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A Geographical Analysis Of Spatio Temporal Senerio Of Canal Irrigation In Sangli District

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Abstract:

Irrigation is a primary input for agricultural production. If an area is facilitated with the irrigation water agricultural sector is positively affected. Irrigation is an important determinant that affects directly as well as indirectly on agricultural technology. Irrigation is the lifeline of the modern agricultural system. In point of this present research paper researcher tries to find out changes in Canal irrigation to net irrigated area of the study region. The collection of data from the field have been compiled, processed and investigated with the help of some statistical methods represented with the help of maps. The proportion of canal irrigation to the net irrigated area as a whole district has 26.80 per cent in 1991, it is constantly increased up to 29.01 per cent in 2018, but the spatial distribution of canal irrigation varies from tahsil to tahsil. Therefore, the government should give up top the priority to develop the irrigation facilities in the Eastern and Southern parts of the district in its plan and policies in order to encourage agricultural technology.

Key words: *Canal Irrigation, Net Irrigated Area, Absolute Change.*

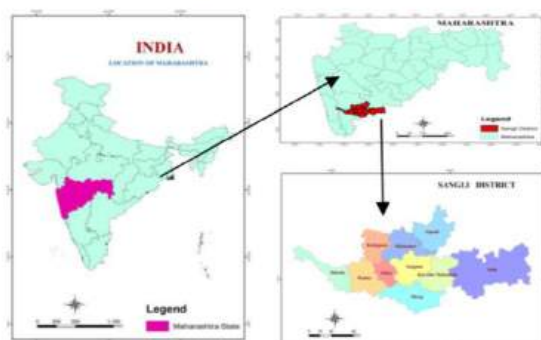
Introduction:

The economic base of the country depends on agriculture. In order to increase the agriculture yield, one should not depend upon rainfall alone but also depends on the irrigation. Irrigation is an important determinant that affects directly as well as indirectly on agricultural technology. Irrigation is the lifeline of the modern agricultural system. For the development of agriculture, secure irrigation is essential (Mansoor Ali, 2007). Irrigation plays a leading role in diminishing the adverse influence of scanty and highly unreliable rainfall. Such a role acquires an added significance in the dry lands where it becomes impossible to grow crops without irrigation (Singh and Dhillon, 1987).

Study Area:

Sangli District located between 16⁰, 45'N to 17⁰, 33'N latitude & 73⁰, 42'E to 75⁰, 40'E longitude. It is lies in drought-prone area. It covers area of 8572 sq.km, it is 2.51% of Maharashtra state & population is about 28.22 Lakh (2011 census). Administratively it is divided in to ten tahsils. In the study region most important rivers are Krishna, Warna, Morna, Yerala, Agrani, Man, etc. The study region rainfall decreases rapidly towards western part of district to eastern part of district. The climate of the Sangli district is generally hot and dry. The region has complexity in topography. It contains hilly region, river basins & undulating land of eastern side.

Figure No. 1

**Objectives:**

1. To analyse the spatio temporal study of canal irrigation in the study region.

Database and Methodology:

In the case of the present study, the secondary data has been collected from different Government offices like talhsil offices of Sangli District, Economics and Statistics Office Sangli District, Irrigation Department offices of Sangli district, Socio-Economic review of Sangli District. The collection of data from the field and offices have been compiled, processed and investigated with the help of some statistical methods represented with the help of maps and diagrams.

The Intensity of Irrigation:

The Intensity of Irrigation

$$= \frac{\text{Net Irrigated Area}}{\text{Net Sown Area}} \times 100$$

Spatial Distribution of Canal Irrigation:

Table No.1 reveals that the proportion of canal irrigation to the net irrigated area as a whole district has 26.80 per cent in 1991, it is constantly increased up to 29.01 per cent in 2018, but the spatial distribution of canal irrigation varies from talhsil to talhsil. Therefore, the study region has been divided into three categories on the basis of mean and standard deviation viz. high (i.e. above mean +SD), moderate (i.e.

ranging from mean to mean + SD) and low (i.e. below mean)

In 1991, the high proportion of canal irrigation i.e. above 46.38 per cent was recorded in Shirala, and Tasgaon talhsils due to located in Warna, Krishna and Yerala river basins and development of Warna and Morana irrigation project whereas Tasgaon talhsil is located in dry area but the development of Aarfal Storage Project, Krishna-Koyana Lift Irrigation- Takari, and Mhaisal Scheme and Tembhu irrigation scheme resulted in high area under canal irrigation. The moderate proportion of canal irrigation i.e. ranging from 25.86 to 46.38 per cent was noted only in Miraj talhsil.

Table No.1: Talhsil-wise Percentage of Area under Canal irrigation to Net Irrigated Area in Sangli District, 1991-2018

SN	Talhsils	1991	2018	Absolute Change
1	Shirala	59.03	37.61	-21.42
2	Walwa	20.95	26.96	6.01
3	Palus	-	-	-
4	Kadegaon	-	-	-
5	Khanapur	2.88	28.95	26.08
6	Atpadi	21.46	21.67	0.21
7	Tasgaon	50.53	27.29	-23.24
8	Miraj	40.99	28.91	-12.07
9	Kavathe Mahankal	1.55	27.16	25.60
10	Jath	9.50	33.92	24.42
Sangli District		26.80	29.01	2.20
Mean		25.86	28.87	3.20
SD		20.52	4.53	19.39

Source: Socio-Economic Abstract of Sangli District, 1991-2018.

The low proportion of canal irrigation i.e. below 25.86 per cent was registered in Walwa, Khanapur, Atpadi, Kavathe Mahankal and Jath talhsils due to Walwa, Khanapur and Atpadi talhsil is located in hilly area and rugged topography

while Kavathe Mahankal and Jath tahsils located in drought-prone area and scanty rainfall, therefore, there are low development of canal irrigation.

As per 2018, Table No.1 shows that the high proportion of canal irrigation i.e. above 33.40 per cent is recorded in Shirala and Jath tahsils due to the development of the Warna Project and Morana irrigation project in Shirala tahsil while Diddanala and Sankh irrigation project in Jath tahsil.

Figure No. 2

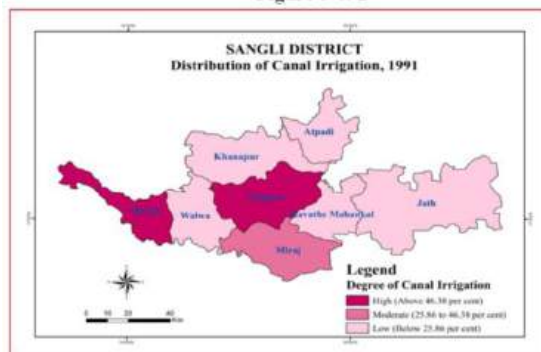
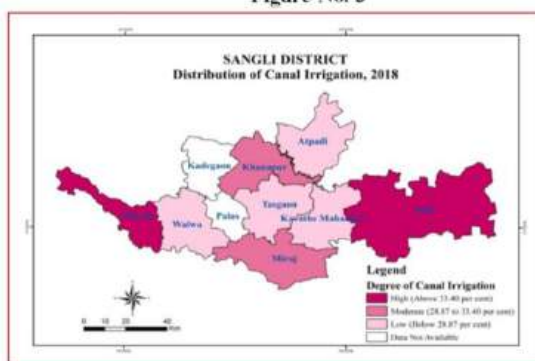


Figure No. 3



The moderate proportion of canal irrigation i.e. ranging between 28.87 to 33.40 per cent is noted in Khanapur and Miraj tahsils. The low proportion of canal irrigation i.e. below 28.87 per cent registered in Walwa, Atpadi, Tasgaon, and Kavathe Mahankal tahsils and causes are the same as mentioned earlier.

Absolute Change in Canal Irrigation:

Table No.1, designates that the district as a whole has 2.20 positive change in percentage of canal irrigation from 1991 to 2011. Table No.1, reveals that the positive

and negative change in canal irrigation in the study region. But the spatial distribution varies from tahsil to tahsil.

The high positive change in canal irrigation i.e. above 22.59 per cent is registered in Khanapur, Kavathe Mahankal and Jath tahsil due to the development of major lift irrigation schemes, medium projects, and Kolhapur type wires. The low positive change in canal irrigation i.e. below 22.59 per cent is found in Walwa tahsil while Atpadi tahsils due to the already development of surface irrigation in Walwa tahsil and hilly and undulating topography in Atpadi tahsil.

Figure No. 4

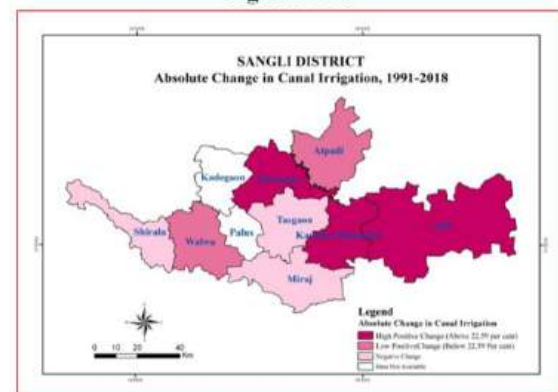


Table No.1, reveals that the negative change in the canal irrigation is noted only in Shirala, Tasgaon and Miraj tahsils. Because development of surface irrigation as a resulted in area under canal irrigation increased but the proportion of canal irrigation declined leads to the increased groundwater table and resulted in increased the number of wells and area under well irrigation.

Conclusion:

Irrigation is the most important requirement in the package practices for intensive and efficient cultivation of the high yielding varieties and also for multiple cropping, whereas without irrigation chemical fertilizers, costly inputs cannot be used with an advantage to the farmers. In the study region observed that the application of

irrigation water helps in stabilizing production under ceteris paribus conditions.

Therefore, the government should give up top the priority to develop the irrigation facilities in the Eastern and Southern parts of the district in its plan and policies in order to encourage agricultural technology and improve agricultural productivity. The minor irrigation projects should be planned at the micro-level as poor peasant will be the major beneficiaries in the drought-prone area of the district.

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वाळवा तालुक्यातील दुग्ध व्यवसायाचा भौगोलिक अभ्यास : राजारामबापू दूध संघ नमुना अभ्यास

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प्रस्तावना :

शेती हा भारतीय अर्थव्यवस्थेचा कणा आहे. 70 टक्क्यांहून अधिक लोकसंख्येसाठी शेती हे उपजीविकेचे साधन आहे. 2001 च्या भारतीय जनगणनेनुसार, 69 टक्के भारतीय लोकसंख्या शेतीमध्ये गुंतलेली आहे. अपुऱ्या आणि अनियमित पावसामुळे मान्सूनच्या हातातला जुगार म्हणून शेती ओळखली जाते. उदरनिर्वाहासाठी हंगामी कामावर अवलंबून असलेल्या भूमिहीन मजुरांकडे तुलनेने महाग धान्य विकत घेण्यासाठी पैसे नाहीत. लाखो छोटे शेतकरी त्यांच्या तुटपुंज्या जमिनीवर त्यांच्या कुटुंबासाठी अन्न पुरवण्यासाठी पुरेसे उत्पादनही करू शकत नाहीत. नुकत्याच झालेल्या संशोधन अभ्यासातून हे तथ्य समोर आले आहे की, दुग्धव्यवसायामुळे देशाला जे साध्य करता आले नाही ते साध्य करण्यात मदत होऊ शकते, जी हरितक्रांतीच्या प्रसारामुळे अल्पभूधारक आणि भूमिहीन मजूर यांच्यासाठी होऊ शकते.

दुग्धव्यवसायाची सुरुवात डेन्मार्क या देशात झाली. त्यानंतर भारतात सर्वप्रथम गुजरातमधील खेडा जिल्ह्यात 1946 मध्ये सहकारी तत्त्वावरील दुग्धसंस्था स्थापन झाली, या जिल्ह्यात 400 खेड्यांतून दूध

संकलन करून जिल्हा पातळीवर कैरा मिल्क युनियन ची स्थापना आणंद या ठिकाणी झाली. असे. भारतात या संस्थेचे दुग्धजन्य पदार्थ अमूल याच नावाने प्रसिद्ध आहेत.

महाराष्ट्रात दुग्ध व्यवसाय मुंबई या ठिकाणी 1951 मध्ये आरे येथे सुरू झाला. पुढे मुंबईची वाढती गर्दी पाहून या व्यवसायाचा विकास मुंबईबाहेर करणे सोईचे होईल असा विचार सरकारने करून 1964 मध्ये हा व्यवसाय सहकारी तत्त्वावर सुरू करण्यात आला.

अभ्यासाची उद्दिष्ट :

हे संशोधन करण्याचे महत्त्वाचे उद्दिष्ट म्हणजे दुग्ध व्यवसायामुळे वाळवा तालुक्याचा झालेला विकास अभ्यासणे होय.

- 1) वाळवा तालुक्याची भौगोलिक पार्श्वभूमी अभ्यासणे.
- 2) राजारामबापू दूध संघाचा व त्यामुळे वाळवा तालुक्याचा झालेला विकास अभ्यासणे.

आकडेवारी संकलन आणि अभ्यास पद्धती :

भौगोलिक अभ्यास हा क्षेत्रभेटीवर आधारित असतो. हे संशोधन प्राथमिक आणि दुय्यम स्तोत्रावर

आधारित आहे. प्राथमिक व दुय्यम माहिती ही दूध संघ व तेथील कामगारांकडून गोळा केली आहे.

प्राथमिक माहिती प्रश्नावली तयार करून ती संघाकडून भरून घेऊन गोळा केली तर दुय्यम प्रकारची माहिती ही दूध संघाचा अहवाल, संदर्भग्रंथ, मासिक, वर्तमानपत्र याद्वारे गोळा केली आहे.

स्थान :

वाळवा तालुका हा सांगली जिल्ह्यातील एक महत्त्वाचा तालुका आहे जो दुग्ध व्यवसायात गुंतलेला आहे. सांगली जिल्ह्याच्या पश्चिम भागात 787.81 चौ.कि.मी. (78781 हेक्टर) भौगोलिक क्षेत्र आहे. वाळवा तालुक्याचा अक्षवृत्तीय विस्तार 16°51' 08" उत्तर अक्षांश ते 17°10'47" उत्तर अक्षांश आणि रेखावृत्तीय विस्तार 74°07'42" पूर्व रेखांश 74°28' 30" पूर्व रेखांश दरम्यान आहे. अभ्यास क्षेत्राची सरासरी उंची सरासरी 560 मीटर आहे. या तालुक्याच्या उत्तरेस सातारा जिल्हा, पूर्वेस पलूस तालुका, ईशान्येस कडेगाव तालुका, आग्नेयेस मिरज तालुका आणि वारणा नदीने कोल्हापूर जिल्हा व दक्षिणेस वाळवा तालुका (सांगली जिल्हा) यांच्यामध्ये नैसर्गिक सीमारेषा तयार केली आहे. अभ्यास क्षेत्रामध्ये उरुण इस्लामपूर आणि आष्टा ही दोन शहरे आणि 96 गावांचा समावेश आहे. 2011 च्या जनगणनेनुसार अभ्यास क्षेत्राची एकूण लोकसंख्या 4,56,002 आहे. त्यापैकी 1,04,496 (22.92%) लोकसंख्या शहरी भागात राहते, तर मोठ्या संख्येने लोकसंख्या म्हणजे 3,51,506(77.02%) वाळवाच्या ग्रामीण भागात राहतात.

अभ्यास क्षेत्राचे महत्व व निवड :

देशाच्या अर्थव्यवस्थेत दुग्धव्यवसाय महत्त्वाची भूमिका बजावते. या शोधनिबंधात वाळवा तालुक्यातील राजारामबापू दूध संघाचा विकास अभ्यासण्याचा प्रयत्न केला आहे. अभ्यास क्षेत्र निवडण्याची कारणे खालीलप्रमाणे आहेत.

1. अभ्यास क्षेत्रात सुपीक जमीन आहे.
2. दुग्धव्यवसाय हा या प्रदेशातील शेतीचा अविभाज्य भाग मानला जातो.
3. सहकारी क्षेत्रातील साखर उद्योगासारख्या कृषी -आधारित उद्योगाच्या विकासाने प्रगतीशील गुंतवणुकीसाठी भांडवल उपलब्ध करून दुग्ध व्यवसायाला मोठ्या प्रमाणात मदत केली आहे.
4. अभ्यास क्षेत्रातील शेती मान्सूनवर अवलंबून असते. अशा स्थितीत या भागात शेतीचा विकास होत नाही. त्यामुळे दुग्धव्यवसाय हा कृषी क्षेत्रासाठी सहायक व्यवसाय म्हणून अधिक विकसित झाला आहे.

सादरीकरण व विश्लेषण:

तक्ता क्र.1

वर्ष	म्हैश दूध	गाय दूध	एकूण दूध
2020-2021	54084	103239	157323
2021-2022	49117	89063	138180
2022-2023	44800	100049	144849

तक्ता नं 1 मध्ये दैनिक सरासरी दूध संकलन दाखवण्यात आले आहे. 2021-22 मध्ये म्हैशीचे दूध संकलन 54084 लि. इतके होते ते 2021-22 मध्ये 49117 लि. इतके झाले तर 2022-23 मध्ये ते 44800 लि. इतके झाले. म्हणजेच म्हैस दूध उत्पादनात 2020-21 पासून 2022-23 पर्यंत घट झालेली दिसून येते.

तक्ता क्र.2

वर्ष	म्हैश दूध	गाय दूध	एकूण दूध
2020-2021	19740535	37682396	57422931
2021-2022	17927683	32508168	50435851
2022-2023	16352094	36517783	52869877

तक्ता क्र. 2 मध्ये वार्षिक सरासरी दूध संकलन दाखवण्यात आले आहे. एकूण दूध उत्पादनात 2020-21 पेक्षा 2021-22 मध्ये घट झालेली दिसून येते तर 2022-23 मध्ये त्यात वाढ झालेली दिसून येते. 2021-22 मध्ये कोरोना लॉकडाऊनचा परिणाम दुग्ध व्यवसायावरही झालेला दिसून येतो.

तक्ता क्र. 3

दुग्धजन्य पदार्थ	सन	सन	सन
श्रीखंड बदाम पिस्ता, आंबा श्रीखंड	312	340	337
तूप लिटर्स	149	146	195
फ्लेवर्ड मिल्क	72	64	49
दही	1141	1481	1812
ताक	819	1107	1391
बासुंदी	71	81	89
लस्सी	348	445	562
पनीर	129	151	167
गुलाबजामून मिक्स	1	1	1
कुल्पी	4873	9375	7287
पेढा	5	5	4
खवा	2	3	3
म्हैस / गाय क्रीम	0	27	7

तक्ता क्र.3 मध्ये राजारामबापू पाटील सहकारी दूध संघात श्रीखंड, आम्रखंड, तूप, दही, ताक, बासुंदी, लस्सी, पनीर, पेढे, खवा, गुलाबजाम, इ. दुग्धजन्य पदार्थ बनवले जातात. 2020-21 मध्ये कुल्पीचे उत्पादन सर्वात जास्त 4873 टन इतके होते. त्या खालोखाल दही (1141टन), ताक (819टन), लस्सी (348टन), श्रीखंड (312टन), पनीर (128टन) यांचा क्रमांक लागतो.

निष्कर्ष :

1) राजारामबापू दूध संघ हा वाळवा तालुक्यातील एकमेव 1957 पासून सुरू असणारा दूध संघ आहे त्यामुळे ग्रामीण भागातील लोकांना रोजगार उपलब्ध झाला आहे. परिणामी वाळवा तालुक्याचा विकास झाला आहे.

2) वाळवा तालुका हा कृष्णा व वारणा नदी खोऱ्यामुळे सुपीक जमीन, मैदानी प्रदेश यामुळे शेतीसाठी अनुकूल बनला आहे असे असले तरी हा पर्जन्यछायेच्या प्रदेशात येतो. जून ते सप्टेंबर या कालावधीत येथे पाऊस पडतो. हा मोसमी पाऊस लहरी स्वरूपाचा असतो. मात्र कृष्णा व वारणा नद्यामुळे वाळवा तालुक्याला बाराही महिने शेतीसाठी पाणीपुरवठा होतो. त्यामुळे येथे शेतीचा पर्यायाने उद्योगधंद्यांचा विकास झालेला आहे.

3) बारमाही जलसिंचन सुविधांमुळे वाळवा तालुक्यात उसाचे उत्पादन मोठ्या प्रमाणात घेतले जाते. येथील लोक शेतीला पूरक व्यवसाय म्हणून दुग्ध व्यवसाय करतात. शेतातून जनावरांसाठी मुबलक प्रमाणात चारा उपलब्ध होतो. त्यामुळे वाळवा तालुक्यात दुग्ध व्यवसायाचा विकास झाला आहे.

4) 2020 - 21 ते 2022 - 23 या कालावधीतील दूध संकलन व वितरण याचा अभ्यास प्रकरण तीन मध्ये केलेला आहे. यात असे दिसून आले की, 2020 - 21 च्या तुलनेत 2021 - 22 मध्ये गाय व म्हेशीच्या दूध उत्पादनात घट झालेली आहे. याचे कारण म्हणजे कोरोनाची परिस्थिती हे आहे. त्यानंतर मात्र 2022 - 23 मध्ये यामध्ये वाढ झालेली दिसून येते.

5) राजारामबापू दूध संघात संकलित दुधावर प्रक्रिया करून त्यापासून दुग्धजन्य पदार्थ बनविले जातात. 2020 - 21 च्या तुलनेत 2022 - 23 मध्ये दुग्धजन्य पदार्थांच्या उत्पादनात वाढ झालेली आहे. दुग्धजन्य पदार्थात जास्त उत्पादन कुल्फीचे उत्पादन (7287 टन) आहे. त्या खालोखाल दही, तूप, बासुंदी, श्रीखंड, ताक, पनीर हे पदार्थही बनवले जातात.

सूचना :

- 1) शेतकऱ्यांना दुग्धजन्य पदार्थ बनवण्यासाठीचे प्रशिक्षण व सुविधा उपलब्ध करून देणे गरजेचे आहे.
- 2) जनावरे व यंत्रसामग्री खरेदीसाठी बिनव्याजी कर्ज उपलब्ध करून देणे गरजेचे आहे.
- 3) गोबर गॅस निर्मितीसाठी लोकांना प्रोत्साहित करणे.

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Educational Development in the Primory Education: A Geographical Study of Satara District

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Abstract:

This research paper explores the educational development in primary education within the Satara district over three decades (2001, 2011, and 2021). Using statistical data, the paper examines tehsil-wise progress, government and private non-aided schools, and teacher-student ratios. The findings highlight geographical disparities and evolving trends in primary education across the district. This research explores the geographical patterns of educational development in the primary education sector of the Satara district. The study aims to analyze the tehsil-wise development of primary education, highlighting disparities and progress in infrastructure, enrollment, and accessibility. Additionally, it evaluates the year-wise teacher-student ratios as a critical indicator of educational quality and equity in the region. The research adopts a mixed-methods approach, combining quantitative data analysis and spatial mapping to provide a comprehensive understanding of the variations in educational progress across different tehsils. The findings are expected to guide policymakers and stakeholders in addressing regional disparities and improving the overall quality of primary education in the Satara district.

Keywords: Educational Development, Tehsil-wise Analysis, Enrollment Rates, Accessibility

Introduction:

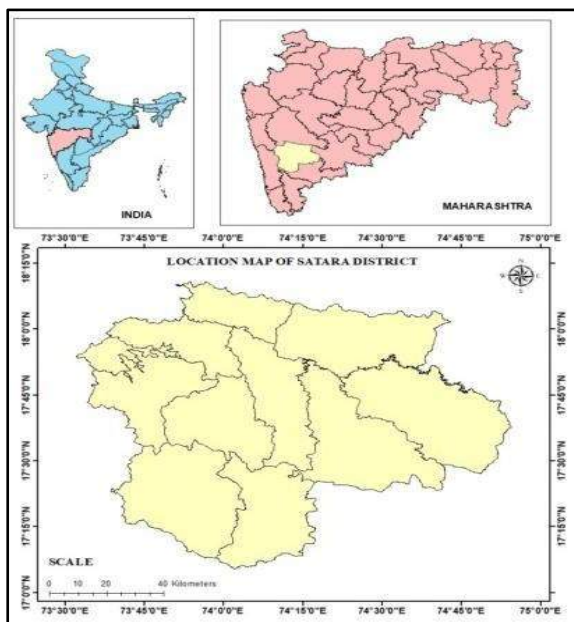
Education is the foundation of sustainable development, empowering individuals and societies to reach their potential. In India, primary education is crucial for shaping young learners' futures, but its quality and accessibility vary due to geographical, socio-economic, and administrative factors. Addressing these disparities is essential for equitable education. Satara district in Maharashtra, with its diverse geographical and socio-economic conditions, provides a case study for regional variations in primary education. This study focuses on two objectives: analyzing tehsil-wise development in enrollment, infrastructure, and accessibility,

and evaluating year-wise teacher-student ratios as a measure of educational quality. A geographical perspective helps uncover how location-specific factors influence education. The findings aim to assist policymakers and stakeholders in bridging educational gaps and promoting balanced development across Satara's tehsils. This research highlights the need for localized strategies to ensure equity and excellence in primary education.

Study Area:

Satara is a district in the Indian state of Maharashtra. It covers an area of 10,480 square kilometers, which constitutes 3.40% of Maharashtra's total land area. Geographically, it lies between 17°10'N and

18°11'N latitude and 73°33'E and 74°54'E longitude. The Sahyadri range, a part Satara district, nestled on the Western Ghats, extends north-south along its western border, separating it from Ratnagiri district. Situated on the western Deccan Plateau, it lies within the Krishna and Bhima river basins. Satara is bordered by Pune district to the north, Solapur district to the east, Sangli district to the south, Ratnagiri district to the west, and Raigad district to the north-west.



Objectives:

1. To analyze tehsil-wise primary education development in Satara district.
2. To evaluate year-wise teacher-student ratios in Satara district.

Methodology:

This study employs a mixed-methods approach, integrating quantitative and qualitative analyses to explore primary education development in Satara district comprehensively.

Study Area and Data Collection: The research covers all tehsils of Satara district, characterized by diverse geographical and socio-economic conditions. **Secondary Data:** Collected from government reports, district education office records, and

published statistical databases, focusing on indicators like enrollment rates, infrastructure, and teacher-student ratios. **Primary Data:** Gathered via structured surveys and interviews with stakeholders, including school administrators, teachers, parents, and local education officials.

Tehsil-wise Analysis: Spatial analysis techniques were used to map and compare educational development across tehsils. Key indicators included school density, enrollment rates, availability of basic facilities (classrooms, drinking water, toilets), and school accessibility.

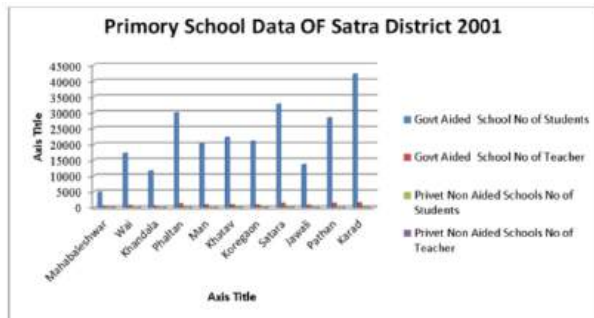
Teacher-Student Ratio Evaluation: Year-wise teacher-student ratios were calculated for each tehsil using school records and official statistics. Trends over a decade were analyzed to evaluate human resource adequacy and its impact on educational quality.

Data Analysis Tools:

Statistical Tools: Regression analysis and ANOVA were applied to identify significant relationships and trends among variables.

Qualitative Analysis: Interviews and focus group discussions captured stakeholder perceptions of challenges and opportunities in primary education. Thematic analysis of this data enriched the context and complemented quantitative findings.

Validation and Triangulation: To ensure reliability, multiple data sources were triangulated. Expert reviews and feedback from local education authorities were incorporated during the analysis phase.

Statistical Data Overview:**2001 Educational Data:****Tehsil-Wise Analysis of Schools and Enrollment:**

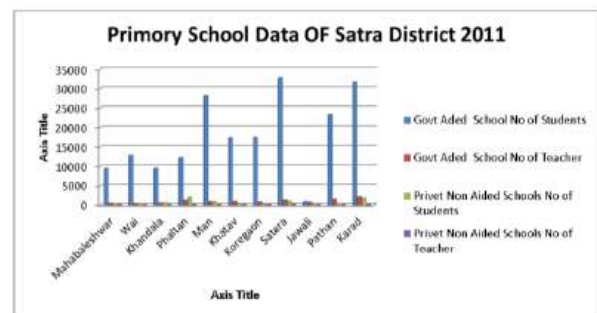
In 2001, Satara district had 2,498 government-aided schools and 15 private non-aided schools, with government-aided schools forming the backbone of primary education. Pathan (481 schools) and Karad (300 schools) had the highest number of schools. Enrollment figures revealed disparities: Karad had the highest enrollment (42,054), followed by Satara (32,630) and Phaltan (29,774), while Mahabaleshwar recorded the lowest (4,802) due to lower population density or limited accessibility.

Teacher-Student Ratios and Resource Allocation: Teacher-student ratios varied significantly across tehsils. Mahabaleshwar had the most favorable ratio (1:22), indicating smaller class sizes and potentially better outcomes, whereas Karad and Phaltan experienced higher ratios, signaling resource strain. Private non-aided schools played a minimal role, with only 1,754 students enrolled, mainly in Mahabaleshwar, Phaltan, Satara, and Karad.

Geographical and Socio-Economic Influences:

The distribution of schools and teachers aligned with the geographical and socio-economic features of each tehsil. Pathan and Karad had higher school concentrations due to better infrastructure and higher population density, while Mahabaleshwar's hilly terrain and sparse population limited its educational facilities. These disparities highlight the need for tailored interventions, such as incentivizing teachers in remote areas and improving infrastructure in underserved regions.

Policy Implications: The findings underline the need for equitable resource allocation. Mahabaleshwar and Jawali require improved accessibility and infrastructure, while Karad and Satara need measures to reduce teacher workload and improve teacher-student ratios. Encouraging private non-aided schools in underserved areas could complement government efforts and expand educational opportunities.

Primary Education Development in 2011:**Tehsil-Wise Analysis of Schools and Enrollment:**

Government-Aided Schools: Pathan leads with 539 schools, while Khandala has the lowest at 128. Larger numbers of schools in tehsils like Pathan and Karad suggest a significant government focus in these areas. **Private Non-Aided Schools:** Karad has the highest number of private non-aided schools (91), followed by Satara (30). Pathan, with only 1 private school, indicates very limited private educational infrastructure. **Student Enrollment:** -Govt-Aided Schools: Satara has a massive student enrollment of 32,714, far exceeding other tehsils. This suggests that Satara serves as a hub for public education. **Private Schools:** Satara leads with 9,900 students, reflecting its socio-economic advantage and preference for private education.

Teacher-Student Ratios and Resource Allocation:

Government-Aided Schools: The overall teacher-student ratio is 1:46 (10,737 teachers for 489,300 students). Best ratios: Karad (1:15) and Khandala (1:17), indicating better resource availability. Worst ratios: Satara (1:250): Despite its high enrollment, the teacher shortage is severe.

Private Non-Aided Schools: The overall teacher-student ratio is 1:28 (861 teachers for 23,841 students), much better than government-aided schools. The private sector provides relatively smaller class sizes, ensuring more attention per student.

Disparities in Resource Allocation: Overcrowding in tehsils like Satara and Pathan contrasts with under-utilized resources in tehsils like Jawali (low student count of 839 despite 716 teachers).

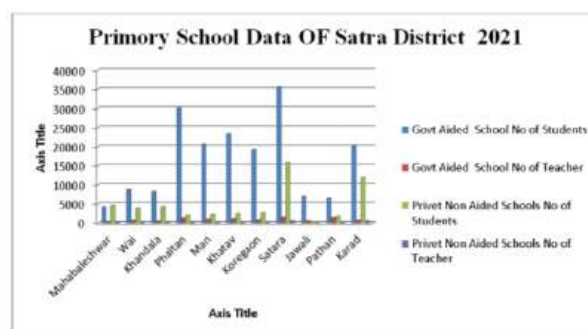
Geographical and Socio: Economic Influences Urban Centers vs. Rural Areas: Urban tehsils like Satara and Karad show higher private school enrollment and infrastructure, reflecting better socio-economic conditions and demand for private education. Rural and less-developed areas like Pathan and Man are heavily reliant on government-aided schools. **Private Education Dominance:** Karad, with the highest number of private schools, reflects a growing preference for private education, possibly driven by better economic conditions. Tehsils like Pathan and Jawali lack private school presence, likely due to lower demand or affordability challenges. **Infrastructure and Accessibility:** Higher numbers of schools in rural tehsils like Pathan and Man indicate efforts to improve access to education, but teacher shortages highlight resource gaps.

Policy Implications: Addressing Teacher Shortages Immediate recruitment and deployment of teachers in overcrowded tehsils like Satara and Pathan to reduce teacher-student ratios. Private Sector Engagement: Incentivize private schools to establish a presence in underserved areas like Pathan and Jawali to provide alternatives to government-aided schools. Resource Redistribution: Reallocate underutilized teaching resources from tehsils with low enrollment (e.g., Jawali) to overcrowded areas (e.g., Satara). Focus on Rural Development Strengthen infrastructure in tehsils like Pathan and Man

to meet growing demand. Consider building additional schools and improving teacher training and deployment.

Improve Monitoring and Quality: Implement programs to ensure quality education in government-aided schools, particularly in regions with high enrollment but poor resources like Satara. Promote Equity: Launch targeted educational initiatives to bridge the gap between rural and urban tehsils, ensuring equitable access to quality education.

2021 Educational Data:



Tehsil-Wise Analysis of Schools and Enrollment: Pathan has the highest number of government-aided schools (587), followed by Karad (434) and Phaltan (395). Mahabaleshwar has the lowest (140), showing some disparity in the availability of public schooling infrastructure. Private Non-Aided Schools: Karad leads with the highest number of private schools (71), followed by Satara (64), reflecting stronger private education infrastructure in these regions. Jawali has the fewest private schools (11), suggesting limited private education options in this tehsil. Satara has the highest number of students (35,567), highlighting its role as an educational hub. Satara also leads in private school enrollment (15,779 students), indicating a socio-economic preference for private institutions.

Teacher-Student Ratios and Resource Allocation: Government-Aided Schools: The overall teacher-student ratio is 1:17 (10,361 teachers for 178,427 students). Best ratios: Mahabaleshwar (1:12): Fewer students per teacher ensure better attention

per student. Worst ratios: Phaltan (1:23): Teacher shortages relative to student population. Private Non-Aided Schools: The overall teacher-student ratio is 1:20 (2,547 teachers for 52,138 students). Private schools generally have smaller class sizes, offering more individualized attention. Notably, Mahabaleshwar's private schools have the best ratio (1:18), while Satara has a higher ratio (1:27), showing strain on private education resources in Satara.

Geographical and Socio-Economic Influences: Urban vs. Rural Education: Urban tehsils like Satara and Karad show high private school enrollment, likely due to better socio-economic conditions and demand for quality education. Rural tehsils like Pathan and Jawali continue to rely heavily on government-aided schools, reflecting limited private investment and lower affordability for private education. Shifts in Educational Preferences: The increase in private school enrollment compared to 2011 indicates a growing preference for private education, especially in urban centers like Satara and Karad. Mahabaleshwar also shows a notable rise in private school presence, suggesting growing demand for alternatives to government schools. Infrastructure Disparities: Despite having the highest number of government-aided schools, Pathan has relatively low student enrollment (6,621 students), indicating under-utilization of resources. Conversely, tehsils like Satara and Karad experience higher enrollment, reflecting concentrated demand.

Policy Implications: Enhance Teacher Recruitment and Training: Focus on tehsils like Phaltan, where government-aided schools have high student-to-teacher ratios. Recruitment and professional development programs can alleviate strain on existing teachers. Encourage Private Sector Investment in Rural Areas: Tehsils like Pathan and Jawali need incentives for

private school development to provide students with more options.

Optimize Resource Utilization: Reallocate resources from under-utilized areas like Pathan to overcrowded areas like Satara. Conduct a review of under-enrolled schools to consolidate resources or repurpose infrastructure where appropriate.

Promote Balanced Growth of Private Education: In urban centers like Satara and Karad, where private schools face higher teacher-student ratios, promote policies that encourage the establishment of new private institutions. Focus on Rural Development: Strengthen infrastructure in rural tehsils like Pathan, where student enrollment in government-aided schools remains low, to encourage higher participation. Address Enrollment Disparities: Implement community outreach programs in under-enrolled areas to promote awareness of education and boost student enrollment.

Conclusion:

The study of primary education in the Satara district over three decades highlights pronounced geographical and socio-economic disparities influencing accessibility, quality, and outcomes. Rural tehsils like Pathan and Man depend heavily on government-aided schools, facing challenges in enrollment and resource utilization. Urban tehsils like Satara and Karad benefit from stronger infrastructure and private sector participation, although overcrowding persists. Despite improvements in teacher-student ratios, urban centers struggle with high demand, while rural areas remain underutilized. Private education has grown in urban regions, yet rural areas lack sufficient access, necessitating targeted policies. Recommendations include optimizing resources, recruiting and training teachers for overcrowded areas, incentivizing private sector investment in underserved regions, enhancing rural infrastructure, and

promoting equity through outreach and community engagement programs.

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Identification and Areal Assessment of Mangrove and Mangrove Associate Species in Kasheli Creek

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Abstract:

The Konkan region is renowned for its diverse aspects, including natural beauty, aquatic resources, mango farming, and mangrove forests. Mangroves are a vital natural resource, providing numerous benefits to local communities and contributing significantly to the regional economy. They provide habitat for aquatic life, mammals, and serve as breeding grounds and nurseries, and offer protection against natural disasters like tsunamis. Additionally, they help mitigate coastal erosion and stabilize the shoreline. However, in recent years, anthropogenic activities have increased in the ecosystem. Consequently, mangrove ecosystems have become increasingly vulnerable. Thus, conservation of these ecosystems is crucial. Therefore, the aim of the article is to identify the mangrove species and assess the mangrove-covered area with respect to understanding its present status in the study region. The study area is home to seven typical mangrove species, including *Rizophora apiculata*, *Avicennia alba*, *Lumnitzera racemosa*, *Excoecaria agallocha*, *Kandelia obovata*, *Sonneratia alba*, *Rhizophora mucronata* and seven mangrove associates, namely *Caesalpinia crista*, *Canavalia cathartica*, *Acanthus ilicifolius*, *Derris trifoliata*, *Clerodendrum inerme*, *Ipomoea pes-caprae* and *Derris scandens*. The mangrove covered area has decreased due to the reduced supply of creek water by the Kharland bund.

Keywords: Mangrove, Creek, Kharland bund, Aquaculture, Kasheli, Konkan

Introduction:

India is one of the most important countries in the world. Out of the states from India, Maharashtra is agriculturally and industrially developed state in India. Maharashtra is divided into three important physiographic divisions. These are Konkan coast, Deccan plateau and Western Ghat etc. (A.B.Saouadi, 2020). The coastal belt between Damanganga river in the north and Terekhol river in the south is known as Konkan. It consists of Palghar, Thane, Raigad, Ratnagiri, Sindhudurg and Mumbai. (Karlekar and Thakurdesai, 2017). The coastal sector, characterized by plains, shoreline terraces, sand dunes, cliffs,

numerous sandy pocket beaches, tidal inlets, creeks and estuaries, shows a great amount of variability from north to south. The estuaries and creeks on this coast are special character of the konkan coast. (Karlekar, 1996). Kalbadevi Creek, Bhatye Creek, Purnagad Creek, Rajapur Creek, Vaghotan Creek, Arjuna Creek, Achara Creek, Kalavali Creek, Kolamb Creek, Karli Creek these are the major creeks of Konkan (Karlekar and Thakurdesai, 2017). On the basis of lithology, geomorphic configuration, nature of hinterland and climate, Konkan has been divided into the three divisions the North Konkan, Middle Konkan and South Konkan (Dikshit, 1986).

South Konkan is the longest stretch. It has deeply entrenched stream channels and the piedmont plains. (Karlekar, 1981). The estuaries of Middle Konkan and South Konkan occur as narrow, elongated inlets with relatively little human interference. (Karlekar, 2001).

Importance of Mangrove:

The state of Maharashtra has a coastline of approximately 720 km, running in the five districts in the Konkan region, where mangroves are found in estuaries, deltas, and mudflat areas. Mangroves are defined as tropical and subtropical forests with a diverse floristic composition, located along the sea on muddy or peaty lowlands that are periodically submerged or influenced by tides. Mangrove ecosystem is particularly significant, from both the ecological and economical points of view. The word 'Mangrove' is considered to be a combination of the Portuguese word 'Mangue' and the English word 'grove'. Mangroves are a typical group of plants which are adopted for survival in sheltered brackish water habitats along coasts of tropical and sub-tropical regions. They provide good shelter and protection to brackish water habitats. Mangroves maintain the quality and productivity of coastal waters. Mangroves are known as primary producers, shoreline protectors. They provide nursery grounds and habitats for a variety of animals. They provide nursery grounds and habitats for a variety of animals, serving as bridging components and unique biological resources. They help control shoreline erosion and stabilize the coastline. Mangroves can provide protection against natural disasters such as tsunamis. Globally, mangroves are one of the most productive and threatened ecosystems which are situated within the intertidal zones of tropics and subtropics. Mangrove ecosystems provide numerous employment opportunities to the local communities. They provide a range of products, including food, tannins, fuel, construction materials, timber,

and medicines. In many countries, including India, subsistence fisheries activities largely depend on healthy mangrove forests. A diverse range of marine animals, including invertebrates, fish, reptiles, birds, and mammals like tigers, seek shelter in mangrove forests. They help purify the air and water by absorbing impurities and harmful heavy metals so they are known as the kidneys of the environment.

The Study Area:

The study area, Kasheli Creek, is located in the southernmost part of Purnagad Creek which is formed by the mouth of the Muckundi River, between Gaonkhadi and Purnagad. Near the mouth, it has got a crescent shape. The creek is also known as Doka River in the area between Guravwadi and Kasheli villages. It comprises the five villages are located as follows: Gaonkhadi (northwest), Dorle (northeast), Kondsar BK (east), Navedar (south), and Kasheli (west). The total geographical area of the study region is approximately 54, 68,814, square meters which is estimated from the Google earth image of Oct.2023. The study regions latitudinal extent is 16, 44, 9.60 N to 16, 44, 19.20 N and longitudinal extent is 73, 19, 8.40 E to 73, 20, 45.60 E. The region's length is approximately 6,443 meters on the western side and 8,099 meters on the eastern side. Due to its irregular shape, the length varies at different points, with a middle section measuring approximately 2,451 meters. The region's width is approximately 375 meters from west to east on the northern side and 848 meters from west to east on the southern side. The study area is generally located 32 kilometers west of Rajapur tehsil and 32 kilometers south of Ratnagiri city. Out of the total study area, approximately 28.71% (1,569,995, sq.m.) is located in Kasheli village, about 13.69 % (748,617 sq.m.) in Gaonkhadi, 3.90 % (213,608 sq.m.) in Dorle, 36.58 % (2,000,000, sq.m.) in Kondsar BK, and about 3.91% (213,608 sq.m.) in Navedar village.

Methods:

To assess the mangrove covered region, the map is prepared using the Google Earth images of 2013 and 2023. The images were accessed through the internet. The study area was fixed and delineated using Google Earth images. Data for the study were obtained through an analysis of Google Earth images to assess changes in the area covered by mangrove forests in Kasheli Creek. Ground verification has also been conducted to make the classification worthwhile for analysis and interpretation. To record accurate information about the changes in mangrove -covered area, the collected data by conducting questionnaire survey in 2018 were analysed to understand people's perceptions. The study was conducted to assess changes in the mangrove-covered area over a 10-year period (2013-2023).

Mangrove identification:

Mangrove identification began with a visit to the study area in 2017. The creek channel was travelled using the small boats of the fishermen, covering the regions from Guravwadi to Gaonkond bund, Gaonkond bund to Kasheli bandh, and Kasheli band to Kasheli bandhiya. All the mangrove species which are luxuriantly grown along the creek channel was carefully observed. Necessary photographs were taken using a mobile camera. Photographs of fruits, flowers, exposed roots, and leaves of various sizes and shapes were taken at that time. The following day, the intertidal zone of the creek was observed by walking. In this zone, some mangrove species and mangrove associates were identified, and photographs were taken. Some fruit samples were also collected. Seed samples that had failed to germinate were also collected. All the collected photographs and fruit samples were classified according to their location and surrounding environment. A second attempt was made to identify the species by surveying literature on mangroves and

vegetation in the Konkan region and also visited to some websites like www.flowersofindia.net. After that, some efforts were made to identify the species. The collected photographs, fruit samples, seeds, and identified species were then shown to the respected guide. All the essential guidance was taken from the respected guide. The given suggestions were understood and followed. Additional guidance was also taken from the Department of Botany, Gogate-Jogalekar College, Ratnagiri. At each visit, the collected information was classified. Based on morphological characteristics such as color, size, shape, area, season, flowers, leaves, roots, fruits, branches and stems. The study area was revisited multiple times during various phases of the vegetation's life cycle. Some species were observed to be seasonal, while others were present throughout the year. It is observed that Members of family Rhizophoraceae show flowering throughout the year. The species like *R. mucronata*, show early stages in the month of April and May and blooming is observed from September to November. *Avicennia* show flowering from March to July and matured fruits are formed in June – July. The mangroves were classified based on their botanical name, local name, family, habit, and habitat. All collected mangrove species were categorized into five classes. trees, shrubs, climbers, typical mangroves, and associate species. A total of 14 species of mangroves and mangrove associates were identified, including 7 typical mangrove species and 7 mangrove associate species. In the intertidal zone, the mangrove species such as *Rhizophora apiculata*, *Avicennia alba*, *Lumnitzera racemosa*, *Excoecaria agallocha*, *Kandelia obovata*, *Sonneratia alba*, and *Rhizophora mucronata* are found during field visits. Additionally, some mangrove associates are identified along the intertidal zone, including *Caesalpinia crista*, *Canavalia cathartica*, *Acanthus ilicifolius*, *Derris trifoliata*, *Clerodendrum inerme*, *Ipomoea pes-caprae*, and *Derris scandens*.

Table 1: Typical Mangrove species in Kasheli creek

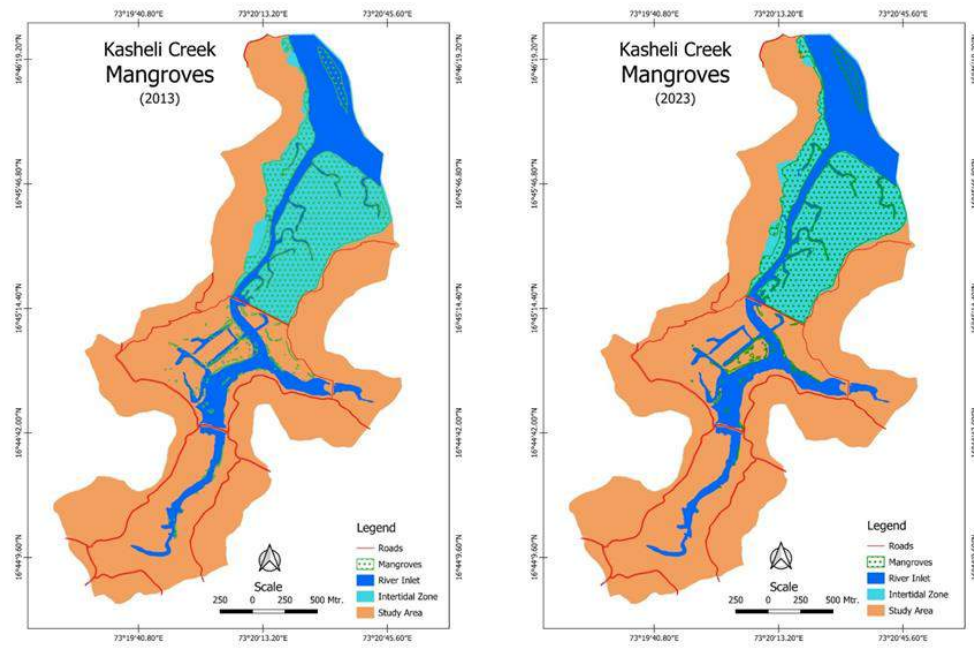
Sr. No	Botanical Name	Local name	Family	Habit	Location / Habitat
1	<i>Rizophora apiculata</i>	Kanjil	Rizophoraceae	Mangrove	Tree
2	<i>Avicennia alba</i>	Tivar	Acanthaceae	Mangrove	Tree
3	<i>Lumnitzera racemosa</i>	Kirpa	Combretaceae	Mangrove	Tree
4	<i>Excoecaria agallocha</i>	Huri	Euphorbiaceae	Mangrove	Tree
5	<i>Kandelia obovata</i>	Kanjil	Rhizophoraceae	Mangrove	Tree
6	<i>Sonneratia alba</i>	Pandhari chipi	Lythraceae	Mangrove	Tree
7	<i>Rhizophora mucronata</i>	Kanjil	Rhizophoraceae	Mangrove	Tree

Typical mangrove species in Kasheli creek*1. Rizophora apiculata**2. Avicennia Alba**3. Lumnitzera racemosa**4. Excoecaria agallocha**5. Kandelia obovata**6. Sonneratia Alba**7. Rizophora mucronata**Figure: 1*

Table 2: Mangrove associate species in Kasheli creek

Sr. No	Name	Local name	Family	Habit	Location/ Habitat
1	Caesalpinia crista	Sagargoti,	Fabaceae	Associate	Climber
2	Canavalia cathartica	Abai	Fabaceae	Associate	Climber
3	Acanthus ilicifolius	Marandi	Acanthaceae	Associate	Shrub
4	Derris trifoliata	Nirgundi	Fabaceae	Associate	Climber
5	Clerodendrum inerme	Vanajai	Lamiaceae	Associate	Shrub
6	Ipomoea pes-caprae	Maryada-vel	Convolvaceae	Associate	Creeper
7	Derris scandens	Garudvel	Fabaceae	Associate	Climber

Figure 2: Mangrove associate species of Kasheli creek*1. Caesalpinia crista**2. Canavalia cathartica**3. Acanthus ilicifolius**4. Derris trifoliata**5. Clerodendrum inerme**6. Ipomoea pes-caprae**7. Derris scandens*

Areal Assessment of Mangrove:***Kasheli creek mangrove 2013 and 2023.***

Source: Google earth image from April, 2013 and 2023.

Figure: 3



Figure: 4

Dense mangrove cover at Gaonkond bund



Figure: 5 - Mangrove decreasing area in Kasheli creek

Table 3: Mangrove covered area (Sq. Meter)

Area covered (Sq. Meter)			
2013		2023	
Area in Sq. Mtr	Percentage	Area in Sq. Mtr	Percentage
878299	16.06	828678	15.15

Mangroves occupied approximately 16.06% of the total study area (54, 68,814 Sq. mtr.) in 2013, covering 878,299 square meters of the study region. On the other hand, mangroves occupied around 15.15% of the total study area in 2023, covering 828678 square meters of the study region. This map indicates that mangroves are sparsely distributed in the southern and middle parts of the study area, whereas they are densely spread in the northern part due to an adequate supply of creek water. In the middle and southern parts of the area, mangroves are seen in sparse and isolated clusters, with species growing far apart from each other, resembling a bouquet. Mangrove species are primarily observed in areas where creek water can reach during high tide. The majority of the mangrove forest is concentrated between Gaonkond bund and Guravwadi in the intertidal zone. It was rarely observed in the easternmost part of the creek, likely due to the creeks headward portion. All mangrove plants are located within the intertidal zone of the study area. Mangrove species are seldom found outside the intertidal zone or near its boundaries.

Kharland bunds for Agriculture:

In the coastal regions of Maharashtra, many villagers have lost their agricultural land due to the intrusion of saline seawater through estuaries, creeks, and inlets during high tides. To mitigate this problem of salinity, earthen bunds were constructed across the entrances, following the coastal regulation rules. The objective of the Kharland scheme is to protect agricultural and grazing lands, thereby strengthening the socio-economic status of nearby villages. The bunds help restore the

fertility of the agricultural land over time, increasing yields. By restricting the flow of creek water into agricultural fields, the bunds improve soil fertility and protect agricultural and grazing lands. This provides significant benefits to local people, strengthening their economic conditions. However, the construction of Kharland bunds on creeks has affected mangrove cover on the landward side of the creeks. A report of BNHS on the impact of Kharland Development bunds on mangrove cover, a case study from Ratnagiri, noted that the Kasari bund on Jaigad Creek affected 108 hectares of mangrove cover. Similarly, the Shipole-Veswi bund on Bankot creek impacted 35.5 hectares, and the Shirgaon bund on Sakartar creek affected 75 hectares of mangrove area. This damage occurred due to the area enclosed by the bund, which lacked adequate tidal water.

Aquaculture:

Near the Gaonkond bund, the two new shrimp farming projects are initiated in the intertidal zone. The shrimp farms are enclosed by constructing bunds, effectively isolating them from tidal influences. This is a new emerging occupation in the study region.

Conclusion:

To provide extra land to local farmers, conserve water tables, and protect agricultural and grazing lands from becoming brackish due to tidal water ingress, the Ratnagiri Kharland Department constructed an earthen kharland bund at Gaonkond. As a result of this bund, a reduced supply of creek water has been observed in the southern, western, and

eastern parts (from Gaonkond bund to Kasheli bandhiya) of the creek's intertidal zone, leading to a gradual decline in mangrove forests, as well as fish and other aquatic animals and birds. It is suggested that areas in the intertidal zone, which are not being used for grazing or agriculture and are lying open, should be utilized for mangrove plantation by creating furrows. This mangrove plantation becomes beneficial to increase fish population and other aquatic animals and birds. The local people's needs for fish will be fulfilled by these efforts.

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A Study of Growth of Census Towns and Emerging Urban Centers in Karad Taluka, Satara District (Maharashtra)

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Abstract:

Karad Taluka is an important place in Satara district. It has important political, educational and agricultural background. Hence, it has emerged some census towns and urban centers. Karad is an notable and most important urban center in Satara District. The statutory Urban local bodies are municipalities and for rural it has Panchayat samiti.

The unit of classification in this regard is 'town' for urban areas and 'village' for rural areas. The urban area comprises two types of towns viz: Statutory towns and Census towns. In the Census of India 2011, the definition of urban area adopted is as follows: (a) Statutory Towns: All places with a municipality, corporation, cantonment board or notified town area committee, etc. are known as Statutory Towns. (b) Census Towns: The following three criteria simultaneously are treated as Census Town. A census town is defined as one where i) the population is at least 5,000 people, ii) the population density is 400 people per square kilometer, iii) at least 75% of the working-age male population is employed in non-agricultural activities.

Cities or areas that are undergoing rapid expansion, development, and transformation are referred to as "Emerging Urban Centers" because of their notable advancements in infrastructure, social improvement, and the economy.

Key words: Census Towns and Emerging Urban Centers

Introduction:

Karad is an important political hub in Satara district. Former Chief Minister of Maharashtra Late Yashwantrao Chavan Saheb and Karad Nagarparishad President P. D. Patil Saheb have both worked tirelessly to development Karad Taluka. Hence, Karad Taluka has various educational societies, research center, each and every health facility, and transport facilities is available in Karad Taluka.

Objectives:

To study the *Census Towns and Emerging Urban Centers* in Karad Taluka

Methodology:

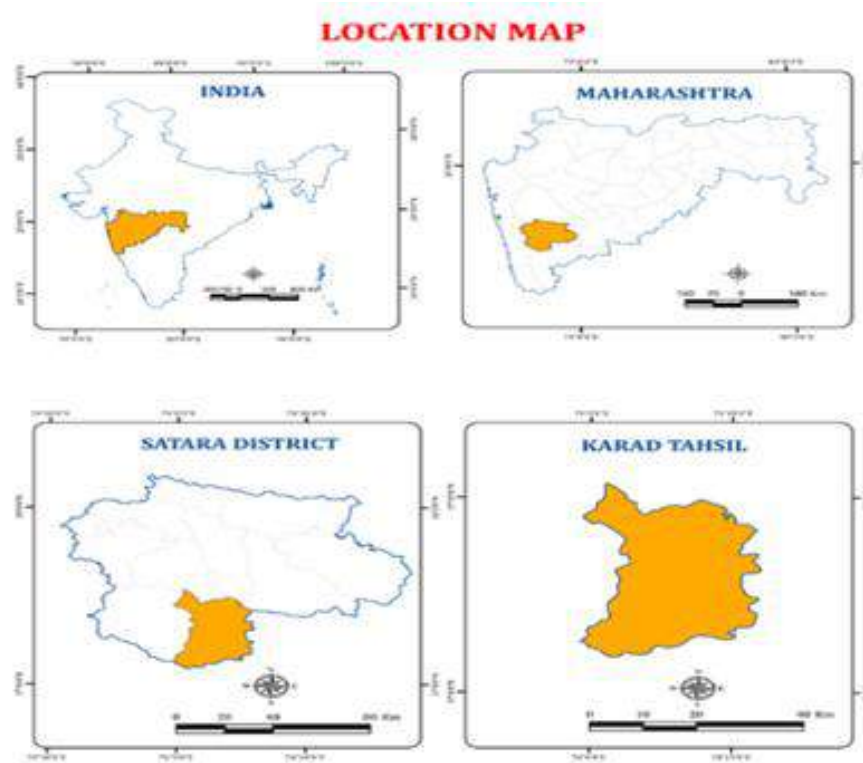
The researcher has been given a field visit for the study. So the primary information is received through field work. Secondary data was collected from Satara District Gazette. After collecting the secondary data, the researcher has used different statistical methods for tabulation and attempted to show the obtained information through a map and diagrams.

Study Region:

Karad Taluka is selected for present investigation. It extends from 17°16' north to 17°33' north latitude and 73°52' east to 74°16' east longitude. Karad Taluka comprises in area of 405.8 sq. Km. Its maximum temperature is up to 42°C and

minimum 15⁰c Annual rain fall is 700 mm and Relative humidity is 85 per cent in the rainy season. Its climate is monsoonal type

and it is favorable and healthy for human living and other living things.



Data Analysis:

Growth of Census Towns in Karad Taluka (1961- 2021)

A census town is defined as one where i) the population is at least 5,000 people, ii) the population density is 400 people per square kilometer, iii) at least 75% of the working-age male population is employed in non-agricultural activities.

Statutory towns and metropolitan regions differ from census towns in that they do not have a municipal administration or board. Despite having urban characteristics, they are not officially designated as urban areas. Census towns have gained significance in the Indian context due to the swift establishment of new urban centers and the swift increase in urbanization.

Table 1.1: Growth of Urban Centers in Karad Taluka (1961-2021)

Years	No .of Urban Centers (Census Towns)	Percent
1961	01	5.88
1971	02	11.76
1981	01	5.88
1991	01	5.88
2001	02	11.76
2011	05	29.41
2021	05	29.41
Total	17	100

Source: District Census Handbook, Satara (1961 to 2011)

In the year 1961 to 1991 it means forty years of the period in Karad Taluka having only one census town in 1961 and two urban centers in 1971. In this year Karad (M CI) and Vanavadi (Sadashivgad) was urban centers (11.76%). In 1981 and 1991 there was one urban center (5.88%) respectively viz. Karad (M CI). In 2001 the number is increased and it goes to two urban centers (11.76%) viz. Karad (M CI) and Vanavadi (Sadashivgad) (CT). After the ten years in 2011, the number of urban centers are increased and it goes to five (29.41%). The name of increased urban centers is Karad (M CI), Malkapur (NP), Saidapur (CT), Karad (Rural) and Hajarmachi (CT). In 2021, its five towns in Karad Taluka and percent of it was 29.41. By the Census of India 2021 declared the same urban centers for the census year 2021.

Emerging Urban Centers in Karad Taluka (2001-2011):

Rapid development and growth in terms of population, infrastructure, and economic activity are common in emerging metropolitan centers. Cities or areas that are undergoing rapid expansion, development, and transformation are referred to as "Emerging Urban Centers" because of their notable advancements in infrastructure, social improvement, and the economy. These regions are frequently distinguished by quick urbanization, a rise in economic activity, and the construction of contemporary infrastructure. The designation "emerging" implies that these centers are now gaining prominence on a national or international level.

Table 1.2: Emerging Urban Centers in Karad Taluka (2001-2011)

Name of Urban Regions	Area in sq. km	2001			2011		
		No. of Households	Total Population	Density of Population	No. of Households	Total Population	Density of Population
Shere	9.26	1024	5205	562	1152	5369	580
Rethare(Bk.)	14.88	2307	11853	797	2397	12004	807
Wing	10.53	1276	6317	600	1460	6604	627
Umbraj	5.77	2872	14431	2501	3714	16854	2921
Saidapur	5.93	2065	10175	1716	3135	9317	2389
Hajarmachi	3.89	1750	8330	2141	2027	13913	2358
Masur	12.15	1564	7966	656	1883	8933	735
Warunji	6.16	1121	5452	885	1355	6136	996
Pal	16.29	1263	6428	395	1395	6619	406
Munde	6.54	818	4344	664	1002	5051	772
Koparde Haveli	9.02	1129	6298	698	1244	6207	688
Karve	9.15	1523	7858	859	1574	7451	814
Goleshwar	6.27	1140	5396	861	1430	6864	1095
Charegaon	9.08	1185	9894	649	1117	5398	594
Kale	13.56	1919	9493	700	1839	8741	645
Vadgaon Haveli	13.96	1274	6460	463	1395	6825	489

Source: District Census Handbook, Satara (2011)

Above table 1.2 shows the Population density of Karad Taluka during 2001 to 2011 census. Under the category of emerging urban centers in Karad Taluka, there are a total 16 emerging urban centers. The population density of the Shere sub-urban center was 562 persons per sq.km in 2001 and 580 persons per sq.km in 2011. Likewise, no. of households were 1024 and 1152 respectively. The population density of the Rethare (Bk.) sub-urban center was 797 persons per sq.km in 2001 and 807 persons per sq.km in 2011.

Alike, no. of households was 2307 and 2397 respectively. The population density of the Wing sub-urban center was 600 persons per sq.km in 2001 and 627 persons per sq.km. in 2011. Likewise, no. of households were 1276 and 1460 respectively. The population density of the Umbraj sub-urban center was 2,921 persons per sq.km in 2011 compared to 2,501 persons per sq. km in 2001. In it has 2872 and 3714 no. of households in both year respectively. The population density of the Saidapur was 1716 and 2389 in 2001 and 2011 respectively. Also, in Hajarmachi the population density of it was 2141 and 2358 in 2001 and 2011 respectively.

Masur sub-urban center was 656 persons per sq.km in 2001 and 735 persons per sq.km in 2011 respectively. As well as, 1564 and 1883 no. of households respectively. The population density of the Warunji sub-urban center was 885 persons per sq.km in 2001 and 996 persons per sq. km in 2011. It holds 1121 and 1355 no. of households. Pal is the religious place in Karad Taluka. It has 395 and 406 persons per sq.km in 2001 and 2011 respectively. As well as, it has 1263 and 1395 no. of households in both year respectively. In Munde sub-urban center has 664 and 772 persons per sq.km respectively and it has 818 and 1002 no. of households in both year.

In Koparde Haveli sub urban center was 698 persons and 688 persons per sq.km in both year. Likewise, no. of households was 1129 and 1244 in both year. In the year 2001, in Karve was 859 persons and 814 persons per sq.km in 2011. It was 1523 and 1574 households population in both year. In Goleshwar sub-urban center, in the year 2001, was 861 persons per sq.km and in 2011, it had 1095 persons per sq.km and it holds 1140 and 1430 households in both year. In the year 2001, in Charegaon was 649 persons per sq.km and 594 persons per sq.km in both year. Likewise, it had 1185 and 1117 no. of households in both year. There was slightly decrease in no. of households and population density. In Kale sub-urban center was 700 and 645 persons per sq.km in both year. Also, in the year 2001, no. of households were 1919 and 1839 in the year 2011. The population density of the Vadgaon Haveli sub-urban center was 463 in 2001 and 489 in 2011. As well as, there was 1274 and 1395 no. of households in both year.

Karad Taluka has an average 562 persons per sq.km. Karad Taluka is the most thickly populated Taluka in the Satara district. In this Taluka, Karad (MCI) has highest density of population. It has 21381 population per sq.km. Malkapur is the second largest density of population. It has 3726 population per sq.km. After that Umbraj has 2921 density of population, Saidapur has 2389 density of population, Hajarmachi has 2358 density of population, Karad (Rural) has 1212 density of population and Goleshwar has 1095 density of population per sq.km. These population densities is comparatively higher than Satara district and Maharashtra state.

Conclusion:

After the 1961 to 2021 years, the number of urban centers are increased and it goes to five (29.41%). The name of increased urban centers is Karad (M CI), Malkapur (NP), Saidapur (CT), Karad (Rural) and Hajarmachi (CT).

As per the Population density of Karad Taluka during 2001 to 2011 census, emerging urban centers in Karad Taluka, there are a total 16 emerging urban centers.

Karad Taluka has an average 562 persons per sq.km. Karad Taluka is the most thickly populated Taluka in the Satara district. In this Taluka, Karad (MCI) has highest density of population. It has 21,381 population per sq.km. Malkapur is the second largest density of population. It has 3,726 population per sq.km. After that Umbraj has 2,921 density of population, Saidapur has 2,389 density of population, Hajarmachi has 2,358 density of population, Karad (Rural) has 1,212 density of population and Goleshwar has 1,095 density of population per sq.km. These population densities is comparatively higher than Satara district and Maharashtra state.

During the 1961 to 2011 there was ups and downs in level of Urbanization of Karad Taluka. In 2011 and 2021, Urbanisation became reached up to high level. Because, in study area seen that there has increased in growth of population, educational facilities, health care facilities, amusement facilities, per capita income, and proportion of main workers.

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A Study of Population Migration with reference to Sangli District

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ABSTRACT:

Migration is very important phenomena in human geography. All over the world this process is effects on various physical as well as human aspects. The present study focuses on migration which is from rural to urban area. Due to migration of working population from the study area only children and old population remains. It impacts on entire economic, social structure of the area. Impact is also seen on population density, age structure, gender ratio economic status, living of standard. There are some serious social problems also generated. Migration of young age group from Sangli tehsil is higher they spends long duration of time from their native place with wife, children and other family members.

The objective of this study is to call attention towards this problem. The researcher also tries to minimize and solve this problem at some extent by giving suggestions. This area has a potential for tourism and some crops like rice. Researcher suggests the planning and management for develop the tourism facilities so the people get the work and jobs hare. Taking into consideration the social aspects of the problem can also be solved at some extent.

Keywords: Migration Meaning, Population Migration Pattern, Causes etc.

Introduction:

Migration is a geographical phenomenon which concerned to population of any geographical area. When an individual or group of individuals moves from one place to another, for lesser or longer duration or permanently, from one political boundary to another, this movement is called as migration. This may happen in a pre-planned manner or may happen suddenly. Also it can be either voluntary or involuntary.

In general, migration brings changes in the population. If people migrate to be a region the population of the region will increase. If people leave a region and migrate to another region, its population will decrease. Population density, patterns and

structure of the population of both the original region (donor region) and the region where migration has taken place (recipient region) will be affected.

Migration is migrating in different parts of the world since their evolution on earth for better and secure life. Migration is not merely shift of people from one place to another, as it is most fundamental to the understanding of continuously changing space content and space relationship of an area (Gosal G.S. 1961). The term 'Mobility' is also used to define migration, but it includes both 'circulation' and 'Migration'. Circulation has been defined as short term repetitive and cyclical movement of people with no intension of permanent changes of residence, migration implies permanent

change of residence. (Horney, William and Jones, Melvyn 1980).

Objectives of the Study:

Migration is an important aspect of the study of Population Geography. This study is carried out in Sangli district of Maharashtra with following objectives:

1. To study the Population migration pattern of Sangli District.
2. To study the causes of population Migration of Sangli District.

Methodology:

This study is totally based on the secondary data collected from different sources. Along with data is collected with different government and nongovernment organizations in Sangli district of Maharashtra. The data is collected, processed and tabulated for study purpose. The interpretation of data is done with geographical point of view.

Review of Literature:

Samuel., Johnson M. (1990): Pattern of female migration in Tamilnadu.

In Tamilnadu, women propensity to migrate is rising faster than that of man. Economic factors taking greater role in migration as well as life style, living standard, marriage, cultural and family factor too.

Upadhye., Chavan, V. D. (1991): A socio-economic survey of immigrant labor in brick –making industry in the Sangli district.

In this study author divided migration patterns into two categories that inter-district and another inter-state. In which inter-district migration pattern is more prevalent than inter-state migration because of socio-cultural and linguistic as well as administrative considerations.

Tawade M.D., Pardeshi P.B. (1993): The population Geography of Solapur district

In this study author says that, the region is the main cause of migration. Geographically region has large land resource potential but regional development due to adverse relief is the major cause for pushing the population out in the region. Undulating topography, hill range forming low table land, watershed area, uncertainty of job, scarcity of job generation, landless population are push factors

Jadhav Maruti Vithoba (2003): Satara District: A study in population Geography

Migratory movements are the products of social, cultural, economic, political and physical circumstances, in which individuals and societies find themselves. In Satara district highest growth rate observed than the next decade because in this decade formation of MIDC and establish government offices of immigration in 1981-2001 naturally increases migration.

Kale S.S. (2005): Seasonal migration of sugarcane cutters in Kolhapur District Maharashtra: A Geographical analysis.

This study focuses on seasonal migration. In this study we found that the standard of living of migrants is very low. These migrants get defiantly work for some period and after the end of season they get advance amount for next season. Therefore this option becomes more and more secure, and thus attract the people who don't want to take risk to find out new employment opportunity, maintain contacts with sugar factories or contractors.

Shiddappa Madar,(2008): Lambanis out migration from Vijayapura district of Karnataka.

In this study author focused on the major cause of the out migration. In this area heavy rainfall and irregular payment, low wages rate are the main causes for working outside their native place. The wages provided in other places which is higher when compared locally.

**Mujymdar Kar, Suparna,(2018):
Migration to Bengaluru study of return
migration of IT professionals.**

In this study author found that the process involved in return migration within a framework that has elements of macro and meso levels. In which family, community, industries and area are included. Difference between international wages and local wages also caused for migration. The IT sector, optimize these talented and skilled professionals and allows for a high degree of geographical mobility.

**Ingale V.B. (2019): A Geographical study
of Demographical characteristics in
Osmanabad district of Maharashtra state:**

In this study researcher goes very particularly. He used the Rees technique to describe the demographic characteristics of Osmanabad district. This area has a typical location. Due drought area there are limitations on development. Because of this, people goes toward cities and other developed area for jobs and any type of employment. This is the important factor for out migration.

Population Migration Pattern:

As the population is mostly rural based agriculture related to activities is the main source of employment in the district. The classification of the workers in the district is as given below:-

Sr. No.	Occupation	No. of Workers
1	Cultivators	354
2	Small & Marginal Farmers	309
3	Agricultural labours	197
4	Artisans	12
5	Household cottage industries	11
6	Allied Agro activities	17
7	Other workers	238

Sangli district is most economically developed district in Maharashtra. All economic activities from primary to quaternary are carried out in district, but these are concentrating in specific regions. Economic development can be seen in agriculture, industry and services.

Inter-State Migration Pattern in Sangli District:

Sangli district has emerged as an economic growth center in Maharashtra state, which attracts migrants from other states in large number. TableNo.3 shows the inter-state immigration patterns of workers.

State	Total	%	Male	%	Female	%
Jammu & Kashmir	48	0.15	30	0.13	18	0.19
Himachal Pradesh	6	0.02	2	0.01	4	0.04
Punjab	115	0.35	65	0.28	50	0.53
Chandigarh	6	0.02	5	0.02	1	0.01
Uttarakhand	20	0.06	10	0.04	10	0.11
Haryana	65	0.20	41	0.18	24	0.25
NCT of Delhi	99	0.30	51	0.22	48	0.51
Rajasthan	939	2.89	562	2.44	377	3.98
Uttar Pradesh	1,571	4.83	941	4.09	630	6.65
Bihar	615	1.89	443	1.92	172	1.82
Sikkim	1	0	1	0	0	0
Arunachal Pradesh	6	0.02	3	0.01	3	0.03

Nagaland	2	0.01	1	0	1	0.01
Manipur	2	0.01	1	0	1	0.01
Mizoram	0	0	0	0	0	0
Tripura	1	0	0	0	1	0.01
Meghalaya	1	0	0	0	1	0.01
Assam	37	0.11	24	0.10	13	0.14
West Bengal	499	1.54	329	1.43	170	1.79
Jharkhand	90	0.28	60	0.26	30	0.32
Odisha	181	0.56	143	0.62	38	0.40
Chhattisgarh	105	0.32	40	0.17	65	0.69
Madhya Pradesh	419	1.29	252	1.09	167	1.76
Gujarat	798	2.46	305	1.33	493	5.20
Daman & Diu	1	0	1	0	0	0
Dadra & Nagar Haveli	2	0.01	2	0.01	0	0
Andhra Pradesh	674	2.07	356	1.55	318	3.36
Karnataka	25,462	78.36	19,001	82.55	6461	68.19
Goa	178	0.55	69	0.30	109	1.15
Lakshadweep	0	0	0	0	0	0
Kerala	289	0.89	157	0.68	132	1.39
Tamil Nadu	257	0.79	122	0.53	135	1.42
Puducherry	1	0	0	0	1	0.01
Andaman & Nicobar Islands	3	0.01	1	0	2	0.02
Total	32493	100	23018	100	9475	100

Source: PRINT ISSN 2319-1775 e-ISSN 2320-7876, www.ijfans.org Volume.11, Issue13, Nov- 2022 Research Paper IJFANS.

Above table shows that the, there were total 32493 persons recorded as migrants in Sangli district in 2011 in that 23018 male and 9475 females population is observed. Persons from every State and union territory are migrated towards Sangli district for economic purpose excluding Lakshadweep. In this migration pattern male population was highly migrated as compare to female population because for work sex specific migration is observed and where always male dominances is seen. As workers have tendency to travel for short distance, we can see labors from neighboring states like Karnataka have migrated to the district in more number.

According to 2011 census, Migrants form Karnataka ranks first with 25,462 persons (78.36%), followed by Uttar Pradesh with 1,571 (4.83%) persons, Rajasthan with 939 (2.89%) persons, Gujarat

with 798 (2.46%) persons, Andhra Pradesh with 674 (2.07) persons, Bihar with 615 (1.89%), West Bengal with 499 (1.54%) persons, Madhya Pradesh with 419 (1.29%) persons, Kerala with 289 (0.89%), Tamil Nadu 257(0.79%) persons and Goa with 178 (0.55%). Persons from North-eastern states like Arunachal Pradesh, Nagaland, Manipur, Mizoram, Meghalaya, etc. are very lass. There are only 50 migrants recorded out of 30 male and 30 females.

Migrants from Karnataka, Uttar Pradesh and Rajasthan are mainly engaged in construction works like brickwork, centering, coloring, flooring etc. Workers from Bihar as well as West Bengal provide cheap labors for industries. Many Gujarati population is engaged in textile industry of the district.

Mainly male migrates to far distance for jobs, services, business and education.

Women have social restrictions and responsibility therefore the share of women migrants was less comparing to men in every state in-migrant.

Inter-District Migration Pattern in Sangli District:

Inter-district migration is the outcome of regional imbalance in economic development. The Maharashtra state is

economically progressed in India, but that development is not equally distributed in all districts of the state. The districts of western Maharashtra are highly developed whereas Konkan region along with Vidarbha are moderately progressed, but district of Marathwada, Khandesh are economically backward.

District	Total	%	Male	%	Female	%
Nandurbar	148	0.06	77	0.05	71	0.09
Dhule	429	0.18	226	0.15	203	0.25
Jalgaon	646	0.27	342	0.22	304	0.37
Buldana	207	0.09	109	0.07	98	0.12
Akola	254	0.11	133	0.09	121	0.15
Washim	74	0.03	41	0.03	33	0.04
Amravati	229	0.10	121	0.08	108	0.13
Wardha	95	0.04	49	0.03	46	0.06
Nagpur	460	0.19	235	0.15	225	0.27
Bhandara	54	0.02	29	0.02	25	0.03
Gondiya	36	0.02	20	0.01	16	0.02
Gadchiroli	11	0.00	5	0.00	6	0.01
Chandrapur	63	0.03	28	0.02	35	0.04
Yavatmal	236	0.10	138	0.09	98	0.12
Nanded	401	0.17	214	0.14	187	0.23
Hingoli	73	0.03	37	0.02	36	0.04
Parbhani	1,963	0.82	1,018	0.65	945	1.14
Jalna	910	0.38	477	0.31	433	0.52
Aurangabad	432	0.18	236	0.15	196	0.24
Nashik	926	0.39	524	0.34	402	0.49
Thane	1,798	0.75	1,027	0.66	771	0.93
Mumbai (Suburban)	3	0.00	3	0.00	0	0.00
Mumbai	10,906	4.58	6,049	3.88	4,857	5.88
Raigarh	470	0.20	265	0.17	205	0.25
Pune	9,928	4.17	6,013	3.86	3,915	4.74
Ahmadnagar	2,622	1.10	1,330	0.85	1,292	1.56
Bid	11,911	5.00	6,270	4.03	5,641	6.83
Latur	1,155	0.48	623	0.40	532	0.64
Osmanabad	2,071	0.87	1,008	0.65	1,063	1.29
Solapur	50,365	21.13	33,431	21.47	16,934	20.50
Satara	58,391	24.50	40,740	26.16	17,651	21.37
Ratnagiri	2,796	1.17	1,518	0.97	1,278	1.55
Sindhudurg	862	0.36	473	0.30	389	0.47
Kolhapur	77,411	32.48	52,919	33.98	24,492	29.65
Total	238,336	100	155,728	100	82,608	100

Source: PRINT ISSN 2319-1775 e-ISSN 2320-7876, www.ijfans.org Volume.11, Issue13, Nov- 2022 Research Paper IJFANS.

The scenario of inter-district in-migration in Sangli district (2011) is shown in table 4. Table no.4 indicates that people

from all districts of Maharashtra state had migrated towards Sangli district in more or less number. The highest inter-district in-

migrant in Sangli district was observed from Kolhapur district with 77411 total persons accounts 32.48 % of all migrant which was followed by Satara district with 24.50 % and Solapur district with 21.13%. It is observed that 78.11 % inter-district migration is produced from surrounding district i.e. Kolhapur, Satara and Solapur district.

Total 11,911 (5%) person are migrated from Bid district which are basically working in the agricultural sector. It is also observed that people from Mumbai with 10,906 persons (4.58%), Pune with 9,928 persons (4.17%), Ratnagiri with 2,796 persons (1.17) and Ahmadnagar with 2,622 persons (1.10%) has moderate migration.

People from remote districts such as Nandurbar, Dhule, Jalgaon, Buldana, Akola, Washim, Amravati, Wardha, Nagpur, Bhandara, Gondiya, Gadchiroli, Chandrapur, Yavatmal, Nanded, Hingoli, Jalna and Aurangabad district has very less.

Inter-district emigration data clearly indicates that migrants have a tendency to migrate for short distance. Sangli district is an important district in western Maharashtra, which is developed in agriculture, industry, trade, transport and services. Many migrants from neighboring district come to Sangli district in search of jobs, services, business, education, etc.

Causes of population Migration of Sangli District:

There are different reasons for human migration from one region to another. It can be economic reasons in some places and social causes in some places.

1) Physical:

Natural events like earthquakes, volcanic eruptions, droughts and flooding may be responsible for population to migrate.

Natural Disasters: People may move to escape natural disasters like floods or droughts.

Climate Change: People may move to

escape the impact of climate change.

2) Economic:

Migration in which people migrate in search of jobs, businesses, improve their standard of living, etc.

Lack of opportunities: People may move to find work, improve their economic status, or escape poverty.

Poor labor standards: People may move to find better employment opportunities or higher wages.

Unemployment: People may move to find work or escape unemployment.

3) Social:

Often people have to migrate forcefully. People decide to leave the place rather than face social problems. It may involve forcing people of a certain group to migrate. Discrimination, education, health, medical facilities, marriage, etc. can be reasons behind migration.

Family: People may move to join family or be closer to friends.

Culture: People may move to live in a place with a familiar culture.

4) Political:

Sometimes war or political problems may arise in a country. In that case, people from that country migrate and seek refuge in another country.

Political persecution: People may move to escape political persecution or war.

Human rights violations: People may move to escape large-scale human rights violations.

Conclusion:

The study of migration is a most important aspect of population change after, fertility & mortality. Sangli district has fertile soil & adequate supply of water for the development of agriculture. So, there is development of sugar industry and agro based industry, which attracts large amount of seasonal migrants in the district. There are other different reasons for human migration from

one region to another region. Due to physical, economic, social and political factors effect on in migration and out migration of sangli district. In drought, flood, Unfertile soil, undulating physiographical reasons out migration have done like Shirala, Jat, Khanapur and Atpadi.

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Agricultural Challenges in Sangli District of Maharashtra in the Context of Global Food Security

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Abstract:

Since ancient era agriculture is major backbone of Indian economy. An irrigation source has considered as an impact factor on growth of agricultural production. Changing global climate has also affected on the face of agriculture. The Krishna river is the major source of agriculture in sangli district. But agricultural struggles resonate with larger concerns about global food security, which refers to the availability, accessibility, and utilization of food for the global population. Sangli's experience serves as a valuable case study for understanding the interplay between local agricultural challenges and global food security.

Introduction:

Agriculture has always been the backbone of rural economies, especially in regions like Sangli district of Maharashtra. As a vital part of India's agricultural landscape, Sangli is known for its production of sugarcane, grapes, turmeric, and other crops that contribute significantly to both local livelihoods and the state's economy. However, the district's agricultural system is under constant stress from environmental, socio-economic, and infrastructural challenges. Climate change, characterized by erratic rainfall patterns and rising temperatures, poses a severe threat to the district's agricultural output. Similarly, issues like soil degradation and water scarcity have exacerbated the vulnerability of farmers, affecting not just their incomes but also the region's overall productivity. These challenges highlight the fragility of agricultural ecosystems in semi-arid regions like Sangli.

In a globalized world, the effects of local agricultural challenges often

transcend geographical boundaries. Sangli's agricultural struggles resonate with larger concerns about global food security, which refers to the availability, accessibility, and utilization of food for the global population. With India being one of the world's largest agricultural producers, any decline in production due to challenges faced by districts like Sangli has implications for global food markets. This research aims to analyze the agricultural challenges in Sangli district using statistical data and understand their broader implications for food security at both national and global levels.

Study Area:

Sangli district is located in the western region of Maharashtra, spanning approximately 8,572 square kilometers. The district is part of the Deccan Plateau and lies within the Krishna River basin, which provides vital water resources for agriculture. Geographically, the district is bounded by Satara to the north, Kolhapur to the south, Solapur to the east, and the state

of Karnataka to the southeast. The Krishna River and its tributaries, such as the Warna and Yerla, form the lifeline of the region, supporting both agriculture and drinking water needs (Fig.1).



Fig. 1: Location Map

Sangli district is divided into ten administrative blocks, with Miraj, Tasgaon, and Jat being among the prominent ones. The district experiences a semi-arid climate, characterized by hot summers, moderate winters, and monsoon rainfall ranging from 400 mm to 600 mm annually. The variability in rainfall, coupled with frequent droughts, makes the district highly susceptible to water scarcity.

The soil in Sangli is predominantly black cotton soil, suitable for crops like sugarcane, grapes, turmeric, and soybean. However, due to the over-reliance on water-intensive crops like sugarcane, the district faces significant water management challenges. Sangli is also renowned for its grape production, contributing significantly to India's wine industry, and its turmeric, which is exported globally.

The district's agricultural activities are influenced by factors such as irrigation availability, climate variability, and access to markets. The reliance on surface water and limited groundwater resources necessitates sustainable water management practices.

Methodology:

This study employs a comprehensive methodology to analyze the agricultural challenges in Sangli district. The research is based on secondary data collected from a variety of sources, including government reports, academic publications, and statistical databases. Key indicators such as annual rainfall, crop yields, irrigation coverage, and soil health metrics were analyzed to provide a quantitative understanding of the challenges faced by the district. Additionally, qualitative data from research papers and policy documents provided insights into the socio-economic dimensions of the issues, such as market access and farmer incomes.

The data collected spans a period of five years (2018–2022) to capture recent trends and patterns in agricultural productivity and environmental conditions. The analysis incorporates statistical tools to identify correlations between variables such as rainfall and crop yield, and to assess the impact of these challenges on the region's agricultural output. Visual representations, including graphs and tables, were created to summarize and highlight key findings, ensuring clarity and accessibility of the data for readers. This mixed-method approach provides a holistic view of the agricultural challenges in Sangli.

Agricultural Challenges in Sangli:

Table No. 1: Sangli District- Rainfall, Irrigation and Crop Yield

Year	Rainfall (mm)	Irrigation Coverage (%)	Average Crop Yield (tons/ha)
2018	550	45	75
2019	480	42	70
2020	520	40	68
2021	450	38	65
2022	400	35	60

The agricultural challenges in Sangli district are highlighted through statistical data, as shown in the table no. 1. The average rainfall in the year 2018 is observed 550mm while in 2022 it was measured 400mm. We can see in fig.2 that as the rainfall decreasing the line of crop yields also decreasing from 2018 to 2022 respectively.

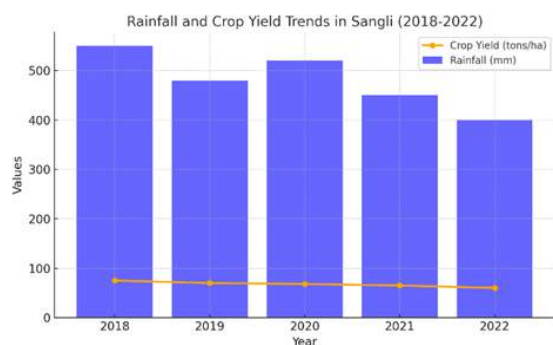


Fig 2: Rainfall and Crop Yield Trends (2018-2022)

Impact on Global Food Security:

The declining agricultural productivity in Sangli has far-reaching implications. Lower yields affect not only local food availability but also contribute to reduced national agricultural exports. As global demand for food rises, challenges in regions like Sangli highlight the need for adaptive measures to secure food supplies.

Recommendations:

- Promote the use of drought-resistant crop varieties to address rainfall variability.
- Expand irrigation infrastructure and encourage water-efficient techniques like drip irrigation.
- Invest in soil health through organic fertilizers and crop diversification.
- Enhance market linkages and provide price support mechanisms to stabilize farmer incomes.

Conclusion:

The agricultural challenges faced by Sangli district are a microcosm of the

broader issues confronting global agriculture. Climate change, resource mismanagement, and socio-economic factors are intricately intertwined, affecting not only local farmers but also the global food supply chain. The findings of this study underscore the urgent need for targeted interventions to mitigate these challenges. Sustainable practices, innovative technologies, and supportive policies must converge to address the vulnerabilities of agricultural systems in regions like Sangli.

In conclusion, Sangli's experience serves as a valuable case study for understanding the interplay between local agricultural challenges and global food security. Strengthening the resilience of such agricultural regions is essential to ensuring the long-term availability and affordability of food for a growing global population.

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Agricultural Fertilizer Consumption in Sangli District (Maharashtra)

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Abstract:

Fertilizers have a key role to play in transforming agriculture. Adoption of improved seeds, fertilizers and irrigation systems has led to a significant increase in food production in Indian agriculture. Both chemical and organic fertilizers increase agricultural production. The use of fertilizers in agriculture and the development of agriculture depends on crop productivity, irrigation methods, soils properties and crop characteristics. A recent study investigated the geographical distribution of agricultural fertilizer use in Sangli district of Maharashtra. The data required for this research was taken from the Socio-Economic Analysis of Sangli District 2023-24. Q-GIS software was used to prepare the data. Significant regional disparities in fertilizer use were found.

Keywords: *Fertilizer Consumption, Agricultural Productivity, Spatial Analysis.*

Introduction:

Organic and chemical fertilizers are considered essential for the growth and development of crops. If this element is involved in the metabolic processes of crops and without this element, the crop cannot complete its life cycle (Havlin, Beaton, Tisdale, Nelson 2010). Fertilizers play an important role in the growth and proper development of crops and in order to obtain higher yields from agriculture. Fertilizer is an important input for the expansion of agricultural production, if excessive fertilizer is used in any farm, it affects the agricultural production capacity and soil properties. However, high levels of fertilizer use have been observed in the study area, therefore, to analyse the fertilizer use in agriculture, necessary data has been collected through the schedule and depiction of fertilizer use in that region for the soil degradation area. In Sangli district, there is significant regional variation in fertilizer use. A spatial analysis of fertilizer use for

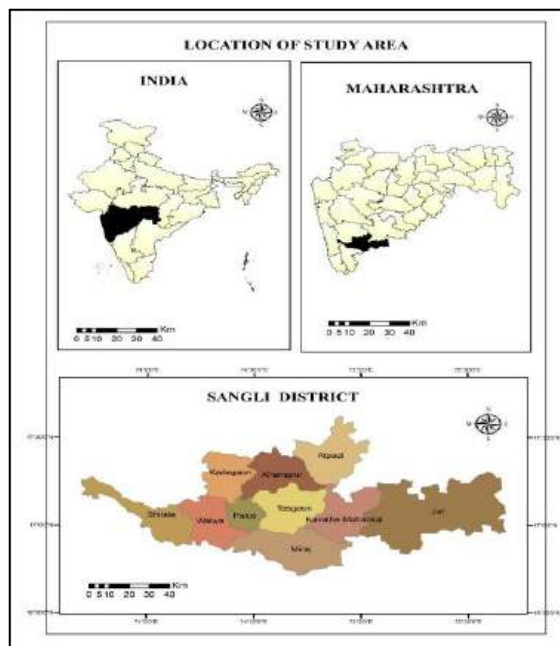
the year 2023-24 has been done tehsil-wise. The objective of this study is to analyse the distribution of fertilizer use in agriculture in various tehsils of Sangli district of Maharashtra and to understand the factors affecting this pattern

Study Area:

Sangli district is a part of the southern districts of the state of Maharashtra and the Deccan plateau. Geographically, it is located between 16° 45' and 17° 33' N latitude and 73° 42' and 75° 40' E longitude. The average elevation of the district is 553 m above sea level. It is bounded on the north by Satara and Solapur districts, on the east and south by the state of Karnataka, on the southwest by Kolhapur district and on the west by Ratnagiri district. Sangli district extends 205 km from north to south and 96 km from east to west. The geographical area of Sangli district is 8572 sq. km. and its total population is 28, 22,143 according to the 2011 census, where 14, 35,728 Males and

13, 86,415 females population were observed. The total literacy rate of Sangli district is 82.62 percent and the population density is 329 per sq. km. Administratively Sangli district is divided into three sub-divisions mainly i.e. Walwa, Miraj and Khanapur and the district has ten tehsils such as Walwa, Shirala, Miraj, Jat, Atpadi, Khanapur, Palus, Kavathe-Mahankal, Tasgaon and Kadegaon.

Map No. 1



Objectives:

An attempt has been made to study the use of fertilizer on agricultural land in the study area.

Database and methodology:

The present research paper depends on secondary data. The fertilizer consumption data were collected for the analysis from the Socio-economic review of Sangli district 2023-24. The analysis of the

data has been done with the help of the following formula, which was created by M. G. Jadhav and S. D. Shinde (1979) to enumerate concentration index values for fertilizer consumption per unit area. The formula is slightly modified here as,

$$I_{fe} = \frac{TF}{DF} \times 100$$

Where,

I_{fe} = Index of fertilizer consumption.

Tf = per hect/ Kg fertilizer consumption in the tehsil.

Df = per hect/Kg. fertilizer consumption in the district.

Result and Discussion:

The total fertilizer use in Sangli district was 539.30 kg/ha in 2023-24. To show the fertilizer use in agriculture in Sangli district, it has been divided into three categories, namely high fertilizer use, medium fertilizer use and low fertilizer use.

Spatial Pattern of Fertilizer Consumption: High Fertilizer Consumption (Above 250 kg/ha):

This includes Palus tehsil located on the banks of Krishna River. Palus tehsil has the highest fertilizer use at 278.95 kg/ha. Cash crops like sugarcane, oilseeds and fruits and vegetables are dominant in Palus tehsil. Palus tehsil has sugar factories and irrigation facilities are well developed. Apart from this, farmers are socially and economically capable of adopting new agricultural technologies in their farming. As a result, Palus tehsil has the highest fertilizer use in the entire Sangli district.

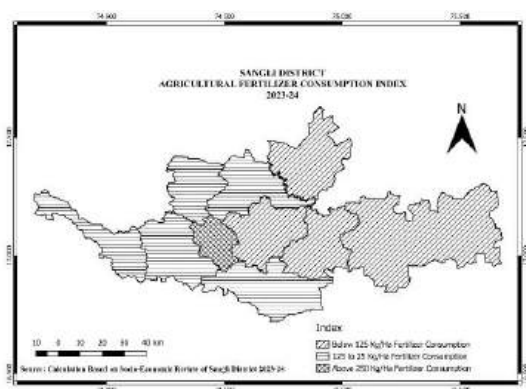
Table No 1: Sangli District: Fertilizer Consumption Index Value 2023-24

Sr. No.	Regions	Fertilizer Index Value (kg/hector)	Tehsils
1	High Fertilizer Consumption	Above 250	Palus
2	Moderate Fertilizer Consumption	125 - 250	Walwa, Shirala, Kadegaon Khanapur, Miraj,
3	Low Fertilizer Consumption	Below 125	K-Mahankal, Atpadi, Tasgaon, Jath

Source: Calculation Based on Socio-Economic Review of Sangli District 2023-24

Moderate Fertilizer Consumption (125 kg/ha to 250 kg/ha):

In medium fertilizer use, Walwa, Shirala, Kadegaon, Khanapur and Miraj tehsils are shown in this category. The index values are 129.47 kg/ha, 189.30 kg/ha, 155.18 kg/ha, 132.6 kg/ha and 139.62 kg/ha respectively. These tehsils are all developed through irrigation. Therefore, both these tehsils have areas of sugarcane cultivation and fruit cultivation. Fertilizer use is moderate due to generally good soil quality. In addition, cooperative sectors have played an important role in increasing the use of fertilizers in these tehsils, hence farmers are aware about the use of fertilizers in agricultural land.



Map. No. 2

Low Fertilizer Consumption (Below 125 kg/ha):

The tehsils with low fertilizer use include, Kavathe-Mahankal, Atpadi, Tasgaon and Jath. While Kavathe-Mahankal (107.23 kg/ha), Atpadi (88.92 kg/ha), Tasgaon (85.89 kg/ha), Jath (25.2 kg/ha) tehsils are eastern part of Sangli district, drought-affected areas, lack of irrigation facilities and the economic condition of farmers is very low. That's way the fertilizer consumption is low in 2023-24.

Conclusion:

Organic fertilizers or chemical fertilizers are considered as important tools to increase agricultural production. In the last few decades, the use of various types of

fertilizers has increased in Sangli district. There has been a significant change in the irrigation area in Sangli district, then there has been a significant increase in the development of lift irrigation, well irrigation canals. Krishna River due to favourable irrigation and soil conditions, and in some tehsils due to public awareness in the use of fertilizers and soil degradation, the use of fertilizers has also decreased to a certain extent. On the contrary, in the eastern tehsils, the use is less due to underdeveloped irrigation system, infrastructure development facilities and challenging natural and soil conditions. This highlights the need for targeted agricultural policies to remove regional disparities and optimize the use of fertilizers for satisfactory productivity in agriculture.

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Analyzing Trend of Rainfall in Western Maharashtra (India) using Geo-Statistical Techniques (1901-2020)

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Introduction:

Rainfall has a vital role in the hydrological cycle. The hydrological cycle is essential to both biotic and abiotic components on Earth. Maharashtra's changing rainfall patterns over the past few decades have a direct impact on climate change. The quantity, intensity, and duration of rainfall have a direct effect on soil moisture, surface groundwater level, runoff density, and stream flow demand. Consequently, these changes indicate a substantial influence on biodiversity, terrestrial and aquatic ecosystems, groundwater supplies, ecology, marine life, and agriculture. The frequent occurrence of disasters like drought, floods, and landslides is caused by changes in rainfall patterns.

Over the past century, many regions of the world have suffered as a result of global warming. Sea levels are rising, glaciers and snow caps are melting, and the temperature of the atmosphere is rising as a result of global warming. There are many widespread agricultural, social, and economic problems in the world as a result of the increasing global surface temperature. The study's parameters for temperature and precipitation might be crucial for both local and global climate change.

Maharashtra is now dealing with a range of weather conditions. Every four or

five years, flooding occurs in some parts of Maharashtra. However, there are regions that are suffering from severe drought. Five districts Pune, Kolhapur, Solapur, Sangli, and Satara are located in western Maharashtra. Therefore, we plan to use 120 years of long-term rainfall data (1901-2020) and 70 years accessible at the Indian Metrological Department (IMD) to examine rainfall variations at a number of sub-stations in the western Maharashtra state.

Study Area:

The current study examines the rainfall trend in Western Maharashtra. It forms the south Maharashtra plateau and is a component of Western Maharashtra. The total area is 57,234 square kilometers, and administratively, it is made up of 58 tehsils and covers the Maharashtra districts of Pune, Kolhapur, Sangli, Satara, and Solapur.

Objective:

1. To analyze the variability and trend analysis in the overall, annual and seasonal rainfall for meteorological sub-stations of Western Maharashtra.

Software Used:

- XLSTAT (for statistical data analysis)
- QGIS (spatial distribution or mapping purpose)

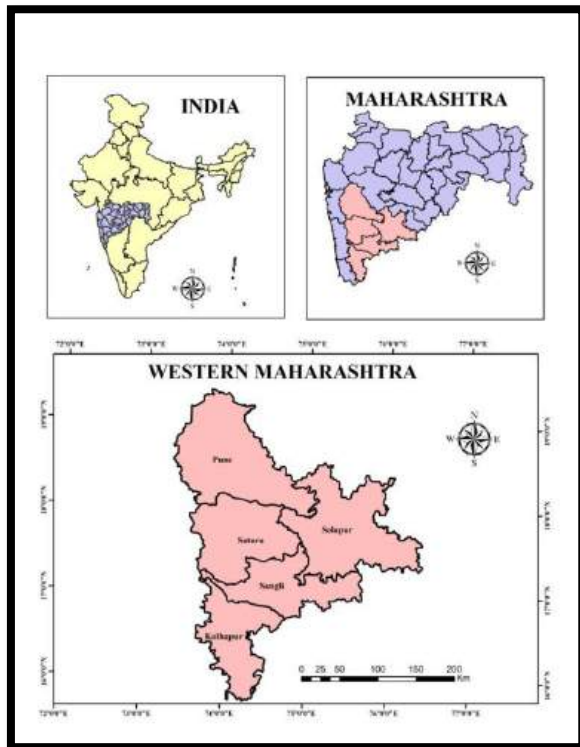


Fig.1 Location Map of Study Area

Methodology:

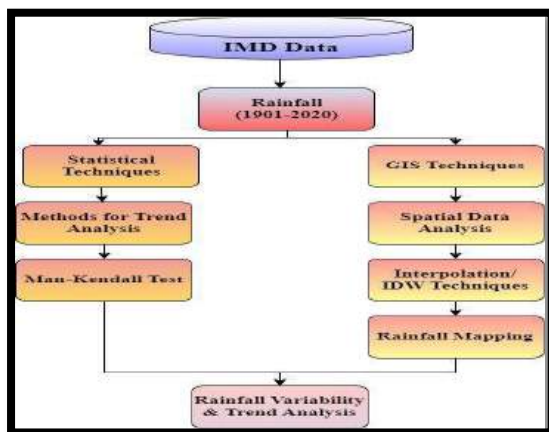


Fig.2 Systematic flow chart of Research Methodology

Statistical Analysis:

Descriptive analysis:

Descriptive statistics (Min, Max, Mean, SD, and CV) of overall annual and seasonal rainfall, overall annual and seasonal rainy days, annual temperature (Minimum, maximum and average) for various substations will be computed and displayed using appropriate tables/graphs.

Trend analysis:

We propose to use Mann-Kendall trend test (Siddharam (2019)) to detect the trend in the long-term rainfall. Mann-Kendall trend test is a nonparametric test based on linear ranks for detecting the trend. This test has been used by several researchers for detecting trend in hydro-climatic data series.

Spatial Analysis (GIS Work):

Interpolation of statistical results and preparation of spatial maps:

In all natural and atmospheric sciences, spatial interpolation or the estimation of a variable at an un-sampled place using data from nearby samples is crucial. In this study we propose to use Inverse Distance Weighting (IDW) method to interpolate the results at un-sampled place. The IDW method is widely used in the literature because it produces results that are more accurate than those produced by kriging, splines, or any other interpolation method. The maps will be prepared using the spatial analyst tool in the QGIS software.

Data Collection and Preliminary Analysis:

The Indian Meteorological Department in Pune, India, was gather the long-term rainfall (mm) data from 1901 to 2020 using a gridded form with a 0.25 x 0.25-degree resolution of data that is publicly available.

Research Output:

The purpose of the Mann-Kendall (MK) test (Mann 1945, Kendall 1975) is to statistically assess if there is a monotonic upward or downward trend of the variable of interest over time. A positive z-statistic indicates an upward trend, a negative z-statistic indicates a downward trend and a zero z-statistic indicates a lack of trend. Trend analysis forecasts future events based on past performance. "It was checked whether the trend was rising or falling according to the Z value of the normalized test statistics.

An essential precondition for agricultural planning and management is a thorough understanding of the local rainfall

regime. Rainfall is the most significant agro-meteorological factor affecting crop yield, especially in rainfed agriculture.

Table: 1 Results of the MK test (Z) and the percentage change estimation of annual rainfall for the period of 1901–2020

Sr. No.	Name of Sub-Station	Annual (Z Value)
1	Karad	1.95
2	Khandala	3.15
3	Kolhapur	6.02
4	Lohgaon	-7.13
5	Mahabaleshwar	3.46
6	Pandharpur	0.92
7	Pune Pashan	-6.16
8	Sangli	2.38
9	Satara	2.81
10	Shivaji Nagar	-5.33
11	Solapur	0.62
12	Tasgaon	0.54
	Overall Impression	0.27

Source: Indian Meteorological Department (Compiled by Researcher).

Various sub-stations and their corresponding annual "Z Values" (a measure or indicator unique to your setting) appear to be listed in the table. The data is summarized as follows:

Remarks:

Positive Z Values: The majority of sub-stations exhibit positive Z Values, which signify positive metrics or performance within their respective categories. Karad, Sangli, Satara, Khandala and Kolhapur stations are fall in positive rainfall trend about 120 years of the rainfall data. The Western Ghats drive moist breezes from the Arabian Sea to climb, where they cool and condense to generate rain, which benefits many parts of Maharashtra. Higher rainfall may result from regular monsoonal winds in areas like Kolhapur and Mahabaleshwar. Significant condensation and precipitation can occur in high-altitude regions. In some areas, an active monsoon with elevated low-pressure systems can increase rainfall. Better vegetated or forested areas (like Mahabaleshwar) can hold onto moisture and

use evapotranspiration to support regional precipitation cycles. Higher humidity levels in areas with sizable lakes, rivers, or reservoirs may contribute to local rainfall. Less urbanized areas experience minimal disturbances to their natural rainfall patterns. **Negative Z Values:** Lohgaon has the most significant negative figure (-7.13) among the three sub-stations with negative Z values: Pune Pashan, Shivaji Nagar, and Lohgaon. Numerous anthropogenic, geographical, and environmental variables may be responsible for the negative rainfall patterns observed in sub-stations such as Pune Pashan, Shivajinagar, and Lohgaon. Deforestation may result from increased urbanization in Pune and the neighboring areas, which could alter regional rainfall patterns. Heat is produced by the dense infrastructure in cities like Shivajinagar and Pune Pashan, which changes the atmosphere and may result in less rainfall. Buildings and roads decrease soil permeability, which impacts local convection and moisture recycling processes and results in less rainfall. Localized

decreases in rainfall may result from variations in the Indian monsoon system, particularly in areas that are already under stress. Higher concentrations of aerosols caused by increased air pollution in

metropolitan areas can decrease rainfall by changing the microphysics of clouds.

Overall Impression: When all sub-stations are taken into account, the cumulative or average Z Value of 0.27 indicates somewhat positive performance.

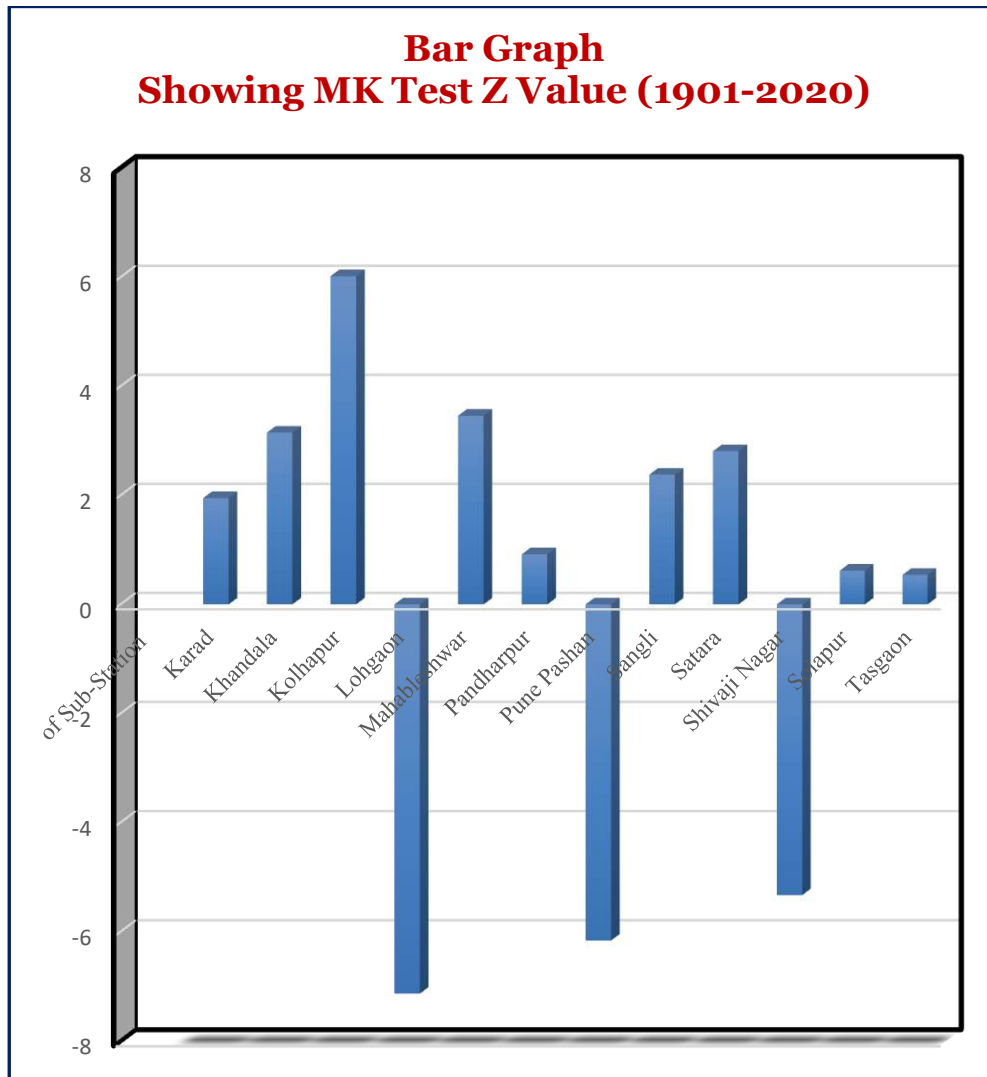
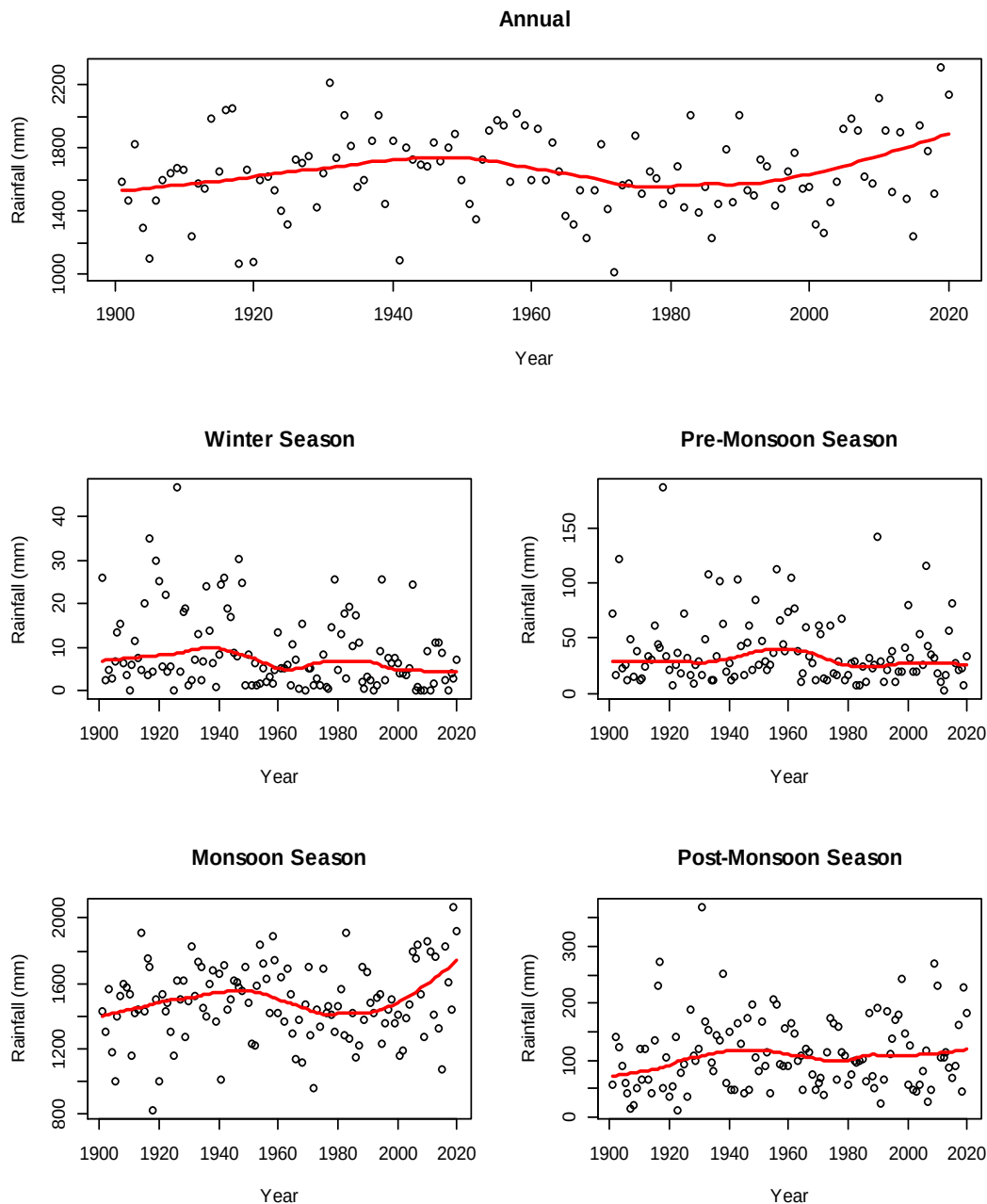


Fig.3 Showing MK test Z value (1901-2020).

The rainfall trend in western Maharashtra during a 120-year period is depicted in the above graph. In the research region, district Pune experiences less rainfall throughout the year. Due to a variety of factors, including its location on the leeward side of the Western Ghats, which causes the winds to lose moisture content, and its distance from the sea, Pune receives substantially less rainfall than other locations. The Kolhapur district receives a lot of rainfall from June to September due to its proximity to the Western Ghats. The average annual rainfall in the Kolhapur area is 1100 mm. The considerable rainfall that occurs during these months often results in significant floods.



Conclusion:

The investigation of the spatiotemporal distribution and fluctuating pattern of rainfall in any location is a fundamental and necessary prerequisite for the planning and management of water resources, sustainable agricultural growth, and other industries. Therefore, utilizing annual and seasonal rainfall data from twelve meteorological sub-stations spanning 120 years, the current study examined the variability and trend analysis of yearly rainfall. According to the current study,

Western Maharashtra has the most overall annual and seasonal rainfall variability. Kolhapur district in western Maharashtra showed the highest positive trend, while Pune Pashan and Shivaji Nagar in Pune district showed the worst negative trend. The research region's rainfall trend was generally good.

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Analysis of Development in Sugarcane Cultivation: A Case Study of Kolhapur District

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Abstract:

Kolhapur district, renowned for its fertile soil and favorable climatic conditions, has long been a significant sugarcane-producing region in Maharashtra, India. The district of Kolhapur has registered significant success in the cultivation of commercial crops such as an assortment of cereals, fruits, and vegetables. Over the years, the sugarcane cultivation landscape in Kolhapur has undergone significant changes, driven by various factors such as technological advancements, changing market dynamics, and government policies. Present study examines development of area under sugarcane cultivation from 2013 to 2023. Comparative analysis method is used for this research paper. As well as ArcGIS and MS Excell software is used for investigation of changes in past decade. Both sugarcane area and production have increased during the period 2013 to 2023 in Kolhapur district. Almost 16% area increased under sugarcane cultivation in Kolhapur district. The development in Gadhinglaj tehsil are rapidly change from past decade.

Keyword: Sugarcane, Cultivation area, Development, Commercial Crop.

Introduction:

In the entire state of Maharashtra, not only in the Kolhapur region, sugarcane is a significant commercial crop. Agriculturists, mill owners, and the federal and state governments all have a significant role in the crop. In addition to giving farmers a source of income, sugarcane production supplies sugarcane mills with essential raw ingredients. The majority of farmers cultivate sugarcane for this reason. But when they are cultivated, some other crops, such as maize, wheat, cotton, jowar, and bajri, provide farmers with a good income. In Kolhapur district, however, the area planted to sugarcane has grown, but the area planted to other crops has declined.

The district of Kolhapur has registered significant success in the cultivation of commercial crops such as an assortment of cereals, fruits, and vegetables. However, it is sugarcane that has made the region quite distinct, with acres and acres of fertile fields bustling with sugarcane cultivation. This pulse-quicken region along the western coast of India has particularly earned a distinction with regular bumper crops of sugarcane. Therefore, it is the sugarcane industry that occupies pride of place in all economic and financial transactions of Kolhapur district. The Maharashtra State Co-operative Banks in Kolhapur, Kolhapur District Industries Centre, and the Maharashtra State Finance Corporation are engaged in providing loans

on a large scale to the sugarcane cultivators and factories. Public and private financial firms, especially the State Bank of India, are other active partners.

Its cultivation involves a number of farm operations and intensive labor. A study of sugarcane cultivation in Kolhapur district provides a fascinating insight into an economic activity that has assumed considerable importance as the main source of wealth of the region. The climatic and geographical conditions of the area are very suitable for sugarcane cultivation. The more or less uniform distribution of rain over most of the year, as well as the fertile black soils of the region, have been a particular attraction. These soil and weather conditions, in combination with a variety of factors, have turned sugarcane into the main crop of the district. With nearly 178,107 hectares of land under sugarcane cultivation in the district, it has beaten other commercial crops such as groundnut and soybean. During the crushing season, the number of these workers escalates into the thousands, though the active workers among them cannot be more than half of the total.

The present paper constitutes an attempt to study the changes in sugarcane cultivation and to understand the existing conditions of this crop.

Objective:

1. To analyze development in sugarcane cultivation area of Kolhapur district.

Literature Review:

Sugarcane is an important commercial crop in India, playing a pivotal role in the country's agricultural and industrial economy (Kumar et al., 2019). In 2013-14, sugarcane accounted for 6% of the overall value of agriculture output and

covered 2.5% of India's gross cropped area. (Sherpa et al., 2017) India ranks second among the sugarcane growing countries of the world in both area and production after Brazil, with an area under sugarcane cultivation of 4.94 million hectares and an average yield of 68.6 tons per hectare (Verma & Solanki, 2020). The sugar industry in India is the second largest agro-industry, second only to the textile industry, and it plays a vital role in developing the socioeconomic status in rural areas by making use of its resources and generating employment. (Sherpa et al., 2017) Sugarcane is grown mainly for the manufacture of sugar, as well as for making gur and khandasari. (Vijayakumar et al., 2020)

Study Area:

Kolhapur district is selected as the study region for the proposed research work. The region lies between 15° 45" and 17° 10" North latitudes, and between 73° 40" and 74° 42" East longitudes. It covers an area of 7685 sq. kms, which is 2.49 % of total area of the state. The Krishna, Panchaganga, Dudhganga, Vedganga, Warna, Hiranyakeshi, Ghatprabha etc. are the major rivers with their tributaries influencing on agriculture of the study region. In 2011 population of the region is 3876001 which are 3.44 % of the total population of the state. The region includes 12 revenue and 1216 Villages. Shahuwadi tehsil has 145 villages, Panhala 129, Hatkanangale 58, Shirol 54, Karvir 121, Gaganbawada 45, Radhanagari 114, Kagal 84 Ajra 99, Gadhinglaj 93, Chandgad 157, and Bhudargad 117. In Kolhapur district 68.26 per cent of population live in rural area. The region is bounded on the north by Sangli district, on the west by Ratnagiri and Sidhudhurg district, on the south and east by Belgaum district of Karnataka states.

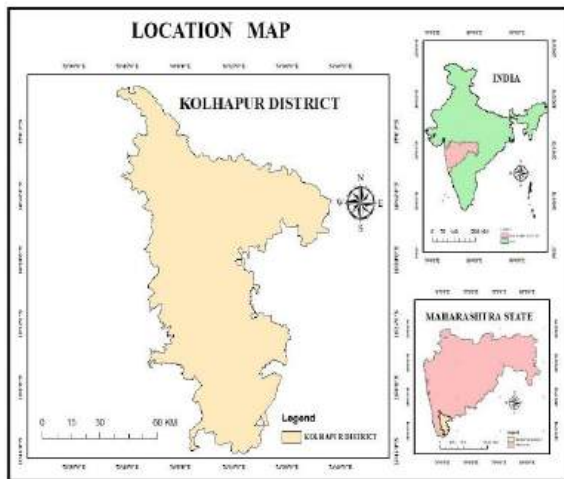


Figure 1: Location Map of Study Area

Data & Methodology:

Secondary data is used for this particular research study. Specifically Socio-Economic Abstract of Kolhapur District is used. Also to analyze the changes in sugarcane cultivation in Kolhapur district, a comprehensive review of secondary data from various sources was conducted. Year 2013 and 2023 are used for analyzing difference. For the analysis and mapping ArcGIS software is used.

Result & Discussion:

1. Cultivated Area Under Sugarcane Crop 2013:

Table 1: Cultivated Area Under Sugarcane Crop 2013

Sr. No.	Taluka	Total Cultivated Area	Sugarcane Cultivated Area	Percentage (%)
1	Shahuwadi	56007	4130	7.374
2	Panhala	33672	10280	30.52
3	Hathkanangle	60005	20400	33.99
4	Shirol	48631	22800	46.88
5	Karvir	63369	21709	34.25
6	Gaganbawda	31545	3360	10.65
7	Radhanagari	38824	8791	22.64
8	Kagal	54555	20634	37.82
9	Bhudargad	35322	5490	15.54
10	Ajara	46353	4700	10.13
11	Gadhinglaj	47671	10021	21.02
12	Chandgad	59622	12971	21.75
	Total	575576	145286	25.24

Figure 2: Cultivated Area Under Sugarcane Crop 2013

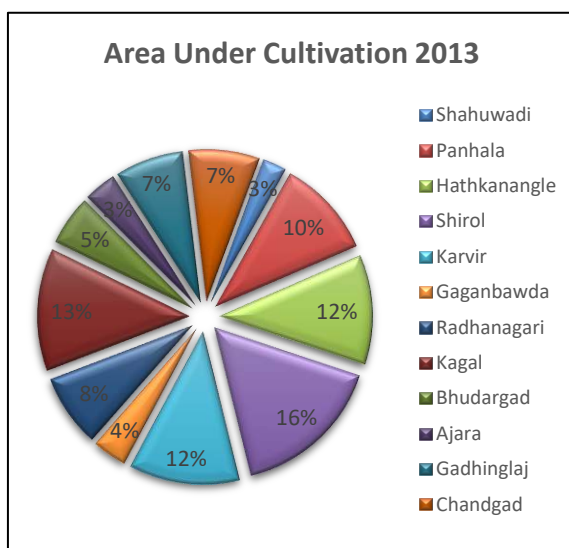


Table 1 and figure 2 are showing tehsil wise percentage of area under sugarcane cultivation to total area of crop cultivation in year 2013. As we see Hatkanangale, Shirol, Karvir and Kagal tehsil have maximum share of cultivated area under sugarcane cultivation and Shahuwadi, Gaganbawada as well as Ajara tehsil have minimum share of cultivated area under sugarcane cultivation.

2. Cultivated Area Under Sugarcane Crop 2023:

Table 2 : Cultivated Area Under Sugarcane Crop 2013

Sr. No.	Taluka	Total Cultivated Area	Sugarcane Cultivated Area	Percentage (%)
1	Shahuwadi	26716	7504	28.08
2	Panhala	34864	14210	40.75
3	Hathkanangle	55755	23694	42.49
4	Shirol	34528	27967	80.99
5	Karvir	40557	24060	59.32
6	Gaganbawda	6590	3832	58.14
7	Radhanagari	29371	12915	43.97
8	Kagal	49693	25766	51.85
9	Bhudargad	30083	7140	23.73
10	Ajara	25821	4920	19.05
11	Gadhinglaj	42017	10052	23.92
12	Chandgad	51020	13500	26.46
	Total	427015	175560	41.11

Table 2 and figure 3 are showing tehsil wise percentage of area under sugarcane cultivation to total area of crop cultivation in year 2023. As we see Shirol, Karvir, Gaganbawada and Kagal tehsil have

maximum share of cultivated area under sugarcane cultivation and Shahuwadi, Bhudargad, Ajara, Gadhinglaj as well as Chandgad tehsil have minimum share of cultivated area under sugarcane cultivation.

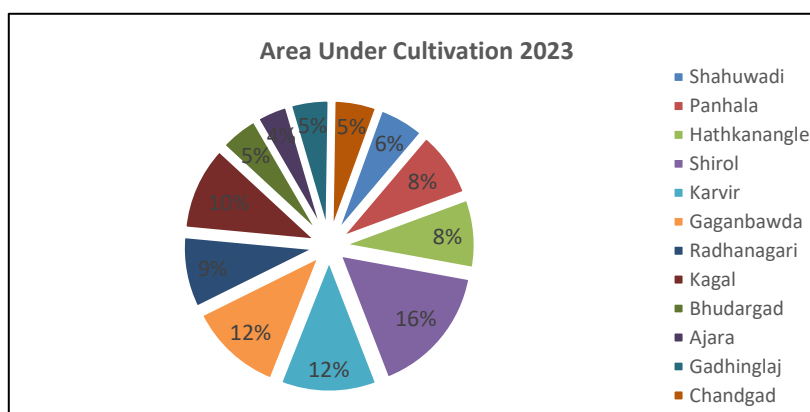


Figure 3: Cultivated Area Under Sugarcane Crop 2023

3. Total Area under Sugarcane Cultivation:

As we see in figure number 4, the total area under sugarcane cultivation in year 2013 is 145286 hectares and total area under sugarcane cultivation in year 2023 is 175560 hectares which means the area under cultivated of sugarcane is increased in last decade.

Adoption of High-Yielding Varieties (HYVs) (HYVs like Co 86032 and CoM 0265 has significantly boosted sugarcane productivity in the region), Mechanization of Agricultural Practices (the

adoption of modern farm machinery, such as tractors, harvesters, and threshers, has increased efficiency and reduced labor costs. Mechanization has also helped in timely sowing, harvesting, and post-harvest operations.), Improved Irrigation Systems(The development of irrigation infrastructure, including canals, dams, and tube wells, has ensured a reliable water supply for sugarcane cultivation), Fertilizer and Pesticide Management (adopting soil testing and nutrient management practices), Government Support and Policies (Government subsidies, crop insurance

schemes, and credit facilities have provided financial support), Shift Towards Value-Added Products (value-added sugarcane

products like jaggery, molasses, and ethanol to enhance their income)

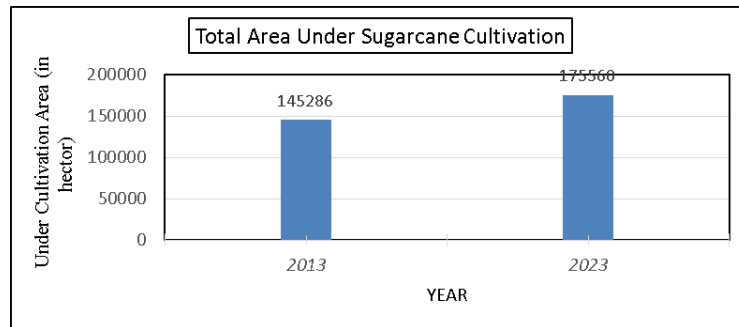


Figure 4: Total Area Under Sugarcane Cultivation

Comparison of Cultivated Area under Sugarcane Crop between Year 2013& 2023:

The data shows that the area under sugarcane cultivation in Kolhapur district has steadily increased over the past decade. In 2013 area under sugarcane cultivation was low in Shahuwadi, Gaganbawada, Bhudargad, Aajara and Gadhinglaj tehsil. Medium area under sugarcane cultivation were Panhala, Radhanagari and Chandgad tehsil. As well as high under cultivation area of sugarcane were Karvir, Kagal, Hatkanangale and Shirol tehsil.

In 2023 area under sugarcane cultivation was low in in Shahuwadi, Gaganbawada, Bhudargad and Aajara tehsil. Medium area under sugarcane cultivation were Panhala, Radhanagari, Gadhinglaj and

Chandgad tehsil. As well as high under cultivation area of sugarcane were Karvir, Kagal, Hatkanangale and Shirol tehsil.

If we compare both of them we can conclude that the development in Gadhinglaj tehsil are rapidly change from past decade. Shirol Tehsil has highest area under sugarcane cultivation. Due to the introduction of high yielding, early maturity, diseases and pest resistant variety and recommendation of wider row spacing, use of trash mulch and adopting the recommended packages of practices regarding the sugarcane cultivation helped in improving farmer's sugarcane yield. The yield level of farmers from last decades has substantially increased by adopting the new technology, ultimately resulted in increased the farmer income.

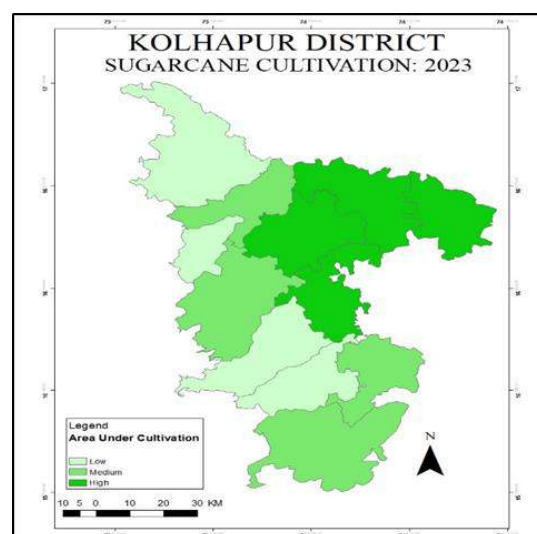
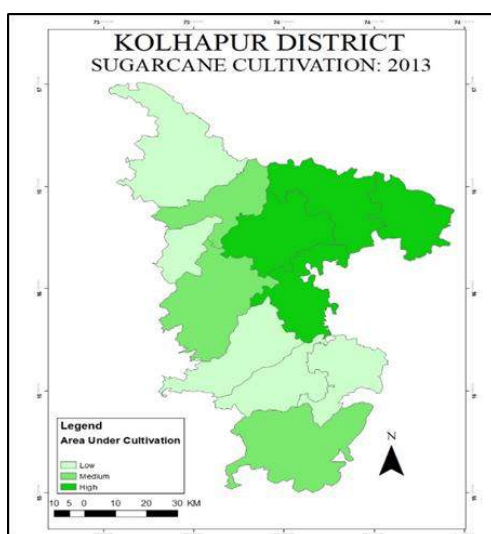


Figure 5 &6 Area Under Sugarcane Cultivation in 2013 and 2023

Conclusion:

Sugarcane crop plays vital role in agriculture of Kolhapur. Area under cultivated sugarcane crop increasing rapidly as compare to another crops. Good climate, heavy rainfall, availability of water, good structure of soil, availability of labors, availability of sugar factories as well as technological progress are the main reasons behind it. Also farmers have increasingly adopted high-yielding varieties like Co 92005, which is well-suited to the region's climate and soil conditions.

Government policies and subsidies have played a crucial role in shaping sugarcane cultivation practices. Fluctuations in sugarcane prices can impact farmers' decisions regarding cultivation and harvesting. Modern agricultural techniques, such as drip irrigation and use of fertilizers, have enhanced sugarcane productivity. Mechanization of sugarcane cultivation has reduced labor costs and increased efficiency. The demand for sugar and sugarcane byproducts, such as ethanol and bagasse, influences cultivation decisions. International market trends, including sugar prices and trade policies, can impact the sugarcane industry in Kolhapur.

Conflict of Interest:

There are no conflicts of interest regarding the publication of this manuscript.

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Application of Geo-Spatial Technology for Zonation Mapping: A Case study of F.Y.B.A.B.Ed. Student (2022-2023) of Vidya Prabodhini College, Parvari-Goa, India

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Abstract:

Geo-spatial technology is a valuable tool for institutional zonation mapping, enabling the efficient analysis of spatial data related to educational services. This research explores the application of geo-spatial technology in mapping the zonation of students enrolled at F.Y.B.A.B.Ed. in the Vidya Prabodhini College, Parvari, Goa, for the academic year 2022-2023. Using Geographic Information System (GIS) technology, the study presents the geo-spatial distribution of students across various distance zones, helping to assess the college's influence and outreach. The analysis covers one class of B.A.B.Ed. Program that is F.Y. B.A.B.Ed. showcasing how students are distributed across different geographical areas. The findings suggest that F.Y.B.A.B.Ed. students are more inclined to travel long distances to access the unique educational opportunities offered by the college. The zonation mapping helps the college optimize resource allocation, improve accessibility, and support data-driven decision-making for future growth and development. This paper emphasizes the significance of geo-spatial mapping in enhancing institutional planning, student experience, and community engagement.

Key Words: Geospatial, Zonation Mapping, GIS, Resource optimization.

Introduction:

Geo-spatial technology is revolutionizing the way institutions map and analyze their geographical impact, particularly in educational service provision. Vidya Prabodhini College, Parvari, Goa, serves as an exemplary case of how Geo-Spatial Zonation Mapping (GSZM) can enhance institutional planning and resource allocation. The college, offering diverse programs such as B.A.B.Ed., B.Com., and other educational services, faces challenges in effectively understanding the spatial distribution of students. Geo-spatial mapping, through the use of Geographic Information Systems (GIS), can address

these challenges by providing data-driven insights into the geographical spread of students, the distance they travel to reach the institution, and their regional preferences. This research investigates the zonation of students enrolled for the academic year 2023-2024 and how the information can be used for better institutional planning and service delivery.

Significance of Geo-Spatial Zonation Mapping:

Geo-spatial zonation mapping serves several important purposes in the context of higher education institutions. Some of the key benefits include:

Optimizing Resource Allocation: By understanding where students come from, the institution can better allocate resources such as faculty, transport facilities, and digital infrastructure based on demand from specific geographical zones.

Improving Accessibility: GIS data helps identify regions where students may face challenges in accessing educational services. This can lead to the establishment of satellite campuses or online programs, ensuring that education reaches underserved areas.

Enhancing Student Experience: Geo-spatial data allows the institution to align its curriculum and infrastructure development with the preferences and needs of students, improving overall satisfaction and outcomes.

Strategic Planning and Expansion: The institution can use spatial data to identify potential areas for growth, such as new program offerings or campus locations, ensuring sustainable growth aligned with student distribution.

Community Engagement and Collaboration: By visualizing zonation maps, the institution can collaborate with local governments, businesses, and other stakeholders to enhance educational services and community development.

Data-Driven Decision-Making: Geo-spatial technology provides empirical data that aids decision-making across various levels, from curriculum design to infrastructure investments.

Monitoring and Evaluation: Continuous monitoring of zonation maps allows the institution to evaluate the effectiveness of educational interventions, track student growth, and adjust strategies as needed.

Aim and Objectives:

The central focus of this project involves creating a Geo-Spatial zonation map of F.Y.B.A.B.Ed. students of Vidya

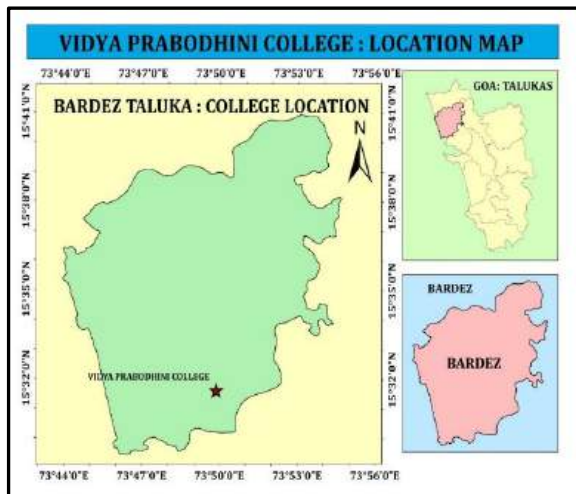
Prabodhini College, to find out the zone of influence of educational services by

1. To construct a Geo-Spatial Zonation Map encompassing all students pursuing the F.Y.B.A.B.Ed student of Vidya Prabodhini College for the academic term spanning 2022 to 2023.
2. Devise a comprehensive student well-being strategy that addresses educational and financial support requirements.



Study Region:

The study area for this dissertation encompasses Prabodhan Education Society's Vidya Prabodhini College of Commerce, Education, Computer, and Management, situated in the tranquil locale of Alto-Parvuri within Bardez-Goa. This educational institution is part of the expansive Prabodhan Education Society complex, which houses educational establishments ranging from pre-primary to college level. Nestled approximately 5 km away from the vibrant capital city of Goa, Panaji, the college is positioned at the geographical coordinates of 15° 31' 37.84 " North Latitude and 73° 49' 52.16" East Longitude. Currently, the college offers both commerce and education programs, accommodating a student body of 360 and 400, respectively. Vidya Prabodhini College stands out as one of the more recent additions to the academic landscape of Goa, distinguished as the pioneer in integrated B.A.B.Ed. programs.



Methodology:

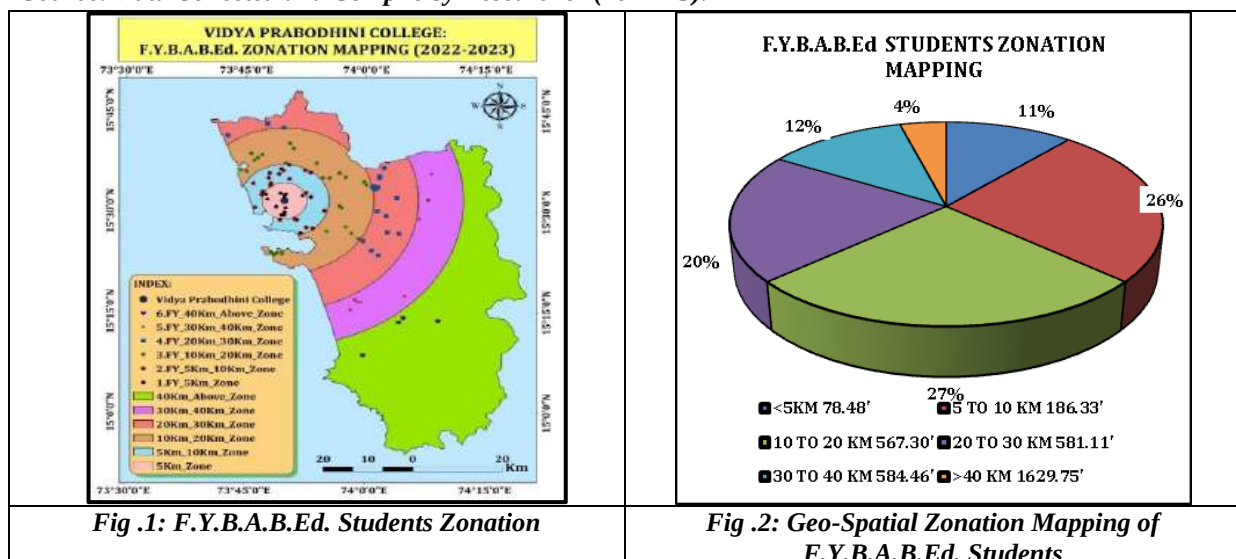
The study utilized GIS technology to map the geo-spatial distribution of students enrolled in various programs at Vidya Prabodhini College for the academic year 2022-2023. The data was collected from enrollment records, and the distance zones were categorized as follows:

- < 5 Km
- 5 Km to 10 Km
- 10 Km to 20 Km
- 20 Km to 30 Km
- 30 Km to 40 Km
- > 40 Km

Table No .1: F.Y.B.A.B.Ed. Students Zonation

Sr. No	Distance Zones	Area	No. of Students	Percentage
1	< 5Km	78.48	11	11.22
2	5 TO 10 Km	186.33	25	25.51
3	10 TO 20 Km	567.30	26	26.53
4	20 TO 30 Km	581.11	20	20.40
5	30 TO 40 Km	584.46	12	12.24
6	>40 Km	1629.75	4	4.08
	TOTAL	3627.43	98	100

Source: Data Collected and Compile by Researcher (2022-23).



The Geo-Spatial Zonation Mapping of F.Y.B.A.B.Ed. students at Vidya Prabodhini College for the academic year 2022-2023 provides valuable insights into the spatial distribution of students across different distance zones from the college. The mapping highlights the geographical areas from which students travel to the college, which can assist in strategic planning for resource allocation, transportation services, and potential expansion of educational facilities.

The zonation distribution of F.Y.B.A.B.Ed. students is as follows:

- **< 5 km Zone:** 11.22% of the students come from within 5 km of the college. This represents a smaller proportion of students, indicating that Vidya Prabodhini College attracts students not just from the local vicinity but also from surrounding areas.
- **5 to 10 km Zone:** A significant percentage, 25.51%, of students come from the 5-10 km zone. This suggests that the college serves a relatively larger catchment area within a short distance from the college.
- **10 to 20 km Zone:** The largest proportion of students, 26.53%, come from the 10-20 km zone. This indicates that Vidya Prabodhini College has a broad appeal to students within this moderate distance range, which could be due to the unique educational offerings available at the college, especially for the B.A.B.Ed. program.
- **20 to 30 km Zone:** About 20.40% of the students travel from the 20-30 km zone, which represents a substantial portion but less than those from the 10-20 km zone.
- **30 to 40 km Zone:** 12.24% of students travel from the 30-40 km zone. This shows that a smaller proportion of students are willing to

travel further, likely because of the specialized nature of the B.A.B.Ed. program offered by the college.

- **40 km Zone:** Only 4.08% of the students come from distances greater than 40 km. This is the smallest proportion, suggesting that only a few students are willing to travel long distances for the B.A.B.Ed. program, likely due to the distance and associated logistical challenges.

Key Observations:

Concentration of Students in Intermediate Zones (5 to 20 km): The majority of students (52.54%) come from the 5 to 20 km distance range, indicating that Vidya Prabodhini College has its core student base within a moderate geographical radius. This suggests that the college serves a substantial population from the surrounding towns and regions.

Limited Reach Beyond 20 km: Only a small proportion of students travel from beyond 30 km (16.32% combined for the 30-40 km and > 40 km zones). This could be a factor of transportation constraints, time, and cost for students traveling long distances, especially in regions where alternative education options might be available closer to home.

Local Students (within 5 km): A smaller percentage of students, 11.22%, reside within 5 km of the college. This may indicate that the college is not the primary institution for local students, or that they prefer attending other institutions that may offer more specialized or easily accessible programs.

Discussion and Implications:

Educational Service Reach: Vidya Prabodhini College, located in Parvari, seems to attract a significant number of students from surrounding towns and regions within a 20 km radius. The

geographical spread suggests that the college's reputation and specialized programs like B.A.B.Ed. appeal to a wide catchment area, particularly in neighboring regions.

Transportation Infrastructure: Given the considerable proportion of students from 5 to 20 km away, the college could consider optimizing transportation services to ensure smooth and cost-effective commuting for students. This could include expanding bus routes, subsidized travel options, or collaborations with local transport agencies to ease accessibility.

Potential for Satellite Campuses or Extension Programs: Since a significant proportion of students travel from 10-20 km away, there may be opportunities for the college to establish satellite campuses or offer extension programs in areas with high student demand. This could help reduce the travel burden on students while expanding the college's influence.

Student Support Services: With a majority of students coming from moderate distances (5-20 km), there is a clear need to provide additional student support services such as academic advising, mentorship, and career counseling, as these students may face greater challenges in terms of balancing study and travel.

Marketing and Outreach: The distribution of students in different distance zones can inform the college's marketing strategies. The college can target students within 5-20 km with region-specific outreach programs, highlighting the unique value of the B.A.B.Ed. program. Additionally, expanding awareness campaigns to areas beyond 20 km may encourage more students from distant locations to consider Vidya Prabodhini College for their higher education.

Planning for Future Growth:

Based on the findings from the geo-spatial zonation mapping, Vidya Prabodhini

College can undertake several initiatives to enhance its reach and service delivery:

Optimizing Resource Allocation:

Understanding the distance zones helps the college allocate resources effectively. For example, additional faculty members and infrastructure could be directed toward areas with a higher concentration of students, while long-distance students may benefit from more flexible study options like online learning.

Expansion of Educational Services: The college may explore the feasibility of offering programs or courses in satellite centers or other regional locations that are closer to areas with high student demand. This would reduce the burden of long-distance commuting and increase enrollment.

Community Engagement: By engaging with local communities in the 5 to 10 km range, the college can create stronger partnerships and encourage more local students to enroll. Outreach programs, career fairs, and community education events could be an effective strategy to connect with potential students and their families.

Conclusion:

The Geo-Spatial Zonation Mapping of F.Y.B.A.B.Ed. students at Vidya Prabodhini College provides crucial insights into the geographical distribution of students and highlights areas for potential improvements in accessibility, resource allocation, and program development. The findings suggest that the college has a significant influence within a 5 to 20 km radius, with only a small percentage of students coming from beyond 40 km. By leveraging these insights, Vidya Prabodhini College can enhance its services, plan for future growth, and continue to provide high-quality educational opportunities to students in the region.

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Assessment of Meteorological Drought Risk Using Standardized Precipitation Index in Satara District, Maharashtra

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Abstract:

Meteorological droughts pose significant challenges in semi-arid regions, impacting agricultural productivity, water resources, and socio-economic stability. This study assesses meteorological drought risk in Satara District, Maharashtra, using the Standardized Precipitation Index (SPI). Annual rainfall data from eleven rain-gauge stations, spanning a 25-year period (2000–2024), were analyzed to calculate SPI values, categorizing drought intensity, frequency, and severity. The analysis reveals pronounced spatial and temporal variability, with specific talukas exhibiting higher drought severity. Drought-prone areas were identified, and thematic maps were developed using GIS, providing valuable insights for policymakers and stakeholders. These results facilitate improved resource management, strategic planning, and effective drought mitigation. By integrating SPI with GIS, this study demonstrates a robust methodology for drought assessment, enhancing resilience in semi-arid regions and serving as a replicable framework for addressing climatic challenges in similar contexts.

Keywords: Standardized Precipitation Index (SPI), Rainfall, Meteorological drought, GIS, Satara District

Introduction:

Drought is a recurring natural hazard that significantly impacts agriculture, water resources, and socio-economic conditions, especially in regions reliant on rain-fed agriculture. In India, Maharashtra—a state with diverse climatic conditions and a strong dependence on agriculture—frequently experiences droughts, making effective water resource management and disaster preparedness essential. Within Maharashtra, the Satara district, situated in the western region, is particularly vulnerable to droughts. Over recent decades, recurrent drought events have posed serious challenges to local communities and farmers, underscoring the urgent need for comprehensive mitigation

strategies.

The Standardized Precipitation Index (SPI) is widely recognized as an effective tool for assessing meteorological drought conditions. By quantifying deviations in precipitation relative to long-term averages, SPI categorizes periods of drought and excess rainfall, providing critical insights into temporal and spatial variability in precipitation. This makes SPI particularly valuable in analysing drought frequency, severity, and spatial distribution over time.

This study utilizes SPI to analyse drought events in Satara district over a 25-year period (2000–2024). The research identifies trends in drought frequency and intensity, highlighting years marked by

severe, moderate, and wet conditions. Spatial variability is also examined to pinpoint the talukas most vulnerable to drought. Furthermore, the implications of drought patterns on agriculture and water resources are explored, given their vital role in the socio-economic well-being of the district's population.

The effectiveness of SPI in drought assessment has been demonstrated in various studies across diverse regions and climates. For instance, Saini et al. (2020) analysed SPI-based wet and dry conditions in dryland ecosystems of north-western India, revealing higher drought severity in certain regions. Similarly, Natarajan et al. (2023) assessed drought vulnerability using SPI in Tamil Nadu's arid, semi-arid, and humid districts, while Shinde and Telore (2024) mapped meteorological drought risk zones in Maharashtra's Yerla River basin. Studies like Shoko and Mushore (2015) further highlight SPI's role in monitoring the impacts of climate variability on precipitation patterns. When combined with GIS and other drought indices, SPI enables a comprehensive assessment, supporting effective mitigation strategies and resource management in water-scarce regions.

This research aims to provide valuable insights into drought challenges in Satara district by analysing drought frequency, severity, and spatial variability. The findings contribute to informed water resource management and strengthened resilience against the adverse impacts of drought in the region.

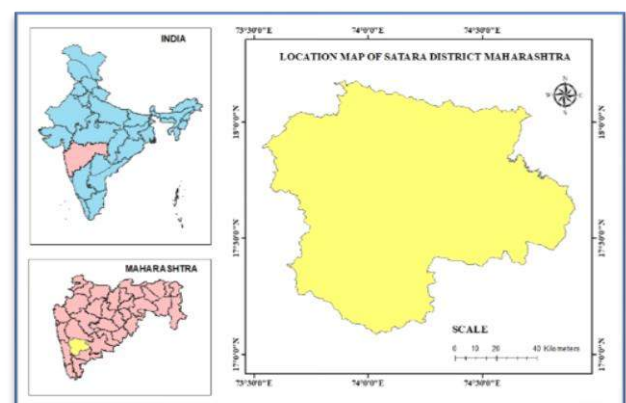
Objective:

The primary objective of this research paper is to evaluate meteorological drought risk in the Satara district of Maharashtra, India, by utilizing the Standardized Precipitation Index (SPI) in conjunction with advanced geospatial technologies.

Study Area:

Satara district, located in the western region of Maharashtra, India (Figure 1), spans an area of 10,480 square kilometers and lies between latitudes 17°N to 18°15'N and longitudes 73°30'E to 75°E. Administratively, the district is divided into eleven talukas and four revenue divisions, encompassing 1,721 revenue villages. The district experiences a generally favorable climate with distinct seasonal variations. Winter, from December to mid-February, is followed by summer, while the southwest monsoon season occurs from June to September. The post-monsoon season extends from October to November. The average minimum temperature in Satara is 14.4°C, while the maximum temperature can reach up to 36.8°C. Rainfall patterns in the district exhibit significant spatial variation, with annual precipitation ranging from 473 mm in the eastern areas to approximately 6,209 mm in the western regions, particularly around Mahabaleshwar and the Sahyadri range of the Western Ghats. The eastern part of the district, which includes most of the Khandala, Phaltan, Khatav, and Man talukas, as well as parts of Koregaon and Karad talukas, is classified as a 'drought-prone area'. This region has experienced drought conditions in over 20% of the years, underscoring its vulnerability to water scarcity (Figure 1),

Figure 1 Location map of Satara District (Maharashtra).



Materials and Method:**Data Collection:**

Annual rainfall data for the period 2000 to 2024 was obtained from eleven rain-gauge stations through the Agriculture Department of Maharashtra's official website (www.mahaagri.gov.in). The collected data was organized and processed using Excel to ensure compatibility for generating interpretative area maps. ArcGIS 10.4 was employed to create, manage, and generate spatial maps, incorporating Standardized Precipitation Index (SPI) values for comprehensive analysis.

Methodology:

The Standardized Precipitation Index (SPI) methodology is applied to assess meteorological drought risk by calculating SPI values from historical rainfall data. These values are determined by comparing observed precipitation against long-term averages, thereby quantifying drought severity. SPI values are categorized into levels that range from extremely wet conditions to severe drought, enabling a clear classification of drought severity.

Table 1 SPI class and Drought Severity.

SPI Value	Classification	Description
> +2.0	Extremely Wet	Extremely wet conditions, rare occurrence
+1.5 to +2.0	Very Wet	Abundant precipitation, above normal
+1.0 to +1.5	Moderately Wet	Above normal rainfall
-1.0 to +1.0	Near Normal	Normal conditions (near long-term average)
-1.0 to -1.5	Moderate Drought	Mild drought conditions
-1.5 to -2.0	Severe Drought	Significant drought conditions
< -2.0	Extreme Drought	Extreme drought, critical conditions

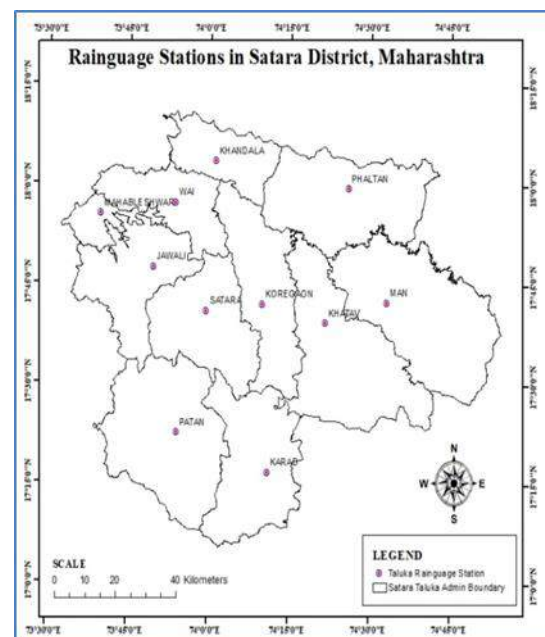
The analysis produces continuous drought risk maps, illustrating the spatial distribution of drought severity across the study area and highlighting regions at high risk. By integrating SPI with Geographic Information System (GIS) technology, the methodology supports effective drought monitoring, resource management, and strategic planning for mitigation efforts. The SPI calculation for each period in the time series follows this formula:

$$SPI = (P - \mu) / \sigma$$

Where: P = observed precipitation, μ = long-term mean precipitation and σ = standard deviation of precipitate

Table 2 Rain Gauge Stations in the Study Area.

Sr.No.	Taluka	Latitude	Longitude
1	Khandala	18.05772	74.0181
2	Phaltan	17.99069	74.43118
3	Wai	17.95154	73.89354
4	Mahabaleshwar	17.92269	73.66096
5	Jawali	17.79029	73.82672
6	Man	17.70545	74.5511
7	Koregaon	17.6989	74.16489
8	Satara	17.68116	73.99166
9	Khatav	17.65331	74.36184
10	Patan	17.37455	73.90116
11	Karad	17.27643	74.18397

**Figure 2** Rain gauge stations in Satara District (Maharashtra).

Results and Discussion:**Overview of the Standardized****Precipitation Index (SPI):**

The Standardized Precipitation Index (SPI) is a vital tool for evaluating precipitation deficits or surpluses over time, offering a comprehensive understanding of drought and wetness conditions. By quantifying deviations from the long-term average precipitation, SPI provides valuable

Analysis of Drought Frequency:

insights into the intensity and duration of droughts and wet periods. In this study, SPI values for the Satara district of Maharashtra from 2000 to 2024 were analysed to identify temporal and spatial trends in precipitation and drought conditions. This analysis serves as a key indicator of the impact of changing precipitation patterns on agriculture, water resources, and socio-economic conditions in the region.

Table 3: Drought Frequency.

Taluka	Extreme Dry	Severe Drought	Moderate Drought	Wet	Near Normal	Extremely Wet	Total
Satara	5	4	7	4	5	0	25
Jawali	6	4	7	4	4	0	25
Koregaon	5	3	7	4	4	0	25
Karad	6	5	5	5	4	0	25
Patan	6	3	6	5	5	0	25
Phaltan	4	4	8	5	4	0	25
Man	6	3	7	5	4	0	25
Khatav	6	3	7	5	4	0	25
Wai	6	3	6	5	5	0	25
M'shwar	5	4	7	5	4	0	25
Khandala	5	4	7	5	4	0	25

The analysis of drought frequency highlights the region's persistent vulnerability to drought events, particularly moderate droughts, which occur frequently and pose on-going challenges to agricultural and water resource management systems. Severe droughts, while less frequent, have had significant impacts during years such as 2002, 2003, 2011, 2015, and 2023, resulting in substantial socio-economic hardships. Mild drought events, though less severe, add to the overall drought burden, with notable occurrences in 2008, 2011, and 2012. Conversely, certain years, including 2005, 2007, and 2019, experienced above-normal precipitation, offering temporary relief with favourable climatic conditions. Despite these wet years, the region remains highly susceptible to the long-term impacts of moderate droughts, emphasizing the urgent

need for effective water management strategies and comprehensive drought mitigation measures.

Taluka-wise Drought Frequency Analysis:

The taluka-wise frequency analysis reveals notable variability in drought occurrences across different regions of Satara district. Talukas such as Phaltan, Khandala, and Karad frequently experience moderate and mild droughts, with these events occurring consistently over the years. For example, Phaltan recorded high frequencies of moderate droughts in 2003, 2007, 2012, and 2015, while Khandala and Karad exhibited similar patterns, with moderate droughts occurring almost annually.

In contrast, talukas like Man, Koregaon, and Jawali showed greater variability in drought severity. Jawali, for instance, experienced several mild drought events but also recorded normal years, particularly in 2007, 2011, and 2019. Karad and Wai demonstrated more evenly distributed drought intensities, with Wai experiencing above-normal conditions in 2005 and 2007.

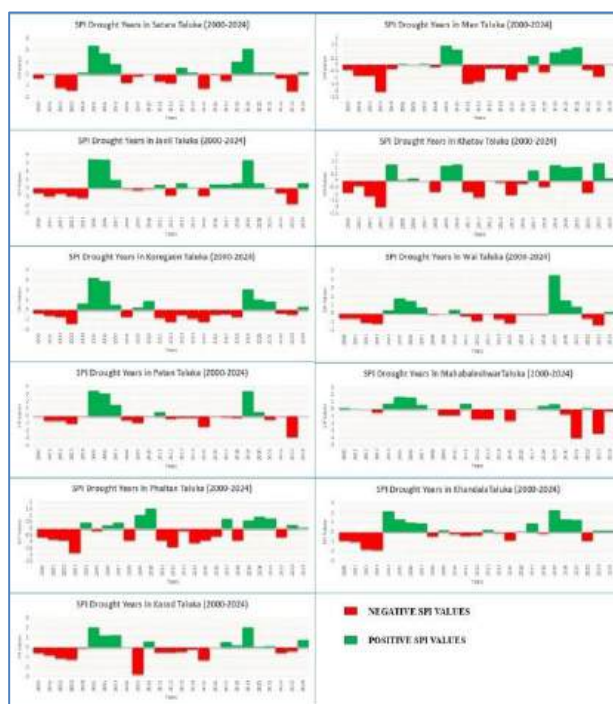
Satara and Patan, on the other hand, recorded fewer severe droughts, indicating a lower vulnerability to extreme drought events. However, moderate droughts still occurred regularly in these areas, consistent with regional trends. Overall, moderate droughts were the most frequent and widespread across the talukas, highlighting the significant challenges faced by the region due to ongoing moderate drought conditions, particularly in areas like Phaltan and Khandala, which are more severely affected.

Temporal Trends of SPI (2000-2024):

The drought event analysis across various talukas indicates that the region is primarily affected by moderate droughts, with a total of 72 occurrences over the 25-year period. Extreme dry conditions were recorded 55 times, and severe droughts occurred 39 times. Wet conditions, although present, were less frequent, appearing 50 times, while near-normal conditions were reported 47 times. Notably, there were no instances of extremely wet years, suggesting that the region did not experience extreme rainfall events.

Talukas such as Satara, Jawali, Man, Khatav, and M'shwar exhibited a higher frequency of extreme dry and moderate drought events, while Karad and Phaltan were more prone to severe droughts. Overall, the region is highly vulnerable to drought, particularly moderate droughts, with occasional extreme dry spells. This underscores the critical need for effective drought management strategies to maintain agricultural productivity and socio-economic stability in the region.

Figure 3 SPI Drought Frequency in Satara District (Maharashtra).



Spatial Variability in SPI:

Spatial analysis of the SPI values reveals significant variability across the talukas. Talukas such as Jawali and Koregaon experienced more frequent wet conditions, with moderate to heavy precipitation periods that contributed to relatively better water availability compared to other regions. In contrast, talukas like Karad, Patan, and Phaltan were more susceptible to drought conditions, particularly in years like 2009, 2015, and 2023. These areas face heightened vulnerability to the adverse effects of reduced precipitation, impacting agriculture and water resources. These spatial patterns suggest that some talukas are more prone to drought due to a combination of regional topographical variations, local climate factors, and water management practices.

Impact on Agriculture and Water Resources:

The analysis of SPI values underscores the significant impact of precipitation patterns on agriculture and water resources. Years marked by extreme drought conditions, such as 2009, 2015, and 2023, resulted in poor crop yields, particularly for water-intensive crops like rice and sugarcane. These droughts severely impacted local farmers, leading to financial strain, crop failures, and increased migration in search of livelihoods. On the other hand, wet years like 2005 and 2006 provided favourable conditions for agriculture, with optimal conditions for crop growth and water storage. However, excessive rainfall during these years also led to flooding and waterlogging in some regions, highlighting the need for effective water management even during periods of surplus rainfall. Groundwater levels saw positive effects during wet years, contributing to recharge, while dry years—especially those marked by extreme drought—resulted in significant depletion of groundwater reserves. This exacerbated challenges for irrigation and drinking water supply, further emphasizing the importance of sustainable water management strategies.

Conclusion:

The analysis of the Standardized Precipitation Index (SPI) for the period 2000-2024 in the Satara district of Maharashtra underscores the significant challenges posed by precipitation variability, with serious implications for agriculture, water resources, and socio-economic stability. The region predominantly experiences moderate droughts, which occur frequently and have become a persistent issue for local communities. While severe droughts are less frequent, they cause substantial socio-economic distress. Extreme drought events, particularly in 2009, 2015, and 2023, have exacerbated agricultural

losses, groundwater depletion, and financial hardship for farmers. Taluka-wise analysis reveals that areas such as Phaltan, Khandala, and Karad are especially vulnerable to consistent drought conditions, whereas regions like Jawali and Koregaon exhibit more variability in drought occurrences. Despite occasional wet years, such as 2005 and 2007, the overall trend highlights the region's high vulnerability to recurring droughts, particularly in the context of shifting climate patterns. Over the past 25 years, the region has experienced 72 instances of moderate drought, 55 extreme dry spells, and 39 severe drought events at the taluka level. Wet conditions were observed 50 times, and near-normal conditions occurred 47 times. Notably, there were no occurrences of extremely wet years, indicating the absence of significant rainfall recovery periods. In conclusion, while brief recovery periods have occurred, the overall trend of fluctuating drought and wet conditions emphasizes the urgent need for comprehensive drought management strategies. These should include enhanced water resource management, crop diversification, and community-level adaptation plans. By focusing on both drought mitigation and preparedness, the region can build resilience against future climate variability and ensure a sustainable future for its agricultural and socio-economic systems.

Recommendations:

To mitigate the impacts of drought in Satara district, a comprehensive approach to water resource management is essential. This includes implementing rainwater harvesting and artificial groundwater recharge systems, as well as promoting water-efficient irrigation techniques like drip irrigation to improve water availability during dry spells. Additionally, encouraging sustainable agricultural practices such as soil moisture conservation, crop diversification,

and the use of drought-resistant crops can help reduce vulnerability. Establishing early warning systems using the Standardized Precipitation Index (SPI) for drought prediction, along with government initiatives offering financial support, subsidies, and insurance, will provide vital assistance to farmers. Strengthening local institutions, advancing research on climate-resilient

farming, and promoting climate-smart agriculture will further contribute to long-term drought mitigation and improve the district's agricultural resilience. Together, these strategies will ensure sustainable water use, reduce the socio-economic impacts of drought, and support the livelihoods of farming communities in the region.

Photo Plates:

Figure 4 Reconnaissance Survey of the area.



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Biodiversity Conservation Strategies in Urban Areas

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Abstract:

Urbanization is a major demographic trend of the 21st century, with over half of the global population now residing in cities. While cities offer economic opportunities and improved infrastructure, they also present challenges to biodiversity. The rapid growth of urban areas and changes to landscapes and ecosystems threaten biodiversity through habitat loss, fragmentation, and pollution. This paper examines biodiversity conservation strategies in urban areas to address these challenges. We explore existing literature, case studies, and innovative practices in urban biodiversity conservation, focusing on green infrastructure, community engagement, policy frameworks, and ecosystem services. The research highlights the importance of integrating biodiversity into urban planning and management for sustainable urban ecosystems.

Keywords: Urban Biodiversity, Challenges and Strategies for Urban Biodiversity

Introduction:

As the global population continues to urbanize, cities are becoming critical areas for biodiversity conservation. Urban ecosystems often support a variety of species, yet they are also characterized by high levels of habitat alteration and degradation. The need for effective strategies to conserve biodiversity in urban settings is urgent, given the ecological, social, and economic benefits that biodiversity provides. Urban biodiversity contributes to ecosystem services such as air and water purification, climate regulation, and recreational opportunities. Biodiverse urban environments enhance human well-being, promote mental health, and foster sustainable urban development. Understanding the importance of urban biodiversity is essential for developing effective conservation strategies.

Data Collection Method:

Data was collected through various governmental entities, including the Forestry Development Authority (FDA) Conservation Department, Environmental Protection Agency (EPA), Ministry of Agriculture (MoA), Ministry of Lands Mines and Energy (MoLM&E), as well as international non-governmental institutions like Fauna and Flora International (FFI) and Conservation International (CI). Additionally, data was gathered from Non-Governmental Organizations such as the Society for the Conservation of Nature (SCNL), Society for Environmental Conservation (SEC), and Skills & Agricultural Development Services (SADS), all of which are responsible for managing biological diversity.

Data Analysis Method:

The responses received from the mentioned entities, in both electronic and hard copy formats, were carefully analysed, processed, and compiled in a timely manner. This thorough analysis led to the efficient creation of this research instrument.

Importance of Urban Biodiversity:**Ecological Importance:**

Biodiversity is crucial for ecosystem stability and resilience. Each species plays a unique role in processes like pollination and nutrient cycling. These interactions maintain ecosystem balance and help them adapt to changes. Diverse ecosystems are more resilient to disturbances like natural disasters and human impacts. For example, diverse forests recover faster from storms compared to monoculture forests.

Economic Value:

Biodiversity is essential for economies reliant on natural resources like agriculture, forestry, fisheries, and tourism. It ensures food security, supports fisheries, and provides potential sources for new medicines. Protecting biodiversity is crucial for sustainable development.

Social and Cultural Importance:

Biodiversity also holds significant social and cultural value. Many cultures and communities have deep connections to their local biodiversity, which shapes their identity, traditions, and spirituality. Indigenous peoples, in particular, often rely on their surrounding ecosystems for their livelihoods, cultural practices, and knowledge systems.

Climate Regulation and Ecosystem Services:

Biodiversity is essential for regulating climate and environmental processes. Diverse ecosystems act as carbon sinks, absorbing carbon dioxide and mitigating climate change. They also play a crucial role in regulating water cycles, enhancing soil fertility, and controlling pests

and diseases. The loss of biodiversity can disrupt these services, leading to increased greenhouse gas emissions, soil degradation, and water scarcity. Conserving biodiversity is crucial for ensuring the continued provision of essential ecosystem services.

Conservation and Sustainable Development:

The current global biodiversity crisis, driven by habitat destruction, climate change, pollution, and over-exploitation, poses significant threats to ecosystems and human well-being. Conservation efforts are crucial to halt biodiversity loss and restore degraded environments. Sustainable development practices that balance economic growth with ecological health are essential in this context.

Biodiversity Challenges in Urban Areas:**Habitat Loss and Fragmentation:**

As cities expand, natural habitats are often cleared to make way for buildings, roads, and infrastructure. This loss of habitat is one of the most immediate threats to urban biodiversity. Moreover, the remaining habitats can become fragmented, isolating populations of species and making it more difficult for them to migrate, find mates, and access the resources they need to survive. Fragmentation can lead to reduced genetic diversity and increased vulnerability to extinction.

Pollution:

Urban areas are often hotspots for pollution, which can severely impact local biodiversity. Various forms of pollution—air, water, and soil—affect both terrestrial and aquatic ecosystems. For instance:

- **Air Pollution:** Emissions from vehicles and industries can harm plant and animal species, affecting their health and reproductive success.
- **Water Pollution:** Runoff from urban areas can introduce harmful substances into rivers, lakes, and coastal areas,

affecting aquatic life and the species that depend on these ecosystems.

- **Soil Contamination:** Heavy metals and chemicals can accumulate in urban soils, impacting plant growth and the organisms that rely on those plants.

Invasive Species:

Urban areas often provide ideal conditions for the introduction and proliferation of invasive species. These non-native species can outcompete local flora and fauna for resources, disrupt food chains, and alter habitats. The presence of invasive species can lead to significant declines in native biodiversity and ecosystem health.

Climate Change:

Cities are significant contributors to climate change, primarily through greenhouse gas emissions. Urban areas also experience the urban heat island effect, where temperatures are higher than in surrounding rural areas due to human activities and land use changes. Climate change affects biodiversity by altering habitats, shifting species distributions, and disrupting migration patterns. Urban ecosystems may not be able to adapt quickly enough to these changes, leading to further losses in biodiversity.

Limited Green Spaces:

While many cities recognize the importance of green spaces, urban development often prioritizes concrete and asphalt over parks, gardens, and natural areas. Limited green spaces reduce the habitats available for wildlife, diminish ecological connectivity, and restrict opportunities for urban dwellers to engage with nature. Urban parks that do exist may not be designed to support diverse species, often favoring ornamental plants over native flora.

Human-Wildlife Conflict:

As wildlife increasingly enters urban environments, conflicts between humans and animals can arise. Animals may seek food, shelter, or nesting sites in urban areas,

leading to encounters that are often negative for both parties. For example, wildlife may damage property, while humans may resort to measures that harm or kill these animals. Striking a balance between human needs and wildlife conservation is a significant challenge in urban settings.

Socioeconomic Factors:

Socioeconomic disparities in urban areas can also impact biodiversity. Low-income communities may lack access to green spaces and suffer from environmental injustices, leading to a lower quality of life and reduced opportunities for engaging with and benefiting from biodiversity. Additionally, urban planning decisions often prioritize economic growth over ecological considerations, sidelining biodiversity in favor of development.

Strategies for Enhancing Urban Biodiversity:

Despite these challenges, there are several strategies that cities can adopt to enhance biodiversity:

Green Infrastructure: Implementing green roofs, walls, and rain gardens can help create habitats for various species while managing storm water and improving air quality.

Urban Parks and Nature Reserves: Expanding and improving urban parks, nature reserves, and community gardens can provide essential habitats for wildlife and enhance residents' well-being.

Sustainable Urban Planning: Integrating biodiversity considerations into urban planning processes can ensure that development minimizes habitat loss and fragmentation.

Community Engagement: Involving local communities in conservation efforts, such as citizen science projects, can foster a sense of stewardship and promote awareness of the importance of biodiversity.

Protection of Native Species: Promoting the use of native plants in landscaping and

gardening can help support local wildlife and maintain ecological integrity.

Monitoring and Research: Conducting research on urban biodiversity and monitoring changes over time can provide valuable insights for policymakers and conservationists.

Conclusion:

Urban areas present both challenges and opportunities for biodiversity conservation. By adopting comprehensive strategies that incorporate green infrastructure, policy frameworks, community engagement, and restoration efforts, cities can enhance their biodiversity. The integration of biodiversity into urban planning is essential for creating sustainable, resilient urban ecosystems that benefit both nature and human communities.

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सांगली जिल्ह्यातील वाळवा तालुक्यातील मौजे तुजारपुर गावातील कृषी संसाधनांचा भौगोलिक अभ्यास

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प्रस्तावना:

भारताची अर्थव्यवस्था कृषीप्रधान आहे. शेती हे भारतीयांच्या उपजीविकेचे साधन आहे आणि शेती हा मुख्य व्यवसाय झाला आहे. आजही भारतातील ६०% पेक्षा जास्त लोक उपजीविकेचे साधन म्हणून शेतीवर अवलंबून आहेत. भारतात शेतीचा म्हणावा तसा विकास झालेला नाही. तो योग्य दिशेने आणि योग्य पद्धतीने करणे अत्यावश्यक आहे. भारतीय शेती अनेक घटकांनी प्रभावित आहे. त्यामुळे शेतीचे अनेक प्रश्न निर्माण झाले आहेत. या सर्व घटकांचा आणि शेतीवर परिणाम करणाऱ्या समस्यांचा अभ्यास करण्यासाठी तुजारपुर गावाची निवड करण्यात आली.

अभ्यास उद्दिष्ट:

- १) मौजे तुजारपुर गावातील सामाईक जमीन वापराचा अभ्यास करणे.
- २) मौजे तुजारपुर गावातील कृषी पीक पद्धतीचा अभ्यास करणे.
- ३) तुजारपुर गावातील सिंचन स्रोत व साधनांचा अभ्यास करणे.
- ४) शेतीतील समस्या शोधून त्यावर उपाय सुचवणे.

आकडेवारी संकलन आणि अभ्यास पद्धती :

सदर अभ्यासासाठी सर्वेक्षण संशोधन पद्धतीचा वापर करण्यात आला आहे. सदर कामासाठी आवश्यक असलेली माहिती खालील स्रोतांकडून संकलित करण्यात आली

अ) प्राथमिक स्रोत: प्रत्यक्ष शेतकरी, प्रशासकीय कार्यालये आणि व्यक्तींकडून (सरपंच, उपसरपंच, ग्रामसेवक, तलाठी, कृषी अधिकारी इ.) प्रत्यक्ष भेटीद्वारे निरीक्षण, वेळापत्रक, मुलाखत, चर्चा या साधनांच्या व तंत्रांच्या मदतीने.

ब) दुय्यम स्रोत: दुय्यम माहिती आम्ही विविध प्रकाशित अहवाल, लेख, पुस्तके, मासिके, वेबसाइट्स इत्यादींमधून गोळा केली आहे. संकलित माहिती विविध सांख्यिकीय आणि कार्टोग्राफिक तंत्रांद्वारे प्रस्तुत केली आहे.

अभ्यास क्षेत्र स्थान:

तुजारपूर हे गाव महाराष्ट्र राज्यातील सांगली जिल्ह्यातील वाळवा तालुक्यात आहे.. तुजारपूर गावाचा अक्षवृत्तीय विस्तार १७°००'३३"N अक्षांश ते १७°००'५६"N अक्षांश आणि रेखावृत्तीय विस्तार ७४°१७'३९.०"E रेखांश आणि ७४°१८'०७.९"E रेखांश आहे. २०११ च्या जनगणनेनुसार तुजारपूरची एकूण लोकसंख्या २००६ आहे. तुजारपूरच्या पूर्वेला

पलूस तालुका, पश्चिमेला शिराळा तालुका, दक्षिणेकडे हातकणंगले तालुका, उत्तरेकडे कडेगाव तालुका आहे. गावाचे क्षेत्रफळ सुमारे ५२२.९८ हेक्टर आहे. तुजारपूर गावात सुमारे ४०२घरे आहेत.

अभ्यास क्षेत्राचे महत्त्व व निवड :

कृषी संसाधन अभ्यास महत्त्व पुढीलप्रमाणे सांगता येईल.

- १) कृषी सर्वेक्षणाद्वारे प्रादेशिक नियोजन आराखडा तयार करण्यास मदत होते
- २) विविध पिकांखालील क्षेत्र कृषी सर्वेक्षणाद्वारे ज्ञात होते.
- ३) कृषी अभ्यास विविध पिकांची माहिती देतात.
- ४) कृषीच्या अभ्यासामुळे शेतीतील नवीन तंत्रज्ञान आणि पद्धती जाणून घेण्यास मदत होते.
- ५) कृषी अभ्यासातून शाश्वत शेतीचे नियोजन करता येते.
- ६) कृषी सर्वेक्षण पीक पद्धतीवर वाढत्या लोकसंख्येच्या परिणामाची कल्पना देते.

सादरीकरण व विश्लेषण:

१.जमिनीचा वापर:मौजे तुजारपूर गावाचे एकूण भौगोलिक ५२३ हेक्टर असून, त्याचे विविध क्षेत्रासाठी झालेली विभागणी-

१. लागवडीखालील एकूण क्षेत्र ४७० असून त्यांचे काही गटांमध्ये विभागणी केली आहे. भोगवटा वर्गाकरीता ४७० हेक्टर क्षेत्राची विभागणी केली आहे.
२. लागवडीसाठी अनुपलब्ध जमिन ४० हेक्टर आहे. त्यामध्ये पोटखराब व नदया व नाले यांच्यासाठी २० हेक्टर जमिन वापरात आहे.
३. सार्वजनिक किंवा विशेष वापरासाठी एकूण १० हेक्टर क्षेत्र नेमून दिले आहे. त्यापैकी वन, कुरण, गायरान, गुरांचा तळ व रस्ते यांसाठी एकूण १० हेक्टर क्षेत्र वापरात आहे. १. गावठाण क्षेत्र २ हेक्टर

क्षेत्र वापरात आहे. २. त्याचबरोबर तलाव, मसवटा यासाठी १ हेक्टर क्षेत्र वापरात आहे.

टेबल क्र.१: तुजारपूर: सर्वसाधारण भूमी उपयोजन (२०२३)

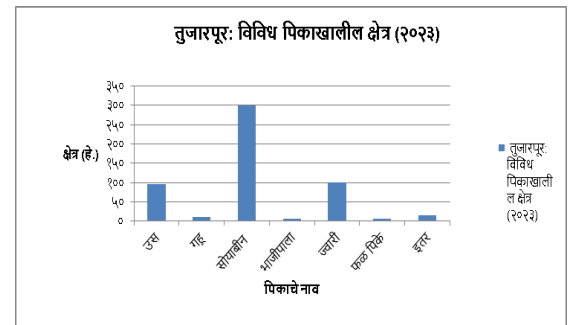
क्र	भूमी उपयोजन	क्षेत्र (हेक्टर)	%
१	लागवडी खालील	४७०	८९.८७
२	अकृषिक	१३	२.४९
३	पडीक	४०	७.६५
एकूण		५२३	१००.००

स्रोत : तलाठी कार्यालय तुजारपूर

२.पिक रचना: खरीप हंगामामध्ये भूईमुग, सोयाबीन यासारखी पिके घेतली जात असे व रब्बी हंगामामध्ये गहू, शाळू यांसारखी पिके घेतली जातात. वार्षिक उत्पन्न म्हणून ऊस हे पिक घेतले जात असे. तुजारपूर गावामध्ये मुख्य पिक हे शाळू हे आहे.जनावरांना चारा म्हणून कडबा, हत्ती गवत, गवत, ऊसाचा पाला इत्यादी घालतात.

तुजारपूर गावामध्ये विविध पिकाखालील क्षेत्र यामध्ये ऊस या पिकासाठी ९५ हे. हेक्टर क्षेत्र आहे. त्यानंतर सोयाबीन ३०० हे., शाळू १०० हे, भूईमुग-१० हे., गहू-१० हे, हरबरा ८ हे. हे आशा प्रकारे जमीनीची विभागणी केली आहे. तुजारपूर गावात ८० शेतकरी हे ऊस या पिकांचे उत्पादन घेतात व हरबरा या पिकांचे ८ शेतकरी भूईमुग या पिकाचे १७ शेतकरी उत्पादन घेतात. तसेच फळाचे व पाले भाज्याचे उत्पादन १० शेतकरी घेतात. सोयाबीन या पिकांचे उत्पादन ९० शेतकरी घेतात, तर शाळू हे तुजारपूर गावातील प्रमुख पिक असून तेथे १२० शेतकरी उत्पदान घेतात. तर इतर पिकामध्ये भूईमुग, कडधान्य यांची उत्पादने तेथील लोक उत्पादन घेतात.

आकृती:१



३.सिंचन स्रोत: तुजारपुर या गावात वारणा नदीचा पाणीपुरवठा केला जातो. तसेच, बोर, विहिरी व पावसावर येथील लोक शेती करतात. पाणी टंचाईमुळे या भागातील शेती जास्त प्रमाणात पिकत नाही. या भागात ऊस उत्पादन कमी प्रमाणात घेतले जाते. पावसावर काही प्रमाणात शेती करतात. पाऊस पडला तरच तेथे शेती केली जाते. बोअर ७५, विहिर १९७, उपसा सिंचन योजना १७९ लोक वापर करतात.

टेबल क्र. २: तुजारपूर जलसिंचन स्रोत

सिंचन प्रकार	क्षेत्र	%
विहिरी	१९७	४२
उपसा सिंचन	१७९	३८
कुपनलिका	७५	१६
शेत तळे	१९	४
एकूण	४७०	१००

स्रोत : तलाठी कार्यालय तुजारपुर

४. कृषी अवजारे

अ) पारंपारिक शेती अवजारे: पारंपारिक शेती अवजारांपैकी, गावात एकूण ६० नांगर आहेत. ५५ कुळव, ७८ बैलगाड्या आणि ८४ कोळपे आहेत.

ब) आधुनिक शेती अवजारे : आधुनिक शेती अवजारांमध्ये गावामध्ये एकूण ३० ट्रॅक्टर, १२ नांगर, १५ रोटोवेटर ०८ पेरणी यंत्रे आणि ०६ मळणी यंत्रे आहेत तसेच शेतीसाठी अद्ययावत उपयुक्त अशी इतर १० वेगवेगळी अवजारे आहेत.

५. शेती पूरक व्यवसाय:

१५ घरातील सर्वेक्षण केल्यानंतर आपणास म्हैसी ५९ गाई २३० शेळी व मेंढी १८ इतके दिसून येतो. व तेथील लोकांचा मुख्य उद्योग हा दुग्ध व्यवसाय आहे. काही लोकांचे घर दुग्ध व्यवसायावर अवलंबून आहे.

६. कृषी सुविधा :

१) कृषी वित्त: गावातील सार्वजनिक विकास सोसायट्या, पतसंस्था, जिल्हा मध्यवर्ती बँका, राष्ट्रीयीकृत बँकांमार्फत शेतीला वित्तपुरवठा केला जातो.

२) पाणलोट क्षेत्र: गावात पाणलोट क्षेत्र विकासाची कामे अतिशय चांगल्या पद्धतीने राबविण्यात आली आहेत.

३) पावसाचे पाणी साठवण: रेनवॉटर हार्वेस्टिंगसाठी उतार खाणकाम, बंधारे बांधणे, तळी असे जास्तीत जास्त पाण्याचे भूगर्भात पुनर्भरण करण्याचे प्रकल्प या गावात चांगल्या पद्धतीने राबविण्यात आले आहेत.

४) सेंद्रिय खत निर्मिती: जनावरांचे शेण, मलमूत्र, वनस्पतींच्या अवशेषांपासून कंपोस्ट तयार केले जाते. गावात गांडूळ खत प्रकल्पही आहेत.

५) जवाहर विहीर योजना: या योजनेतर्गत अल्पभूधारक शेतकऱ्यांना विहिरी उपलब्ध करून देण्यात आल्या आहेत. यामुळे येथील शेतकऱ्यांच्या कृषी उत्पादनात वाढ झाली आहे.

कृषी समस्या:

- १) मातीची धूप
- २) सिंचनाच्या अपुन्या सुविधा
- ३) अपुरा वीज पुरवठा:
- ४) पिकावरील रोग :
- ५) सुधारित संकरित बियाणांचा कमी वापर
- ६) रासायनिक खतांचा अति वापर
- ७) पारंपारिक कृषी अवजारे
- ८) शेतजमिनीचा लहान आकार

निष्कर्ष :

१) मृदा संवर्धन: मृदसंधारणाची कामे गावात उताराच्या बाजूने करावीत.

२) पीक विमा / पीक संरक्षण योजना: दुष्काळ, अतिवृष्टी, गारपीट, धुके, वणव्याची आग, रोगग्रस्त वातावरण यासारख्या नैसर्गिक आपत्तींपासून संरक्षण आणि नुकसान भरपाई मिळावी. पिकांचे किडीपासून संरक्षण करावे.

३) पाणलोट विकास कार्यक्रमांला प्रोत्साहन: हा कार्यक्रम अधिक सक्षमपणे राबविण्याची गरज आहे.

४) सहकार चळवळीला चालना: भ्रष्टाचाऱ्यांच्या संधिसाधूपणामुळे आज सहकार तुटला आहे. परंतु शेतकऱ्यांना कमी दरात कर्जपुरवठा करण्याचे अधिकार दिले पाहिजेत. बियाणे, खते, कीटकनाशके यासाठी कमी दरात कर्ज उपलब्ध करून द्यावे.

५) सेंद्रिय खत निर्मिती प्रकल्पांना प्रोत्साहन: शाश्वत कृषी विकासाच्या दृष्टिकोनातून, कंपोस्ट, गांडूळ खत यांसारख्या सेंद्रिय खतांच्या उत्पादनासाठी आणि वापरासाठी जनजागृती आवश्यक आहे.

६) शेतमालाला रास्त भाव मिळवून देण्यासाठी बाजारपेठांची निर्मिती: शेतमालाला उत्पादनखर्चावर आधारित रास्त भाव मिळावा यासाठी मध्यस्थांचे पूर्णपणे उच्चाटन केले पाहिजे. प्रसंगी शासनाने माल खरेदी करून त्यांना आर्थिक मदत करावी.

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Geographical Study of Landuse Efficiency in Sangli District (Maharashtra)

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Abstract:

Landuse refers to how people use the land, including the economic and cultural activities that take place on it. Cropping intensity is a ratio between gross cropped area and net sown area in a component areal unit. The Sangli district is one of the southernmost district of Maharashtra State. The present research paper is giving emphasis on the landuse and cropping intensity of the study region. Study is based on secondary source of data which is collected from district socio economic abstract of Sangli district. The study of landuse pattern in the study region is classified into five categories i.e. Area under Forest, Area not Available for Cultivation, Other Uncultivable Land, Fallow Land and Net Sown Area. The net sown area is significant in the study area basically riverside fertile plains region has more area under cultivation. Cropping intensity is high in tehsils where well-developed irrigation facilities and fertile black soil.

Introduction:

The concept of landuse is related to the use of which land is put in a certain reason at a given period of time. Landuse is related to conservation of land from one major use to another general use (Nanvati, 1951). Changing man - environment relationship also play an important role in defining the landuse of a particular region. The basic objective of landuse pattern is to utilize the limited available land. Landuse patterns are complex and dynamic. Landuse analysis shows the status of land utilization for different purpose in an area.

Landuse efficiency can be defined as the extent of net sown area. The gross cropped area as percentage to the net area sown provides a measure of landuse efficiency which means cropping intensity and represents the number of crops grown on the same area in only one agricultural year (Singh, 1972). The main objective of landuse efficiency is to examine the regional

differences in agricultural efficiency of the study area.

Objectives:

The main objective of the present work is to highlight and assess the landuse pattern and landuse efficiency of the Sangli district.

Data Collection And Methodology:

Present study is generally depends on the secondary source of data which is collected from socio-economic abstract of Sangli district 2023-24. The collected secondary data has been processed, tabulated and interpreted. The landuse efficiency is calculated by using the following formula –

$$\text{Landuse Efficiency} = \frac{\text{Gross Cropped Area}}{\text{Net Sown Area}} \times 100$$

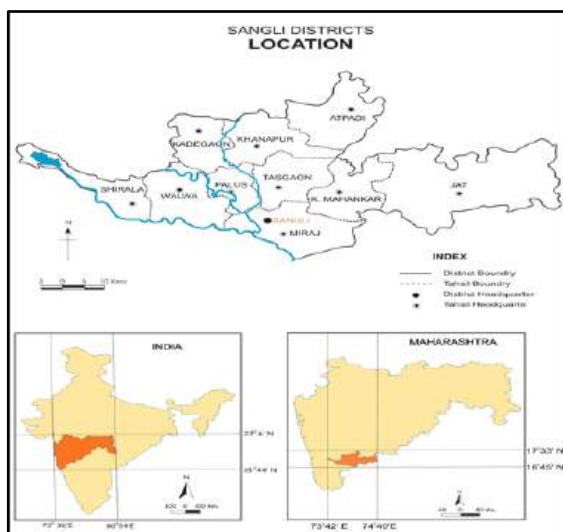
Statistic techniques such as mean and standard deviation has been used for the categories of low, moderate and high cropping intensity area of the study region

in. On the basis of these statistical techniques result and conclusion are drawn.

Study Area:

The Sangli district is one of the district of Maharashtra state and situated between the latitude of 16°43' North and 17°38' North and the longitude of 73°41' East and 75°41' East. It is bounded by the Satara district on the north western side, southern part is bounded by Belgum and Bijapur district of Karnataka state and Ratnagiri and Kolhapur district lies on the western part of Sangli district.

Fig. 1



The study region covers an area of 8,572 sq. km. of supporting 28, 20,575 population according to 2011 census. Administratively it consist of ten tehsils Viz., Shirala, Walwa, Palus, Kadegaon, Khanapur, Atpadi, Tasgaon, Miraj, Kavathemahankal, and Jath. The region receives rainfall mainly from south-west monsoon. Sangli district has a well-developed drainage pattern by Krishna, Warna, Yerala, Agrani, Nanni and Bor.

Landuse Pattern:

The concept of landuse is relates to the use of land that is used for specific activities over a period of time. A landuse study is of great importance as it can give a picture of the intensively used and unused land of an area.

Table No. 1: Tehsil Wise Land Use Pattern in Sangli District: 2023 - 24 (Area in Percent)

Tahsil	Geographical Area	Area Under Forest	Area Not Available For Cultivation	Other Uncultivable Land	Fallow Land	Net Sown Area
Shirala	63417	30.32	18.21	0	4.57	46.90
Walwa	84567	11.72	10.50	1.46	2.48	73.84
Palus	24436	0	11.34	0	3.30	85.36
Kadegaon	58056	7.68	16.11	0	7.51	68.70
Khanapur	72725	15.13	20.26	2.97	4.90	56.74
Atpadi	85654	1.80	18.25	14.53	19.77	45.65
Tasgaon	79866	5.30	16.53	0	4.68	73.49
Miraj	92102	2.21	16.72	1.44	6.61	73.02
K. Mahankal	73489	2.52	13.07	11.75	15.50	57.16
Jath	224538	5.85	4.76	2.97	5.24	81.18
District	8,58,850	7.52	12.65	3.76	7.26	68.81

Source: Computed by researcher based on Socio-Economic Abstract of Sangli District, 2023-24

Table No. 1 shows the landuse pattern of the study region. Total geographical area of the study region is

8,58,850 hectare. The proportion of area under forest is 7.52 percent to the total geographical area of the region. Out of total

geographical area 12.65 per cent area is not available for cultivation which is covered by industries, settlement and transport network. The proportion of area under fallow land is 7.26 percent while area under agriculture is 68.81 percent of the total geographical area of the study region.

Area under Forest:

The western part of Sangli district is covered by Sahyadri hilly region and therefore densely forested. About 7.52 percent of the area in the district is covered by forest. The tehsil-wise distribution of forests shows variation. The Shirala tehsil cover highest percent of forest with 30.32 percent and followed by Khanapur and Walwa tehsils. In general forest cover is decreased from western part to eastern part the study region because eastern part of Sangli district is drought prone region.

Area not available for cultivation:

Land under non-agricultural uses, barren and uncultivable land is included in this group. Area under non-agricultural uses includes land occupied by road, water bodies, buildings and railway network etc. The average proportion of such land in study region is 12.65 percent. Highest proportion is observed in Khanapur (20.26 percent) tehsil and lowest was in Jath tehsil with 4.76 percent.

Other Uncultivable Land:

This group includes permanent pastures, land under tree crops, cultivable wastelands and broken grounds. In the study area average proportion of such land is 3.76 percent. Highest proportion of other uncultivable land is observed in Atpadi tehsil with 14.53 percent and lowest was in

Shirala, Palus, Kadegaon and Tasgaon tehsils.

Fallow Land:

Fallow land is land that is not under cultivation at present but it was under cultivation in the past. It can be divided into two groups which are current fallow and permanent fallow land. In study area average 7.26 percent fallow land has been found. Highest proportion of fallow land is found in Atpadi tehsil with 19.77 percent whereas lowest proportion of fallow land is observed in Walwa tehsil with 2.48 percent.

Net Sown Area:

The land which is actually under crops in the current year is called as net sown area. About 68.81 percent of the land is under various crops in the study area. The highest proportion of net sown area is found in Palus tehsil with 85.36 percent due to availability of water and fertile soils. Lowest proportion is observed in Shirala tehsil (46.90 percent) due western part of Sangli district is hilly region.

Landuse Efficiency:

Cropping intensity refers to number of times crops are grown and harvested on a given area of land within a year. This can be calculated using the formula:

$$\text{Landuse Efficiency} = \frac{\text{Gross Cropped Area}}{\text{Net Sown Area}} \times 100$$

Gross cropped area is the total area sown once or more than once in a year. Net sown area is the total area sown including crops and orchards, counting the area sown more than once in the same year only once. Table No. 2 shows tehsil wise cropping intensity of the study region in 2023 - 24.

Table No. 2: Tehsil Wise Landuse Efficiency in Sangli District: 2023 - 24 (Area in hectare)

Tahsil	Gross Cropped Area	Net sown Area	Cropping IntensityPercent
Shirala	38100.5	20300.5	187.68
Walwa	72946.82	70128.82	104.02
Palus	26561	21678	122.53
Kadegaon	47541.65	28949.65	164.22
Khanapur	38383.75	28828.75	133.14
Atpadi	35282.35	31861.15	110.74
Tasgaon	61334.7	49162.7	124.76
Miraj	75814.15	55942.46	135.52
Kavathe Mahankal	47628.6	36072.6	132.04
Jath	181230.22	156817.22	115.57
District	624823.74	499741.85	125.03
Mean			133.02
SD			24.06

Source: Computed by researcher based on Socio-Economic Abstract of Sangli District, 2023-24

Table No. 3: Sangli District: Area of Landuse Efficiency (2023 - 24)

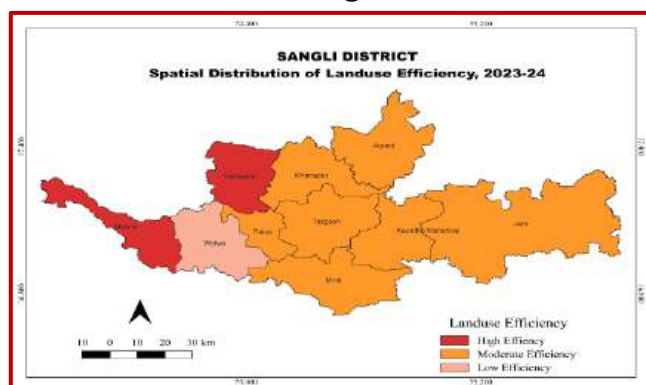
Category	Intensity Value	Name of Tehsils
Area of High Efficiency	Above 157.08 %	Shirala, Kadegaon
Area of Moderate Efficiency	108.96 % to 157.08 %	Miraj, Khanapur, Kavathe Mahankal, Tasgaon, Palus, Jath, Atpadi
Area of Low Efficiency	Below 108.96 %	Walwa

Source: Computed by researcher based on Socio-Economic Abstract of Sangli District, 2023-24

Area of Low Efficiency (Below 108.96 %):

Area of low efficiency is distributed in Walwa tehsil with 108.96 percent. Because Walwa tehsil are located in river basin area therefore there are fertile black soil, high availability of water for irrigation and relatively high amount of rainfall received resulted in high cultivation of cash crop like sugarcane. As the area under sugarcane crop is more, the gross cropped area is less as compare to other tehsils and hence low cropping intensity.

Fig. 2



Area of Moderate Efficiency (108.96 % to 157.08 %):

Areas of moderate efficiency are confined to Miraj (135.52 percent), Khanapur (133.14 percent), Kavathe Mahankal (132.04 percent), Tasgaon (124.76 percent), Palus (122.53 percent), Jath (115.57 percent) and Atpadi (110.74 percent) tehsils. All these tehsils has medium developed of irrigation facilities, grey, medium to black soil, some part of these tehsils are hilly region, other natural as well as socio economic factors resulted low cultivation annual crop like sugarcane therefore leads to high cultivation of other crops.

Area of High Efficiency (Above 157.08 %):

High efficiency observed in Shirala tehsil with 187.68% because there having shallow red soil, heavy rainfall as well as raise of irrigation which suitable for rice, soybean also summer groundnut cultivation. In Kadegaon tehsil because of fertile black soils and well developed irrigation facility as

well as the developed agricultural techniques of this region gives high efficiency with 164.22 percent.

Conclusion:

The area under forest in the study area is observed with 7.52 percent, it needs to be increased in the forest. The net sown area is significant in the study area basically riverside fertile plains region has more area under cultivation. Area not available for cultivation is covered by industries, settlement and transport network. The area under fallow is higher in eastern part of the study region whereas the area under agriculture is higher in central and western part of the district. Landuse efficiency is high in Shirala and Kadegaon tehsils because of well-developed irrigation facilities and fertile black soil. Moderate efficiency is in Miraj Khanapur, Kavathe Mahankal, Tasgaon, Palus, Jath and Atpadi tehsils of Sangli district. Walwa tehsil located in river basin area, fertile black soil and high availability of water resulted in high cultivation of sugarcane hence the gross cropped area is low.

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Geographical Study of Sustainable Tourism and Conservation in Sangli District

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Abstract:

Sangli District, located in the western part of Maharashtra, is a region rich in culture, history, and natural beauty. The district's tourism sector has been steadily growing, thanks to its scenic landscapes, historic temples, and wildlife sanctuaries. However, this growth brings challenges related to environmental conservation and sustainable tourism practices. This paper explores the relationship between tourism and conservation in Sangli, focusing on sustainable tourism models, conservation efforts, and the impact of tourism on the environment and local communities. By examining current initiatives and proposing strategies, this study aims to contribute to the sustainable development of Sangli's tourism industry.

Introduction:

Sangli District, located in the southwestern part of Maharashtra, is a region with a unique blend of natural beauty, historical heritage, and agricultural significance. The district's growing tourism industry has attracted visitors from across the country and abroad, offering a wide range of attractions, including scenic landscapes, temples, historical forts, and wildlife sanctuaries. However, with this growth comes the challenge of ensuring that tourism development does not compromise the region's cultural, environmental, and economic well-being.

Sustainable tourism has emerged as a key strategy to address these challenges. It aims to promote tourism that meets the needs of present tourists and host regions without compromising the ability of future generations to meet their own needs. In Sangli, this approach is especially crucial given the district's vulnerability to

environmental degradation, such as water scarcity, deforestation, and the pressure placed on local ecosystems by increasing tourist numbers. Moreover, the preservation of cultural heritage, which attracts tourists in the first place, must also be considered.

The primary objective of this research is to examine the interplay between tourism development and conservation efforts in Sangli District. By exploring the region's historical and eco-tourism assets, identifying the impacts of tourism on the environment and local communities, and analyzing existing conservation measures, this paper aims to contribute to the broader conversation on sustainable tourism development. Additionally, the study seeks to propose strategies that will allow Sangli to continue to benefit from tourism without sacrificing its natural and cultural heritage.

The significance of this research lies not only in its potential to inform local tourism policy but also in its contribution to

the global understanding of sustainable tourism practices in regions similar to Sangli those balancing agricultural, cultural, and tourism demands.

Study Area:

Sangli District is situated in the southwestern part of Maharashtra, approximately 250 kilometers from the state capital, Mumbai. The district is bordered by Kolhapur to the south, Satara to the north, and Belgaum in Karnataka to the east (fig.1). The district covers an area of about 8,771 square kilometers and is home to a population of over 2.5 million people. The region is predominantly agricultural, known for its production of crops such as sugarcane, grapes, pomegranates, and cotton, which play a key role in the local economy.

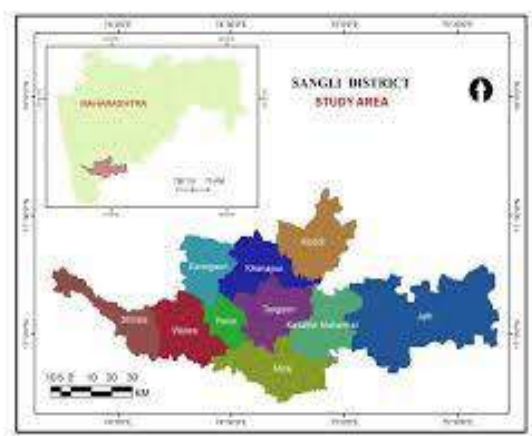


Fig.1: Location Map

The geographic location of Sangli makes it an attractive destination for both historical and nature-based tourism. The district's historical significance is reflected in its many ancient temples, forts, and palaces. The Miraj Palace, the Khandoba Temple in Malkapur, and the Sangli Fort are some of the prominent historical sites that attract visitors interested in the region's cultural and architectural heritage.

In addition to its historical assets, Sangli boasts several natural attractions. The Krishna river, which flows through the

district, is a major source of water for the region and offers recreational opportunities such as boating and fishing. The Radhanagari Wildlife Sanctuary, located on the outskirts of the district, is another key attraction, home to diverse flora and fauna, including several endangered species. This sanctuary plays an essential role in biodiversity conservation and provides opportunities for eco-tourism, including trekking and wildlife observation.

Despite these attractions, Sangli faces several environmental challenges, such as deforestation, water scarcity, and pollution, which are exacerbated by the influx of tourists. Thus, the need for sustainable tourism practices is critical to safeguard the region's natural and cultural resources while ensuring that tourism continues to contribute to the local economy. The study area for this research includes the entire Sangli District, with a primary focus on key tourist destinations, conservation areas, and local communities impacted by tourism. The research will evaluate the effectiveness of existing conservation initiatives in preserving the district's heritage and natural resources, while also assessing the socio-economic impact of tourism on local communities.

Data Collection:

Data for this research was collected from multiple sources to provide a comprehensive view of the sustainable tourism practices in Sangli District. The following methods were used:

Primary Data: Surveys and interviews with local residents, tourism officials, and visitors to gather firsthand information on tourism impacts, awareness of conservation, and sustainability practices.

Secondary Data: Reports and documents from the Maharashtra Tourism Development Corporation (MTDC), the Forest Department (Radhanagari Wildlife Sanctuary), local government publications,

and environmental NGOs that focus on tourism and conservation.

Field Observations: Site visits to key tourist destinations (e.g., Krishna river, Radhanagari Sanctuary) to observe and document tourism activities, waste management practices, and conservation efforts.

Data Methodology:

The methodology for this research follows a mixed-methods approach, combining both qualitative and quantitative data analysis to provide a holistic view of sustainable tourism and conservation in Sangli. The process includes the following steps:

Quantitative Analysis:

Data collected from surveys (tourists, local residents, and businesses) on topics such as tourist inflow, local revenue from tourism, and the impact of tourism on local infrastructure. This data is then analyzed using basic statistical techniques to identify trends and patterns.

Example: A survey was conducted with 200 tourists visiting the Radhanagari Wildlife Sanctuary, asking questions about their awareness of sustainable tourism practices and their willingness to pay for eco-friendly services.

Qualitative Analysis:

The semi-structured interviews with key stakeholders, including government officials, conservationists and local business owners have been considered. These interviews help understand the challenges faced in balancing tourism development with conservation and sustainability.

Spatial Analysis:

Geographic Information Systems (GIS) technology is used to map key tourist spots, conservation areas, and infrastructure developments. A study map will be created to illustrate areas of interest, showcasing both developed and underdeveloped regions in terms of tourism and conservation.

Importance of Sustainable Tourism:

Sustainable tourism refers to the management of tourism in a way that does not degrade or exhaust the resources of a region. In Sangli, sustainable tourism would involve protecting its natural and cultural heritage while ensuring that tourism contributes to local economic development. This paper focuses on three key aspects of sustainable tourism:

Economic Sustainability: Ensuring that the tourism industry contributes positively to local businesses and employment.

Environmental Sustainability: Protecting natural resources such as water, flora, and fauna while promoting responsible travel.

Cultural Sustainability: Preserving and promoting the cultural heritage of Sangli while engaging tourists in meaningful, respectful experiences.

Tourist Attractions in Sangli District:

Sangli District has a variety of attractions that appeal to different kinds of tourists:

Historical Sites: The Miraj Palace, Sangli Fort, and ancient temples like the Khandoba Temple in Malkapur.

Eco-tourism: The Radhanagari Wildlife Sanctuary, known for its rich biodiversity, and the Krishna river, which offers scenic views and recreational opportunities.

Cultural Heritage: The traditional handicrafts, food, and festivals such as the Sangli Ganapati Festival attract cultural tourists.

Challenges of Sustainable Tourism in Sangli:

While tourism presents opportunities for local economic growth, it also poses several challenges:

Environmental Degradation: Increased waste, water pollution, and overexploitation of natural resources due to unregulated tourism activities.

Cultural Erosion: The commercialization of cultural heritage sites and loss of local traditions.

Overcrowding: Tourism can lead to congestion, particularly in popular areas like temples and wildlife sanctuaries.

Statistical Analysis:

Table 1: Tourist Inflow and Revenue in Sangli District (2015-2023)

Year	Number of Tourists	Revenue (in ₹ Lakhs)	Local Employment (in %)
2015	2,50,000	300	10
2016	3,00,000	350	12
2017	3,50,000	400	14
2018	4,00,000	450	16
2019	4,50,000	500	18
2020	2,00,000	200	5
2021	3,00,000	350	12
2022	4,50,000	550	20
2023	5,00,000	600	22

Compiled by researcher

Conservation Efforts in Sangli:

Various initiatives have been undertaken to balance tourism with conservation:

Wildlife Protection: The Radhanagari Wildlife Sanctuary has implemented measures to protect endangered species and prevent habitat destruction.

Waste Management: Local authorities have introduced waste management policies in tourist-heavy areas.

Awareness Campaigns: NGOs and the local government are working together to educate tourists about responsible tourism practices

Sustainable Tourism Models for Sangli:

To address the challenges and promote sustainable tourism in Sangli, several models can be adopted:

Eco-Tourism Initiatives: Promoting low-impact tourism in areas like the Radhanagari Wildlife Sanctuary, with nature-based tours, wildlife observation, and eco-friendly accommodations.

Community-Based Tourism: Engaging local communities in tourism development, ensuring they benefit economically and socially from tourism activities.

Cultural Preservation Programs:

Implementing policies that protect the district's cultural heritage, such as limiting commercialization around religious sites.

Conclusion:

In conclusion, sustainable tourism in Sangli District is not only essential for preserving its unique natural and cultural heritage but also critical for ensuring long-term economic growth and social well-being. This research highlights the delicate balance required to foster responsible tourism that benefits both local communities and the environment. The tourism sector has the potential to drive economic development in Sangli by creating jobs, promoting local businesses, and improving infrastructure. However, without a concerted effort to integrate sustainable practices into tourism management, there is a real risk of damaging the very resources that attract tourists to the region.

The study has shown that the district's natural assets, including the Radhanagari Wildlife Sanctuary and the Krishna river, are central to its tourism appeal. Conservation efforts such as wildlife

protection, waste management policies, and awareness campaigns are already in place but require further strengthening to ensure the district can cope with increasing tourist numbers. At the same time, local communities must be involved in tourism planning to ensure that they benefit directly from the industry and that their cultural heritage is preserved.

Moving forward, it is essential for local stakeholders—government authorities, tourism operators, and residents—to collaborate on developing and implementing sustainable tourism policies. This could include eco-tourism initiatives, community-based tourism models, and stricter regulations on waste management and water usage. By promoting these practices, Sangli can serve as a model for other regions in Maharashtra and beyond, demonstrating how sustainable tourism can coexist with conservation efforts to create a more resilient, prosperous, and environmentally conscious tourism industry.

In essence, the future of tourism in Sangli lies in its ability to maintain a harmonious balance between development

and preservation. By embracing sustainable tourism practices, the district can protect its natural resources and cultural heritage, ensuring that future generations can enjoy the region's beauty and history while continuing to benefit from its economic potential.

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Impact of Sugar Factory on Agriculture Development in Karad Tahsil

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Abstract:

Sugar factories contribute significantly to the rural economy by creating employment opportunities and supporting allied industries such as transportation, machinery, and bio-product manufacturing. The introduction of cooperative sugar factories in particular has empowered farmers, giving them greater control over pricing and profits while promoting a sense of collective ownership. However, the increased focus on sugarcane cultivation has also raised concerns regarding soil degradation, water usage, and crop diversity.

This study aims to explore the multifaceted impact of sugar factories on agricultural development in Karad Tahsil, highlighting their role in improving rural livelihoods while addressing the challenges posed to sustainable agricultural practices.

Keywords: *Sugar Factories, Agriculture Development, Karad and Satara.*

Introduction:

Agriculture is the backbone of rural economies, and in regions like Karad Tahsil, it plays a vital role in shaping the livelihood of farmers and the overall development of the area. One significant factor that has contributed to agricultural growth and rural transformation in this region is the establishment of sugar factories. Sugarcane cultivation, being a primary crop in Karad, has driven the establishment of sugar factories, which, in turn, have had a profound impact on the local agricultural landscape.

The sugar industry in Karad Tahsil acts as a key catalyst for agricultural development by providing a stable market for sugarcane farmers, ensuring financial security, and encouraging modern farming practices. Farmers in the region have embraced sugarcane cultivation due to its high profitability compared to traditional crops. This has led to an increased demand for fertilizers, irrigation facilities, and

mechanized farming tools, further modernizing the agricultural sector.

Moreover, sugar factories contribute significantly to the rural economy by creating employment opportunities and supporting allied industries such as transportation, machinery, and bio-product manufacturing. The introduction of cooperative sugar factories in particular has empowered farmers, giving them greater control over pricing and profits while promoting a sense of collective ownership. However, the increased focus on sugarcane cultivation has also raised concerns regarding soil degradation, water usage, and crop diversity.

This study aims to explore the multifaceted impact of sugar factories on agricultural development in Karad Tahsil, highlighting their role in improving rural livelihoods while addressing the challenges posed to sustainable agricultural practices.

Changing Cropping Pattern:

The proportion of area under different crops at a given period in the study region is revealed by a study of shifting cropping patterns. Cropping patterns in the study area are constantly changing due to price fluctuations in agricultural products, government policies, and other physical and non-physical factors. Cropping patterns are influenced by economic, social, and personal variables and environmental elements such as physiographic and meteorological circumstances. The average area under various crops and the relative percentage of each crop in the gross cultivated area has been calculated in the study region.

Cropping Pattern In Karad Tahsil:

For the entire Karad Tahsil, the changing cropping pattern is investigated. More than grain crops, the pattern of cash crops and orchards has altered. The proportion of land planted in cereal crops has decreased. About 85 percent of the land was planted with cereal crops during the investigation period, compared to roughly 65 percent. Sugarcane, Soyabean, Groundnut, and Pulses have seen an increase in area under cultivation, whilst Bajara and Maize have seen a significant decrease in area under cultivation. The changes in the Karad Tahsil are clearly shown in table 3.8. The entire Tahsil's cropping pattern has been studied.

Concept of Development in Geography:

Development is a term that is both region and time-specific. It implies that the definition of development can differ from one area to the next, as well as from one time to the next within the same area. Given that different social sciences have their viewpoints on development due to differences in theory, geographers' new view provides the most comprehensive conceptualization of the development process.

Various disciplines, such as economics, sociology, politics, research,

history, and geography, often deal with the growth process from their perspective. They have their understanding of the creation process, which is in line with the thrust and theory of their respective disciplines. However, among the different social sciences, economics surpasses the contributions of other social scientists. Economists have expressed their views on development in terms of economic growth when it comes to conceptualizing development and formulating development models and theories.

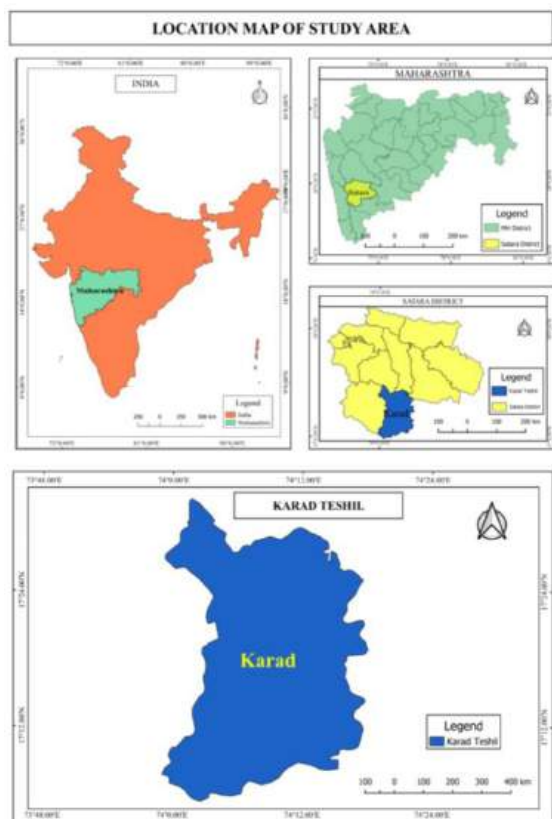
Study Region:

Karad tahsil lies in the Satara district of Maharashtra, India, consisting of 216 villages. Geographically Karad tahsil is located between 17°06' to 17°40'32' North Latitude and 73°05' to 74°01'16' East Longitude. It has an average elevation of 566 meters. It lies at the confluence of the Krishna and Koyana Rivers, called 'Preeti Sangam,' meaning the confluence of love. It has a maximum temperature of 41°C and a minimum of 15°C. The average annual rainfall in Karad is 700 mm and has a total area of 566 m². It is located in a hilly region. The Krishna, Koyana, Uttar mand, Tarali, and their tributaries have well-developed drainage patterns in the study area.

Karad tahsil has a population of 1,63,02,722 people, according to the 2011 census. The sex ratio in Karad tahsil is 972 females per 1000 males, with a literacy rate of 75.54 percent. Basalt is the main stone in this region, with distinctive black soil occupying the river valley. The Deccan trap is the only geological formation in this area. In this region, agriculture is the major occupation.

Objectives of the Study:

1. To study the variable for the agriculture development in Karad Tahsil.
2. To study the impact of sugar factory on Agriculture Development in karad Tahsil.



Research Methodology:

Bhatia's location quotient method of crop concentration is the greatest way to measure spatial distinction in Karad Tahsil's cropping pattern. Eleven major crops, including jowar, bajara, maize, wheat, pulses, sugarcane, fruits, oilseeds, rice, spices, and fibers, were analyzed and measured in the Karad Tahsil.

For the calculation of the location quotient, Bhatia's approach is employed. The

Table: Crop Concentration Calculated by Bhatia's Method in Karad Tahsil

CROPS	1960-61	1970-71	1980-81	1990-91	2000-01	2010-11	2018-19
Rice	2.75	1.57	1.90	1.47	1.48	1.49	0.25
Wheat	1.02	0.51	0.58	0.93	1.23	1.17	0.27
Jowar	8.20	1.00	0.91	0.28	1.24	0.93	0.50
Bajara	0.02	0.10	0.02	0.01	0.08	0.01	0.00
Maize	3.61	2.83	1.25	2.15	4.00	0.39	0.51
Total Pulses	5.93	0.67	0.54	0.38	0.39	0.66	0.10
Sugarcane	2.57	3.20	3.52	3.46	3.33	4.32	2.83
Spices	2.54	2.15	1.79	0.94	0.66	0.57	1.52
fruits and vegetables	0.58	0.51	0.79	0.56	0.47	0.61	1.76
total fibers	0.48	0.24	0.25	1.96	0.47	0.41	0.84
total oilseeds	2.11	2.05	1.89	2.52	2.02	1.47	1.34

Source: Calculated by a researcher

crop concentration in Karad Tahsil is calculated using the formula below.

Index for determining the concentration of crop 'a'

$$= \frac{\text{area of crop 'a' in the entire region}}{\text{Total Cropped Area of all crops entire region}} \times \frac{\text{Area of crop 'a' in the entire region}}{\text{Area of all crops entire region}}$$

There have been significant variations in the area patterns of the crop concentration in the study region.

Crop Concentration in Karad Tahsil:

Crop density variation in a specific area or region at any given moment is referred to as crop concentration. Physiographic, climatic, hydrological, socio-economic, and technological elements that affect crop concentration define the spatial variance in crop density. The location measurement approach is often employed for crop concentration analysis. Many geographers have used this method to estimate the density of individual crops. Geographers such as Florence (1948), Chisholm (1962), Bhatia (1965), and Jasbir Singh (1976) contributed to the use of the quotient method to mark the agricultural zone. Using the quotient approach, Florence (1948) compared a region's contribution to that of the entire country. With the use of the coefficient of localization, Chisholm (1962) attempted to use a quotient to measure the relative regional concentration.

1. 1960-61:

All crop concentrations in the Karad Tahsil are shown in Table 4.4. As can be seen from the table above, jowar and total pulses crops had a high level of crop concentration in 1960-61.

Because irrigation facilities were not built at the time, and a sugar mill had not been constructed, people's attitudes toward agriculture were based solely on substances. Rice, maize, sugar cane, spice, and oilseed crops are all at a medium degree of concentration this year (4-2).

Because of the unfavorable conditions for Bajara crops and fiber crops in Karad, Bajra, fruits and vegetables and fiber crops have a very low crop concentration. The wheat crop is merely sufficient to meet the demands of the household.

2. 1970-71:

Sugarcane crop had the highest level of crop concentration in this decade, as shown in the table above. Sugarcane is the highest level of crop concentration, so the Krishna sugar factory constructed and developed the irrigation facility in 1961. Maize, spices, and oil seeds follow sugarcane. Crop concentration is reported to be moderate. Rice, wheat, bajara, total pulses, fruits and vegetables, and total fiber are all found in relatively low concentrations in this decade.

3. 1980-81:

The total crop concentration in the Karad Tahsil is shown in Table 4.4. The accompanying Table showed a very high concentration of sugar cane crop in 1980-81 (3.52); because a second factory was being built in the study area at this time. Rice, spices, and total oilseed crops have a medium crop concentration. Sugarcane intercropping oil seeds are discovered in the research area. Wheat, jowar, bajara, fruits and vegetables, and fiber crops have very low crop concentrations.

4. 1990-91:

Sugarcane crop had the highest level of crop concentration in this decade, as

shown in the table above. Crop concentration is reported to be moderate. Crops of maize and total oilseeds maize are used as animal feed and a food crop in the research area. Wheat, jowar, bajara, pulses, spices, fibers, and fruits and vegetables crop concentrations have been determined to be very low in this decade.

5. 2000-01:

As shown in Table 4.4, in the Karad Tahsil, a very high-level crop concentration is maize and sugarcane. Sugar cane is the dominant crop in the study region. But maize is mostly intercropping crop in the Karad Tahsil. Mainly Small-scale factories depend on Maize crops. In the Karad tahsil, the medium level of crop concentration is oilseeds. In oilseeds, soybean and groundnut are the most dominant oilseeds crops. Very low crop concentration is found in food crops, spices, fibers and fruit vegetables. This is because these crops are cultivated only to meet their needs.

6. 2010-11:

The crop concentrations in the research area are shown in Table 4.4. Sugarcane was the dominating crop from 2001 to 2010, with very high levels of crop concentration. (4.32).

Many sugar factory irrigation facilities were installed after independence until 2010-11. Compared to other Tahsils in the Satara district, the Karad Tahsil sugarcane crop has a high concentration.

Another crop is a very low-level concentrate food crop, pulses, oilseeds, spices, and fruit and vegetables with very low-level concentration found in the decade 2000-01 to 2010.

7. 2018-19:

Sugarcane has likewise been a high-level crop focus in this decade. Sugarcane is the only crop that concentrates at a very high level compared to other crops.

Agricultural Characteristics:

In rural India, agriculture is a significant sector. This sector directly

Development

employs over 65 percent of the population. Farmers are continually looking for ways to increase their farm's profitability. Farmers will develop their farms if they make more money, but if they grow grain crops, they will not make as much money as if they grow a cash crop like sugarcane. Farmers' profits are reduced due to inappropriate farming methods, aged seeds, irrational fertilizer and pesticide use, lack of agriculture knowledge, and insufficient water availability, among other factors. Sugar factories create a single agricultural development section that takes into account all of these disadvantages. This section offers advice to farmers on improving the quality and quantity of their crops using current and scientific agricultural methods. In this approach, industries take extraordinary steps to help rural farmers.

This section's primary goal is to expand the area under sugarcane cultivation. In the Tahsil of Karad, there are four sugar factories in operation. Two sugar factories operate in the co-operative sector, while the other operates in the private sector. Both enterprises are attempting to ameliorate the situation in the agricultural sector. A few indications clearly illustrate the progress made in the Karad Tahsil.

Irrigated farming and rainfed farming in Karad Tahsil:

Irrigated farming is the predominant type of agriculture in Karad Tahsil, as it is in the Satara district (Bagayati farming). Irrigated farming is a method of farming practiced in areas with an annual rainfall of 200 cm and well-developed irrigation facilities. In a year, there are two main agricultural seasons. The summer season is known as Kharif, and the winter season is known as Rabi. The Kharif season begins in June with the arrival of the south-west monsoon, with seeds being planted in June and July and harvesting in September and October. During the Kharif season, crops that require a lot of water are grown. The rabi season begins in the middle of October when the south-east monsoon arrives. In October, seeds are planted, and harvests are harvested in March and April. During the rabi season, crops that require less water are typically planted. Jowar is the most common rabi crop. Aside from the aforementioned crops, irrigated crops, also known as Bagayati crops, are farmed all year under irrigation. Sugarcane and soybean are the principal crops irrigated artificially in Karad Tahsil. The percentage of farmers in Karad Tahsil who practice two forms of agriculture is shown in table 4.5.

Table: Types of Farming method in Karad Tahsil

Sr.no	Types of Agriculture	Before sugar Factory	Percentage	After sugar Factory	Percentage
1	Irrigated farming	375	41.66	670	74.44
2	Rainfed farming	525	58.33	230	25.55
	Total	900	100	900	100

Source: Based on fieldwork (2019-20).

The sugar factory irrigation scheme, Krishna canal, Gokak scheme, Yevati Dam, and irrigation facilities made accessible to farmers have radically changed the nature of agriculture in the Karad Tahsil, as shown in Table 4.5. As a result, 41.66 percent of farmers practiced irrigated farming before the sugar Factory, while 58.33 percent practiced non-irrigated farming.

With the growth of the sugar business and the development of irrigation systems, the nature of agriculture has radically altered. Irrigated farming is practiced by over 74.44 percent of farmers, while non-irrigated farming is practiced by only 25 percent of farmers.

Farming instruments:

Various types of implements were utilized for agricultural operations between 1960 and 2018, and some of them are

addressed here as the study's reference period. The cultivation of crops necessitates the use of tools. It is difficult to cultivate

without using wooden and iron farming implements. Both of these instruments are powered by animals.

Table: Use of farming instruments in agriculture

Sr.no	Types of instrument	Before Sugar Factory	Percentage	After sugar Factory	Percentage
1	Wooden	706	78.44	308	34.22
2	Iron	194	21.56	592	65.78
	Total	900	100	900	100

Source: Based on fieldwork (2019-20).

A typical implement is a wooden plow, which farmers commonly use. Prior to 1960, food grain production was significant in Karad Tahsil. Farmers in Karad Tahsil were seen utilizing the most wood implements prior to 1970. Farmers employed them in 78.44 percent of cases, despite this region's invention of iron plugs. Iron plugs were not available to everyone even before independence.

In 2018, however, a new sugar factory was established in Karad Tahsil. The sugar factory's economic development goes hand in hand with its development. Farmers'

economic development in Karad Tahsil has improved.

Means of tillages:

Agricultural progress relies on advanced agricultural technology (Kanawade M.C., 1984). Tractors are utilized in some regions for plowing, and oxen are used in others to cultivate the land. Cultivating oxen takes a long time and requires much effort, whereas farming with tractors takes less time and effort. The growth of sugar factories in Karad Tahsil reflects the farmers' economic progress. As a result, farmers choose to cultivate with tractors rather than oxen.

Table: Karad Tahsil: Means of Tillage

Sr. No	Means of Tillage	Before sugar Factory	Percentage	After sugar Factory	Percentage
1	With the help of oxen pair	560	60	314	34.88
2	With the help of a tractor	340	40	586	65.11
	Total	900	100.00	900	100

Source: Based on fieldwork (2019-20).

The above table demonstrates that before the sugar factory, a large percentage of farmers were involved in oxen farming. Farmers engaged in oxen farming accounted for 60 percent of all farmers, whereas tractor farming accounted for 40 percent of all farmers.

The above table illustrates that after the sugar factory, due to the economic development of sugar factories or the economic well-being of farmers, the rate of cultivation with oxen has declined, as it

takes more time and personnel to cultivate with oxen. The number of oxen farmers has decreased to 34.8 percent. The percentage of farmers who use tractors has risen to 65.11 percent.

Trend of growth in the number of tractors:

The study of growth in the number of tractors in the study area is essential. An attempt has been made to trace the number of tractors in Karad Tahsil.

Table : Decadal Growth in the Number of Tractors In Karad Tahsil (Year 1971 to 2011)

Sr. No.	Tahsil	1971	1981	1991	2001	2011
1	Karad	201	416	907	1460	5200

Source: Records of RTO Office Karad Tahsil (Vijaynagar)

The above table depicts the increase in tractors in Karad Tahsil. In the year 1971, the Karad Tahsil had 201 tractors. The distribution differs from one village to the next. In 1971, Karad Tahsil ranked first in the Satara district with 201 tractors. The tractors climbed to 416 in the

Methods of sugarcane cutting:

Table: Methods of sugarcane cutting

Sr. No	Method of Sugarcane Cutting	Count	Percentage
1	Humans	586	65.11
2	Instruments	314	34.89
Total		900	100.00

Source: Based on fieldwork (2019-2020)

When the cane is ripe, it must be gathered by a man or a cane harvester before being delivered to the factory. Karad tahsil has a significant region covered in cane. According to Table 4.9, human labor accounts for 65.18 percent of cane harvesting in Karad tahsil, while machine labor accounts for 34.89 percent.

Changes in Source of Irrigation:

"Irrigation," according to Cantor (1967), is the artificial application of water to the soil for agricultural production. Irrigation is a civilization-old art form. Irrigation water from various sources is applied to the land in a variety of ways, depending on the slope of the field, the kind of soil, and the crop to be lifted. In this regard, data is gathered through distributing questionnaires to sample communities and reinforced by frequent field visits.

Irrigation in the study region began with the opening of the Krishna Canal during the early time of the British administration. Still, the whole building of the rapid began in 1864 and was finished in 1867. They were 60.66 meters long and 7.0 meters tall and were located near Khodashi in Karad Tahsil, across the Krishna. The Krishna canal distributes 160.06 cubic meters of water every second, irrigating

following decade, from 1980 to 1981. The year 2011 was distinguished by significant growth in tractors, which reached 5200 units. The significant development of agro-based sectors and the favorable influence of co-operative sugar factories.

3,079.02 hectares of cultivable land. Prior to this project, the primary irrigation source was mainly wells, and water was lifted using a lift and a water wheel. State and federal governments have started many more irrigation projects to bring a total of 123 acres under irrigation by supplying water through canals and other irrigation sources. Many co-operative societies in the Satara district have developed and built a dense network of lift, drip, and sprinkler irrigation due to government policies encouraging the use of surface and groundwater resources through financial help and subsidies.

Methods of irrigation:

Irrigation is an essential input in agriculture and one of the most significant components of agricultural technology for increasing agricultural productivity. Because sugarcane is a perennial crop, it requires a massive amount of water. As a result, the area under sugarcane has risen due to the creation of sugar factories. As a result, sugar mills assist farmers in constructing various irrigation sources and irrigation plans, among other things. Various types of irrigation sources created and used by farmers in Karad Tahsil are shown in Table 4.10.

Table: Sources of Irrigation

Sr. No	Irrigation Methods	Before sugar Factory		After sugar Factory	
		No of Respondents	Percentage	No of Respondents	Percentage
1	Canal	76	8.44	95	10.55
2	Boar Well	35	3.88	175	19.44
3	Well	275	30.55	190	21.11
4	Lift Irrigation	39	4.33	395	43.88
5	Dep On Rainfall	475	52.77	45	5
Grand Total		900	100	900	100

Source: Based on fieldwork (2019-2020)

Table 4.13 reveals that, before 2001, 52.77 percent of farmers relied on rainfall as their primary supply of water for irrigation. Extensive irrigation is well developed in the southern section of Karad Tahsil, with 30.55 percent of farmers using it. Canal irrigation is used by 8.44 percent of farmers, whereas lift irrigation is used by 4.33 percent.

After the development of sugar factories in 2001, which aided the development of lift irrigation schemes, 43.88 percent of farmers now rely on lift irrigation. Farmers primarily use lift irrigation facilities in Karad Tahsil. Boar well irrigation is used

by 19.44 percent of farms, whereas well irrigation is used by 21.11 percent. The eastern section of Karad Tahsil is now accessible thanks to the completion of the Krishna canal on the Krishna River.

➤ **Types of irrigation systems:**

There are many different irrigation systems, depending on how the water is distributed throughout the field. Surface irrigation, Localized irrigation, Drip irrigation, Sprinkler irrigation, Center pivot irrigation, Lateral move irrigation, Manual irrigation, etc., are the types of irrigation systems. Some common irrigation systems include Traditional, Drip, Sprinkler, etc.

Table: Irrigation Systems in Karad Tahsil

Sr. No	Irrigation Systems	No. of farmers	Percentage
1.	Traditional	554	61.55
2	'Drip	238	26.44
3	Sprinkler	49	5.44
4	Other	59	6.55
Grand Total		900	100.00

Source: Based on fieldwork (2019-2020)

It was critical to analyze the technology of irrigation agriculture when considering the agriculture of Karad Tahsil and its aftermath. When farmers in Karad Tahsil were questioned, it was discovered that traditional irrigation methods were being used more and more. Surface irrigation, targeted irrigation, manual irrigation, and insistence irrigation are all examples of traditional irrigation techniques. Traditional farming methods were found to be used by 61.55 percent of farmers. Drip and sprinkler irrigation systems haven't been

developed extensively in Karad Tahsil because irrigation water isn't a big concern. Drip irrigation was found to be used by 26.44 percent of farmers, whereas sprinkler irrigation was used by 5.44 percent of farmers. Other irrigation systems were seen being used by some farmers.

Types of Fertilizers:

Fertilizers are routinely used to grow all crops, with treatment rates varying depending on soil fertility, which is usually determined by a soil test and crop type. Sugarcane growth is reliant on the

availability of essential nutrients. Even if the soil is capable of natural regeneration, it is unable to offer all of those nutrients on its own. It is required to feed the additional nutrients in order to meet all of the key plant nutrient requirements. Fertilizer has a long-term impact on agricultural growth and is a critical component of agricultural development. Fertilizer application has an essential function in crop yield. There are two types of fertilizers that are used to boost crop output. Sugarcane, for example, necessitates a greater amount of fertilizer. Sugarcane sugar is the most important component. Sugar is a chemical compound made up of carbon, hydrogen, and oxygen found in sugarcane. None of them is derived from the soil.

It is critical that these components develop properly and are preserved.

Sugarcane, for example, necessitates a large amount of fertilizer. Inorganic fertilizers are widely utilized all over the world. This is because the consequences are immediate. Organic fertilizers also increase sugarcane output, but they work much more slowly than inorganic fertilizers. Various fertilizers such as DAP, Urea, 10-26-26, 18-46, 10-15-15, and Superphosphate are commonly used for sugarcane crops. Organic fertilizers are also popular, although they are difficult to come by and are also highly expensive. Compost, cow manure, Neem fertilizers, and poultry waste are some of the most well-known organic fertilizers. And those are both beneficial to enhancing productivity and protecting soil health. Table 4.12 shows the types of fertilizers used by sugarcane producers in the Karad Tahsil before and after 2001.

Table: Fertilizers used by farmers in Karad Tahsil

Sr. No	Type of Fertilizers	Before Factory		After Factory	
		No of Respondents	Percentage	No of Respondents	Percentage
1	Organic chemical	132	14.66	401	44.55
2	Chemical	21	2.34	401	44.55
3	Organic	747	83	98	10.90
Grand Total		900	100	900	100

Source: Based on fieldwork (2019-2020)

According to the table above, 14.66 percent of farmers employ organic and chemical fertilizers before the Sugar Factory. Chemical fertilizers are used by 2.34 percent of farmers. Organic fertilizers are used by 83 percent of farmers.

Farmers in this region were not economically established prior to the sugar business, so more farmers emphasized using organic fertilizers. However, the scenario today, or after 2001, is radically different.

Table 4.12 shows that 44.55 percent of farmers employ organic and chemical fertilizers after the Sugar Factory. 10.90 percent of farmers use organic fertilizers. Chemical fertilizers are used by 44.55 percent of farmers.

Sugar cane varieties:

The study region pilot seed plots are planted with a variety of sugarcane cultivars. Sugarcane seed of the highest quality is the foundation of high-yielding sugarcane. As a result, choosing the right cane seed is crucial. There are a variety of cane varieties accessible right now. Co-671, Co-265, Co-92061, Co-86032, Co-8021, Co-8014, and Co-100001 are important once again. All of these truths are true in practice. Cultivation is done with Co-671, Co-86032, and Co-265.

After 10 to 10 months, the early growth of types is available for harvesting. Early varieties are often planted early in the implant season and crushed in the early part of the crushing season. These cultivars can produce up to 100 to 120 tonnes per hectare. At 12 to 14 months, mid-late maturing

varieties are ready for harvesting. Co-7219, Co-86032, Co-6304, Co-8021, and Co-8014 are the codes. These are typically high-yielding varieties with a moderate sugar recovery rate. The Co- 86032 variety may be found in most sugarcane-growing areas. It yields 110 to 125 tonnes per hectare in Karad Tahsil.

Late-growing cultivars are ready to harvest at the age of 14 to 16 months. Co-62125 and Co-86032 are the codes. In the Karad Tahsil, Co-94012 is a popular variety. The sugarcane variety was created and promoted by the central sugarcane research

institute in Coimbatore. As a result, CO is used to name these properties (Coimbatore).

Cane seeds that are good for you have certain qualities. Only seeds that have been in the ground for at least 10 to 11 months and are still immature with a lot of juice and green buds are acceptable. Plantation of cane seeds with three, two, or one buddings can be done for the sake of ensuring healthy growth and maximum productivity. As a result, sugarcane seeds of this quality are highly sought (Deshmukh S.B., 1983). The sugarcane types grown in Karad Tahsil are the following (Table 4.13).

Table: Karad Tahsil: Sugarcane Varieties

Sr. no.	Verities of sugarcane	No. of farmers	Percentage
1	CO- 671 AND CO-265	180	20
2	CO-265 AND CO- 86032	210	23.33
3	CO- 86032	480	53.33
4	CO- 94012, CO- 671, CO- 8001	30	3.33
Total		900	100

Source: Based on fieldwork, 2019-20

According to table 4.13, around 53.33 percent of farmers favor the co-86032 sugarcane variety. About 23.33 percent of farmers used sugarcane varieties co-617 and co-265, whereas 20 percent preferred sugarcane varieties co-265 and co-671. According to their experience, just 3.33

percent of farmers favor the co-94012, co-671, and co-8001 sorts of varieties.

Sugarcane Total Farm:

In the Tahsil, the number of sugar factories has expanded, as has the number of irrigation facilities for sugarcane. The area under sugarcane in Karad Tahsil is shown in Table 4.14.

Table: Sugarcane total farmland in farmers of Karad Tahsil

Sr. No	Sugarcane Total farm (In Acre)	Before sugar Factory		After sugar Factory	
		No of Respondents	Percentage	No of Respondents	Percentage
1	0_1	718	79.78	180	20
2	1_2	14	1.56	202	22.44
3	2_3	99	11	175	19.44
4	3_4	22	2.44	112	12.44
5	4_5	18	2	49	5.44
6	5_6	29	3.22	26	2.89
7	6_7	0	0	15	1.67
8	7_8	0	0	30	3.33
9	8_9	0	0	22	2.44
10	9_10	0	0	39	4.33
11	10+	0	0	40	4.44
Grand Total		900	100	900	100

Source: Based on fieldwork (2019-2020)

According to the table above, approximately 79.78 percent of people have five acres of land under sugarcane cultivation prior to the Sugar Factory.

Farmers in Karad Tahsil used to grow crops other than sugarcane before the sugar business. As a result, the area under sugarcane is smaller. Only 1.56 percent of

farmers had two acres of sugarcane farmland. According to the findings, farmers were not planting sugarcane on around 6 acres of land.

Sugarcane area will be increased due to the development of several irrigation transportation infrastructures following the Sugar Factory. Following the Sugar Factory, it was discovered that 20 percent of farmers have 1 acre of land dedicated to sugarcane growing. Farmers with two acres of sugarcane land account for 22.74 percent of the total. Only 4.44 percent of farmers have more than ten acres of sugarcane growing area, and 19.44 percent have three acres.

Size of landholding:

Table: Landholding size

Sr. No.	Nature of Landholding	No. of Farmer	Percentage
1	Small farmers (Below 5 acres)	560	62.22
2	Medium farmers (5 to 10 acres)	220	24.44
3	Big farmers (Above 10 acres)	120	13.33
	Total	900	100

Source: Based on fieldwork (2019-2020)

Table 4.21 reveals that small farmers account for 62.22 percent of farmers in Karad Tahsil with less than five acres of land, medium farmers account for 24.44 percent of farmers with five to ten acres of land, and large farmers account for 13.33 percent of farmers with more than ten acres of land.

Intercropping in sugarcane:

With its Ad sali and pre-season planting strategy, sugarcane is a long-term crop. This crop has been on the fields for a long time. Sugarcane seeds require roughly

Landholding size plays an essential role in the growth of agriculture, particularly in the modernization and commercialization of agriculture. Traditionally, Karad Tahsil was an irrigated area. However, with the building of the sugar plant, irrigation conveyance has improved, cropping patterns have altered, sugar cane cultivation has grown, and agricultural mechanization and commercialization have advanced in the region. However, the bulk of farmers continues to employ traditional methods and equipment in agricultural activities because mechanization is not feasible for them due to their modest landholding size. Table 4.19 shows the size of land holdings in the Karad Tahsil.

six to eight weeks sprouting, followed by a six-week filling time before entering the most recent grand phase of growth. When it only begins to grow eagerly and covers the ground. It is feasible to take intercrop during this time, which might finish its life cycle in three to four months. Intercropping like this is more cost-effective than growing sugarcane alone. Sugar mills are encouraging farmers to engage in such intercropping. Farmers in Karad Tahsil are intercropping, as seen in Table 4.16.

Table: Karad Tahsil: Inter cropping in sugarcane Karad Tahsil

Sr. No	Crops Other Than Sugarcane	No, of farmers	Percentage
1	Maize,	24	2.66
2	Pulses	74	8.22
3	Groundnut	320	35.55
4	Soybean	224	24.88
5	Onion	47	5.22
6	Leafy Vegetables	25	2.77
7	No intercropping	186	20.66
	Total	900	100

Table 4.20 reveals that approximately 75 percent of sugarcane farmers engage in intercropping. 2.66 percent of these people prefer maize as an intercropping crop. Maize is used as animal fodder by farmers. Around 35 percent of farmers prefer groundnut as an intercropping crop, whereas 24.88 percent prefer soybean. However, around 20 percent of farmers still plant a single sugarcane crop.

Sugarcane Plantation:

Sugarcane plantations differ from one region to the next. The geographical attribute distinguishes the area in the research region, and sugarcane plantations vary. There are two sorts of plantations. There are two types of plantations: wet and dry. The wet plantation is carried out in light and medium soil types. The line is flooded, and the can sticks are shoved 3 to 6 cm into the soil to keep the buds up. The dry planting is done on high-yielding black soil.

Dry earth is used to press the can sticks. The buds are placed on a sod, covered with soil, and watered.

I] Planting season for sugarcane:

The climate is conducive to sugarcane production. It takes roughly six to eight weeks for sugarcane to mature. Following that, it takes four to six weeks to file, after which it enters the early noble period of growth. It swiftly grows and sheds the earth ultimately. The length of the growing season is determined by the season of agriculture. In Maharashtra, there are four seasons for farming and growing. The Adsali sugarcane seeds take roughly 16 to 18 months to mature. The Adsali orchard is usually used from the end of June until August. Adsali has a good yield per acre. The sugarcane crop before the season, but not as much as adsali. Suru, a seasonal crop, takes roughly a year to mature. In December and January, the orchard is finished.

Table:Period of sugarcane plantation in Karad Tahsil

Sr. No	Period of sugarcane plantation	Count	Percentage
1	Adsali	570.00	63.33
2	Adsali, Suruchi	224.00	24.89
3	Suruchi	106.00	11.78
Grand Total		900.00	100.00

Source: Based on fieldwork (2019-2020)

The Adasali plantation is mostly done in the rainy season, from late June to August. Its growth and maturity are dependent on the passage of 16 to 18 months. As a result, the Adsali sugarcane crop will be in the fold until the next rainy season. Harvesting begins in October and November, followed by the winter, which aids in its growth. Irrigation facilities are required to be more intermediate in the summer. Summer is followed by the rainy season, and ranching begins after the rainy season. As a result, Adsali has a high yield per hectare, and around 63 percent of farmers in Karad Tahsil favor Adsali cultivation.

Suruchi plantation takes place primarily throughout November and December. It takes about a year for it to mature. This Suruchi plantation goes

through two winter and two summer seasons before being harvested. Because the majority of the harvesting takes place in March and April. Suru plantation has a lower yield per hectare than other plantations, and only 12 percent of farmers in Karad Tahsil chose Suruchi planting. These sorts of cane planting procedures are utilized by farmers that have a considerable amount of land. Only 25 percent of farmers in Karad Tahsil choose both plantations.

Conclusions:

1. Growth of the sugar business and the development of irrigation systems, the nature of agriculture has radically altered. Irrigated farming is practiced by over 74.44 percent of farmers, while non-irrigated farming is

- practiced by only 25 percent of farmers.
2. A typical implement is a wooden plow, which farmers commonly use. Prior to 1960, food grain production was significant in Karad Tahsil. Farmers in Karad Tahsil were seen utilizing the most wood implements prior to 1970. Farmers employed them in 78.44 percent of cases, despite this region's invention of iron plugs. Iron plugs were not available to everyone even before independence.
 3. Demonstrates that before the sugar factory, a large percentage of farmers were involved in oxen farming. Farmers engaged in oxen farming accounted for 60 percent of all farmers, whereas tractor farming accounted for 40 percent of all farmers.
 4. Illustrates that after the sugar factory, due to the economic development of sugar factories or the economic well-being of farmers, the rate of cultivation with oxen has declined, as it takes more time and personnel to cultivate with oxen. The number of oxen farmers has decreased to 34.8 percent. The percentage of farmers who use tractors has risen to 65.11 percent.
 5. Human labor accounts for 65.18 percent of cane harvesting in Karad tahsil, while machine labor accounts for 34.89 percent.
 6. Extensive irrigation is well developed in the southern section of Karad Tahsil, with 30.55 percent of farmers using it. Canal irrigation is used by 8.44 percent of farmers, whereas lift irrigation is used by 4.33 percent.
 7. Traditional farming methods were found to be used by 61.55 percent of farmers. Drip and sprinkler irrigation systems haven't been developed extensively in Karad Tahsil because irrigation water isn't a big concern.
- Drip irrigation was found to be used by 26.44 percent of farmers, whereas sprinkler irrigation was used by 5.44 percent of farmers. Other irrigation systems were seen being used by some farmers.
8. 14.66 percent of farmers employ organic and chemical fertilizers before the Sugar Factory. Chemical fertilizers are used by 2.34 percent of farmers. Organic fertilizers are used by 83 percent of farmers.
 9. 44.55 percent of farmers employ organic and chemical fertilizers after the Sugar Factory. 10.90 percent of farmers use organic fertilizers. Chemical fertilizers are used by 44.55 percent of farmers.
 10. 53.33 percent of farmers favor the co-86032 sugarcane variety. About 23.33 percent of farmers used sugarcane varieties co-617 and co-265, whereas 20 percent preferred sugarcane varieties co-265 and co-671. According to their experience, just 3.33 percent of farmers favor the co-94012, co-671, and co-8001 sorts of varieties.
 11. Small farmers account for 62.22 percent of farmers in Karad Tahsil with less than five acres of land, medium farmers account for 24.44 percent of farmers with five to ten acres of land, and large farmers account for 13.33 percent of farmers with more than ten acres of land.
 12. 75 percent of sugarcane farmers engage in intercropping. 2.66 percent of these people prefer maize as an intercropping crop. Maize is used as animal fodder by farmers. Around 35 percent of farmers prefer groundnut as an intercropping crop, whereas 24.88 percent prefer soybean. However, around 20 percent of farmers still plant a single sugarcane crop.

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A Model Village Manyachiwadi Of Patan Tehsil Of Satara District, Maharashtra: A Geographical Study.

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Abstract:

Manyachiwadi village in Patan tehsil of Satara District in Maharashtra has overcome various challenges and become a self-sufficient community and has achieved success in various areas like solar power, water conservation, agriculture, education, health, and sanitation. The village has also implemented innovative initiatives like vermicomposting, biogas, and e-learning through collective efforts of villagers in Manyachiwadi. Village has become an ideal village through implementing innovative initiatives and collective efforts. Manyachiwadi village is considered an excellent example of rural development not only in Maharashtra but also in the whole of India. The unity and hard work of the villagers have proven that any difficulty can be overcome with the right direction and efforts. Since the establishment of the Gram Panchayat in 2001, the village has received 76 awards, with the first one in 2005. It is a model of sustainable development, with leaders from other villages frequently visiting to replicate its success. Due to all these efforts, village is at the forefront in all matters.

Key Words: Manyachiwadi, Recycled Materials, Environmental Friendly.

Introduction:

Manyachiwadi, a village nestled along the banks of the Wang River in the Maladn village of Patan tehsil of Satara district. Since the establishment of the Gram Panchayat in 2001, the village has received 76 awards, with the first one in 2005. It is a model of sustainable development, with leaders from other villages frequently visiting to replicate its success. The village has effectively implemented environmental friendly programs such as waste management, proper drainage, and a consistent water supply. Numerous artworks made from recycled materials like tires, dishes, and plastic items can be seen throughout the village. With the collective efforts of the villagers and approach to energy conservation and solar power transformed Manyachiwadi into a solar-

powered village, earning it the distinction of being the first solar village in Maharashtra. Located at the foothills of the Sahyadri mountain range of Patan tehsil in western Maharashtra, Manyachiwadi is a picturesque village that has gained recognition not only for its natural beauty but also for the remarkable achievements of its residents. A symbol of rural Maharashtra's traditional way of life, Manyachiwadi has overcome numerous challenges; including water scarcity, low agricultural productivity, and limited access to education. Through collective efforts, Manyachiwadi village has become an ideal village through collective efforts. The village has overcome various challenges and become a self-sufficient community. It has achieved success in areas like solar power, water conservation, agriculture, education, health, and sanitation.

The village has also implemented innovative initiatives like vermicomposting, biogas, and e-learning.

Objectives of the research:

1. To study the socio-economic improvements of Manyachiwadi village of Patan tehsil.
2. To study the various environmental friendly changes in Manyachiwadi village of Patan tehsil.

Study Region:

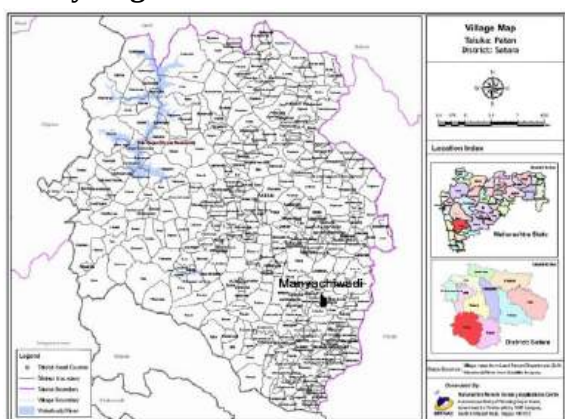


Fig. 1. Study Region

The Manyachiwadi village Patan tehsil is located at 17°25'79" latitude and 73°98'03" longitude and 610 meters and above main sea level in Patan tehsil of Satara district in Maharashtra, India. It is situated 27 km away from sub-district headquarter Patan. The total geographical area of village is 110.82 hectares. The average temperature within the range of 25°C to 30°C with hotter summers and milder winters and the average annual rainfall is around 1631.16 mm. Manyachiwadi has a total population of 420 peoples, out of which male population is 189 while female population is 231. Literacy rate of Manyachiwadi village is 75.71% out of which 85.71% males and 67.53% females are literate. Working population is 33.5 %. There are about 107 houses in Manyachiwadi village.

Research Hypotheses:

Manyachiwadi village had many problems in the beginning and has undergone complete development and now at the forefront in all respects.

Research Methodology:

While selecting the sample for the research, 100 respondents were selected using the purposive sampling method in the non-probability selection method. For the present research, the *Sarpanch*, *Deputy Sarpanch*, *Gram Sevak*, Women's Self-Help Group President, Secretary and Members as well as the local people of the village have been selected according to simple random sampling method to select the sample for the research. To analyze the information and data, averages, tables, percentages, graphs, etc. Statistical techniques have been used.

Data Sources:

The present research is mainly based on primary sources. While collecting data and information, information has been obtained from *Sarpanch*, *Deputy Sarpanch*, *Gram Sevak*, Women's Self-Help Group President, Secretary and Members as well as the local people of the village through questionnaires, interviews and observations. The secondary data were collected from various reference books, District Rural Development Agency reports, various websites, newspapers, etc.

Discussion and Result:

Manyachiwadi village has made its identity as an ideal village due to its collective efforts. Due to the hard work and struggle of the villagers, this village has today emerged as a strong and self-reliant society. Due to all these efforts, Manyachiwadi village is considered an excellent example of rural development not only in Maharashtra but also in the whole of India. The unity and hard work of the villagers have proven that any difficulty can be overcome with the right direction and

efforts. Manyachiwadi has overcome numerous challenges; including water scarcity, low agricultural productivity, and limited access to education. Through collective efforts, Manyachiwadi village has become an ideal village through collective efforts. The village has overcome various challenges and become a self-sufficient community. It has achieved success in areas like solar power, water conservation, agriculture, education, health, and sanitation. The village has also implemented innovative initiatives like vermicomposting, biogas, and e-learning.

Water Conservation and Harvesting:

One of the primary concerns in Manyachiwadi was the scarcity of water. To address this issue, the villagers implemented various water conservation and harvesting measures. These included the construction of check dams, water harvesting structures, and the adoption of water-saving techniques. As a result, the village witnessed a significant reduction in water scarcity, and agricultural productivity increased. Today, the village boasts of a reliable 24/7 water supply, thanks to the efficient use of rainwater harvesting and water conservation methods. Until recently, Manyachiwadi faced severe water scarcity. A water purifier near the panchayat office provides 5 liters of purified drinking water for just ₹1, allowing families to fill their containers and take them home. 98 respondents have responded on water conservation and agricultural improvement. 98% of the people feel that work has been done in this regard.

Agriculture and Economic Progress:

Following the successful water conservation efforts, the farmers of Manyachiwadi adopted modern farming techniques. The village focused on increasing production through organic farming and diverse cropping patterns. This led to an increase in the farmers' income and

an improvement in the village's economic condition. 95 respondents have responded on agriculture and economic development. 95% of the people feel that work has been done in this regard.

Solar Project and Waste Management:

The concept of getting light in every house in the village using natural energy has been realized in every house in this village. Solar energy power supply systems have been installed in every house in the village. This has resulted in a saving of about 60 to 70 percent in household bills. This has helped the citizens of the village save on their electricity bills. Through this, Manyachiwadi has become the first solar village in the state. Manyachiwadi's solar project is nearing completion. The village successfully lobbied for a special government rule change to accommodate the project, building on their existing excellent work in other environmental areas. Residents participating in the solar energy program pay approximately ₹9,000 and receive a ₹30,000 subsidy, making solar energy a financially viable option. This initiative brings the village close to becoming independent from the Maharashtra State Electricity Board (MSEB). The village school, gram panchayat office, anganwadi, and local dairy all run on solar energy, making them a true model of renewable energy. Notably, the gram panchayat office also has a free charging station for electric two-wheelers, encouraging the use of clean energy for transportation. 100 respondents have responded on solar projects and waste management. 100% of the people feel that work has been done in this regard.

Manyachiwadi's waste management is exemplary. The village is clean, with separate bins for plastic and minimal plastic use. The women of the village take pride in keeping their surroundings clean, a daily habit. Drainage water is redirected for agricultural use, for which a small tax is

levied for the service. Additionally, the village has a program that provides ₹51,000 to families to support their daughters' weddings, celebrate the birth of a daughter, and promote gender equality. With the installation of an additional solar system for non-household purposes, such as water supply and the gram panchayat office, the

village's solar capacity has increased to 109 kilowatts. A one-kilowatt solar unit generates approximately 120 units of electricity per month, and the village will generate around 13,000 units of electricity per month. As a result, the village has become 100% self-sufficient in terms of electricity.

Table No. 1. Villagers Satisfied by Development Activities in Manyachiwadi

Sr.No.	Development Activities	Percentage of Satisfied Villagers
1	Water Conservation and Agricultural Improvement	98
2	Agriculture and Economic Progress	95
3	Education and Social Development	99
4	Health and Sanitation	98
5	Solar Projects and Waste Management	100

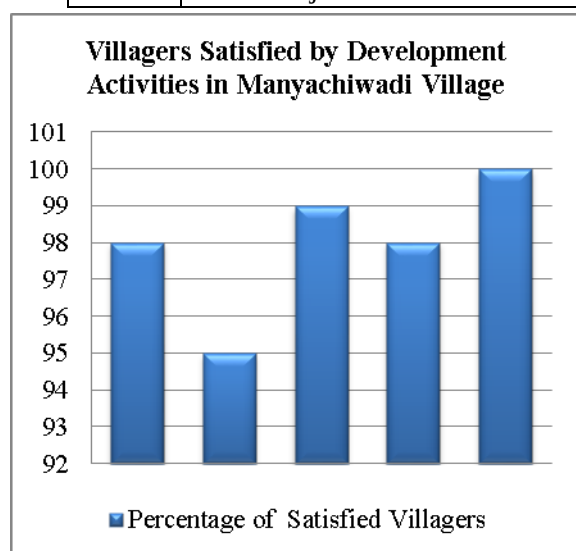


Fig no. 2. Villagers Satisfied by Development Activities in Manyachiwadi

Education and Social Development:

The villagers also collectively focused on the education of their children. Schools and libraries were established in the village, providing children with access to quality education and increasing their future prospects. From a social development perspective, the village has self-help groups for women and organizes various social programs. 99 respondents have responded on education and social development. 99% of the people feel that work has been done in this regard.

Health and Sanitation:

Manyachiwadi has also emphasized health and sanitation. The village has implemented various initiatives to maintain cleanliness, including the Swachh Bharat Abhiyan. The villagers have improved public toilets, roads, and water supply systems, creating a healthy environment in the village. 98 respondents have responded on health and sanitation. 98% of the people feel that work has been done in this regard.

When Mahatma Gandhi's conflict-free village campaign was started, Manyachiwadi won in the very first year and made the village conflict-free. The village has maintained the tradition of unopposed elections at the local level. The five-yearly elections of the Gram Panchayat have also been held unopposed. Keeping a policy of cleanliness and other activities as a part of the cleanliness campaign, Manyachiwadi has preserved cleanliness as a culture.

Manyachiwadi a village in Patan tehsil of Maharashtra has created its own identity due to innovative initiatives like vermicomposting projects in every house, buffaloes in every house, toilets in every house, and internet facilities from the first grade in primary schools.

Observations:

1. Initially, there were many problems in the village such as lack of water, low agricultural income and lack of education.
2. Manyachiwadi village has developed in terms of water conservation and agricultural reforms.
3. Manyachiwadi village has made agricultural and economic progress through various schemes and initiatives.
4. The village has made tremendous progress in terms of education and social development.
5. A large number of people have become aware of health and cleanliness in the village.
6. Along with energy conservation, the village has tried to get rid of load shedding.
7. Manyachiwadi village has moved towards becoming the first solar village in the country in a short period of time.

Conclusion:

Manyachiwadi village has overcome various challenges and become a self-sufficient community and has achieved success in various areas like solar power, water conservation, agriculture, education, health, and sanitation. The village has also implemented innovative initiatives like vermicomposting, biogas, and e-learning through collective efforts of villagers in Manyachiwadi. Village has become an ideal village through implementing innovative initiatives and collective efforts. Manyachiwadi village is considered an

excellent example of rural development not only in Maharashtra but also in the whole of India. The unity and hard work of the villagers have proven that any difficulty can be overcome with the right direction and efforts. Due to all these efforts Manyachiwadi village is at the forefront in all matters.

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Integrating Geospatial Tools in Urban Development Strategies

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Abstract:

Urban areas are characterized by dense populations and human-made infrastructures such as houses, commercial buildings, roads, bridges, and railways, with the majority of inhabitants engaged in non-agricultural occupations. Historically, urban areas were seen as hubs of innovation, economic growth, and opportunities for rural populations to access better healthcare, education, and economic prospects. However, in the modern context, cities now represent both symbols of development and concentrated social challenges. Over time, urbanization has led to significant changes in the spatial and social forms of cities, influencing their size, functions, activities, growth patterns, and interactions with the surrounding environment. To effectively manage these complexities and prevent severe repercussions, it is crucial to utilize geospatial technologies in urban planning and management. The global challenges, such as the COVID-19 pandemic, serve as a stark reminder of the interconnectedness of urban issues worldwide. The solution lies in adopting a "think globally, act locally" approach, with a focus on collective contributions rather than competition.

Keywords: Urban Areas, Human-Made Infrastructure, Innovation, Spatial and Social Forms, Social Challenges.

Introduction:

Urban areas are characterized by a high concentration of people engaged in non-agricultural occupations, with a dense presence of human-made structures such as residential buildings, commercial establishments, roads, bridges, and railways. Historically, urban areas attracted rural populations seeking better access to healthcare, education, and economic opportunities. Cities were seen as engines of innovation and economic growth. However, in the contemporary context, while urban areas continue to symbolize development, they also face a concentration of social challenges. Urbanization has led to significant variations in the spatial and social structure of cities, including changes in their size, functions, activities, growth patterns,

and their relationship with the surrounding environment. In light of these challenges, it is imperative to address urbanization through effective management strategies and the integration of geospatial technologies. Failure to do so may result in severe global repercussions, akin to the challenges faced during the Covid-19 pandemic. This goal can be achieved only through a collective effort where we "think globally but act locally," with a focus on contribution over competition.

Aim & Objectives:

The objective of this research paper is to explore the urban challenges, their causes, impacts, and the role of geospatial techniques in addressing these issues. The specific objectives of the paper are:

1. To highlight the significance of urban areas.
2. To examine the various urban problems and their impacts.
3. To explore potential solutions for urban issues through the application of geospatial technologies.

Scenario of Cities in the World:

Urbanization remains a dominant global trend, particularly in Asia and Africa, shaping international development. Over the past century, the trend toward urbanization has been undeniable. In 1950, there were only 83 cities globally with populations exceeding 1 million, and just 30% of the world's population lived in urban areas. Today, more than 54% of the world's population resides in urban areas, with over 500 cities having populations greater than 1 million. In China, the urbanization rate has surged from a mere 13% in the 1950s to an impressive 80%. Projections indicate that by 2100, the amount of urban land could range from 1.1 million to 3.6 million km², a significant increase from the 0.6 million km² of urban land recorded in 2000.

According to the United Nations, 55% of the global population currently lives in urban areas, with this proportion expected to rise to 68% by 2050. This shift, driven by both urbanization and population growth, is expected to add another 2.5 billion people to urban areas by 2050, with nearly 90% of this increase occurring in Asia and Africa. The trajectory of urban development will have profound and long-lasting effects on the lives of billions of people and the sustainability of the planet's limited natural resources.

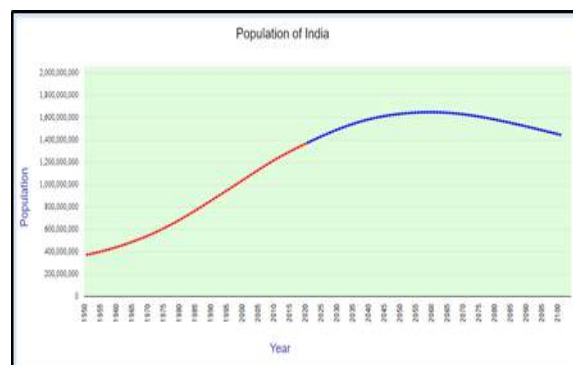
Scenario of Cities in India:

Rapid population growth is the biggest problem faced by the whole world. According to the world population prospects for 2019, 7.7 billion people are estimated worldwide. By the year 2050, it is expected

to grow about 9.7 billion. India is the second largest populated country after China with a total population of 1.36 billion in the year 2019. Urbanization in India is mainly due to the liberalization of its economy after the 1990s, which gave rise to the development of the private sector. Presently, although urbanization is taking place at a fast rate in India, only one-third of its population lives in urban areas.

According to the 2011 census, there are 53 cities in India with a population of a million or more; by 2031, that number will rise to 87. The population residing in urban areas in India, according to 1901 census, was 11.4%. This count increased to 28.53% according to the 2001 census, and crossed 30% as per the 2011 census, standing at 31.16%. According to a survey by the UN State of the World Population Report in 2007, by 2030, 40.76% of the country's population is expected to reside in urban areas.

Figure 1: Year Wise Population in India



Source- Ministry of Statistics and Programme Implementation, UN World Population Prospects 2019

Actually the large numbers of rural-urban migration within the country became the biggest problem for the cities of India so in the year 2015, the Government of India announced the scheme of developing 100 cities as Smart Cities as the increasing problems in the cities results in the disturbance of socio-economic and geographical conditions of these areas.

Table 1: Top 20 Most Populated Cities of India (Census of India, 2011)

Rank	City Name	State/Territory	Population
1	Mumbai	Maharashtra	18,394,912
2	Delhi	Delhi	16,349,831
3	Kolkata	West Bengal	14,112,536
4	Chennai	Tamil Nadu	8,696,010
5	Bengaluru	Karnataka	8,520,435
6	Hyderabad	Telangana	7,749,334
7	Ahmedabad	Gujarat	6,361,084
8	Pune	Maharashtra	5,057,709
9	Surat	Gujarat	4,591,246
10	Jaipur	Rajasthan	3,073,350
11	Kanpur	Uttar Pradesh	2,920,496
12	Lucknow	Uttar Pradesh	2,902,920
13	Nagpur	Maharashtra	2,497,870
14	Ghaziabad	Uttar Pradesh	2,375,820
15	Indore	Madhya Pradesh	2,170,295
16	Coimbatore	Tamil Nadu	2,151,466
17	Kochi	Kerala	2,119,724
18	Patna	Bihar	2,049,156
19	Kozhikode	Kerala	2,030,519
20	Bhopal	Madhya Pradesh	1,886,100

Causes of Urbanization:

Urbanization in India has witnessed significant acceleration, especially after the liberalization of the economy in the 1990s, which stimulated the growth of the private sector. Despite this rapid urban expansion, only about one-third of India's population currently resides in urban areas. Several key factors have contributed to the swift urbanization in the country, including industrialization, which drives the demand for labor and economic opportunities in urban areas. Commercialization has transformed cities into centers of business and trade, attracting people from rural regions. Additionally, the accessibility of social benefits and services, such as improved healthcare, education, and housing, has played a crucial role in drawing people to cities. Employment opportunities, modernization, and changes in lifestyles have also contributed to this trend, as individuals seek better living standards and socio-economic prospects. Furthermore, the rural-urban transformation has acted as a catalyst for the migration of people to urban centers in search of improved livelihoods and amenities.

Positive Effects of Urbanization:

Urbanization, while a hallmark of progress, can have both positive and negative effects depending on its pace and management. When urbanization occurs within controlled limits, it can lead to a multitude of positive outcomes. These include an increase in employment opportunities, as industries and businesses thrive in urban areas. Technological advancements and infrastructural developments are often more concentrated in cities, leading to better transportation, communication, and accessibility to essential services. Urban areas also offer improved educational and healthcare facilities, contributing to higher living standards and a better quality of life. Moreover, the concentration of resources and opportunities in cities fosters an environment conducive to innovation and growth.

Negative Effects of Urbanization

However, unchecked urban growth can have detrimental effects. The rapid influx of people into cities often leads to housing problems, as the demand for housing exceeds supply, resulting in

overcrowded slums and informal settlements. The lack of proper planning can exacerbate issues such as unemployment, water and sanitation problems, and poor health conditions, which can lead to the spread of diseases. Additionally, traffic congestion and power outages become common challenges in fast-growing urban centers. Extreme weather events, rising urban crime, and environmental degradation further complicate the urban experience, creating psychological stress for residents. These negative effects underscore the need for effective urban management strategies to ensure sustainable development.

Management of Urbanization – Towards Sustainable Cities:

To ensure sustainable urbanization, the following strategies should be adopted:

- Building sustainable and eco-friendly cities
- Providing essential services
- Creating more job opportunities
- Implementing population control measures
- Integrating geospatial technologies in urban planning

Government Initiatives in Urban Planning And Development:

There is a lot of investment required in the urban development sector in the next 20 years thereby roughly indicating the parameters to imply the opportunity available for the adoption of geospatial technologies. Recent government programs in the urban development like Smart Cities, AMRUT, and Metro rail projects enable the adoption of geospatial technologies along with various other technological advancements. With an investment as high as 73.5 billion for the Heritage City Development and Augmentation Yojana (HRIDAY) and 14.7 billion for Smart Cities; the government is increasingly encouraging the use of the geospatial component in these

projects. Spatial Modelling, GIS-based centralised city information system, satellite imageries and aerial photos, laser scanning, etc., are few of the major geospatial components of all government initiatives and programs

Use of Geo-Spatial Technology in Urban Planning:

Globalization is dependent on the advancement of technology. Urban cities can only be smart if they are technology-friendly. Only a technologically smart city can develop a smart community. Remote sensing and GIS are entering into the daily life of the people of the 21st century. 3D modeling of the proposed plans, quality management, planned development, smart mapping, the planned expansion of the cities, well-connected infrastructure are the key features of urban planning and sustainable development.

- Today GIS is very important in urban planning
- It can better understand current needs for a city, and then design to fulfill those needs.
- By processing geospatial data from satellite imaging, aerial photography and remote sensors, users gain a detailed perspective on land and infrastructure.
- As urban populations grow and spread, the importance of GIS lies in its ability to pull together the vast amounts of information necessary to balance competing priorities and solve complicated problems, such as optimizing new building placement or determining the feasibility of a waste disposal site.
- These powerful tools help planners understand the needs of densely populated areas, but they also adapt to examining smaller towns and even informal settlements.

- It has the ability to run a variety of queries and analytics on GIS data means experts can evaluate how new construction will fit in with existing infrastructure and meet regulatory demands.
- Users can spot opportunities for improved resource use, identifying the best locations to harvest solar, wind or geothermal energy.
- GIS technology empowers urban planners with enhanced visibility into data.
- It helps to monitor fluctuations over time, evaluate the feasibility of proposed projects and predict their effects on the environment.
- GIS software can also show all relevant stakeholders exactly what the changes on the ground will look like to help them make better decisions. For example, GIS software may generate visualizations of an area's current environmental conditions and allow users to draw comparisons between the anticipated results of proposed development plans.

Figure 2: Geospatial Techniques for Urban Areas

GEOSPATIAL TECHNIQUES FOR URBAN AREAS	3D MODELLING OF THE SMART CITY
	MONITORING OF TRANSPORTATION SYSTEM
	AREAL MAPPING OF THE CITIES
	WATER QUALITY MANAGMENT
	CONTROLLED TRAFFIC MANAGEMENT
	MAINTAINENCE AND MONITORING OF GREEN BELT.
	CRIME MANAGEMENT

Urban planners in both the public and private sectors employ data-driven methods to address a wide array of issues that have long-term implications for communities and the surrounding landscape. Some of the common applications for GIS include:

- Review and analysis of development plans.
- Checks on regulatory compliance.
- Review of environmental impact.
- Preservation of historic sites.
- Regional planning beyond the borders of a city or town.
- Mapping the delivery of utilities and planning for service interruptions.

Conclusion:

As the world continues to urbanize, sustainable development depends increasingly on the successful management of urban growth, especially in low-income and lower-middle-income countries where the pace of urbanization is projected to be

the fastest. Many countries will face challenges in meeting the needs of their growing urban populations, including for housing, transportation, energy systems and other infrastructure, as well as for employment and basic services such as education and health care. Integrated policies to improve the lives of both urban and rural dwellers are needed while strengthening the linkages between urban and rural areas, building on their existing economic, social and environmental ties.

Urban and regional planning is a rewarding field that's full of chances to discover fresh insights and make a difference in the futures of communities. The need of the hour is not just urbanization but smart urbanization; to plan urban development smartly to accommodate more in less, and that too nicely and efficiently. It has permeated almost every sphere of human life today. Using GIS in urban planning, planners can take urbanization to new scales

and manage urban growth need to ensure access to infrastructure and social services for all, focusing on the needs of the urban poor and other vulnerable groups for housing, education, health care, decent work and a safe environment. Hence, we can conclude that in today's scenario GIS has become ubiquitous in urban planning and management.

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Levels of Development in Drought Prone Area of Eastern Sangli District (Maharashtra): A Geographical Perspective

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Introduction:

One of the most common climatic and natural disasters worldwide is drought. Droughts, which can afflict the majority of society and have severe effects on the economy, can linger for months or even years. A drought is a transient, recurrent natural calamity that results from insufficient precipitation and causes large-scale financial losses. It evokes a mood of gloom and hopelessness. Drought can be attributed to water scarcity as both a cause and an effect. Anytime one of the hydrological cycle's linkages breaks or becomes unstable, drought results. Drought is a poison; nobody can anticipate when it will strike, how long it will persist, or how severe it will be.

Due to its wide spatial scope, it may significantly affect the socioeconomic stability of a whole region. There is no way to prevent droughts. However, strategies for preparing for and managing the effects of drought are attainable. The effectiveness of both is dependent, among other things, on the degree to which droughts are identified and their features are measured (Smakhtin et al., 2004). With over 70% of its people reliant on agriculture, India is primarily an agrarian nation. More than 68% of the nation's net sown area is drought prone due to the unpredictable nature of rainfall, of which 50% is severe. Every two to three

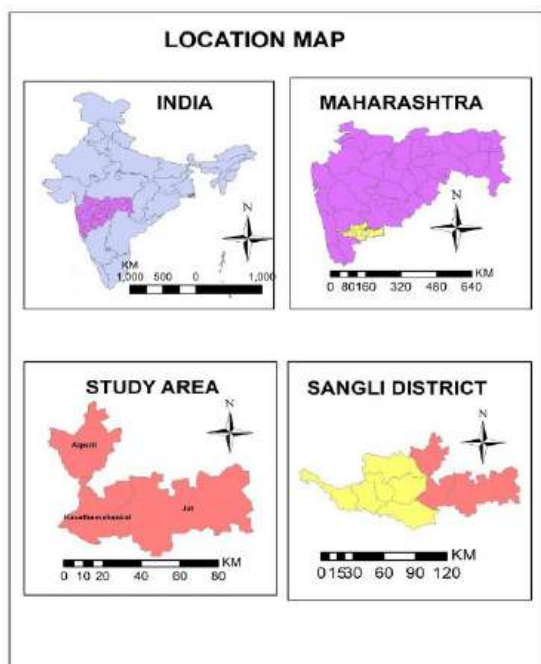
years, there is a drought in one or more regions of the nation.

Any area's capacity to develop depends on its climate, which is also influenced by geographic features and other human variables. Development can be defined as the qualitative improvement of the preceding state or as a shift in the desired direction at the desired speed. The eastern portion of Sangli district is considered a drought-prone area because of the main issue of water shortage brought on by the lack of rainfall; as a result, these types of locations lag behind in terms of development and require further research.

Study Area:

The development levels in the eastern portion of the Sangli district are the main subject of this study. The Sangli district is bordered by the states of Maharashtra and Karnataka and is situated in the far south of the state. The district is bordered to the north by the districts of Satara and Solapur, to the west by the districts of Ratnagiri and Kolhapur, and to the north by the districts of Belgaum and Bijapur in Karnataka. As a result, the district has two distinct cultures. The district, which covers an area of 8591.3 kilometers, is divided into 10 tehsils. The district is separated geographically into three zones: the eastern, central, and western zones. The

eastern zone's study region includes the tehsils of Jat, Kavathe-Mahankal, and Atpadi. Total area of study region is 3792.4 kilometer.



Objectives:

To Find Out Levels of Development in Study Area.

Database and Methodology:

Primary Data:

Both primary and secondary sources of data were used to create the current study. The six study region villages that were chosen for the field survey used a household schedule, and the interview approach was evaluated. The primary data were gathered in this way.

Secondary Data:

The secondary data collected from a variety of sources, including dissertations, books, journals, articles, socioeconomic reviews, the primary census abstract of Maharashtra state from 2001 to 2011, the census reports published by the Indian government in 2001 and 2011, the Socio-economic Review, and the district statistical abstract of Sangli district.

Methodology:

The study primarily uses data from primary and secondary sources to achieve this goal. Primary data were obtained through extensive fieldwork in six chosen villages located in the eastern region of Maharashtra's Sangli district. Three sample villages are chosen from the rural areas of the tehsils, while three sample villages are chosen close to the tehsil headquarters. In all, 120 homes in the sample villages were surveyed. It has aided in our comprehension of the study region's overall growth. However, secondary data have also been used to examine their overall development in the research area as well as their distribution pattern, growth rate, literacy status, and occupational structure. The basic data was collected using a systematic sampling technique, with every third house being evaluated for data collection.

Tehsil and village levels of development were also measured. The socio-economic development of villages, tehsils, and the 2011 and 2001 censuses was based on data from systematic sample surveys conducted between 2017 and 2018. The five socioeconomic indicators of literacy rate, female literacy rate, labor participation rate, percentage of workers in the non-agricultural sector, and sex ratio (i.e., number of females per 1000 male population) are the basis for the composite indexes of development for the tehsil level for the years 2001 and 2011.

The next twelve socioeconomic indicators for the development of villages at the village level include the percentage of people employed in the non-agricultural sector, female literacy, and literacy rate. income per capita (in rupees), Share of households with three or more rooms; percentage of households with two wheels; percentage of households with radios and tape recorders; percentage of households with televisions; percentage of households with pooled and RCC houses; and

percentage of households with latrines. Composite indices are employed in the development process computation.

Data Analysis:

Levels of Development (2001):

The eastern portion of Sangli district, which includes the tehsils of Jat, Kavathe-Mahankal, and Atpadi, is classified as a drought-prone area due to little rainfall and high temperatures, according to the 2001 census. In comparison, three tehsils within the research region had a highly developed Kavathe-Mahankal tehsil. The primary cause of this was the implementation of several irrigation projects, which improved the non-agricultural sector's workforce base, literacy rate, and work participation ratio while also leaving some areas of the Kavathe-Mahankal tehsil in decent condition. Every four to five years, Atpadi Tehsil also experiences a drought because the tehsil is located in a rain shadow area, which results in less rainfall there. This tehsil's sex ratio and literacy rate were both high, but its low labor force participation rate and low number of workers in the non-agricultural sector meant that this indicator lagged behind in the development category. When compared to Atpadi and Kavathe-Mahankal tehsils in the eastern portion of Sangli district, Jat tehsil—which is the largest tehsil in the district based on area—is lagging behind in terms of development. The Jat tehsil is situated in the eastern section of the district. Its horizontal shape means that its climate is similar throughout, with frequent high temperatures and little precipitation.

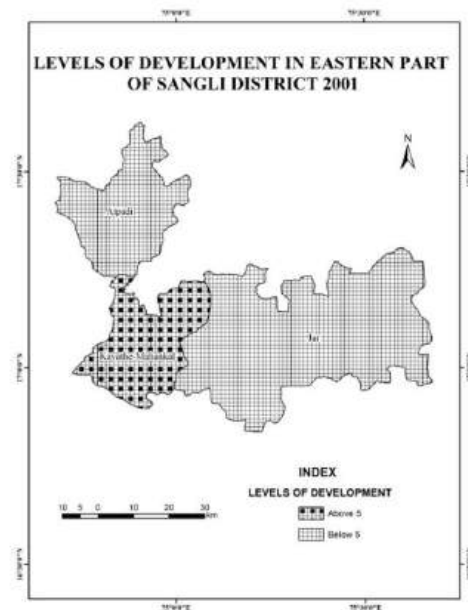
The Jat tehsils work participation rate and percentage of workers in the non-agricultural sector were extremely low, which led to extremely low levels of development in this tehsil. The Kavathe-Mahankal tehsil had an average composite score of 5.09, Atpadi 4.82, while Jat tehsil had an index value of 4.52. The eastern

portion of the Sangli district has an average composite value of 4.81, indicating extremely regressive growth in this area.

Table 1: Levels of Development, 2001

Sr. No.	Tehsil	Composite Index
1	Kavathe-Mahankal	5.09
2	Atpadi	4.82
3	Jat	4.52
	Average	4.81

Source: Census of India 2001, & District Census Handbook, Sangli District.



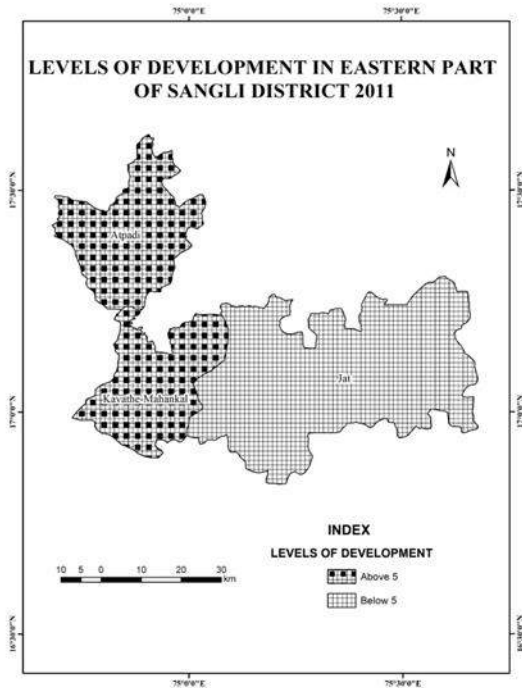
Levels of Development (2011):

In comparison, Kavathe-Mahankal tehsil in the eastern portion of Sangli district was highly developed according to the 2011 census. After that, Atpadi tehsil came and Jat tehsil remained backward, same as the 2001 census, in three tehsils in the study region. Due to irrigation projects, agricultural development has been noticed in Kavathe-Mahankal tehsil over the past 56 years. This tehsil is in better shape because the work participation rate, literacy rate, and number of workers in the non-agricultural sector have all increased during the past ten years. The state of development in Atpadi Tehsil likewise improves, although the percentage of workers who are not in the agricultural sector and their labor force participation rate decline.

Table 2: Levels of Development, 2011

Sr. No.	Tehsil	Composite Index
1	Kavathe-Mahankal	5.29
2	Atpadi	5.27
3	Jat	4.79
	Average	5.12

Source: Census of India 2011, & District Census Handbook, Sangli District



This tehsils sex ratio and literacy rate both increased, but the percentage of workers in the non-agricultural sector and labor participation rate decreased. As a result, this indicator lagged behind and stayed in the same place in the development category. In comparison to the results of Kavathe-Mahankal and Atpadi tehsils, the Jat tehsils levels of development were relatively low. This was evident in the labor participation rate and the low percentage of female literacy among non-agricultural sector workers. Kavathe-Mahankal tehsils average composite values were 5.29, Atpadi tehsils 5.27, and Jat tehsils 4.79 index values. In comparison to other Sangli district regions, the eastern section of the district has very sluggish development, as seen by the average composite value of 5.12 obtained from the 2011 census. According to the 2011

census, Atpadi and Kavathe-Mahankal tehsils are classified as underdeveloped, whereas Jat tehsil is classified as backwardly developed. The map displays the composite index for the top five and below five.

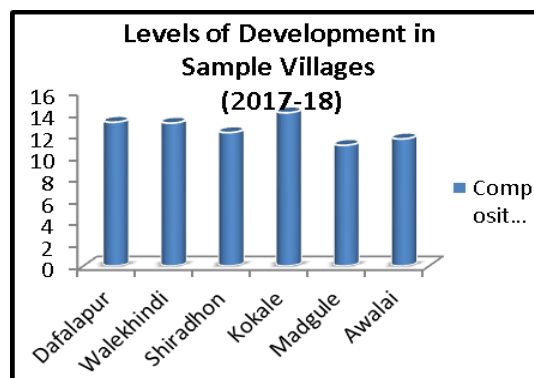
Levels of Development in Sample Villages (2017-18):

Kokale village in Kawarthe-Mahankal tehsil, which has the most development in the sample villages of the eastern portion of Sangli district, has a composite value of 14.08, while Madgule village in Atpadi tehsil has the lowest composite index, at 11.09. Madgule village was found to be weaker than all other sample villages because the majority of the villagers live in kutchha and semi-pucca houses, there are very few household assets, few households are reported to be homeless, and there is little to no agricultural development. However, Kokale village in Kavathe-Mahankal tehsil has the highest levels of development that have been observed. This is because the village is located near a main road, water is available, agricultural development is in a good stage, the work participation rate is high and the majority of the population uses government services, indicating that the economic situation is good.

As a result, the composite value of Kokale village is 14.08 higher than that of the other sample villages. Dafalapur in Jat tehsil has a composite index of 13.21, followed by Walekhindi at 13.13, Shiradhon at 12.26, Awalai at 11.68, and Madgule in Atpadi tehsil at 11.09. These values indicate that the region as a whole is experiencing the same drought issue because the variation between the six villages is not maximum. According to the field study, Kavathe-Mahankal tehsil has the highest level of development, followed by Jat tehsil, which is in the middle category, and Atpadi tehsil, which has the lowest levels of development.

Table 3: Levels of Development in Sample Villages, 2017-18

Sr. No.	Village	Tehsil	Composite Index
1	Dafalapur	Jat	13.21
2	Walekhindi	Jat	13.13
3	Shiradhon	Kavathe-Mahankal	12.26
4	Kokale	Kavathe-Mahankal	14.08
5	Madgule	Atpadi	11.09
6	Awalai	Atpadi	11.68
Average			12.57



Source: Fieldwork 2017-18.

Conclusions:

The above said data clearly shows the degrees of development according to the 2001 census, with Kavathe-Mahankal tehsil having the highest levels of development, followed by Atpadi tehsil and Jat tehsil being classified as having backward development. The research region's development levels have not changed in ten years; only the numbers have. The primary factor influencing development levels is the drought; this is also demonstrated by the data, which show that the development is significantly impacted by the work participation rate and the number of workers in the non-agricultural sector. The data clearly show where the work participation ratio was good that places with the best levels of growth and development.

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Rainfall Variability In Pune Division (1901 to 2023)

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Abstract:

With the help of simple trend attempt has been made to study the variation of rainfall in Pune division. The trends in the monthly, seasonal, annual and decadal average rainfall of Pune division have been studied from 1901 to 2023. The study discusses development of a gridded rainfall data over Pune division high spatial $0.25^{\circ} \times 0.25$ resolution; it's included 94 grid points. The purpose of the present study is to examine rainfall trend over an extensive time interval and a wide area. Statistical analysis of the database highlights increase and decrease rainfall trend over the last 123 years.

Keywords: Rainfall, Gridded data, Trend, Division, Distribution.

Introduction:

Precipitation trend analyses, on different spatial and temporal scales, has been of great concern during the past century because of the attention given to global climate change from the scientific community: they indicate a small positive global trend, even though large areas are instead characterized by negative trends (IPCC, 1996). Rainfall uncertainty is one among the slices of climate variation which has a vital role in many aspects like ecological, economical and aesthetical diversity of the country. In India many studies have been done to investigate the significance of rainfall events with a special concern of monsoonal change and global warming (Balchandran, 2006). In this paper attempt has been made to study an annual variability of rainfall in Pune division over the period 1901 to 2023. The availability of rainfall data is in the form of station wise and gridded. The annual rainfall trend was increases up to 129.95 mm in last 123 years. The average annual rainfall in the study area

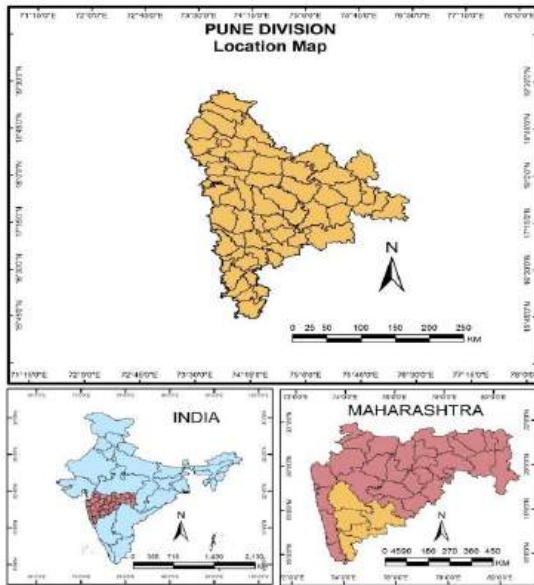
was 1467.9 mm. For the purpose of spatial distribution of rainfall the researcher has been used grids $0.25^{\circ} \times 0.25^{\circ}$ during the same period. In the process of annual trend of rainfall, an atmospheric change plays dominant role or its impact on changing the nature of rainfall, (Ramchandran A. 2014). The second cause behind the spatial nature of rainfall in study region is topographic variation.

Study Area:

The Pune division is located in southwestern part of Maharashtra state. It lies between $15^{\circ}, 45' \text{ N}$ to $19^{\circ}, 0' \text{ N}$ latitude and $73^{\circ}, 32' \text{ E}$ to $76^{\circ}, 15' \text{ E}$ longitude. The area under study comprises of five districts namely Pune, Sangli, Satara, Solhapur, and Kolhapur (Pune Division). The study region occupies a total geographical area of 57275 sq km and habitating 23,449,051 populations as per 2011 census. Physiographical this region can be divided in to three parts namely hilly, plateau and lowlands. In this region temperature is varies

in the internal different parts, the maximum average temperature of the study area is 31.82°C and minimum 20.33°C . An average annual rainfall in the Pune division is 1467.9 mm. There are major two river basins, which are Krishna and Bhima. Most part of the Pune Division has covered by medium black soil.

Fig. No. 1



Data Base and Methodology:

Indian Metrological Department (IMD), Pune has provided monthly station wise rainfall data over Pune Division from 1901 to 2023. The Pune division yearly rainfall and temperature data had taken from the website (www.indiawaterportal.in), from 1901 to 20023. The Pune Division 0.25° by 0.25° gridded rainfall data had obtained from Global Weather Data website from 1979 to 2023. Gridded data are also preferred for the model validations, as the model outputs are generated at fixed spatial grid points. However, depending on the application, requirement of spatial and temporal resolution of the gridded data can be different. (Pai, D. 2014). The rainfall trend calculated with the help of MS- Excel

Windows office 2023. The analyzed data is annual, decadal monthly and season wise for the considering period. The mean, standard deviation and coefficient of variation has been calculated. Here the variability of the annual rainfall has been calculated by using the formula: Coefficient of Variation = Standard Deviation / Mean *100. The spatial distribution of rainfall shows with the help of using Arc Map GIS software.

Objectives:

1. To analyze rainfall trend in the Pune Division.
2. To study the changes in spatio-temporal rainfall in study region.

Annual Rainfall Trend in Pune Division:

A temporal trend describes the long smooth movement of the variable lasting over a span of observations, ignoring the short term fluctuation. The analysis of trend is primarily estimation of the magnitude of trend along with the statistical significance of the value (p -value). Identification of long-term trends in climate change provide information for decision-makers and resource managers that allow them to better anticipate and plan for the potential impacts of climate variability and change (Singh Vivekanand, 2017).

The mean annual rainfall over the Pune division is 1467.90 mm during the period of 123 years (1901-2023). The coefficient of variation of annual rainfall is relatively low (17.8 %). The mean annual rainfall over Pune Division from 1901 to 2023 is showing an in decreasing trend by 129.95 mm (fig.1.a). The increasing trend was notated by 1.15 mm per year. The mean lowest and highest rainfalls were reported 1492.08 mm, which is lowest in 1917 and the highest in 1994 (2029.90 mm).

Table No.1: Monthly Rainfall Trend in Pune Division (1901 to 2023)

Year	Average	S. D.	C.V.	In %
January	0.40	1.60	353.10	0.03
February	1.10	2.60	232.10	0.08
March	2.60	3.40	128.40	0.18
April	15.00	13.00	86.70	1.02
May	44.30	40.10	90.50	3.02
June	333.20	117.80	35.40	22.70
July	452.60	148.30	32.80	30.84
August	290.00	112.70	38.90	19.76
September	188.00	89.30	47.50	12.81
October	98.90	63.90	64.60	6.74
November	35.30	39.10	110.70	2.40
December	6.40	11.60	181.80	0.43
Winter Rainfall	7.90	11.80	149.10	0.54
Summer Rainfall	61.90	42.40	68.40	4.22
SW Monsoon	1263.90	244.50	19.30	86.10
Post Monsoon	134.20	75.10	56	9.14
Annual	1467.90	2610	17.80	100.00

Source: Computed by Researcher, 2025

The decadal trend in mean rainfall over Pune division is observed that increases which is account for 12.51 mm/decade. The decadal mean rainfall recorded was the highest (1628.10 mm) in 1951-60 followed by (1529.5 mm) in 1961-70 and (1524 mm) in 1931-40. The lowest mean rainfall is

recorded in 2011-20 decade and that was 1171 mm followed by 1296.8 in 1921-30 (fig.1.b). The annual decadal rainfall trend increases till 1930 to 1950 continuous increases and there was significant decreases.

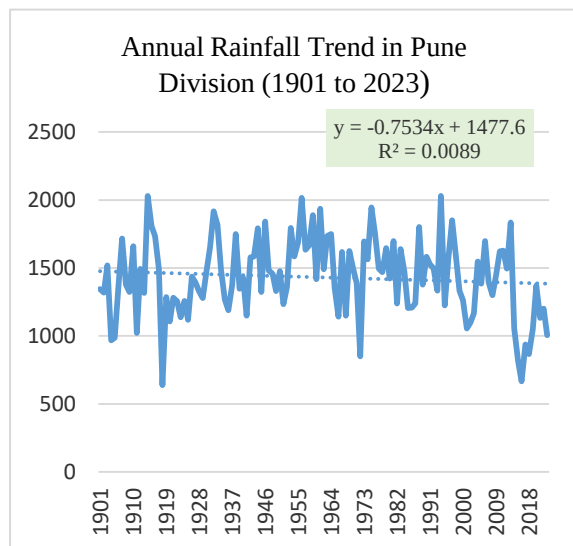


Fig. 2 Annual Rainfall Trend in Pune Division (1901 to 2023)

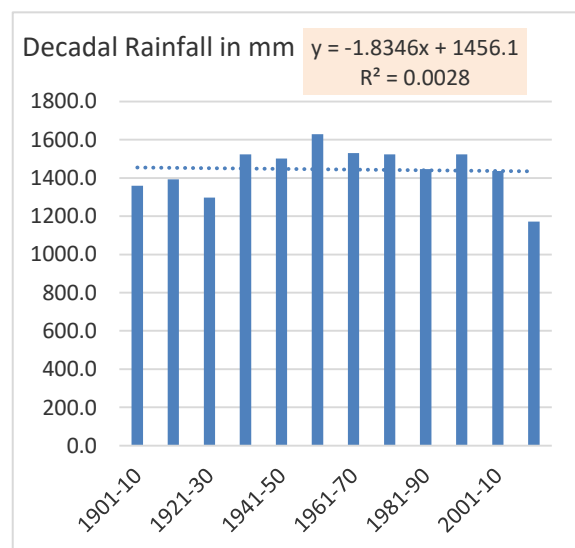


Fig. 3 Decadal Rainfall Trend in Pune Division (1901 to 2023)

Seasonal Rainfall Trend in Pune Division:

A trend is a significant change over time exhibited by a random variable, detectable by statistical parametric and non-parametric procedures (Longobardi A. and Villani P. 2009). The SW Monsoon rainfall over the Pune division is 1263.9 mm during the period of 123 years (1901-2023). The table no. 1.0 shows that the coefficient of variation of SW Monsoon rainfall is 19.30 per cent. The CV is in the month of June reporting 35.40 per cent, July (32.80 %), and

August (38.90 %) are relatively low variation as compare to the September (47.50 %). The SW Monsoon rainfall over Pune Division from 1901 to 2023 presented an increasing trend of 129.95 mm (fig.2.a.). The increasing was at the rate of 0.72 mm per year. The SW Monsoon was the lowest (1492.08 mm) in 1917 and the highest (426.72 mm) in 1918. The Post Monsoon rainfall over the Pune division is 134.2 mm during considering period of 123 years.

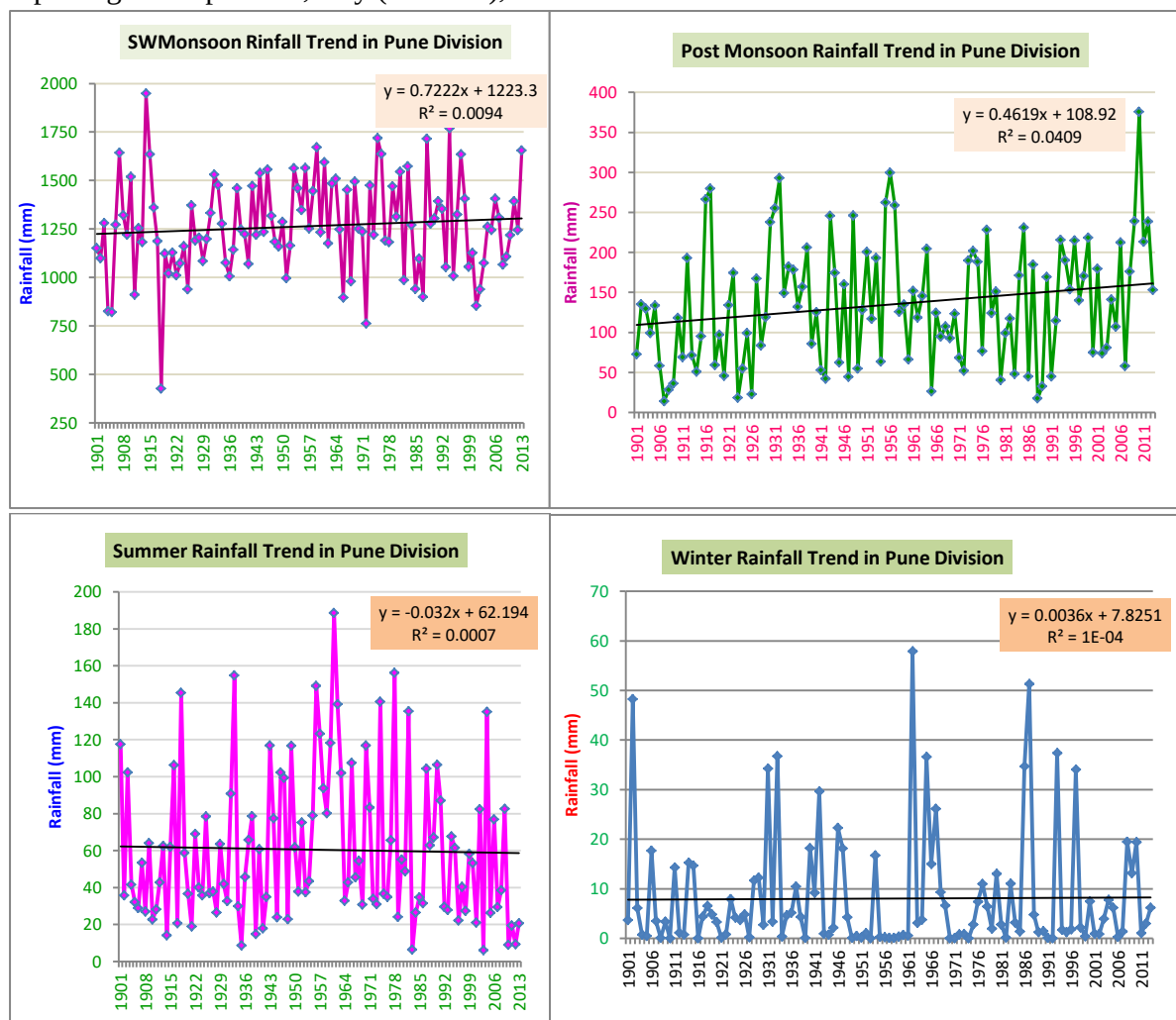


Fig. 4 Seasonal Rainfall Trend in Pune Division (1901 to 2023) a. SW monsoon, b. Post Monsoon, c. Summer, d. Winter

The Table No. 1.0 shows that coefficient variation of Post Monsoon rainfall is 56.00 per cent. The Post Monsoon rainfall over Pune Division from 1901 to 2023 is presented an increasing trend by 52.19 mm (fig.2.b). The increase in post

monsoon rainfall is an estimated and that rate of increasing is 0.46 mm per year. The Post Monsoon was the lowest reported in year 1907 (14.23 mm) and the highest 375.58 mm in 2010. The summer rainfall over the Pune division is 61.9 mm during the

period 1901-2023. The table no.1 shows that coefficient of variation of summer rainfall is 68.40 per cent. The summer rainfall decreases insignificant level which is 3.16 mm is observed from 1901 to 2023 (fig.2.c). The decreasing in rainfall is at the rate of 0.032 mm per year. The summer rainfall is reported lowest, which is 6.04 mm in 2023 and the highest in 1961 (188.51 mm).

The winter rainfall over the Pune division is 7.9 mm. during the period of 123 years (1901-2023). The table 1 shows that coefficient of variation of winter rainfall is (149.1 %). The winter rainfall increases insignificant level, which is 0.34 mm, is observed in considering period (fig.2.d). The increasing in rainfall is noted at the rate of 0.003 mm per year. The winter rainfall was the lowest in 1953 (0.0164mm) and the highest in 1962 (57.88 mm). The rainfall maybe attributed to a declining trend in the frequency of depressions, cyclonic storms and systems during the months June to September (Singh P., and Sharma, S., 2017).

Conclusion:

The annual rainfall trend of Pune division from 1901 to 2023 was increases 129.95 mm. he rainfall trend was increases SW monsoon (81.60 mm), post monsoon (52.19 mm) and winter rainfall increases (0.64 mm) insignificant level. The summer rainfall trend was decreases in 3.61 mm during the 123 years in the Pune division. Precipitation conditions over Pune division during the considering years show that trend of increases annual rainfall. The south-west, post and winter rainfall trend increases while the summer rainfall trend is decreases insignificant.

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The Correlation Of Population Growth And Health Centers In Satara District

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Introduction:

India is fragment country, but we see integrity in various things. It is country of large populations. India is second ranks of population in the world. It is most important and duty to provide food, clothing, and shelter to the entire population. Like these needs the health is also important. To take care of population there is intendant. Public health care system in India which is followed in Maharashtra also as one of important state. Satara district also has its own public care system. There is one district hospital. Two sub district hospitals available in Satara district. Each Tahsil has one rural hospital. Khatav Tahsil has more than 2 rural hospitals. Uneven distribution of primary health centers is recorded in study region. In this research researcher had studied the population and available health facilities in the district, like the number of doctors, nurses, ward boy and another health-related facility. In Satara district 1 Civil Hospital, 2 Sub district Hospitals, 15 Rural Hospitals 72 Primary Health centers, 400 health sub centers established. The number of health centers increased according to growth of population. In 2001, the available health facilities in Satara were less, but in 2011 the situation was changed Satara District has average availability of government medical facilities. In the early the criterion of one primary health center for 3000 population and one sub center for 5000 populations was established in Satara district

Study Region:

Satara district is one of the leading districts of Western Maharashtra. It is situated in the western part of the State and lies between north latitudes 17° 05' and 18° 11' and east longitude 73 ° 33' and 74° 54'. The total area of the district is 10480 sq. km. The district is bounded in the north by Pune district on the east by Solapur district, on the south by Sangli district and on the west by Ratnagiri district of Konkan region. Sahayadri hills of western ghat forms the western boundary, while Nira River forms the northern boundary of the district.

The district having tropical wet and dry climate. Average highest temperature 30.8 °C and average lowest temperature is 18.64°C. The average precipitation of the region is 1125.01 inch. Average elevation of the region is 742 metre. For administrative convenience, the district is divided into 11 tahsils. It has total Population 3003741 as per 2011. the male population is 1510842 and female population is 1492899 with literacy rate 82.87%. Population density is 287 persons/sq. km. The district has 15 towns. Administratively there are 11 talukas viz. Satara, Patan, Karad, Wai, Khandala, Mahableshwar, Javoli, Man, Khatav, Phaltan, Koregaon, 1739 villages, 11 Panchayat Samitis, 1488 Gram Panchayats and 8 Nagar Parishads. Sex ratio is 988.

Objectives:

In view of the above, main objectives of proposed study are as following:

1. To study the Population Growth affected Health center in study area.
2. To study the required PHCs and Doctors according to the Population Projection

Database:

The present study will be depending on primary as well as secondary data. Primary data will be collected through the questionnaire. For the purpose villagers will be chosen by stratified random sampling, and photographs, video shooting will be collected for the better understanding of the study region. Secondary data will be collected through the related reference books, magazines, published, unpublished thesis, journals, and published Govt. Report, District Census, hand book, the record of health centers, government hospitals, Newspapers, Other media reports, and related websites. And world Health Organization data

Methodology:

The present study is based on the collection of data from health care centers, hospitals and extensive field survey by the statistically tabulated, interviews, questionnaire method. Some mathematical processing will be carried out and the inferences may arrive. There is no definite method to apply to such study but statistical method, cartographic techniques.

Concentration ratio, impact method will be used wherever necessary different terms and observations used in the texts have been defined and explained in glossary at the end.

Growth of populations and Growth of Health Centers:**Population Growth:**

Population growth means positive change has taken place in the population and its impacts on frequently occurring diseases and healthcare facilities in Satara district.

To calculate the growth rate of a population, the following formula is applied by the researcher.

$$R = \frac{P_n - P_o}{P_o} \times 100$$

Population projection deals with computations of future population size and characteristics based on assumptions based about future trends infertility, mortality and migration. The formula to count the population projection is of following,

$$P_n = P_o + \frac{n(p_o - p_m)}{M}$$

P_n = population in future after a period of time

P_o = Present population

P_m = Population in the past before m years

n = Number of years for the projection

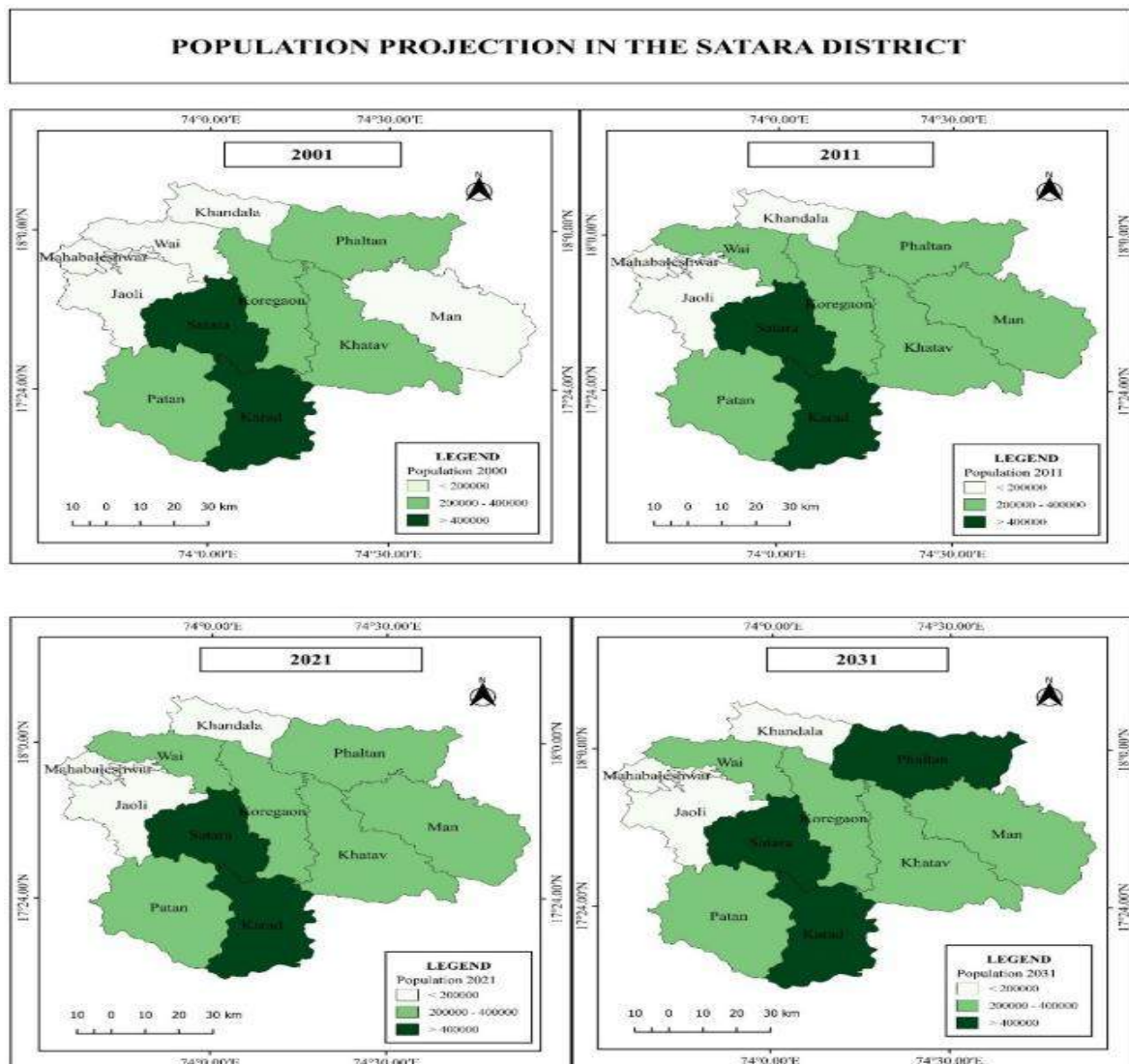
m = Number of years in the past taken in to consideration

Population Projection in the Satara district (2021)

Sr.No	Tahsil	2001	2011	Decadal growth percentage	2021	2031
1	Satara	451870	502049	11.10	552228	602407
2	Wai	189336	200269	5.77	211202	222135
3	Khandala	119819	137418	14.69	155017	172616
4	Koregaon	253138	257550	1.73	261962	266374
5	Phaltan	313627	342667	9.26	371707	400747
6	Man	199598	225634	13.04	251670	277706
7	Khatav	260951	275274	5.49	289597	291620
8	Karad	543424	584085	7.48	624746	624546
9	Patan	298095	299509	0.47	300923	302355
10	Javali	124600	106506	-14.52	88412	70318
11	M.Shwar	54546	72830	3.52	91114	109398
12	District Total	2808994	3000374	6.93	3191754	3383127

Source: Census of population during 2001 to 2011

The population in 2001 was 2808994, and it increased in the year of 2011 to 3000374. The decade's growth is 6.93%. Satara Tahsil growth was 11.10% in the decade from 2001 to 2011. Man Tahsil has the highest growth rate, at 13.45 percent. The negative growth was shown at -14.09 in the Javali Tahsil. The population projection for Satara district is 319,754 in the year 2021. The highest population will be 624746 in Karad Tahsil and the lowest will be 91114 in Mahabaleshwar Tahsil. During the period from 1991 to 2011, the **Population Projection in the Satara district (2021):**



Required PHCs and Doctors according to the Population Projection:

The growth of population in Satara district and health centers is rationally

total growth of the population and the growth of health centers were not the same. But that is insufficient and there is a need for more health centers in the study region. The population projection of the study region will be 3191754 in the year 2021 and the population projection of Satara district will be 3383127 in the year 2021. The highest population will be 624746 in Karad Tahsil in 2021 and 624546 in 2031, and the lowest will be 88412 in Javali Tahsil in 2021 and 70318 in 2031.

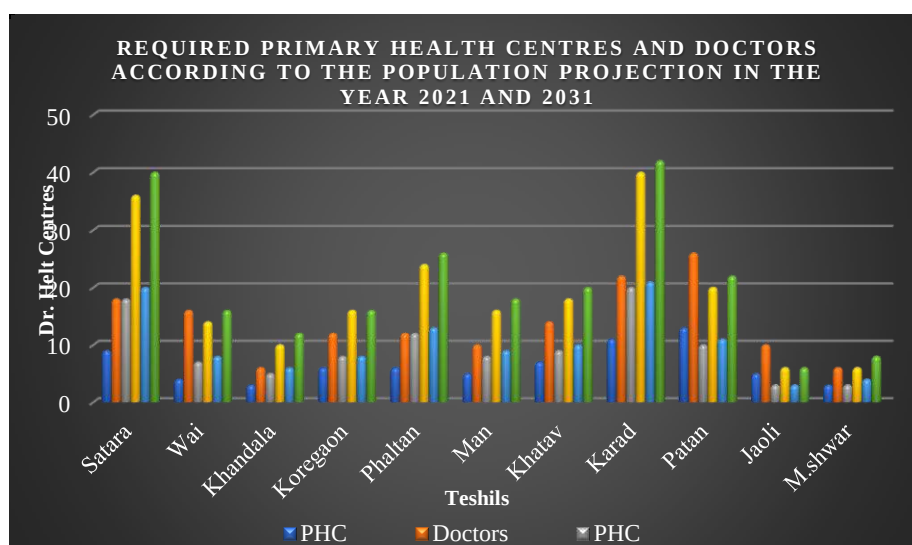
noticed while there is need of more PHCs and doctors according to the growing population.

Required Primary Health Centers and Doctors according to the Population projection in the year 2021 and 2031:

Sr.No	Tahsil	Required Health center and doctors 2011		Required Health center and doctors 2021		Required Health center and doctors 2031	
		PHC	Doctors	PHC	Doctors	PHC	Doctors
1	Satara	9	18	18	36	20	40
2	Wai	4	16	7	14	8	16
3	Khandala	3	6	5	10	6	12
4	Koregaon	6	12	8	16	8	16
5	Phaltan	6	12	12	24	13	26
6	Man	5	10	8	16	9	18
7	Khatav	7	14	9	18	10	20
8	Karad	11	22	20	40	21	42
9	Patan	13	26	10	20	11	22
10	Javali	5	10	3	6	3	6
11	M.shwar	3	6	3	6	4	8
District total		72	144	103	206	112	224

Source: Computed by researcher

Required Primary Health Centers and Doctors according to the Population projection in the year 2021 and 2031



In Satara district, the growth of population and health centers is rationally noticed while there is a need for more PHCs and doctors according to the growing population. Table No. 6.11 shows that in the year 2021 there will be 103 PHCs and 206 doctors required to increase according to the population projection. The Satara Tahsil requires 9 PHCs and 18 doctors in the year

2021. Mahabaleshwar Tahsil requires 3 PHCs and 3 doctors. According to the population projection, in the year 2031, there will be 112 PHCs and 224 doctors. The requirement is for PHC only 1 and 2 PHCs and doctors' requirements are highest in Satara tashil at 40 and 2 doctors are required in Mahebaleshwar tashils. In respect of doctors, they may be increased by 2 in each

PHC of the above mentioned tashils. In the present chapter, the growth of health centers took place according to the growth of populations. Health centers are not noticeable, which will change in the year 2020. Health care changes have been observed from time to time, which have decreased according to the needs of the people. However, some health facilities have come into force in the district. The variation is recorded in the growth of health centers. According to the population projection, the

need for an adequate proportion of PHCs has been observed for future planning.

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Socio-Economic Status of Ainwadi Village in Shahuwadi Tahsil of Kolhapur District (Maharashtra): A Case Study

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Abstract:

Socio-economic status is an important aspect of study at local, national and global level. Socio-economic status of society gives a clue to understand the socio-economic background of the villagers. Socio-economic status in rural areas is gradually improving over a period of time. Different types of economic as well as social classes are found in a village.

For the present study primary data has been collected from 71 families (63.00 percent) out of 113 families inhabiting in Ainwadi Village. Socio-economic condition depends primarily on occupations, education, income and wealth. The entire primary data collected by the researchers through proper questionnaire. The present research work highlights on systematic study of socio-economic status of peoples from hilly part of Ainwadi village in Shahuwadi tahsil.

Keywords: Annual Income, Occupational Structure, Educational Level, Socio-Economic Status.

Introduction:

In rural areas in India, now days due to increased per capita income and use and application of modern agricultural practices and tools the socio-economic status of peoples is consistently improving. Literate peoples and farmers in villages are apt to use new technology in their occupation. According to Dutton and Levine (1989), Socio-Economic status is “a composite measure that typically incorporates economic status measured by income, social status measured by education and work status measured by occupation”.

To understand socio-economic status of peoples, important indicators primarily occupational structure, annual income and educational status of sample families are taken into consideration for the present study. Other indicators constitutes cropping pattern, use of seeds and fertilizers, type of

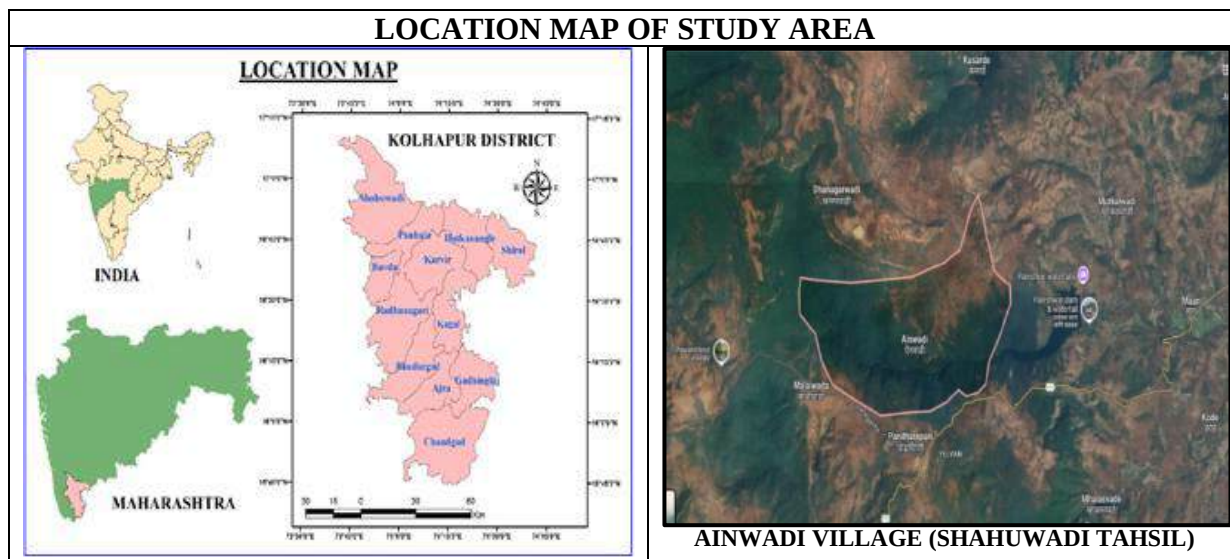
farming and source of water are also highlighted. Way of life of peoples depends upon their socio-economic condition. Hence the study of ‘Socio-Economic Status of Ainwadi Peoples’ is selected for the research work. All these indicators are studied respectively and results are shown and depicted through tables, diagrams, proper analysis and discussion.

Study Area:

Socio-economic status of peoples in western hilly region of Kolhapur district gives an indication to understand of social and economic background of peoples and rural development in the study area. Study area selected for the present research work is “Ainwadi Village” which is located in hilly tracts of Sahyadri Mountain in Shahuwadi tahsil of Kolhapur district in Maharashtra, India. There are 140 villages in Shahuwadi

tahsil. The village Ainwadi is situated 14 km away from Malkapur and 55 km away

from district headquarter, Kolhapur.



Ainwadi village lies on $16^{\circ}50'36.6''$ North Latitude and $73^{\circ}52'20.9''$ East Longitude. The total geographical area of Ainwadi village is 692 hectare (6.92 sq.km.). Total Population of Ainwadi village is 665, consisting 335 male and 330 female. There are 113 families in Ainwadi village. The researchers have randomly selected 71 families consisting 516 working population.

Objectives:

The main objectives of the present study are as follows:

1. To analyze occupational structure of peoples in Ainwadi village.
2. To study annual income and educational status of sample families.
3. To study agricultural practices of sample families/farmers.

Database And Methodology:

The present research work is based on primary data which is collected through questionnaire and keen observations. Random sampling technique is used for the present study. There are total 113 families in Ainwadi village, out of which 71 families are selected as a sample size. These 71 families comprise 516 members as working population. The collected data analyzed with

simple statistical method and represented with suitable cartographic techniques such as bar graph and pie-chart.

Result And Discussion:

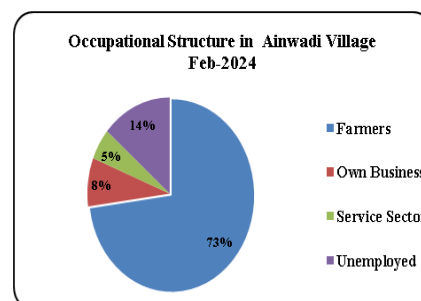
In the month of February 2024, researchers have taken a Survey of 71 families in Ainwadi village of Shahuwadi tahsil in Kolhapur District.

Table-1 Ainwadi: Occupational Structure

Sr. No.	Occupation	Number	Percentage
1	Farmers	376	72.87
2	Own Business	42	8.14
3	Service Sector	27	5.23
4	Unemployed	71	13.76
Total		516	100.00

Source: Field Survey, Feb-2024

Fig. 1



Occupational structure is a significant indicator of economic status of individuals as well as of the society. It is observed that, 73 percent peoples are

engaged in farming sector, 8 percent peoples have their own business and 5 percent peoples are engaged in service sector whereas 14 percent peoples are unemployed in sample study. Table 1 and Figure 1 indicate that farming is a major economic

activity in the village. Own business comprises grocery, kerosene, automobile, auto rickshaw, Poultry farming etc. Proportion of unemployment is high due to the lack of higher education facilities.

Table-2: Ainwadi: Annual Income of Sample Families

Income (in Rs)	No. of Family	Percentage
Up to 10,000/-	05	7.04
10,001-20,000/-	09	12.68
20,001-30,000/-	29	40.85
30,001-40,000/-	08	11.27
40,001-50,000/-	08	11.27
More than 50,000/-	12	16.90
Total	71	100.000

Source: Field Survey, Feb-2024

Fig.2

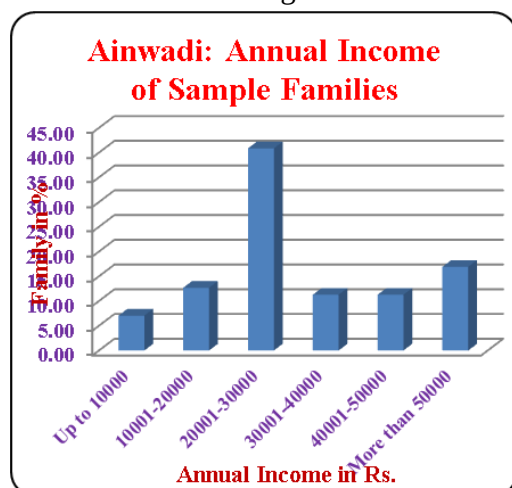


Table 2 and Fig 2 shows annual income of sample families. It is found that, 19.72 percent families have their annual income up to 20,000/- rupees, 52.12 percent families income ranges between 20,001/- to 40,000/- rupees and 28.16 percent families annual income is more than 40,000/- rupees. These statistics clearly indicates that the numbers of middle class families are high in Ainwadi Village.

Table-3: Ainwadi: Educational Status

Sr. No.	Educational Status	Number	Percentage
1	Illiterate	159	30.81
2	Primary	248	48.06
3	Secondary	51	9.88
4	Higher Secondary	15	2.91
5	Graduates	43	8.33
Total		516	100

Source: Field Survey, Feb-2024

At the time of field survey, the researchers observed that there is only a primary school in the village. The students for their secondary, higher secondary and UG education goes to Malkapur, which is adjacent higher educational place whereas for their PG education students goes to Kolhapur, which is a district place having

State University. It is also found that 69 percent peoples are literate and 31 percent peoples are illiterate. This means that the proportion of illiterate people is much more than the average (20 percent) of India.

While surveying socio-economic status of Ainwadi, researchers have observed that the proportion of dry farming (54

percent) is higher than that of irrigated farming (28 percent) and fallow land (18 percent). All families depends on natural source of water i.e. rainwater and spring for their agricultural practices. However it is important to note here that five farmers have their wells, one family have their own borewell and one farmer have prepared a separate tank for irrigation. While considering use and application of seeds and fertilizers in agriculture, 50 percent families insisted on traditional seeds and manure. Farmers uses high yielding varieties (HYVs) and chemical fertilizers in order to increase per hectares production of a particular crop, wherever artificial sources of water are made available. The researchers have found that rice crop (95 percent) dominated the cropping pattern in Ainwadi village. Other important crop includes nachani and vari. It is also found that majority families are engaged in rearing cows and buffaloes for dairy production.

Conclusion:

As Ainwadi village is located in Western Ghat, rugged topography is observed throughout the study area. Tropical dry deciduous forests are common. Red soil is common whereas black soil is found in patches.

The above study provides glimpses of socio-economic profile of sample families in Ainwadi village and ascertains their socio-economic status. The numbers of middle class families are high (52.12 percent) as compared to other classes i.e. high income & low income. As far as sex ratio is concerned there are 335 males and 330 females are inhabitants in this village. As far as occupational structure is concerned the proportion (72.87 percent) of farmers is at apex than other occupation. Generally the proportion of illiterate peoples (30.81 percent) is high.

Researchers have observed that there is a lack of higher education system, transportation and medical facilities as well as apathy of people's representatives towards local problems. The study suggests that there is need of government assistance to promote the participation of farmers in agricultural training and workshop and to avail the higher educational facilities in Ainwadi village. There is an urgent need to construct district level roads, so that the communication with neighboring towns and cities will be possible.

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Status of Workers in The Krishna Verla Magasvargiya Sahkari Soot Girni Ltd (Palus) Dist. Sangli

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Abstract:

Textile Industry in India is the second largest employment generator after agriculture. The Textile industry plays important role in the Indian economy and contributes substantially to its export earnings. Textile exports share nearly 30 percent of the country's total exports. It is 20 percent of the National production. It provides direct employment to cover 15 million persons in the mill such as Power Loom and Handloom Sectors. India is the world's second largest production of textiles after china. It is the world's third largest production of cotton. The textile industry in India is one of the oldest manufacturing sectors in the country and currently, its largest in Maharashtra Sangli District plays very important role in textile industry.

The co-operative spinning mill in India is relatively started recently. The co-operative textile sector has played a commendable role in the upliftment of workers in the Krishna Verla Magasvargiya Sahakari soot Girni Ltd Palus here about 10 percent workers are selected as a sample for study This soot Girni is selected in the semi urban area or rural area of Walwa Tehsil the workers are coming from surrounding village of this mill. Therefore, all the study is about a significant socio-economic transformation in the area by this mill. This transformation took the shape of better civic information and a noticeable improvement in the quality-of-life Krishna Verla Magasvargiya Sahakari soot Girni Ltd Palus provided jobs for 490 people. The people are settled nearby the soot Girni around 02 km to 15 km. According to field survey this soot Girni is very useful for change in Socio-Economic conditions of workers. This soot Girni is providing various facilities to workers.

Keywords: Co-Operative Textile Sector, Socio- Economic condition of workers, Manufacturing

Introduction:

The word "Textile" is derived from the Latin word "Texere" meaning to weave and "Textiles" means woven. The word 'Textile' was originally used to define a woven fabric and the process involved in wearing cloth from the ancient time textile industry was working it produced a various type of cloth. Now a days this industry is well established in all over the world.

First Indian textile industry was established in 1822 on the bank of river Hugliin West Bengal. Jute industry made a beginning in 1855 with the establishment of

a jute mill in the Hooghly Valley near Kolkata with foreign capital and entrepreneurship. Thereafter in 1854, the Indian industrialist Mr. Kawasaki Dadabhai Devar had taken initiative and established first modern cotton textile mill at Mumbai (Maharashtra) and after that in 1861, the third textile mill started at Ahmadabad (Gujarat). In the year 1907, the use of electricity has been started in the textile industry and the remarkable development of textile industry has been taking place. At present in India more than 1824 textile mills. Out of these 192 mills are run by the public

sector, 153 are run by the co-operative sector and remaining 1479 textile mills are under the command of private sector.

Maharashtra is an important and leading textile cloth manufacturer state in India because it is not only in number of textile mills but also cloth production and its allied activities. There are 210 cotton textile industries in which 36 per cent looms and 25 per cent spindles out of the total country in Maharashtra. The textile industrial sector of Maharashtra has provided nearly three lakhs employments which contributes different levels of jobs. Mumbai is supposed as the biggest and significant Textile Hub in Maharashtra as well in India. Due to this, Mumbai is known as 'Manchester of India'. Followed the Mumbai, the cotton textile industries are concentrated at Ichalkaranji (Kolhapur district) due to favorable locational factors and it is commonly called as 'Manchester of Maharashtra'. Beside these some other textile centers in Maharashtra which are Sangli, Sholapur, Pune, Jalgaon and Nagpur etc.

Profile of Krishna Verla Magasvargiyasahkari Soot Girni:

This is co-operative spinning mill named as Krishna Verla Sahakari Soot Girni Ltd Palus, is registered on 18 th December 1990 under co-operative Societies Act 1960 of Government of Maharashtra for setting up of a spinning mill. The foundation stone was laid in the year 2004 and actual production was started on 21 st oct 2004. The Society has been organized and promoted by Hon. Dr. Patangrao Kadam who is the distinguished personality and founder of Bharati Vidyapeeth, and Chancellor of Bharathi Vidyapeeth Deemed University which is well known reputed educational organizational at National and State level with its branches in abroad. This mill is successfully running under chairmanship of Prof Babasaheb Gotpagar. This is a state of the art 25056 spindles project, The mill has

complete indigenous machinery of advance technology machines of Kirloskar Toyota, Zincer Textile and the mill has Tromac machine for its Blow Room. In winding the mill had imported latest Germany Schlafthorst 338 Autoconer machines to compute and stand in international market for yarn quality. Also the mill has Imported Laboratory Equipment's of User Technology India Pvt Lets., Switzerland. The set-up of machinery and modern testing equipment results in high production levels and superior quality of yarn. The yarn produced by the mill is accepted by the export markets on all counts of quality standards.

Objective:

1. To Study the facilities provided workers by Soot Girni
2. To Study the socio-economic condition of workers

Methodology and Database:

The primary data has been collected from schedule which has been prepared for workers about 500 workers are working in the Krishna Verla Magasvargiya Sahakari Soot Girni Form these workers about 10 percent workers are selected as sample for this analysis. Here stratified random sample techniques have been used for study. Further the researcher has recorded his observations during the data collection. Also, he had conducted the group discussions to understand the opinion and attitude of the respondents in general. Secondary data has been collected through technical performance report from Maharashtra state co-operative Textile federation Limited Mumbai.

Status of Workers in the Krishna Verla Magasvargiya Sahkari Soot Girni:

Here schedule has been prepared for the analysis of status of workers in the soot Girni. This schedule includes questions regarding their General Information,

Infrastructure and Facilities, Educational status, Family status, Economical status provided by soot Girni. About 49 Schedules

have been filled up from the workers. The workers from different villages, different economical background has been selected.

Table No- -1. Residential Address of the Workers

Sr. No	Local Workers	Out of State Workers	Total Workers
1	44	06	50

Above table shows that majority of the workers are coming from the nearest place of spinning mill. They are travelling 2 km to 18 km distance regularly to work in the spinning mill. Some workers are come here from out of state. (Goa and Karnataka state). Those are stayed in the Kadegaon city. They are invited because they are experienced and skilled workers.

Table No-2. Education of Workers

Sr. No	Education	Number of Worker
1	S.S.C	22
2	H.S.C	13
3	Graduate	10
4	Post Graduate	05
	Total	50

Above table shows that 44 percent workers are studied up to SSC and 26 percent HSC. This soot Girni is situated in the rural area therefore various workers are coming from rural background. Remaining workers are highly educated those are supervisors and technical workers.

Table No -3. Family Sizes of Workers

Sr. No	Persons in the family	Number of workers
1	Below-2	08
2	2 to 4	19
3	4 to 6	13
4	6 to 8	06
5	8 to 10	02
	Total	50

Above table shows that family size between 2 to 4 are in majority worker's house. The second largest group is 4 to 6 because all the workers are forming nearby rural area, which is living in mostly joint family or with their old parents and therefore other peoples of family members are helping them in the agricultural practices.

Table No.-4. Work Experience

Sr. No	Work Experience	Number of workers
1	1 Year	27
2	2 Year	05
3	3 Year	09
4	4Year	04
5	More than 5	05
6	Total	50

Majority of the workers are from nearby areas from the shareholders therefore they are not taken for experience. Therefore, here skilled workers are very less. Soot Girni is giving training of machine work after joining. Only few workers are experienced they are mostly from other state of from city specially invited because of their experience.

Table No.-5. Change in Social Status

Sr. No	Number of workers	Change in social status
1	26	Yes
2	24	No
Total	50	

About 52 percent workers are agreed that their social status has been changed because of this job. They are living in nearby villages they are doing agricultural

practices with this job therefore they can invest better in agriculture than other people. Therefore, they get respect in the village more than only farmers therefore they feel that their social status has been improved.

Conclusion:

This soot Girni is providing job to the people living in the nearby village. Therefore this soot Girni is responsible to improve standard of living of the people lives in nearby village. But majority workers are not experienced. They are doing job because soot Girni is very near to their village and getting additional income. Therefore, they are not serious about job. Workers are having agricultural land and they are doing agricultural practices with this job. Therefore, not focusing on the skill and technology. Therefore for skill and technology soot Girni has appointed persons from out of state. Therefore, here are few suggestions for improving the quality of workers for better development.

- 1) The nature of work in textile units is temporary
- 2) They should provide more health facilities to reduce health problem
- 3) Compulsory training programs

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Trend Analysis of Seasonal Rainfall in Pune Division of Maharashtra State.

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Abstract:

Climate change significantly influences rainfall patterns globally and in regionally as like Pune division in Maharashtra. Climate change has led to changes in rainfall intensity, frequency, and distribution. It can disrupt traditional monsoon patterns and trend causing erratic rainfall during the season. Uneven distribution of rainfall can lead to periods of heavy rain followed by dry spells, affecting agriculture and water resources.

In this research work, we have analysed the temporal trend of seasonal rainfall (June to September) in Pune division of Maharashtra state during 2023 and 2024 years. Trend analysis of seasonal rainfall in Pune division of Maharashtra state was analyzed using non-parametric Mann-Kendall test, with 95 percent confidence levels. Pune division comprises five districts i.e. Pune, Satara, Solapur, Sangli, and Kolhapur districts. The rainfall trend in Pune division of Maharashtra generally follows the typical monsoonal pattern of the region. These data analysis shows that rainfall patterns have experienced variations over the years, with some years having above-average rainfall and others experiencing deficits.

Keywords: Climate Change, Seasonal Rainfall Trend, Pattern, Mann-Kendall, Sen's slope.

Introduction:

Climate is indeed one of the most critical environmental factors, as it influences nearly every aspect of natural systems, human life, and economic activities. As a global regulator, climate maintains Earth's heat balance and drives essential systems like monsoons. The role of climate is vital for ensuring environmental sustainability and human resilience.

The hydrological cycle and regional crop pattern may be significantly impacted by the altered rainfall patterns brought on by climate change (Mirza and Hussain 2003; David Chikodzi and Linda Yeukai Mapfaka, 2018; Abrol et al., 2004). One of the key meteorological factors for identifying climate change is rainfall (Sahu and Khare, 2015).

Numerous scholars such as Naidu et al., 1999; Guhathakurta and Rajeevan, 2008; Kumar et al., 2010; Gosain et al., 2011; Joshi and Pandey, 2011 and Naveen Kumar et al. 2016 have examined the seasonal and annual patterns of rainfall in India at the regional level.

India is agricultural nation with high percentage of its population dependent on agriculture, is particularly susceptible to the effects of climate hazards. Sometime in the semi-arid areas of Western India received more rainfall than normal due to temperature rise. The development of future climate scenarios will benefit from the trend analysis of temperature, precipitation, and other climatic variables on various regional scales (Jain et al., 2012).

In the sense of impact of climate change Maharashtra state is one of the key states. The geographical area of Maharashtra state is 307,713 square kilometres (30.7 Mha) out of which, 73.29 percent is cultivable, 40 percent drought prone and 7 percent flood prone area. About rainfall it is uneven rainfall ranging from 400 to 4500 mm occurs with from 40 to 100 rainy days in the State. The state experiences a tropical monsoon climate, with distinct wet and dry seasons, but there is considerable variability in rainfall across different regions because of the uneven terrain and proximity to the coast.

This research works has been analysed seasonal rainfall trend of the years 2023 and 2024 in Pune divisions of Maharashtra state. Trend analysis of seasonal rainfall in Pune division of Maharashtra state was analyzed using non-parametric Mann-Kendall and Sen's slope test, with 95 percent and 99 percent confidence levels. Pune division comprises five districts i.e. Pune, Satara, Solapur, Sangli, and Kolhapur districts. The rainfall trend in Pune division of Maharashtra generally follows the typical monsoonal pattern of the region. These data analysis shows that rainfall patterns have experienced variations over the years, with some years having above-average rainfall and others experiencing deficits.

Objectives of the Study:

The current research study has been undertaken with the following objective

1. To find out trends of seasonal rainfall in study area.

Study Region:

The Pune Division, situated in the western region of Maharashtra, India, encompasses five distinct districts: Pune, Solapur, Satara, Sangli, and Kolhapur. This division is geographically delineated by the Konkan region to the west, the Nashik Division to the north, Marathwada to the east, and the state of Karnataka to the south.

Pune city functions as the administrative center for both the Pune District and Pune Division. Referred to as the "Oxford of the East," Pune is distinguished for its prestigious educational institutions and rich cultural heritage. The geographical diversity of the division encompasses metropolitan areas, agrarian landscapes, and undulating topographies, which collectively enhance its heterogeneous climate and abundant biodiversity. From an economic perspective, the Pune Division holds considerable significance owing to its industrial sectors, centres of education, and cultural heritage sites.

Data Collection and Methodology:

This research is based on the secondary source of information of the Department of Agriculture, Maharashtra State. (<https://maharain.maharashtra.gov.in/>). The study is related to the trend analysis of seasonal rainfall in Pune division of Maharashtra. In this research work, we have taken district wise seasonal rainfall data of pune division i.e. 2023 and 2024 of Maharashtra. The pune division of Maharashtra state comprises Pune, Satara, Solapur, Sangli, and Kolhapur districts.

To analyze data, various appropriate trend analysis tools have been used non-parametric Mann-Kendall tests, with 95 percent confidence levels. The maps and diagrams are prepared by adopting various cartographic techniques it includes bar and line graphs for better comprehension.

Mann-Kendall (MK) test:

The **Mann-Kendall (MK) test** is a non-parametric statistical test used to identify trends in time-series data. It is widely used in environmental sciences, hydrology, climatology, and related fields to detect whether there is a significant increasing or decreasing trend in data over time. (Mann 1945; Kendall 1975).

Equation (1) defines the MK statistics (S)

$$S = \sum_{b=1}^{n-1} \sum_{c=b+1}^n \text{sign}(X_c - X_b)$$

Where:

X_b and X_c are the seasonal values in years b and c .

The later observations in the time series tend to be bigger than the earlier observations if $S > 0$, and the opposite is true if $S < 0$.

Equation (2)

$$\text{Sign}(X_b - X_c) = \begin{cases} 1 & \text{if } X_c - X_b > 0 \\ 0 & \text{if } X_c - X_b = 0 \\ -1 & \text{if } X_c - X_b < 0 \end{cases}$$

Equation (3) is used to compute the variance of S :

$$\text{var}(S) = \frac{1}{18} \left[n(n-1)(2n+5) - \sum_{p=1}^q f_p(f_p-1)(2f_p+5) \right]$$

where n is the number of data points, q is the number of tied groups, and f_p is the number of data values in the q^{th} group.

Equation (4) if no tied is used to compute the variance of S :

$$\text{var}(S) = \frac{n(n-1)(2n+5)}{18}$$

where n is the number of data points,

Equation (5) is used to determine the test statistics Z using the values of S and $\text{var}(S)$.

$$Z = \begin{cases} (S-1)/S_r & \text{if } S > 0 \\ 0 & \text{if } S = 0 \\ (S+1)/S_r & \text{if } S < 0 \end{cases}$$

where S_r is the square root of $\text{var}(S)$.

The **Mann-Kendall (MK) test** result is primarily determined by the **p-value**, which indicates the statistical significance of a trend in a time series. The **p-value** represents the probability that the observed trend is due to random chance. A **lower p-value** suggests that the trend is more likely to be real and not due to randomness.

The concluded the trend, if $p \leq \alpha$ (Significance Level i.e. 90, 95, 99 percent) **reject the null hypothesis** (H_0) it means A significant trend exists (either increasing or decreasing). and if $p > \alpha$ (Significance Level i.e. 90, 95, 99 percent) **fail to reject H_0** it means No significant trend detected.

The checking Trend Direction with Z-Score of Mann-Kendall Statistical Techniques, If the Mann-Kendall Z-score is positive $\rightarrow$ Upward trend (increasing) and if the Mann-Kendall Z-score is negative $\rightarrow$ Downward trend (decreasing).

Results and Discussion:

The rainfall trends were identified by using Mann Kendal Test estimator method on Seasonal Rainfall with Month wise for 2023 and 2024 years of Pune division.

Rainfall in five districts of Pune division for the two years 2023 and 2024 has been analyzed to identify the rainfall trends based on availability of data.

Table No.1: Rainfall Trend in Pune Division during June 2023.

Name of District	Mean (mm)	Min. (mm)	Max. (mm)	SD (mm)	CV (%)	P Value	Z Value	Trend
Pune	3.02	0	13.7	4.9	162	0.004043	2.6104	Increase
Solapur	0.96	0	11.4	2.2	232	0.008845	2.618	Increase
Satara	2.86	0	18.4	4.8	168	0.04114	2.0421	Increase
Sangli	1.19	0	8	2.0	169	0.247	1.1576	Increase
Kolhapur	3.26	0	19.3	5.1	163	0.006538	2.7195	Increase

Note: significant trend at the 95% confidence level

Rainfall Trend for Month of June 2023:

The average rainfall in June month is given in table no.1 with district wise of pune division. The highest average rainfall was observed at Kolhapur district (3.26 ± 5.1 mm) with 163 % coefficient of variation and lowest at Solapur (0.96 ± 2.2 mm) with 232 percent a coefficient of variation.

In this month of June 2023, P-value of Sangli district has greater than 0.05 confidence level i.e. 0.247. It means Sangli district has found *no significant increase trend* of rainfall and other district of pune division has *significant increase trend* of rainfall in the month of June 2023.

Table No. 2: Rainfall Trend in Pune Division during July 2023.

Name of District	Mean (mm)	Min. (mm)	Max. (mm)	SD (mm)	CV (%)	P Value	Z Value	Trend
Pune	9.07	0.8	23.6	6.7	73	0.4859	1.9722	Increase
Solapur	5.80	0	33.2	7.9	136	0.01123	2.5355	Increase
Satara	9.84	1.1	32.4	8.1	82	0.06146	1.8701	Increase
Sangli	5.55	0.1	19.4	5.2	94	0.003419	2.9273	Increase
Kolhapur	19.40	2.1	49	14.1	73	0.06893	1.8189	Increase

Note: significant trend at the 95% confidence level

Rainfall Trend for Month of July 2023:

The average rainfall in July month is given in table no. 2 with district wise of pune division. The highest average rainfall was observed at Kolhapur district (19.40 ± 14.4 mm) with 73% coefficient of variation followed by Satara and Pune district and lowest at Sangli (5.55 ± 5.2 mm) with 94 percent of a coefficient of variation.

In this month of July 2023, P-value of Pune, Satara and Kolhapur district has greater than 0.05 confidence level i.e. 0.4859, 0.06146 and 0.06893 respectively. it indicates these districts has found *no significant increase trend* of rainfall and other district of pune division such as Solapur and Sangli has *significant increase trend* of rainfall in the month of July 2023.

Table No. 3: Rainfall Trend in Pune Division during August 2023.

Name of District	Mean (mm)	Min. (mm)	Max. (mm)	SD (mm)	CV (%)	P Value	Z Value	Trend
Pune	2.78	0.1	7.9	1.9	70	0.05651	1.9071	Increase
Solapur	0.65	0	3.6	0.9	131	0.6062	0.51553	Increase
Satara	2.59	0	9.3	2.3	90	0.001379	-3.199	Decrease
Sangli	1.07	0	6.1	1.2	114	0.01753	-2.3755	Decrease
Kolhapur	4.26	0.1	15.3	4.3	100	0.003253	-2.9428	Decrease

Note: significant trend at the 95% confidence level

Rainfall Trend for Month of August 2023:

The average rainfall in August month is given in table no. 3 with district wise of pune division. In this month the highest average rainfall was observed at Kolhapur district (4.26 ± 4.3 mm) with 100 % coefficient of variation followed by Pune and Satara district and lowest at Solapur (0.65 ± 0.9 mm) with 131 percent of a coefficient of variation.

In this month of August 2023, P-value of Pune and Solapur district has greater than 0.05 confidence level i.e. 0.05651 and 0.6062 respectively. it means these districts has found *no significant increase trend* of rainfall and other district of pune division such as Satara, Sangli and Kolhapur has *significant Decrease trend* of rainfall in the month of August 2023.

Table No. 4: Rainfall Trend in Pune Division during September 2023.

Name of District	Mean (mm)	Min. (mm)	Max. (mm)	SD (mm)	CV (%)	P Value	Z Value	Trend
Pune	6.63	0	24.4	6.7	101	0.003838	2.8912	Increase
Solapur	4.63	0	15.5	6.2	134	0.2112	1.2502	Increase
Satara	3.62	0	15.6	3.9	107	0.03197	2.1448	Increase
Sangli	3.75	0	26	5.8	153	0.03646	2.0917	Increase
Kolhapur	4.87	0	22.8	5.6	117	0.02329	2.2686	Increase

Note: significant trend at the 95% confidence level

Rainfall Trend for Month of September 2023:

The average rainfall in September month is given in table no. 4 with district wise of pune division. In this month the highest average rainfall was observed at Pune district (6.63 ± 6.7 mm) with 101 % coefficient of variation followed by Kolhapur and Solapur district and lowest at Satara

(3.62 ± 3.9 mm) with 107 percent of a coefficient of variation.

In this month of September 2023, P-value of Solapur district has greater than 0.05 confidence level i.e. 0.2112. it is represented this district has found *no significant increase trend* of rainfall and other district of Pune division such as Pune, Satara, Sangli and Kolhapur has *significant Increase trend* of rainfall in the month of September 2023.

Table No. 5: Rainfall Trend in Pune Division during June 2024.

Name of District	Mean (mm)	Min. (mm)	Max. (mm)	SD (mm)	CV (%)	P Value	Z Value	Trend
Pune	5.71	0	16.4	7.2	126	0.9858	-0.017857	Decrease
Solapur	7.61	0	32.7	10.6	139	0.01845	-2.3565	Decrease
Satara	7.94	0	51.8	11.5	145	0.544	0.60679	Increase
Sangli	7.54	0	34	9.1	121	0.4428	-0.76753	Decrease
Kolhapur	6.69	0	32.9	8.1	121	0.004521	2.8393	Increase

Note: significant trend at the 95% confidence level

Rainfall Trend for Month of June 2024:

The average rainfall in June month is given in table no. 5 with district wise of pune division. In this month the highest average rainfall was observed at Satara district (7.94 ± 11.5 mm) with 145 % coefficient of variation followed by Solapur and Sangli district and lowest at Pune (5.71 ± 7.2 mm) with 126 percent of a coefficient of variation.

In this month of September 2023, P-value of Pune and Satara district has greater than 0.05 confidence level i.e. 0.9858 and 0.544 respectively with *no significant decrease trend* of rainfall and *no significant Increase trend* of rainfall respectively. other district of Pune division such as Solapur and Sangli has *significant decrease trend* of rainfall and Kolhapur has *significant increase trend* in the month of June 2024.

Table No. 6: Rainfall Trend in Pune Division during July 2024.

Name of District	Mean (mm)	Min. (mm)	Max. (mm)	SD (mm)	CV (%)	P Value	Z Value	Trend
Pune	14.30	0.7	89.7	17	119	0.05918	1.8869	Increase
Solapur	3.99	0.1	19.9	5.3	133	0.7853	-0.27247	Decrease
Satara	15.65	0.4	3.2	13.1	84	0.005035	2.8048	Increase
Sangli	9.15	0.3	40	9.9	108	0.1131	2.5328	Increase
Kolhapur	25.77	1.2	69.7	16.7	65	0.01026	2.5668	Increase

Note: significant trend at the 95% confidence level

Rainfall Trend for Month of July 2024:

The average rainfall in July month is given in table no. 6 with district wise of pune division. In this month the highest average rainfall was observed at Kolhapur district (25.77 ± 16.7 mm) with 65 % coefficient of variation followed by Satara and Pune district and lowest at Solapur (3.99 ± 5.3 mm) with 133 percent of a coefficient of variation.

In this month of July 2024, P-value of Pune and Solapur district has greater than 0.05 confidence level i.e. *0.9858 and 0.544 respectively with no significant increase trend of rainfall and no significant decrease trend of rainfall respectively.* other district of Pune division such as Satara, Sangli and Kolhapur has *significant increase trend of rainfall.*

Table No. 7: Rainfall Trend in Pune Division during August 2024.

Name of District	Mean (mm)	Min. (mm)	Max. (mm)	SD (mm)	CV (%)	P Value	Z Value	Trend
Pune	9.76	0	34.5	9.6	98	0.8918	-0.13601	Decrease
Solapur	4.02	0	33.6	6.3	157	0.9322	0.085109	Increase
Satara	9.09	0.3	33.7	9.1	100	0.6708	0.42509	Increase
Sangli	7.14	0.3	27.8	7.5	105	0.2475	1.1564	Increase
Kolhapur	10.89	0	35.6	10.8	99	0.8784	-0.15299	Decrease

Note: significant trend at the 95% confidence level

Rainfall Trend for Month of August 2024:

The average rainfall in August month is given in table no. 7 with district wise of pune division. In this month the highest average rainfall was observed at Kolhapur district (10.89 ± 10.8 mm) with 99 % coefficient of variation and lowest at Solapur (4.02 ± 6.3 mm) with 157 percent of a coefficient of variation.

In this month, P-value has greater than 0.05 confidence level at whole Pune division of Maharashtra state with Pune and Kolhapur has *no significant decrease trend of rainfall* and remaining other district of Pune division such as Solapur, Satara and Sangli has *no significant increase trend of rainfall.*

Table No. 8: Rainfall Trend in Pune Division during September 2024.

Name of District	Mean (mm)	Min. (mm)	Max. (mm)	SD (mm)	CV (%)	P Value	Z Value	Trend
Pune	4.51	0	25.3	5.9	131	0.9146	-0.10721	Decrease
Solapur	4.85	0	24.8	6.9	142	0.3591	-0.91707	Decrease
Satara	4.11	0	21.5	5.7	139	0.9857	-0.01787	Decrease
Sangli	4.68	0	28.4	7.3	92	0.2179	-1.2321	Decrease
Kolhapur	4.69	0.2	18.7	4.5	96	0.1005	-1.6424	Decrease

Rainfall Trend for Month of September 2024:

The average rainfall in September month is given in table no. 8 with district wise of pune division. In this month the highest average rainfall was observed at Kolhapur district (4.69 ± 4.5 mm) with 96 % coefficient of variation and lowest at Satara (4.11 ± 5.7 mm) with 139 percent of a coefficient of variation.

In this month, P-value has greater than 0.05 confidence level at whole Pune division of Maharashtra state has *no significant decrease trend* of rainfall.

Conclusion:

The average Seasonal rainfall distribution over the Pune division is uneven throughout the years. Generally, according to above finding the highest average seasonally rainfall in 2023 and 2024 years during the months in June to September remain in Kolhapur District.

In the year of 2023 sangli in June; Pune, Satara and Kolhapur in July; Pune and Solapur in August; and Solapur in September has found no significant increase trend in Rainfall.

So, Pune, Satara, Solapur and Kolhapur in June; Solapur and Sangli in July has significance increase trend in rainfall; Satara, Sangli and Kolhapur in August has significance decrease trend in rainfall and Pune, Satara, Sangli and Kolhapur in September has significant increase trend in rainfall.

In the year of 2024, Satara in June; Pune in July; and Solapur, Satara and Sangli in has found no significant increase trend in Rainfall and Pune in June; Solapur in July; Pune and Kolhapur; and all district of pune division in September has found no significant decrease trend in Rainfall

So, Kolhapur in June; Kolhapur, Satara and Sangli in July has significance increase trend in rainfall; Solapur and Sangli

district in June has significance decrease trend in rainfall.

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Urbanization Process and Emerging Environmental Issues In India

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Abstract:

The process of Urbanization is not only desirable but essential for generating economic growth and social change in developing countries like India. Urbanization no doubt has a positive impact on income level, employment, production, infrastructure and education, but it is accompanied with a number of problems such as shortages of housing, inadequate water supply, inadequate sanitation and waste disposal facilities. Added to all these problems, in the developing countries, administration is weak and slack, traffic systems are not managed properly, industrial rules and regulations are flouted, they are not implemented seriously. As a result, deterioration of urban environment has increased in many folds than what it should have been actually.

*This research paper aims to **highlight the process of urbanization and emerging environmental issues in India with special reference to environmental issues like air, water, land and noise pollution, problems of housing, traffic congestion, slums, solid waste management and also to suggest measures to overcome all these problems.***

The study reveals that rapid growth of population in the small and large cities of India has resulted in serious shortfalls in housing, public utilities, and community facilities. The urban environment has deteriorated, giving rise to shanty town and slums, heavy population concentration, uncontrolled land use, problem of solid waste traffic congestion, and pollution.

Keywords- Urban Growth, Urban services, Urban Issues, pollution Ecological management

Introduction:

The onset of modern and universal process of urbanization is relatively a recent phenomenon and is closely related with industrial revolution and associated economic development. As industrial revolution started in Western Europe, United Kingdom was the initiator of industrial Revolution. Historical evidence suggests that urbanization process is inevitable and universal. The United Nation estimates indicate that at mid-1990s, about 43 per cent of the world population lived in urban areas. With the urban population growing two and a half times faster than its rural counterpart, the level of urbanization is projected to cross

the 50 percent mark in 2005. United nations projections further show that by 2025, more than three fifth of the world population will live in urban areas (**U. N- 1993**).

Although India is one of the less urbanized countries of the world with only 27.78 per cent of her population living in urban agglomerations/towns, this country is facing a serious crisis of urban growth at the present time. Whereas urbanization has been an instrument of economic, social and political progress, it has led to serious socio-economic problems.

The sheer magnitude of the urban population, haphazard and unplanned growth of urban areas, and a desperate lack

of infrastructure are the main causes of such a situation. The rapid growth of urban population both natural and through migration, has put heavy pressure on public utilities like housing, sanitation, transport, water, electricity, health, education and so on.

Urbanization no doubt has a positive impact on income level, employment, production, infrastructure and education, but it is accompanied with a number of problems such as shortages of housing, inadequate water supply, inadequate sanitation and waste disposal facilities. Added to all these problems, in the developing countries, administration is weak and slack, traffic systems are not managed properly, industrial rules and regulations are flouted, they are not implemented seriously.

Objectives of the Study:

1. To analyse the process of urbanization in India
2. To assess emerging environmental issues associated with the process of urbanization.
3. To recommend measures to improve the environmental conditions of Indian cities.

Data Source and Methodology:

In this part of the study we have made an attempt to analyze **the process of urbanization and emerging environmental issues in India with special reference to environmental issues**. An integrated approach has been adopted in the present study analyses. The required data for the present study analysis have been obtained from both primary and secondary sources like **Census of India**, Environmental survey by The Hindu Daily, **CPCB report**, news papers, magazines etc. Researcher also made general observation by visiting major cities of India and also by interviewing the important scholars/personalities who are working in

this field. The collected data have been classified, processed and presented in the form of different cartographical and GIS techniques.

Urbanization Is A Process:

Urbanization is an index of transformation from traditional rural economics to modern industrial one. It is progressive concentration (Davis 1965) of population in urban unit. It is a finite process, a cycle through which a nation passes as they evolve from agrarian to industrial society (Davis and Golden, 1954). Davis has mentioned three stages in the process of urbanization. Stage one is the initial stage characterized by rural traditional society with predominance in agriculture and dispersed pattern of settlements. Stage two refers to acceleration stage where basic restructuring of the economy and investments in social overhead capitals including transportation, communication take place. Proportion of urban population gradually increases from 25% to 40%, 50%, 60% and so on. Dependence on primary sector gradually dwindles. Third stage is known as terminal stage where urban population exceeds 70% or more. At this stage level of urbanization (Davis, 1965) remains more or less same or constant. Rate of growth of urban population and total population becomes same at this terminal stage.

Urban areas have been recognized as “engines of inclusive economic growth”. Of the **121 crore** Indians, **83.3 crore** live in rural areas while **37.7 crore** stay in urban areas, i.e. approx **32 %** of the population. The census of India, 2011 defines urban settlement as :-All the places which have municipality, corporation, cantonment board or notified town area committee. All the other places which satisfy following criteria:
a. A minimum population of 5000 persons;

- b. At least 75 % of male main working population engaged in non-agricultural pursuits; and
- c. A density of population of at least 400 persons per square kilometer.

economic growth and social change in developing countries like India. Number of urban centers have grown from 1827 in 1901 to 5161 in 2001 and number of population residing in urban areas has increased from 2.58 crore in 1901 to **37.7 crore** in 2011.

Trend of Urbanization in India:

The process of Urbanization is not only desirable but essential for generating

Table 1: Number of Urban Centers and Urban Population in India

Census Years	Number Of Urban Agglomeration/Town	Total Population	Urban Population	Rural
1901	1827	238396327	25851873	212544454
1911	1825	252093390	25941633	2261517572
1921	1949	251321213	28086167	223235046
1931	2072	278977238	33455989	245521249
1941	2250	318660580	44153297	274507283
1951	2843	361088090	62443709	298644381
1961	2363	439234771	78936603	360298168
1971	2590	598159652	109113977	489045675
1981	3378	683329097	159462547	523866550
1991	3768	844324222	217177625	627146597
2001	5161	1027015247	285354954	741660293
2011	7935	1,210,854,977	377105760	833087662
2021 (Projected)	8233	1,48,056322	498179071	98238415

Source: (Census of India report)

Environmental Issues Associated With Urbanization:

The population of the world is growing at a fast pace besides this, world's population is urbanizing much faster than its growth. As a result of this process, population of cities is swelling fast. Phenomenal population growth coupled with fast pace of industrialization is responsible for urban environmental hazards. Human activities are disturbing the equilibrium of the atmospheric environment, particularly by changing chemistry of the atmosphere. Disposal of human and industrial waste into rivers, land, air not only affect the atmosphere and the climate but also degrade the quality of fresh water as well as damage

the ecosystem. There are many evidences to show that urbanization in India is producing a great stress on the environment.(Kurani.M.S-2007)

Dr. Wiesner, a scientific adviser said that we are “engaged in a race between catastrophe and intelligent use of technology, and it's not at all clear we are going to win”. There can be no question that the earth's capacity to absorb and assimilate pollution are no longer what they were. Almost every day the News Papers publish reports about death of some people from all over the world. They are dying either due to accidents caused by major train collision, plane crash or some natural calamities but very rarely they publish

reports about millions of people dying in the hospitals and at their homes or in the caring centers after suffering from long term unavoidable disease which are caused by pollution from air, water, land and noise etc either individually or in combination.

Quality of Air:

The main sources of air pollution are industrial plants, Power plants, Automobiles, Locomotives, Missiles, Dead bodies burning, Burning of oils, Refuse burning etc. Common contaminants that are Harmful to health or property. They are ammonia, sulfur oxides, nitrogen oxide, hydrogen sulfide, Carbon monoxide, dust radioactive gases, methane, chlorine and various organic solvents. **In Mumbai industries daily throw more than 1,600 tones, of pollutants it is followed by Delhi 1020 tones, Calcutta 985 tones, Chennai 880 tones, Bangalore 800 tones & Pune 800 tones etc**

Due to release of temperature and pollutants by the fossil fuels, the world temperature is rising day by day. It is estimated that before 1850 the concentration of carbon dioxide in the atmosphere was between 265 and 290 PPM, by 1978 the atmospheric CO₂ has risen to 330PPM and by 2001 it has increased to 485PPM. research reveals that increasing concentration of CO₂ in the atmosphere could cause a warning trend leading to drastic change in the climate of the world.

Today, everybody has a craze for having his own vehicles and in most of the cities automobiles are rapidly becoming the main source of air pollution. Due to inferior maintenance of vehicle in combination with lower combustion efficiency is making the vehicular exhausts a menace to the city dwellers.

Quality of Water:

Surface water in and around urban areas is mostly polluted by discharges of sewerage and industries. Polluted water

breeds diseases, hampers recreational and irrigation use of water and even becomes unsuitable for industrial use.. As a matter of fact only 72.9 percent of urban population has access to safe drinking water.

70 percent of river water pollution is by human wastes. **Kanpur municipality pours 474 million liters of sewage a day in Ganga. In Delhi is major drains discharges 8,30,000 kilo litres of wastes everyday**. Most of urban centers do not have sewerage treatment plants. Around 34 urban centers in India have complete sewerage system but only half of them have treatment systems. In Calcutta only 26 percent of population is served by sewerage. The sewerage water was easily poured into rivers. Crores of rupees today are being spend on cleaning river waters (Ganga Project is known to everybody). The coastal area of Mumbai has become slightly acidic and polluted. Near Gujarat coast the amount of mercury has risen in the sea water.

Many water borne diseases like Trachoma, Elephantiasis, Malaria, Diarrhea increasing. To these may be added Typhoid, Dysentery, Hepatitis are spread by contaminated water or dirty hands as well as Scabies, Yaws, Leprosy diseases are aggravated by insufficient water for washing purposes.

Management of Solid Waste:

Disposal of human waste has become a big problem in urban areas. As such Indian cities have small amount of garbage per person per day when compared with those of developed countries. The National Commission on Urbanization (2008), on the basis of sample of 40 cities over 100,000 population found that the mean per capita waste/day was 370gms Per day. **An average Indian generates about 450-500gm/day of solid waste and on an average 82.8% of solid is generated in metropolitan cities are collected and disposed. whereas only 59% is collected**

and disposed in Class I and Class II cities.

Besides the healthier ways of solid waste disposal the municipalities are also confronted with the monstrous problems of managing wastewater. Many of the urban cities in India do not have either proper drainage system or following proper methods of disposal Garbage whether from houses or industries tend to spoil not only the environment, it also effects the land, health of the people and water.

Slums Formation:

Other type of pollution which should concern us the most is the incidence of large number of sub-standard 'Bastis' or slums (Communities). There are varying estimates regarding slum population but the fact is that a sizeable proportion of our urban population live under sub-human conditions. Not to speak of houses, even the essential facilities of water supply and sanitation are not available in such slums. Such communities are there not only by choice but by compulsions and necessities; our planning system does not recognize these compulsions.

The prevalence of slums is very common in Third world countries in general and India in particular. But the origin of the slum dates back to the period of industrial revolution that came to exit in European Countries. **Presently, India's slum population is 20 per cent of the country's urban population. The slum dwellers in many cities account for between 30 to 40 per cent of the total population. Kolkata among mega cities, tops the list with over a third of its population in slums, followed by Mumbai, Delhi, Chennai, Hyderabad etc.**

The rapid growth of slum areas in Indian cities is creating bottlenecks for urban planners as well as the administrators in assuring the healthy living conditions in towns and cities. So without the development of these slums, the

development of the urban centers is not possible. Hence, while planning for the improvement of environment suitable strategies have to be evolved for different locations to solve the problems of these areas.

Traffic Issues:

The Traffic problem in Urban areas is one of the greatest problems of the day. Most of the cities and towns are growing in unplanned way. Due to lack of proper enforcement agencies encroachment in all parts of the cities going rapidly and due to political interference, authorities become incompetent. Most of the roads are narrow, haphazard and ill-maintained. Traffic problem is getting bad to worse because of high density of population, desire to have personal means of transport and to live near the city, mixed traffic, lack of civic sense, ill-maintained roads, poor regulation of traffic etc.

Suggestions for Urban Planning and Development:

The measures suggested to Urban planning and development. And also to improve the quality of urban environment.

1. Overpopulation is the root of all pollution problems. The total impact on environment is simply proportional to total population. The population control is needed both in urban and rural areas. There is also need for checking rural to urban migration by providing employment opportunities and better civic amenities.
2. Industrial waste water is to be treated and reused on conservation of water and reduction of pollution of nearby surface water. Recycling of industrial wastes and treating of industrial effluents.
3. Automobiles are the main sources of pollution in urban areas. To check it, public transport system should be encouraged. No vehicles should be

allowed to emit the pollutants above the maximum permissible limit.

4. Noise can be easily reduced without adding much cost of removal. The noise producing industries should use all devices to reduce the level of noise inside the industries. There should be complete banning of the use of loudspeaker in school and college zones and in the nights.
5. The indiscriminate exploitation of groundwater and other natural resources like agricultural, pastoral, grazing and forest lands also to be preserved. Provision of storage facilities for rainwater harvesting in each house, and making it mandatory by the corporation. Increase of percolation tanks in different parts of the city to augment the water levels in wells /tube wells with the supply of drinking water.
6. Minimize of garbage accumulation, use of gunny\nylon bags for carrying consumable goods, reusing bottle and recycling of paper should be adopted since garbage has a major share in polluting land air and water also indirectly effect on flora and fauna's.
7. There is need of preservation of land for green areas, recreation, lakes and ponds and parks and playgrounds etc..
8. **There is need to apply of GIS in Urban planning specially in mapping of slum areas, management of solid waste, land use planning and also mapping of all the properties in a city,which helps local bodies in planning, controlling encroachment and smooth administration.**
9. Urban people should be educated about the need to pressure environment through audio visual aids lectures, seminars and by physically involving them in implementing the environmental programmes. Environment and development have to be viewed as two sides of the same coin

Conclusion:

In present global atmosphere, all nations undergo with the challenges of environment, social, transportation, economy in their respective cities. These issues are commonly occurred in developing countries due to the difference of development in cities and villages. Most of countries focus on development of cities instead of rural areas. Consequently, the urban areas are equipped with infrastructure, public facilities as well as provide employment opportunities compared to the rural areas. Therefore inhabitants are more attracted to migrate in cities to avail hi tech facilities, enhance their lifestyles and ultimately these activities raise numerous urbanization issues. But this Urbanization has equally created havoc in the city area. Traffic problems, Over crowding, Air, water Noise Pollutions, slums , Solid and liquid waste and so many problems are deteriorated the quality of urban life. There is urgent need to overcome these urban problems for sustainable development. There is need to change the life style and outlook of urban people. Every urbanite should think that it is his sacred and patriotic duty to preserve environment for the benefit of one and all. One should develop a consciousness of the preservation is considered to be the highest stage of civilization.

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कोल्हापूर जिल्हा: कुंभी नदी खोऱ्यातील साक्षरतेचा अभ्यास- २०११

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गोषवारा :

जगातील विकसित देशांच्या तुलनेत भारतामध्ये साक्षरता निम्न आहे. भारत देशाला विकसित राष्ट्र करण्यासाठी भारतातील ग्रामीण जनतेची साक्षरता अभ्यासणे अत्यंत आवश्यक आहे. भारत हा खेड्यांचा देश असून भारतातील बहुसंख्य (६८ ते ७०%) लोकसंख्या खेड्यात राहते. ग्रामीण प्रदेशातील साक्षरता अभ्यासणे आणि साक्षरता वाढवण्यासाठी विविध पायाभूत उपाय-योजना करणे हे सध्याचे मानवी समुदाया समोरील आव्हान आहे. त्यानुसार प्रस्तुत संशोधन पेपर मधून कोल्हापूर जिल्ह्यातील कुंभी नदी खोऱ्यात येणाऱ्या गावातील साक्षरतेचा सन २०११ मधील अभ्यास करण्यात आलेला आहे. कुंभी नदी खोऱ्याचे तीन विभाग केले आहेत; ज्यामध्ये डोंगराळ प्रदेश, डोंगर पायथ्याचा प्रदेश, नदी खोऱ्याचा सुपीक मैदानी प्रदेश यांचा समावेश होतो. या प्रदेशामध्ये असलेल्या गावातील साक्षरतेवर येथील भौगोलिक रचनेचा कसा परिणाम झाला आहे, याचा अभ्यास केला आहे. या प्रदेशाचे भौगोलिक स्थान कोल्हापूर जिल्ह्याच्या उत्तर मध्य पश्चिमेस आहे. या प्रदेशातील साक्षरतेचा अभ्यास हा नदी पाणलोट क्षेत्र; या भौगोलिक घटकांनुसार केला आहे. या प्रदेशांमध्ये ५८ गावांचा समावेश होतो. कोणत्याही प्रदेशाच्या सामाजिक-आर्थिक विकासामध्ये साक्षरता हा लोकसंख्याशास्त्रीय घटक अत्यंत महत्त्वाचा आहे. या पेपरमध्ये साक्षरता दर हा संख्या, आलेख, नकाशे, तक्ते यांच्या सहाय्याने दर्शवला आहे. साक्षरता हा घटक लोकसंख्या भूगोलातील महत्त्वाचा घटक आहे. की, ज्याच्या माध्यमातून संबंधित प्रदेशातील सर्वांगीण विकासाचा स्तर समजण्यास मदत होते.

सूचक शब्द: - Keywords – literacy, male-female, region, river Basin, आर्थिक क्रिया.

प्रस्तावना: (Introduction)

कोल्हापूर शहर हे पंचगंगा नदीकाठी वसले असून पंचगंगा नदी ही पाच नद्यांचा संगम होऊन तयार झालेले नदी आहे. त्यापैकी एक कुंभी नदी आहे. या नदीचा उगम कोल्हापूर शहराच्या नैऋत्येस सह्याद्रीच्या डोंगर रांगांमध्ये होतो. ही नदी सह्याद्रीच्या डोंगर रांगांमधून डोंगर पायथ्याच्या प्रदेशातून नागमोडी वळणे घेत समतल मैदानी प्रदेशातून वाहते. ही नदी बहिरेश्वर या गावाजवळ भोगावती नदीला मिळते. कोणत्याही प्रदेशातील मानवी वसाहतीवर व लोकसंख्या वितरणावर त्या प्रदेशातील प्राकृतिक रचना अनकूल

आणि प्रतिकूल परिणाम करते. या नदी खोऱ्याच्या डोंगराळ प्रदेशात नदी मुखापासून मानवीवस्ती आढळते. येथील वसाहतीवर येथील प्राकृतिक रचनेचा परिणाम झालेला दिसून येतो. डोंगराळ प्रदेशात विखुरलेल्या व लोकसंख्या घनता कमी तर पर्वत पायथ्याच्या प्रदेशात डोंगराळ प्रदेशाच्या तुलनेत लोकसंख्या अधिक आहे. नदी खोऱ्याच्या समतल मैदानी प्रदेशात एकत्र व पुंज आकाराची वसाहत व लोकसंख्या घनता अधिक आहे. येथील सामाजिक-आर्थिक विकास पाहण्यासाठी तसेच शाश्वत विकास करण्यासाठी या प्रदेशातील साक्षरता अभ्यासणे अत्यंत

महत्वाचे आहे. कारण साक्षरता हा सामाजिक-आर्थिक विकासाचा निर्देशांक आहे. साक्षरतेमुळेच कोणत्याही प्रदेशातील मानव त्या प्रदेशातील प्राकृतिक रचना व नैसर्गिक घटकांचा संसाधन/साधनसंपत्ती म्हणून उपयोग करून त्या प्रदेशाचा सर्वांगीन करू शकतो. या नदीच्या उगमाजवळ लखमापूर या ठिकाणी कुंभी नदी धरण बांधण्यात आले आहे. त्याला लखमापूर डॅम असे म्हणतात. या प्रदेशातील पाण्याच्या बारमाही उपलब्धतेमुळे कृषीचा विकास झालेला दिसून येतो. या नदीचा भौगोलिक विस्तार राधानगरी, पन्हाळा, गगनबावडा, करवीर या प्रशासकीय हद्द दर्शवणाऱ्या तहसील मध्ये झाला आहे. हा प्रदेश पाण्याच्या बारमाही उपलब्धतेमुळे ऊस पिकासाठी प्रसिद्ध आहे. या प्रदेशात ऊस व इतर अनेक बागायती पिके घेतली जातात उदा. सोयाबीन, भात, मका, गहू, सुर्यफुल, भुईमुंग, विविध फळ व पालेभाज्या इ. त्यामुळे या प्रदेशात कृषी आधारित उद्योगधंद्यांची निर्मिती झाली आहे. त्यामध्ये गुन्हाळ घर, साखर कारखाने, राईस मिल, गोडेतेल घाणे इत्यादी. या प्रमुख उद्योगावर आधारित त्या प्रदेशात अनेक उपउद्योगांची निर्मिती झाली आहे, त्यामुळे रोजगार उपलब्धता वाढली आहे. तसेच अभ्यास क्षेत्रातील रस्ते व पायाभूत सुविधांचा विकास झाला आहे. परिणामी लोकसंख्या घनता व साक्षरता अधिक असल्याचे दिसून येते. साक्षरता म्हणजे संयुक्त राष्ट्रांच्या मते “कोणतीही भाषा वाचणे, समजणे आणि लिहिण्याच्या क्षमतेला साक्षरता असे म्हणतात.” तर “ज्या व्यक्तीला कोणतीही भाषा लिहिता, वाचता येत नाही अशा व्यक्तीला निरीक्षर म्हणतात.” देशातील नागरिकांमध्ये वैज्ञानिक वृत्ती निर्माण करणे, तसेच नागरिकांना त्यांचे मूलभूत हक्क मिळवण्यासाठी, त्यांची मूलभूत कर्तव्य पार पाडण्यासाठी साक्षरता आवश्यक आहे. एकूणच समाजाचा सामाजिक-आर्थिक व सर्वांगीण विकास मोजण्याकरिता साक्षरता वाढवणे आणि त्यामध्ये सतत सुधारणा करणे आवश्यक आहे. “वाचन आणि लिहिण्याची क्षमता म्हणजे साक्षरता होय” (अहमद आणि नुना, १९८६).

साक्षरता हा लोकसंख्याशास्त्राचा आणखी एक महत्वाचा घटक असून आधुनिक काळात कोणत्याही क्षेत्राच्या विकासामध्ये अगदी कृषी क्षेत्राताही किमान शिक्षणाची गरज भासत आहे. एकंदरीत समाज व राष्ट्राच्या विकासाचे मोजमाप करणारे ते एक महत्वाचे साधन म्हणून ओळखले जाते. साक्षरतेच्या प्रमाणावरून शिक्षित लोकांचे प्रमाण समजून येते. “समाजातील साक्षरता आणि शैक्षणिक स्तर हा विकासातील सर्वात महत्वाचा घटक आहे. त्याशिवाय कोणताही समाज प्रगती करू शकत नाही. साक्षरता ही कृषी आणि इतर क्षेत्रामध्ये प्रगती करण्यास सहाय्यभूत ठरते” (भूगोल तंत्र रमोत्रा, २०००). “ज्या व्यक्तीला लिहिता आणि वाचता येते व ते आकलन होते, ती कोणतीही भाषा असेल अशा लिहिता, वाचता व आकलन होणाऱ्या प्रक्रियेस साक्षरता असे म्हणतात” (भारतीय जनगणना आयोग, १९९१). साक्षरतेच्या पातळीचा लोकसंख्या, जननक्षमता, मर्तता, गतीमानता, व्यवसाय आणि सामाजिक-आर्थिक विकास, शहरीकरणाचे वाढते प्रमाण, शैक्षणिक संधी यावर परिणाम होतो. “साक्षरतेचा प्रचार, प्रसार व संहिता ही औद्योगीकरण, दळणवळण, व्यापार, शहरीकरण आणि आधुनिकता या सारख्या आजच्या सभ्यतेचे आवश्यक गुण आहेत.” (भारतीय जनगणना, १९९१). मानवाच्या विकासाचा आणि उच्च राहणीमानाचा साक्षरता हा दर्शक आहे. निरक्षरता हा मानवी विकासाला मिळालेला शाप असून निरक्षर समाज हा अधोगतीचे प्रतिक आहे. दारिद्र्य, चुकिच्या रूढी परंपरा, प्राचिन काळी विषिष्ट वर्गाची शिक्षण क्षेत्रात असणारी मत्तेदारी, स्त्रि व सामान्य लोकांना नाकारण्यात आलेला अध्ययनाचा अधिकार, स्त्रि-पुरुषांमध्ये केला जाणारा भेदभाव इ. अनेक कारणे निरक्षरते मागे आढळून येतात. “लोकांना अज्ञान आणि मागासलेपणा यातून बाहेर काढण्यासाठी साक्षरता हा खात्रीचा मुलभूत घटक आहे” (गोसल आणि चंदना, १९७९). ग्रामीण प्रदेशात शहरी भागापेक्षा अधिक प्रमाणावर स्त्रि-पुरुष साक्षरतेमध्ये भिन्नता आढळते. “साक्षरता ही मानवी

प्रगती आणि मानवी जीवनाचे स्वरूप आहे. ती जन्मदर, आर्थिक सुधारणा, जीवनशैली, स्त्रियांची स्थिती, नाविन्यपूर्ण प्रगती आणि इतर संबंधित घटकावर विशिष्ट दृष्टीकोनातून प्रभाव टाकते” (गौतम, २००६). उपलब्ध नैसर्गिक साधनसंपत्तीचा योग्य वापर करून राष्ट्राचा विकास साधने हे त्या देशातील बुद्धीजीवी व साक्षर लोकांच्यावर अवलंबून असते.

उद्दिष्टे: (Objectives)

१. Primary purpose of this study is to research the literacy rate of Kumbhi River Basin in Kolhapur district throughout २०११ censuses.
२. कुंभी नदी खोऱ्यातील प्राकृतिक रचनेचा प्रभाव साक्षरतेवर झाला आहे काय? हे पाहणे.

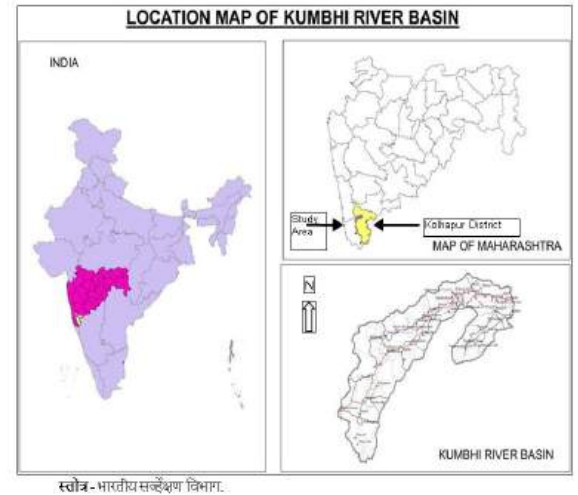
गृहीतक: (Hypothesis)

१. कुंभी नदी खोऱ्यातील प्राकृतिक रचनेचा प्रभाव साक्षरतेवर झाला आहे.

अभ्यास क्षेत्र: (Study Area)

प्रस्तुत संशोधन पेपरचे अभ्यास क्षेत्र कोल्हापूर जिल्ह्याच्या नैऋत्य-पश्चिमेस वसलेल्या गगनबावडा, पन्हाळा, करवीर या तालुक्यातून वाहणारी कुंभी नदी आहे. या नदीचा उगम गगनबावडा तालुक्यातील लखमापूर गावाजवळ होतो. या गावाच्या नावावरूनच येथील धरणास लखमापूर डॅम हे नाव देण्यात आले आहे. या डॅमच्या बांधकामास १९८० मध्ये सुरवात होऊन २००६-०७ साली त्याचे बांधकाम पूर्ण झाले. कुंभी नदी लखमापूरजवळ उगवते आणि सुमारे ४५ किमी ईशान्येकडे वाहते, नंतर ती पूर्वेकडे वाहते आणि पंचगंगेच्या दुसऱ्या उपनदीला मिळते; कुंभी नदीला गोठे गावाजवळ धामणी नदी मिळते पुढे ती सांगरूळ गावाच्या ईशान्येला पूर्वेकडे तीव्र वळण घेऊन पूर्वेकडे वाहत असताना तिला उपवडे या गावाजवळ उगम पावऊन पासार्डे - आमशी या गावाजवळून वाहत

येणारा (हारवळ) नावाचा ओढा म्हारूळ गावाजवळ कुंभी नदीला मिळतो. पुढे कुंभी नदी पूर्वेकडे वाहत जाऊन बहिरेश्वर व कोगे गावाजवळ भोगावती नदीला मिळते. कुंभी नदीचा भौगोलिक विस्तार $16^{\circ} 24' 20.79''$ उत्तर अक्षवृत्त ते $16^{\circ} 48' 0.35''$ उत्तर अक्षवृत्त आणि रेखावृत्तीय विस्तार हा $73^{\circ} 09' 13.78''$ पूर्व ते $74^{\circ} 49' 31.91''$ पूर्व या दरम्यान आहे. या नदीच्या प्रवाह मार्गात डोंगराळ प्रदेश, डोंगरपायथ्याचा प्रदेश व सपाट मैदानी प्रदेशात वसलेल्या गावांचा समावेश होतो. या प्रदेशातील सरासरी उंची ५६७ मी ते ६५० मी या दरम्यान आहे. या नदीने कोल्हापूर जिल्ह्यातील ३१५ Sq. M. क्षेत्र व्यापलेले आहे. २०११ नुसार कोल्हापूर जिल्ह्याची लोकसंख्या ३ कोटी ८७ लाख ६००१ आहे. तर साक्षरता दर ८१.५१% आहे.



अभ्यास पद्धती: (Methodology)

प्रस्तुत संशोधन कार्य Kolhapur District Census Handbook मधून प्राप्त झालेल्या दुय्यम डेटा वर आधारित आहे. कोल्हापूर जिल्हा आणि महाराष्ट्र राज्याचे सांख्यिकीय गोषवारा आणि भारतीय जनगणना इत्यादी विविध दुय्यम माहितीचा वापर केला आहे. संकलित माहितीचे विश्लेषण करण्यासाठी वर्णनात्मक आणि नमुना संशोधन पद्धतीचा वापर केला आहे. गृहीतक पडताळणीसाठी Chi-square test या संख्यात्मक तंत्रज्ञानाचा उपयोग केला आहे.

१. माहिती आणि माहितीचा स्रोत: (Data Collection)

प्रस्तुत संशोधन पूर्णपणे भारत सरकारच्या वार्षिक जनगणनेच्या पुर्नवालोकातून संकलित केलेल्या दुय्यम नोदिवर आधारित आहे. यामध्ये देश, राज्य, जिल्हा, जिल्ह्यातील तालुका साक्षरता समाविष्ट आहे. कुंभी नदी खोऱ्यातील साक्षरता दर्शविण्यासाठी नदी प्रवाह ज्या तीन भौगोलिक प्रदेशातून वाहतो; त्यामध्ये डोंगराळ प्रदेश, पर्वत पायथ्याचा प्रदेश, समतोल मैदान नदी खोऱ्याचा प्रदेश यांचा समावेश होतो. या प्रदेशांमध्ये वसलेल्या गावांमधील साक्षरता दर दर्शविण्यासाठी यादृच्छिकपणे ४५ गावांची निवड करण्यात आली आहे. साक्षरता दर्शविण्यासाठी माहितीचे विश्लेषण केले आहे. साक्षरता दर म्हणजे त्या प्रदेशातील एकूण साक्षर लोकसंख्या भागिले त्या प्रदेशातील ६ वर्षावरील एकूण लोकसंख्या होय. साक्षरता दर खालील सूत्राद्वारे मोजला जातो.

$$\text{Literacy Rate} = \frac{\text{Literacy Population}}{\text{Total Population above 6 ages}} * 100$$

$$\chi^2 = \sum \frac{(O - E)^2}{E}$$

χ^2 = the test statistic $\sum$ = the sum of
O = Observed frequencies E = Expected frequencies

२. Statistical analysis: Hypothesis testing:

H_0 : Literacy are not significantly dependent on Rigion. V/S H_1 : Literacy are significantly dependent on Rigion.

Chi-square test:

$$\chi^2 = \sum \frac{(O_i - E_i)^2}{E_i}$$

There,

$$1. \chi^2 = \text{Chi-Square}$$

Chi-square test:

तुलनात्मक मूल्यमापन करण्यासाठी येथे कोल्हापूर जिल्ह्यातील साक्षरता दराचा अभ्यास केला आहे. टेबल नंबर एक कोल्हापूर जिल्ह्यातील स्त्री-पुरुष साक्षरता दर्शवते त्यामध्ये पुरुष साक्षरता आणि महिला साक्षरता टक्केवारीमध्ये आहे.

साक्षरता वाढविण्यासाठी राबवले जाणारे कार्यक्रम:

१. शाश्वत प्रौढ साक्षरता कार्यक्रम
२. ग्रामीण कार्यात्मक साक्षरता १९८६
३. राष्ट्रीय साक्षरता अभियान १९७८
४. सर्व शिक्षा अभियान २००१
५. बेटी बचाव बेटी पढाव २०१५.

२०११ च्या जनगणनेनुसार भारताची एकूण लोकसंख्या १.२१ अब्ज इतकी होती आणि एकूण साक्षरता दर ७४.०४९ टक्के इतका होता. सर्वाधिक साक्षर राज्य केरळ हे असून सर्वात कमी साक्षरता बिहार राज्यात आहे. ७४.०४९ % या एकूण साक्षरतेत ८४.१४ % पुरुष तर स्त्री साक्षरता ६५.१४५% असलेली दिसून येते. २०११ नुसार महाराष्ट्रातील स्त्री-पुरुष साक्षरता ८९.८२% पुरुष आणि ७५.८८% स्त्रिया साक्षरता आहेत. तर एकूण साक्षरता ८२.९१% असलेचे दिसून येते. तसेच कोल्हापूर जिल्ह्याची साक्षरता ८१.५०% असून पुरुष साक्षरता ८८.५७% तर स्त्री साक्षरता ७४.२२% इतकी आहे. अभ्यास क्षेत्रातील साक्षरता आणि निरक्षरतेचा अभ्यास कुंभी नदी पाणलोट क्षेत्र या भौगोलिक विभागानुसार व २०११ च्या जनगणनेचे निरीक्षण करून अभ्यासली आहे.

2. O_i = Observed Value

3. E_i = Expected Value $E_i = \text{Literate} + \text{Illiterate} * \text{Total Literate} / \text{All Total. \&}$
 $RT*CT/AT. 12607*5612/91191 = 7,273.519$

4. $\alpha = 0.05$

5. $Df = (\text{Rows}-1) * (\text{Colms}-1) =$

Chi-square contingency Table:

Region	Literate	Illiterate	Total
Hilly	7757	4850	12607
Plain	34874	28224	63098
Foot	9981	5505	15486
	52612	38579	91191

	Ei	oi	Chi
E(HL)	7273.519	7757	32.13764016
E(PL)	36403.94	34874	64.29869171
E(FL)	8934.538	9981	122.5674199
E(HiL)	5333.481	4850	43.8276141
E(PiL)	26694.06	28224	87.6871554
E(FiL)	6551.462	5505	167.1509654
	Total		517.6694866

$$\chi^2_{(\text{calculated})} = 517.66$$

$$\chi^2_{(\text{table})} = 3.6$$

$$\chi^2_{(\text{calculated})} = 517.66 > \chi^2_{(\text{table})} = 3.6$$

There accept H_1 a at 5% level of significant (Literacy are significantly dependent on Rigion.)

i.e. Literacy is dependent on region

अभ्यास क्षेत्रतिल भौगोलिक विभाग:-

१. डोंगराळ प्रदेश : - (Hilly Region)

Table: 01: Selected villages Literacy rate in Hilly Region															
Village	Total Population	Male	Female	Literate person	%	Male	%	Female	%	Illiterate person	%	Male	%	Female	%
Lakhamapur	445	239	206	243	54.606	149	61.316	94	38.683	202	45.393	90	44.554	112	55.445
Gaganbavd	1588	758	830	1202	75.692	598	49.750	604	50.249	386	24.307	160	41.450	226	58.549
Saitavade	1072	560	512	637	59.421	393	61.695	244	38.304	435	40.578	167	38.390	268	61.609
Sangashi	364	187	177	245	67.307	140	57.142	105	42.857	119	32.692	47	39.495	72	60.504
Narvali	263	137	126	167	63.498	100	59.880	67	40.119	96	36.501	37	38.541	59	61.458
Taliye kh.	393	205	188	200	50.890	126	63	74	37	193	49.109	79	40.932	114	59.067
Vesarf	525	259	266	271	51.619	164	60.516	107	39.483	254	48.380	95	37.401	159	62.598
Asalaj	1619	851	768	1026	63.372	615	59.941	411	40.058	593	36.627	236	39.797	357	60.202
Palsambe	469	244	225	285	60.767	161	56.491	124	43.508	184	39.232	83	45.108	101	54.891
Kode Bk.	983	519	464	542	55.137	351	64.760	191	35.239	441	44.862	168	38.095	273	61.904
Borbet	645	340	305	414	64.186	251	60.628	163	39.371	231	35.813	89	38.528	142	61.471
Mandukali	1210	649	561	715	59.090	439	61.398	276	38.601	495	40.909	210	42.424	285	57.575
Mandur	1205	628	577	652	54.107	385	59.049	267	40.950	553	45.892	243	43.942	310	56.057
Taliye Kh.	644	331	313	420	65.217	262	62.380	158	37.619	224	34.782	69	30.803	155	69.196
Khokurie	1172	601	571	738	62.969	445	60.298	293	39.701	434	37.030	156	35.944	278	64.055
Total	12597	6508	6089	7757	61.57815	4577	59.004	3178	40.969	4850	38.501	1929	39.773	2911	60.020

Source: - Researcher Creation

डोंगराळ प्रदेशातील साक्षरता:

डोंगराळ प्रदेशातील यादृच्छिक पद्धतीने 15 गावे निवडलेली आहेत. या डोंगराळ प्रदेशाची एकूण

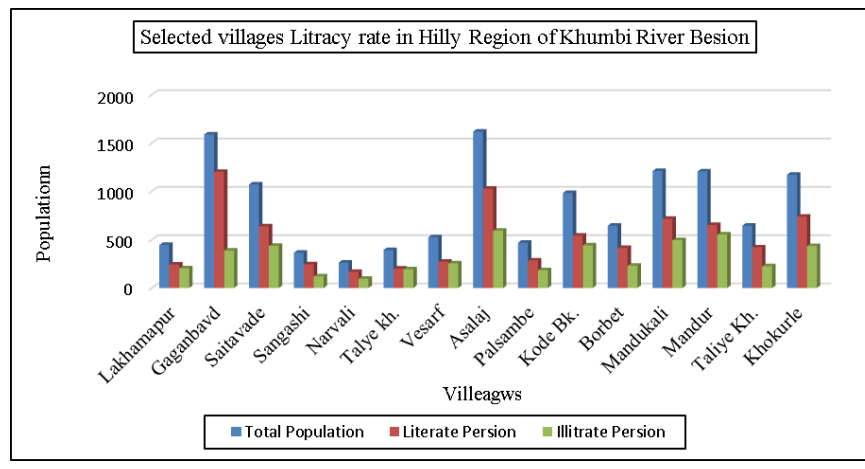
लोकसंख्या 12597 असून साक्षर लोकांची एकूण लोकसंख्या 7757 आहे. त्यामध्ये पुरुष साक्षरता 59% व स्त्री साक्षरता ४०.९६% आहे, तर या विभागातील

पाटील प्राज्ञा रवींद्र, प्रा. डॉ. पाटील संदीप अर्जुना

एकूण निरीक्षण लोकसंख्या 38.42 % आहे. निवडलेल्या गावानुसार सर्वाधिक साक्षरता गगनबावडा येथे 75% आहे; तर सर्वात कमी साक्षरता 50% तिलवे खुर्द या गावात आहे. सर्वसाधारणपणे पुरुषांच्या तुलने स्त्रियांचे निरक्षरतेचे प्रमाण सर्वात अधिक दिसून येते. गगनबावडा हे गाव तालुक्याचे ठिकाणी असल्यामुळे इतर गावाच्या तुलनेत शैक्षणिक सुविधा, सामाजिक-आर्थिक विकास अधिक आहे. परिणाम या ठिकाणी साक्षरता अधिक आहे. डोंगराळ प्रदेशातील निवडलेल्या एकूण 15 गावांमध्ये गगनबावडा मध्ये

सर्वाधिक साक्षरता तर तिलवे खुर्द गावामध्ये सर्वात कमी साक्षरता आहे. उर्वरित १३ गावामध्ये सर्वसाधारण साक्षरता दिसून येते. डोंगराळ प्रदेशातील प्राकृतिक रचना अत्यंत क्लिष्ट व प्रतिकूल असल्यामुळे भौतिक, कृषी, सामाजिक-आर्थिक पायाभूत सुविधांची निम्न उपलब्धता तसेच बहुसंख्य लोकसंख्या प्राथमिक व्यवसायमध्ये (शेती, पशुपालन, वनातील फळे,कंदमुळे इ.) गुंतलेली आहे. त्यामुळे निम्न अर्थार्जन आणि राहणीमानाचा निम्न स्तर परिणामी साक्षरता निम्न आहे.

आलेख क्र. ०१



डोंगर/पर्वत पायथ्याचा प्रदेश : - (Foot Hill Region)

Villages	Total Population	Male	Female	Literate person	%	Male	%	Female	%	Illiterate person	%	Male	%	Female	%
Wetavde	1216	645	571	752	61.842	480	63.829	272	36.170	464	38.157	165	35.560	299	64.439
Asandoli	1496	770	726	905	60.494	526	58.121	379	41.878	591	39.505	244	41.285	347	58.714
Nivade	1228	632	596	802	65.309	460	57.356	342	42.643	426	34.690	172	40.375	254	59.624
Vesarde	659	334	325	414	62.822	244	58.937	170	41.062	245	37.177	90	36.734	155	63.265
Tisangi	2048	1031	1017	1526	74.511	815	53.407	711	46.592	522	25.488	216	41.379	306	58.620
Mhalunge	232	123	109	181	78.017	105	58.011	76	41.988	51	21.982	18	35.294	33	64.705
Sakhari	1130	559	571	667	59.026	374	56.071	293	43.928	463	40.973	185	39.956	278	60.043
Kirave	1167	602	565	742	63.581	438	59.029	304	40.970	425	36.418	164	38.588	261	61.411
Atkirwadi	842	414	428	491	58.313	285	58.044	206	41.955	351	41.686	129	36.752	222	63.247
khadule	516	269	247	303	58.720	190	62.706	113	37.293	213	41.279	79	37.089	134	62.910
Gharpan	1874	969	905	1337	71.344	763	57.068	574	42.931	537	28.655	206	38.361	331	61.638
Satwan	197	105	92	139	70.558	81	58.273	58	41.726	581	294.92	24	4.1308	34	5.8519
Parakhandale	1305	683	622	1011	77.471	549	54.302	462	45.697	294	22.528	734	249.65	160	54.421
Navalewadi	251	142	109	152	60.557	102	67.105	50	32.894	99	39.442	40	40.404	59	59.595
Gotha	802	408	394	559	69.700	304	54.382	255	45.617	243	30.299	104	42.798	139	57.201
Total	14963	7683	7277	9981	66.7045	5716	57.268	4265	42.731	5505	36.790	2570	46.684	3012	54.713

Source: - Researcher Creation

डोंगर/पर्वत पायथ्याचा प्रदेश:

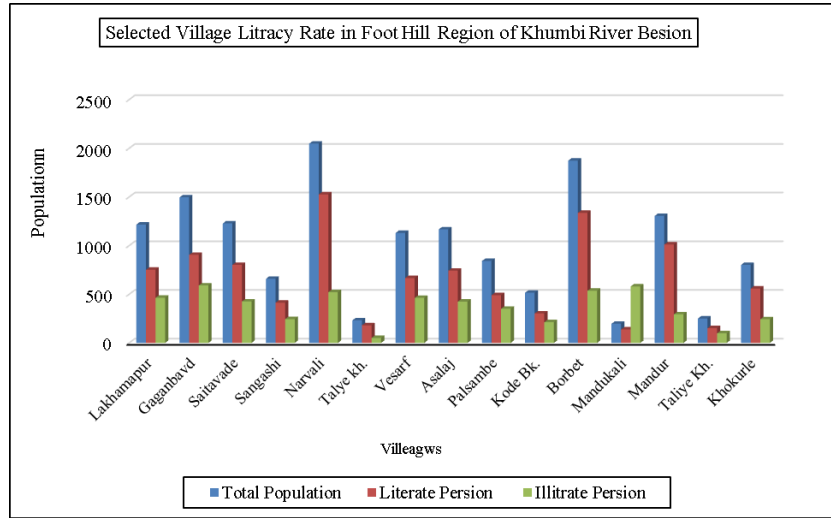
पर्वत पायथ्याच्या प्रदेशांमधील यादृच्छिक पद्धतीने 15 गावांची निवड केली आहे. या प्रदेशाची एकूण लोकसंख्या 14963 असून साक्षर लोकांची

एकूण संख्या 66.70% आहे. यामध्ये पुरुष साक्षरता 52.01% व स्त्री साक्षरता 43.4% आहे. या विभागात एकूण निरक्षर लोकसंख्या 33.29% असून त्यांमध्ये पुरुषांचे प्रमाण 51.88% आहे तर स्त्रियांचे प्रमाण

58.41% आहे. या निवडलेल्या गावांमध्ये सर्वात जास्त साक्षर लोकसंख्या म्हागुंगे या गावांमध्ये ७८% आहे. या प्रदेशात उतारावरील कोरडवाहू शेती, बहुसंख्य लोकसंख्या प्राथमिक व्यवसायमध्ये (शेती, पशुपालन, वनातील फळे,कंदमुळे इ.) गुंतलेली आहे. त्यामुळे तुटपुंज्जी अर्थप्राप्ती, राहणीमान स्तर निम्न तसेच पायाभूत सुविधांची कमतरता परिणामी साक्षरता कमी आहे. परंतु पर्वत पायथ्याच्या प्रदेशांमध्ये डोंगराळ

प्रदेशाच्या तुलनेत साक्षरतेचे प्रमाण अधिक दिसून येते. कारण या प्रदेशात कोरडवाहू शेतीसाठी उपलब्ध झालेली पाण्याची सुविधा त्यामुळे झालेला कृषीचा विकास व वाढलेली कृषी उत्पादकता. तसेच शैक्षणिक सुविधांचा विकास, व्दितीय व्यवसायांची होत असणारी उपलब्धता (कृषीपूरक, कृषीप्रक्रिय उद्योग-धंदे उदा.- राइस मिल, पोहा निर्मिती इ.) परिणामी साक्षरता अधिक आहे.

आलेख क्र. ०२



समतल नदी खोऱ्याचा मैदानी प्रदेश: - Plain Region

Table: 03: Selected Village Literacy Rate in Plain Region

Village	Total population	Male	Female	Literate person	%	Male	%	Female	%	Illiterate person	%	Male	%	Female	%
Kale	6403	3369	3034	4613	72.044	2650	57.446	1963	42.553	1790	27.955	719	40.167	1071	59.832
Swarde	3271	1764	1507	2439	74.564	1364	55.924	1075	44.075	832	25.435	400	48.076	432	51.923
Bhamte	2190	1129	1061	1571	71.735	892	56.779	679	43.220	619	28.264	237	38.287	382	61.712
Koparde	5311	3051	2260	3753	70.664	2381	63.442	1372	36.557	1558	29.335	670	43.003	888	56.996
Sangrul	8414	4395	4019	6271	74.530	3573	56.976	2698	43.023	2143	25.469	822	38.357	132	6.1595
Kuditre	4382	2296	2086	3150	71.884	1781	56.539	1369	43.460	1232	28.115	515	41.801	717	58.198
Mharul	2343	1230	1113	1616	68.971	975	60.334	641	39.665	727	31.028	255	35.075	472	64.924
Pasarde	1602	858	744	1151	71.847	694	60.295	457	39.704	451	28.152	164	36.363	287	63.636
Adure	1668	865	803	1128	67.625	657	58.244	471	41.755	540	32.374	208	38.518	332	61.481
Koge	4920	2602	2318	3317	67.418	1921	57.913	1396	42.086	1603	32.581	681	42.482	922	57.517
Chichawade	1827	1002	825	1354	74.110	560	41.358	432	31.905	335	18.336	126	37.611	209	62.388
Marali	1935	1023	912	1289	66.614	748	58.029	541	41.970	646	33.385	275	42.569	371	57.430
Malharpeth	1288	667	621	933	72.437	537	57.556	396	42.443	355	27.562	130	36.619	225	63.380
Andur	1119	601	518	663	59.249	424	63.951	239	36.048	456	40.750	177	38.815	279	61.184
Bololi	2563	1309	1254	1626	63.441	971	59.717	655	40.282	937	36.558	338	36.072	599	63.927
Total	49236	26161	23125	34874	70.830	20128	57.716	13384	38.378	28224	57.323	5717	20.255	7318	25.928

Source: - Researcher Creation

समतल नदी खोऱ्याचा मैदानी प्रदेश:

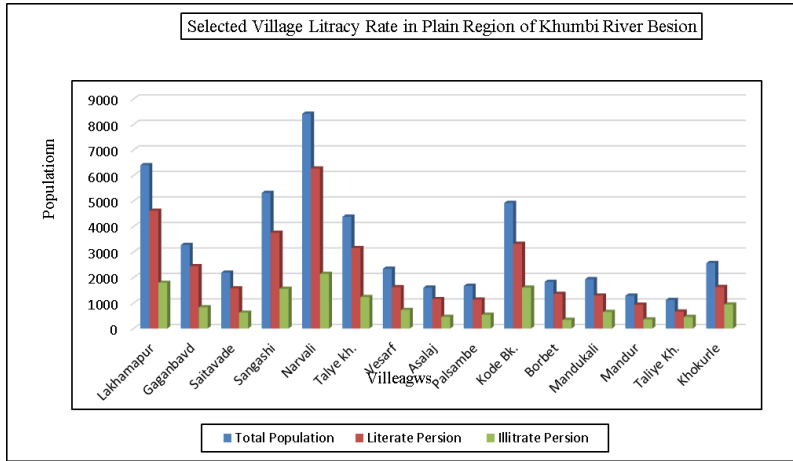
कुंभी नदी समतल मैदानी खोऱ्याच्या प्रदेशातील 15 गावांची निवड यादृच्छिकपणे केली आहे. या विभागाची एकूण लोकसंख्या 49,236 इतकी आहे. तर यामध्ये पुरुष साक्षरता 57.71% व स्त्री साक्षरता 38.37% आहे. तर या विभागाचे एकूण

साक्षरता 70.83% आहे. या प्रदेशात एकूण निरक्षर लोकसंख्या 57.32% आहे निवडलेल्या गावानुसार सर्वाधिक साक्षरता 74% सावर्डे व सांगरूळ या गावांमध्ये दिसून येते, तर सर्वात कमी साक्षरता चिंचवडे या गावांमध्ये दिसून येते. यामध्ये पुरुष निरक्षर संख्या 20.25% असून स्त्रियांचे प्रमाण 25.92% आहे.

अभ्यास क्षेत्रातिल समतल मैदानी नदी खोऱ्याच्या प्रदेशात येणाऱ्या गावांमध्ये पाण्याचे अधिक उपलब्धता, सुपिक जमीन परिणामी अधिक कृषी उत्पादकता व कृषी विकास त्यामुळे कृषी प्रक्रिया उद्योग व त्याला पूरक उद्योगांचा (साखर कारखाना, पिक व फळ प्रक्रिया उद्योग, पेपर मिल, लघु-कुटीर उद्योग) विकास झालेला आहे. तसेच या प्रदेशातील लोकसंख्या अधिक प्रमाणता व्दितीय व तृतीय व्यवसायामध्ये गुंतलेली

आहे. त्यामुळे अर्थार्जन काही प्रमाणात अधिक त्यामुळे या प्रदेशांमध्ये समाविष्ट असणाऱ्या गावांमध्ये सामाजिक-आर्थिक, शैक्षणिक विकास डोंगराळ प्रदेश व पर्वत पायथ्याच्या प्रदेशापेक्षा अधिक आहे. उच्च राहणीमान, शैक्षणिक पायाभूत सुविधांची उपलब्धता परिणामी या प्रदेशात साक्षरता अधिक असल्याचे दिसून येते. पुरुषांच्या तुलनेत महिला साक्षरता निम्न आहे.

आलेख क्र. ०३



निष्कर्ष: (Conclusion)

संपूर्ण मानवी समाजामध्ये साक्षरतेला अत्यंत महत्त्वाचे स्थान आहे. संप्रेषण साधण्याचे माध्यम भाषा आणि लिपी आहे, मग ती कोणतीही असेल. कोणतीही भाषा आणि लिपी यांचे ज्ञान व ती अवगत असणे आवश्यक आहे. अन्यथा जीवनामध्ये अनेक समस्यांना सामोरे जावे लागते. त्यामुळे साक्षर होणे अत्यंत गरजेचे आहे. राष्ट्र, राज्य आणि जिल्हा पातळीवर सक्षरता दरात लक्षणीय बदल असून पुरुषांच्या तुलनेत स्त्री सक्षरता निम्न आहे. कुंभी नदी खोऱ्यातील साक्षरतेचा अभ्यास करण्यासाठी अभ्यास क्षेत्राचे तीन विभाग केले गेले. एक डोंगराळ प्रदेश, दोन पर्वत पायथ्याचा प्रदेश, तीन समतल नदी खोऱ्याचा मैदानी प्रदेश; त्यानुसार निवडक गावातील साक्षरतेचा अभ्यास केला गेला असता सर्वाधिक साक्षरता समतल नदी खोऱ्याच्या प्रदेशात आहे. सर्वात कमी साक्षरता डोंगरावर प्रदेशात दिसून येते. तिन विभागांमध्ये महिला साक्षरता पुरुष

साक्षरतेच्या तुलनेत कमी आहे. त्यातल्या त्यात डोंगर प्रदेशामध्ये सर्वात कमी महिला साक्षरता आहे. डोंगराळ प्रदेशातील प्रतिकूल प्राकृतिक रचना, हवामान, पाणी व जमिनीची निम्न उपलब्धता यांचा परिणाम कृषी व मानवाच्या सामाजिक-आर्थिक जीवनावर झालेला आहे. पायाभूत सुविधा व शैक्षणिक सुविधांची कमतरता त्यामुळे या प्रदेशातील लोकांना शिक्षणाच्या कमी संधी, निम्न राहणीमान, बहुसंख्य लोकसंख्या प्राथमिक व्यवसायामध्ये गुंतलेली आहे. त्यामुळे रोजगाराच्या कमी संधी, तुटपुंजे आर्थिक उत्पन्न यामुळे डोंगराळ प्रदेशामध्ये साक्षरता निम्न दिसून येते. कुंभी नदी खोऱ्याच्या मैदानी प्रदेशात पाणी, सुपीक जमीन, हवामान व प्राकृतिक रचना अनुकूल असल्यामुळे कृषी व कृषीपूरक उद्योगांमध्ये यांचा अधिक विकास तसेच काही प्रमाणात लोकसंख्या व्दितीय, तृतीय व्यवसायामध्ये गुंतलेली आहे. परिणामी या प्रदेशातील सामाजिक-आर्थिक जीवनाचा दर्जा उच्च आहे. तसेच

पायाभूत व शैक्षणिक सुविधांची पर्याप्त उपलब्धता; त्यामुळे स्त्री-पुरुष साक्षरता वरील दोन प्रदेशांच्या तुलनेत अधिक दिसून येते. तसेच निवडलेल्या तिन्ही प्रदेशात महिला साक्षरता कमी आहे. कारण अजूनही समाजामध्ये मुलीच्याकडे पाहण्याचा दृष्टीकोन, मुलगी ही अबला आहे, मुलींचे कार्यक्षेत्र चूल आणि मुल, मुलगी ही परक्याचे धन, मुलगा हा वंशाचा दिवा, मुलगी होणे म्हणजे अपशकून, मुलगा आणि मुलगी यांच्या पालण-पोषणामध्ये केला जाणारा भेदभाव, मुलींच्या मधील कुपोष इ. मुळे स्त्रियांची साक्षरता कमी असल्याचे दिसून येते. तसेच सद्या एकूणच अभ्यास क्षेत्रामध्ये साक्षरता वाढवण्यासाठी अमलात आणलेल्या शासकीय योजनांच्या कार्यवाहीमुळे साक्षरतेमध्ये वाढ होत असलेली दिसून येते.

उपाय: (Recommendation)

१. साक्षरता वाढवण्यासाठी डोंगराळ प्रदेशांमध्ये पायाभूत व शैक्षणिक सुविधांची प्रमाण वाढवण्यात यावे.
२. साक्षरते संदर्भात अभ्यास क्षेत्रातील लोकसंख्येत जाणीव-जागृती करण्यात यावी.
३. साक्षरता वाढवण्यासाठी राबविल्या जाणाऱ्या शासकीय योजनांची अंमलबजावणी काटेकोर व्हावी.

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३. कोल्हापूर जिल्हा सामाजिक-आर्थिक समालोचन-१९९१, २००१, २०११
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कोल्हापूर जिल्ह्यातील मत्स्य व्यवसायाचे भौगोलिक विश्लेषण (२०२२-२०२३)**संग्राम रंगराव पाटील^१, डॉ. नामदेव शामराव आडनाईक^२**^१संशोधक विद्यार्थी, मुंबई विद्यापीठ, मुंबई.^२भूगोल विभागप्रमुख, प्रा. डॉ. एन. डी. पाटील महाविद्यालय, मलकापूर.**Corresponding Author – संग्राम रंगराव पाटील****DOI - 10.5281/zenodo.15063519****गोषवारा:**

कोल्हापूर जिल्ह्यातील मत्स्यव्यवसाय सार्वजनिक क्षेत्रापेक्षा सहकारी क्षेत्रात विकसित झाला आहे. जलस्रोतांचे सापेक्ष महत्त्व हे दर्शविते की, अभ्यास क्षेत्राच्या पश्चिम भागात या प्रदेशातील पारंपारिक मत्स्यपालनाची मोठी क्षमता आहे. अभ्यास क्षेत्राचा पश्चिम भाग नैसर्गिक जलसाठ्यासाठी उत्तम भौगोलिक परिस्थिती प्रदान करतो, तर पूर्वेकडील भागात मत्स्यपालनासाठी कृत्रिम तलाव बांधण्याची गरज आहे. जलस्रोतांचे सापेक्ष महत्त्व हे दर्शविते की, राधानगरी तालुका प्रदेशाच्या पश्चिम भागात भूपृष्ठावरील जलस्रोतांच्या साठवणुकीसाठी अग्रेसर आहे तेथे ४७ टक्के जल क्षेत्र मत्स्यपालनासाठी वापरले गेले आहे. परंतु उर्वरित तालुक्यामधील एकूण भौगोलिक क्षेत्राच्या तुलनेत वास्तविक जलाचे क्षेत्र समाधानकारक नाही. त्यामुळे ते मजबूत करणे आवश्यक आहे. कोल्हापूर जिल्ह्यातील पंचगंगा नदी आणि तिच्या उपनद्यांसह क्षारयुक्त आणि पाणी साचलेल्या मातीमुळे मत्स्यशेतीसाठी नवीन क्षमता निर्माण झाली आहे.

प्रस्तावना:

सागरी मत्स्यव्यवसाय अन्न सुरक्षेसह १.५ दशलक्षाहून अधिक मच्छिमार लोकांना प्रत्यक्ष रोजगार प्रदान करतो आणि इतर लोक या क्षेत्रावर अप्रत्यक्षपणे अवलंबून असतात. परिसंस्थेची रचना आणि कार्ये यांच्या आधारे भारतीय किनारपट्टीचे २२ विभाग केले आहेत. भारतीय बोटींचा प्रकार पारंपारिक कॅटमॅन, मसुला बोटी, फळीपासून बनवलेल्या बोटीपासून ते सध्याच्या मोटार चालवलेल्या फायबर-काचेच्या बोटी, यांत्रिक ट्रॉलर आणि गिलनेटर्सपर्यंतचा आहे. सागरी मत्स्यव्यवसाय क्षेत्रात, मत्स्यव्यवसायात १,९४,४९० बोटी होत्या त्यापैकी ३७ टक्के यांत्रिकी, ३७ टक्के मोटारीकृत आणि २६ टक्के मोटारी नसलेल्या होत्या. मच्छीमार लोकांच्या पूर्ण मालकीच्या एकूण १,६७,९५७ बोटीपैकी ५३ टक्के मोटारी नसलेल्या, २४ टक्के मोटारीकृत आणि २३ टक्के यांत्रिकी होत्या. पूर्णपणे मच्छिमारांच्या मालकीच्या यांत्रिकी बोटीपैकी

२९ टक्के ट्रॉलर, ४३ टक्के गिलनेटर्स आणि १९ टक्के डोलनेटर्स होत्या.

भारताचे सागरी मास्यांचे उत्पादन १९५० मध्ये ५.३४ लाख टन वरून २०२२ मध्ये ३१.५० लाख टन इतके वाढले. उत्पादनात मोठ्या प्रमाणात तेल सार्डिनचा समावेश आहे, त्यानंतर पेनाईड आणि नॉन-पेनाईड कोळंबी, इंडियन मॅकेरल, बॉम्बे डक, क्रोकरपॉइसचा इत्यादींचा समावेश आहे.

भारतातील गोड्या पाण्याच्या स्रोतांमध्ये नद्या आणि कालवे (१९७०२४ किमी), जलाशय ३.१५ दशलक्ष हेक्टर), तलाव आणि शेततळी (२३५ दशलक्ष हेक्टर), नालाकृती/चंद्राकार तलाव आणि सोडलेले पाणी (१.३ दशलक्ष हेक्टर), खारे पाणी (१.२४ दशलक्ष हेक्टर) यांचा समावेश आहे. अंतर्गत मास्यांचे उत्पादन १९५० मध्ये १९२००० टन वरून २०२२ मध्ये ७८१८४६ टन इतके वाढले आहे.

मत्स्यव्यवसाय हे भारतातील महत्त्वाचे क्षेत्र आहे. हे लाखो लोकांना रोजगार देते आणि देशाच्या अन्न सुरक्षेत देखील योगदान देते. ८००० कि. मी. पेक्षा जास्त समुद्रकिनारा, २ दशलक्ष चौ. कि. मी. पेक्षा जास्त एक विशेष आर्थिक क्षेत्र (SEZ) आणि विस्तृत गोड्या पाण्याच्या स्रोतांसह, मत्स्यपालन महत्त्वपूर्ण भूमिका बजावते. सध्या, मत्स्यव्यवसाय आणि मत्स्यपालन राष्ट्रीय जीडीपी मध्ये १.०७ टक्के आणि कृषी आणि संलग्न क्रियाकलापांमध्ये ५.३० टक्के योगदान देतो.

महाराष्ट्र राज्याच्या किनारपट्टीचा बराच भाग मत्स्योत्पादनात मोठा वाटा उचलत आहे, महाराष्ट्र राज्याच्या इतर प्रदेशांना मात्र मत्स्योत्पादनात फारसे महत्त्व नाही. कोल्हापूर जिल्हा हा महाराष्ट्रातील कृषी, उद्योग, सेवा क्षेत्र आदी सर्वच बाबतीत विकसित जिल्ह्यांपैकी एक आहे. मात्र, कोल्हापूर जिल्ह्यात मत्स्यव्यवसाय फारसा विकसित झालेला नाही. त्यामुळे मत्स्य उत्पादनाची सद्यस्थिती जाणून घेण्यासाठी 'कोल्हापूर जिल्ह्यातील मत्स्य व्यवसायाचे भौगोलिक विश्लेषण (२०२२-२०२३)' या विषयाची निवड करण्यात आली आहे.

कोल्हापूर जिल्ह्यातील भौगोलिक परिस्थिती, जलप्रणाली, हवामान परिस्थिती, पर्यावरणीय आणि पायाभूत घटकांमुळे या क्षेत्रात मासेमारीसाठी चांगले वातावरण मिळाले आहे.

कोल्हापूर जिल्ह्यातील १२ तालुक्यांमध्ये प्रामुख्याने नदी तसेच मोठ्या आणि लहान धरणांमध्ये मत्स्यशेती केली जाते. या क्षेत्रात पालन आणि पकडणे या दोन्ही प्रकारचे मत्स्यपालन केले जाते. त्याशिवाय,

कोळंबी (मायक्रो ब्रॅचियम रोझेनबर्गी) ही भारतीय प्रमुख कार्पस यांसारख्या अनुक्रमे कटला, रोहू आणि मृगल यांच्याबरोबर मिश्र पालन म्हणून देखील संवर्धन केले जाते. या भागातील मत्स्य उत्पादनाचा पुरवठा स्थानिक बाजारपेठेत केला जातो. कोळंबीचे पालन प्रामुख्याने धरणांमध्ये आणि क्षारयुक्त आणि पाणी साचलेल्या जमिनीत तयार केलेल्या छोट्या तलावांमध्ये केंद्रित आहे.

उद्दिष्टे:

१. कोल्हापूर जिल्ह्यातील मत्स्य उत्पादनाच्या परिस्थितीचा अभ्यास करणे.
२. अभ्यास क्षेत्रातील मत्स्यव्यवसायाच्या विकासासाठी योजना सूचविणे.

अभ्यास पद्धती:

सदर संशोधन कार्य दुय्यम माहितीवर आधारित आहे. दुय्यम माहिती विविध पुस्तके, लेख, प्रबंध, सरकारी अहवाल, अप्रकाशित दस्तावेज, वर्तमानपत्रे आणि वेबसाइट्स इत्यादींमधून प्राप्त केली आहे. दुय्यम स्रोतांद्वारे संकलित केलेल्या माहितीवर विविध सांख्यिकीय तंत्रांच्या मदतीने प्रक्रिया, सारणी आणि विश्लेषण केले आहे.

कोल्हापूर जिल्ह्यातील मत्स्यव्यवसाय विश्लेषण:

कोल्हापूर जिल्ह्यातील मत्स्यव्यवसायाचे एकूण विश्लेषण विचारात घेणे आवश्यक आहे. खालील कोष्टकामध्ये मत्स्यपालनाची स्थिती स्पष्ट होते.

सारणी १ : कोल्हापूर जिल्ह्यातील मत्स्यव्यवसाय (२०२२-२०२३)

अ.नं.	तालुका	मत्स्य व्यवसायासाठी अनुकूल क्षेत्र (तलाव, सरोवरे आणि जलाशये)		मत्स्य व्यवसाया खाली आणलेले एकूण क्षेत्र (हेक्टर)	भूजल मत्स्य उत्पादन (टन)	पकडलेल्या मास्यांची उत्पादकास मिळालेली किंमत (रु. लाख)	मत्स्य व्यवसाय क्षेत्रासाठी वापरलेले मत्स्यबीज (लाखात)	मत्स्य व्यवसाय सहकारी संस्था	
		संख्या	एकूण क्षेत्र (हेक्टर)					संख्या	सभासदांची संख्या
१	शाहूवाडी	७३	७८९	७८९	३४८	१०४	१८.४४	९	५१८
२	पन्हाळा	६१	१३८	१३८	९८	२९	५.४२	३	१६५
३	हातकणंगले	५६	७९	७९	५६	१७	३.९७	१	२८०
४	शिरोळ	२७	२०	२०	१५	५	०.९७	४	३४५
५	करवीर	८६	१७९	१७९	२०९	६३	८.२०	५	२२८०
६	गगनबावडा	१३	३४९	३४९	२०६	६२	७.५२	३	१६९
७	राधानगरी	२७	३७३	३७३	२३५	७१	५.१९	३	४१५
८	कागल	७०	१६२	१६२	११५	३४	८.०९	४	३२५
९	भुदरगड	२९	४८०	४८०	३४१	१०२	७.७३	४	४८१
१०	आजरा	४५	३८५	३८५	२७३	८२	१०.१८	२	६०
११	गडहिंग्लज	६८	१९३	१९३	१३७	४१	९.०१	६	३१०
१२	चंदगड	११३	१२६३	१२६३	८९७	२६९	२७.५६	९	९९८
	एकूण	६६८	४४१०	४४१०	२९३०	८७९	११२.२८	५३	६३४६

स्रोत : सामाजिक-आर्थिक पुनरावलोकन कोल्हापूर जिल्हा (२०२२), पृ. ४२.

कोल्हापूर जिल्हा हा किनारपट्टीचा भाग नसल्यामुळे येथे अंतर्गत मत्स्यव्यवसाय आहे. जिल्ह्यातील सर्व नद्यांची एकूण लांबी ९५५ कि. मी. असून मत्स्यव्यवसायासाठी अनुकूल क्षेत्र ६६८ हेक्टर आहे. चंदगड तालुक्यामध्ये तलाव, जलाशये आणि सरोवरांची संख्या सर्वाधिक (११३) आहे. त्यानंतर करवीर, शाहूवाडी, कागल, गडहिंग्लज, पन्हाळा, हातकणंगले, आजरा आणि भुदरगड या तालुक्यांचा क्रमांक लागतो.

दुसरीकडे शिरोळ, राधानगरी (२७) आणि गगनबावडा (१३) हे विविध जलाशय, सरोवरे आणि

तलाव असण्याची क्षमता सर्वात कमी आहे. वाम (ईल्स), खवळी (पांढरी सार्डिन), तांब (रेड स्नॅपर), शिंगाडा, काळीवांज, कटरणा, कुळशी आणि मरळ यासारख्या विविध प्रकारच्या मास्यांच्या स्थानिक जाती येथे सापडतात.

कोल्हापूर जिल्ह्यातील मत्स्यव्यवसायासाठी अनुकूल क्षेत्र:

मत्स्यव्यवसायासाठी एकूण अनुकूल क्षेत्र ४४१० हेक्टर आहे. सर्वात अनुकूल क्षेत्र चंदगड (१२६३ हेक्टर) येथे वसलेले आहे. त्यानंतर अनुक्रमे शाहूवाडी, भुदरगड, आजरा, राधानगरी, गगनबावडा, गडहिंग्लज, करवीर, कागल, पन्हाळा आणि हातकणंगले यांचा क्रमांक लागतो. तर मत्स्यव्यवसायासाठी सर्वात कमी अनुकूल क्षेत्र शिरोळ (२० हेक्टर) येथे आहे.

कोल्हापूर जिल्ह्यातील मत्स्य व्यवसायाखालील क्षेत्र:

कोल्हापूर जिल्ह्यात मत्स्य व्यवसायाखालील क्षेत्र ४४१० हेक्टर आहे. सर्वाधिक क्षेत्र चंदगड (१२६३ हेक्टर) तालुक्यामध्ये आहे. जेथे अशा क्षेत्राचा पूर्ण वापर केला जातो. त्यानंतर शाहूवाडी, भुदरगड, आजरा, राधानगरी, गगनबावडा, गडहिंग्लज, करवीर, कागल, पन्हाळा, हातकणंगले या तालुक्यांचा क्रमांक लागतो. पन्हाळा तालुक्यात कासारी, कुंभी आणि वारणा नद्यांवर अंतर्गत मत्स्यव्यवसाय आढळतो. मत्स्यव्यवसायाखालील सर्वात कमी क्षेत्र शिरोळ (२० हेक्टर) येथे आहे.

कोल्हापूर जिल्ह्यातील अंतर्गत मत्स्य उत्पादन:

२०२२-२३ या वर्षात कोल्हापूर जिल्ह्यात एकूण २९३० टन मत्स्य उत्पादन झाले. चंदगड (८९७ टन), या खालोखाल शाहूवाडी (३४८ टन), भुदरगड (३४१ टन) आणि आजरा (२७३ टन) या तालुक्यात सर्वाधिक मत्स्योत्पादन झाले. त्यानंतर राधानगरी (२३५ टन), करवीर (२०९ टन), गगनबावडा (२०६ टन), गडहिंग्लज (१३७ टन), कागल (११५ टन) आणि पन्हाळा (९८ टन) या तालुक्यात उत्पादन झाले. सर्वात कमी मत्स्य उत्पादन हातकणंगले (५६ टन) व शिरोळ (१५ टन) येथे आहे. चंदगड तालुक्यात मत्स्य उत्पादन जास्त आहे, कारण तेथे मत्स्यपालन वेगाने व योग्य पद्धतीने विकसित होत आहे. तर शिरोळ तालुक्यात सर्वात कमी मत्स्योत्पादन होते कारण शाकाहारी लोकांचे प्रमाण खूप जास्त आहे.

२०२२-२३ या वर्षात कोल्हापूर जिल्ह्यातील उत्पादकाला एकूण मास्यांची किंमत रु. ८७९ लाख मिळाली होती. मास्यांची सर्वाधिक किंमत चंदगड (रु. २६९ लाख) येथे आहे. तर उत्पादकास सर्वात कमी मास्यांची किंमत शिरोळ (रु. ५ लाख) तालुक्यामध्ये मिळते.

कोल्हापूर जिल्ह्यातील मत्स्य पालनासाठी वापरण्यात येणारे मत्स्यबीज:

मत्स्योत्पादनातील वाढत्या कलामुळे मत्स्यबीजांचा अधिक वापर होत आहे. २०२२-२३ या वर्षात कोल्हापूर जिल्ह्यात मत्स्य व्यवसायासाठी ११२.२८ लाख मत्स्यबीजांचा वापर करण्यात आला आहे. कोल्हापूर जिल्ह्यात मत्स्यबीजांचा सर्वाधिक वापर चंदगड (२७.५६ लाख) आणि शाहूवाडी (१८.४४ लाख) त्यानंतर आजरा (१०.१८ लाख) येथे झाला आहे. मत्स्यबीजांचा सर्वात कमी वापर शिरोळ तालुक्यामध्ये (०.९७ लाख) झालेला दिसून येतो.

कोल्हापूर जिल्ह्यातील मच्छीमार सहकारी संस्था:

सहकार क्षेत्राचा सर्वत्र विस्तार व विकास झाला आहे. जिल्ह्यात ११३४५ विविध सहकारी संस्था कार्यरत आहेत. मात्र, मच्छीमार सहकारी संस्थांची संख्या केवळ ५३ आहे जी एकूण सहकारी संस्थांच्या ०.४७ टक्के आहे. मच्छीमार सहकारी संस्थांची सर्वाधिक संख्या शाहूवाडी (९), चंदगड (९), गडहिंग्लज (६) तालुका येथे आहे तर करवीर (५), शिरोळ, कागल आणि भुदरगड या प्रत्येक तालुक्यात प्रत्येकी (४) आहे. त्यानंतर पन्हाळा, गगनबावडा, राधानगरी येथे प्रत्येकी (३) आणि आजरा येथे (२) आहेत. सर्वात कमी संख्या हातकणंगले तालुक्यात (१) आहे.

जिल्ह्यातील सर्व मच्छीमार सहकारी संस्थांची एकूण सभासद संख्या ६३४६ आहे. त्यापैकी सर्वाधिक सभासद करवीर तालुक्यामध्ये (२२८०) आणि सर्वात कमी सभासद आजरा तालुक्यात (६०) आहेत.

सारांश:

अभ्यास क्षेत्राच्या पश्चिम भागात, पाणवठ्यांमुळे पारंपारिक मत्स्यपालनाची मोठी क्षमता आहे. अभ्यास क्षेत्राचा मध्य भाग मासेमारीसाठी नदीचे पाणी पुरवतो तर अभ्यास क्षेत्राचा पूर्व भाग मोठ्या बारमाही जलाशयांमध्ये पारंपारिक मासेमारीसाठी योग्य आहे. पाणवठ्यांची सुपीकता वाढवण्यासाठी योग्य प्रशिक्षणाची गरज आहे आणि मच्छीमारांना मासेमारी आणि विपणन क्रियाकलापांबद्दलचे ज्ञान देण्याची गरज आहे. विश्लेषणातून असे दिसून आले आहे की, मोठ्या जलस्रोतांच्या भागात अपुऱ्या आहार आणि नियोजनामुळे कमी उत्पादकता दर्शविली आहे. सध्या पाण्याची कमतरता, अकुशल मच्छीमार, मासेमारीची आधुनिक साधने, साठवण सुविधा, वाहतूक, भांडवल आणि मत्स्यबीजांचा अभाव हे त्याच्या पुढील विकासातील काही अडथळे आहेत. या अडचणींवर मात करण्यासाठी सहकार क्षेत्र आणि सरकारने पुढाकार घेतला पाहिजे, ज्यामुळे या प्रदेशातील अंतर्गत मत्स्यशेतीला उज्ज्वल भविष्य मिळेल.

कोल्हापूर जिल्ह्यात जमीन आणि जलस्रोतांचा उत्तम वापर करून ग्रामीण अर्थव्यवस्थेच्या

सुधारणेसाठी मत्स्य व्यवसाय महत्त्वाची भूमिका बजावतो आहेतंत्रज्ञानावर आधारित व्यावसायिक . मत्स्यपालन विकसित करण्यासाठी अधिक प्रयत्नांची आवश्यकता आहे.

संदर्भ :

१. दुग्धव्यवसाय आणि मत्स्यव्यवसाय विभाग, भारत सरकार, नवी दिल्ली.
२. जिल्हा अधीक्षक कृषी अधिकारी, कोल्हापूर, महाराष्ट्र शासन कृषी विभाग सर्वसमावेशक जिल्हा कृषी योजना जिल्हा कोल्हापूर, पृ. १०३-१०५.
३. महाराष्ट्राचे आर्थिक सर्वेक्षण (२०१०-११), DES, महाराष्ट्र शासन, मुंबई, पृ. ९४.
४. महाराष्ट्राचे आर्थिक सर्वेक्षण (२०२०-२१), DES, महाराष्ट्र शासन, मुंबई, पृ. ९९-१००.
५. कोल्हापूर जिल्ह्याचा सामाजिक-आर्थिक आढावा (२०२२-२३). पृ. ८०.
६. सामाजिक-आर्थिक आढावा कोल्हापूर जिल्हा (२०२२-२३), पृ. ४२.
७. www.economywatch.com

भारतीय सण व पर्यावरण एक चिकित्सक अभ्यास

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सारांश:

भारतीय सण व उत्सव हे खगोलशास्त्र, पर्यावरण, आरोग्य, आनंद यांच्याशी निगडित आहे. भारतीय सण चंद्रमास व सौरमास यावर आधारित असून ऋतुचक्र बदलाप्रमाणे आपण सण साजरे करतो. भारतात अगदी प्राचीन काळापासून पर्यावरणाचा विचार केलेला आढळतो. भारतीय संस्कृती ही पर्यावरणपूरकच आहे. निसर्गातील झाडे, नद्या, पर्वत, भूमी, सूर्य, चंद्र इत्यादी घटकांना देवतास्वरूप मानून त्यांचे पूजन, रक्षण करणे ही भारतीय संस्कृतीची विशेषता आपल्या संस्कृतीतील या पर्यावरणस्नेही वृत्तीचे दाखले संस्कृत साहित्यात अनेक ठिकाणी आढळतात. पर्यावरण आणि सार्वजनिक सण याच जवळच नात आहे कारण हे सण अनेकदा निसर्गाशी जोडलेले असतात आणि सामूहिक एकात्मतेच प्रतीक असतात. चैत्र पाडवा हा नववर्ष ऋतुचक्र बदला प्रमाणे येतो. आपल्या सणामध्ये पोळा हे प्राण्याविषयी कृतज्ञता व्यक्त करण्यासाठी, वटवृक्ष पूजा ही निसर्ग पूजा आहे. आषाढ मध्ये आपण एकादशी करतो ती आरोग्याशी निगडित आहे. चातुर्मासात शाकाहार, उपवास व कमी बोलणे हे देखील आरोग्याशी निगडित आहेत. श्रावणामध्ये मंगळागौर हे स्त्रियांचे खेळ हे त्यांच्या मध्ये प्रतिकार करण्याची शक्ती निर्माण व्हावी, आरोग्य चांगले राहावे, व्यायाम व्हावा यासाठी आहे. सणाच्या, उत्सवाच्या निमित्ताने आपण एकत्र येतो त्यामध्ये आनंद साजरा करतो. त्यामुळे मानसिकता उत्तम राहते या सर्व गोष्टी च्या मागे विज्ञान दडलेले आहे.

बीजसंज्ञा : भारतीय संस्कृती, धार्मिक सण-उत्सव, पर्यावरण.

उद्देश:

“भारतीय सण व पर्यावरण एक चिकित्सक अभ्यास” या विषयाच्या अनुषंगाने प्रस्तुत शोधनिबंधात खालील उद्देशांना अनुसरून अभ्यास करण्यात आलेला आहे.

१. भारतीय सण – उत्सव यांचा अभ्यास करणे.
२. पारंपारिक सणाचे पर्यावरण विषयक दृष्टिकोन अभ्यासणे.
३. पारंपारिक सणाचे महत्त्व विशद करणे.

माहिती स्रोत व अभ्यास पद्धती:

या शोधनिबंधासाठी द्वितीय सामुग्रीचा उपयोग करण्यात आला आहे. द्वितीय सामुग्री ही विविध संदर्भ ग्रंथ, पर्यटन अहवाल, शासकीय अहवाल. जर्नल. मासिके, वेबसाईट इत्यादीच्या माध्यमातून प्राप्त केली. प्राप्त केलेल्या माहितीचे योग्य प्रकारे संस्करण करून विश्लेषण करण्यात आले.

अभ्यास क्षेत्र:

भारतातील २८ घटकराज्यांपैकी महाराष्ट्र राज्य हे एक महत्वपूर्ण राज्य आहे. भारताच्या मध्यवर्ती भागात महाराष्ट्र राज्य असून भारत व दक्षिण भारतास एकत्रित आणणारी विशाल भूमी आहे. महाराष्ट्राचे भौगोलिक स्थान हे १५ ४५' उत्तर अक्षवृत्त ते २२ ६' उत्तर अक्षवृत्त असून रेखांश विस्तार ७२ ३६' पूर्व रेखावृत्त ते ८० ५४' पूर्व रेखावृत्त वर आहे. महाराष्ट्राचे क्षेत्रफळ ३,०७.७१३ चौ.कि.मी. असून क्षेत्रफळाच्या दृष्टीने तीसरा क्रमांक लागतो. महाराष्ट्राचा सर्वसाधारण आकार त्रिकोणाकृती असून दक्षिणेकडे चिंचोळा तर उत्तरेकडे रुंद होत गेलेला आहे. त्याचा पाया कोकणात व त्याचे निमुळते टोक पूर्वेस गोंदिया जिल्ह्याकडे आहे. महाराष्ट्राच्या वायव्य भागात गुजरात राज्य आणि दादरा व नगर-हवेली हे संघराज्य क्षेत्र आहे. उत्तरेस मध्यप्रदेश, पूर्वेस छत्तीसगड तर आग्नेय आंध्र प्रदेश तर दक्षिणेस कर्नाटक व गोवा या राज्यांचा सीमारेषा आहेत. महाराष्ट्रात एकूण ३५ जिल्हे असून २०११ च्या जनगणनेनुसार लोकसंख्या ११,२३,७२,९७२ आहे. लोकसंख्येच्या बाबतीत महाराष्ट्राचा उत्तरप्रदेशा खालोखाल दुसरा क्रमांक लागतो.

विषय विवेचन:**नागपंचमी:**

श्रावण महिन्यातील शुद्ध पंचमीला नागपंचमी म्हटले जाते. या दिवशी नागाची पुजा केली जाते. फार पुर्वीपासून आपल्याकडे नागाला देव मानून पुजा करण्याची परंपरा आपल्या संस्कृतीत रुढ आहे. प्राणी व पक्षी यांच्या प्रती कृतज्ञता व्यक्त करण्यासाठी सण साजरे करण्याची प्रथा आपल्या संस्कृतीत फार पुर्वी पासून आहे. म्हणून आपल्याकडे नागपंचमी साजरी केली जाते. महाराष्ट्रात नागपंचमीचा सण सर्वत्र साजरा केला जातो. सांगली जिल्ह्यातील बातिसशिराळे इथं

नागपंचमीचा सण मोठ्या प्रमाणात साजरा केला जातो.

शेती हा आपल्या देशाचा प्रमुख व्यवसाय आहे. आणि साप शेतीच्या कार्यात फारच महत्वाचा कार्यभाग सांभाळतो. शेतातील उंदीर व अन्य हानिकारक जीवावर उदरनिर्वाह करून तो शेताची एका प्रकारे निगा करतो. क्षेत्र (शेत) पाल (रक्षक) असे सापाचे क्षेत्रपाल असेही नाव आहे. शेतातील उंदरांचा साप नाश करतात म्हणून सापाला शेतकऱ्याचा मित्र म्हणतात. या दिवशी नागाला ईजा होऊ नये म्हणून शेतकरी शेतात नागरं देखील फिरवत नाही. या दिवशी घरात विळी देखील वापरली जात नाही.

वटपौर्णिमा:

वटपौर्णिमेला स्त्रिया वडाच्या झाडाची पूजा करतात. पर्यावरण शास्त्र दृष्ट्या वडाचे महत्व विशेष आहे. जमिनीची धूप थांबवून मातीचे रक्षण करणे, लाकूडफाटा मिळणे, प्राणवायू मिळणे असे वडाच्या झाडाचे अनेक गुणधर्म आहेत. त्यामुळे त्याच्या विषयी कृतज्ञता व्यक्त करणे हा ही पूजेचा एक हेतू आहे.

वटवृक्षाला सूत गुंडाळण्याचे महत्त्व -

वटवृक्षाच्या खोडाच्या उभ्या छेदावर असणाऱ्या या सुप्त लहरी शिवतत्त्व आकृष्ट करून वायुमंडलात प्रक्षेपित करतात. ज्या वेळी वटवृक्षाच्या खोडाला सुती धाग्याने गुंडाळले जाते, त्या वेळी जिवाच्या भावाप्रमाणे खोडातील शिवतत्त्वाशी संबंधित लहरी कार्यरत होऊन आकार धारण करतात. सुती धाग्यातील पृथ्वी व आप या तत्त्वांच्या संयोगामुळे या लहरी जिवाला ग्रहण करण्यास सुलभ होतात.

प्रार्थना- सर्व पवित्र वृक्षांत वटवृक्षाचे आयुष्य जास्त असून पारंब्यांनी त्याचा विस्तारही खूप होतो. अशा वटवृक्षाचे पूजन करून स्त्रिया

‘मला व माझ्या पतीला आरोग्यसंपन्न दीर्घायुष्य लाभू दे, धनधान्य व मुले-नातू यांनी माझा प्रपंच विस्तारित व संपन्न होऊ दे’, अशी प्रार्थना करतात.

पोळा:

वर्षभर शेतात राबून, कष्ट करणारा शेतकऱ्या मित्र ‘बैल’ याचा सण म्हणजे ‘पोळा’... पोळा हा महाराष्ट्रातील शेतकऱ्यांचा महत्वाचा सण आहे. श्रावण महिन्याची सुरवातच सणांची उधळण करणारी असते. नागपंचमी, नारळी पौर्णिमा, रक्षाबंधन, गोकुळाष्टमी या सणांबरोबरच सरत्या श्रावणात पिठोरी अमावस्येला संपूर्ण महाराष्ट्रात पोळा हा सण साजरा केला जातो. या दिवशी शेतकरी बैलांना अंधोळ घालून सजवतात. आपला बैल उठुन दिसावा यासाठी शेतकरी आपल्या ऐपतीप्रमाणे त्याचा साजश्रृंगार खरेदी करतात. शिंगाना बेगड लावतात. पाठीवर झूल घालून त्याला सजवतात. आपल्या बैलांना वाजत गाजत मारूतीच्या दर्शनाला नेतात. या दिवशी बैलांना पूर्ण विश्रांती देतात. संध्याकाळी बैल वाजत गाजत आले की, त्यांची पूजा करतात व त्यांना पुरणपोळी खायला देतात. ज्यांचा शेती हा व्यवसाय नाही ते लोक या दिवशी मातीच्या बैलाच्या मूर्ती विकत आणून पाटावर गहू पसरून त्यावर बैल मांडून त्यांची पूजा करतात. जेवणात पुरणपोळी हे प्रमुख पकवान केले जाते. तसेच या दिवशी घराघरांमध्ये करंजी व ५ भाज्यांची भाजी केली जाते.

महाराष्ट्रातील काही गावामध्ये या दिवशी बैलांच्या शर्यतीचे आयोजन करून तेथे पोळा फोडला जातो. ज्या शेतकऱ्याचा बैल पोळा फोडेल म्हणजेच शर्यतजिंकेल त्या बैलाच्या अंगावर ग्रामपंचायतीतर्फे झूल टाकली जाते व शेतकऱ्याच्या डोक्यावर फेटा बांधून त्याचा सन्मान केला जातो. त्यानंतर गावातून

बैलांची सवादय मिरवणूक काढली जाते. घरोघरी त्यांना पुजल जात. अशा पारंपरिक पद्धतीने मोठ्या उत्साहपूर्ण वातावरणात संपूर्ण महाराष्ट्रात शेतकऱ्याचा जिव्हाळ्याचा सण पारंपरिक पोळा साजरा केला जातो. यामुळे या पशुधनाबाबत माहिती होऊन महाराष्ट्रीयन संस्कृती जपल्या जाते.

गुढीपाडवा:

हिंदूंचे नवीन वर्ष गुढीपाडव्यापासून सुरु होते. चैत्र महिन्यात झाडांना नवी पालवी फुटते आणि उन्हाचा कडाका जाणवू लागतो. उन्हामुळे शरीरातील उष्णता वाढून त्यामुळे नाना प्रकारचे आजार होतात. अश्या आजारांचे प्रमाण कमी व्हावे आणि आपली प्रतिकारशक्ती वाढावी, आपले नवीन वर्ष आरोग्यपूर्ण जावे म्हणून आपल्या पूर्वजांनी पाडव्याला कडूनिंबाचे पूजन सांगितले आहे. धार्मिक दृष्टीने गुढीपाडवा हा महत्त्वपूर्ण दिवस आहे. साडेतीन मुहूर्तातील एक दिवस आणि वर्षारंभचा दिवस. या दिवशी आंधोळीच्या पाण्यात डहाळी टाकून त्या पाण्याने स्नान करण्याची प्रथा आहे. तसेच गुढीला कडूनिंबाची डहाळी लावून त्याची पूजा करतात. कडूनिंबाची पाने आणि मीठ, मिरे, हिंग, ओवा, चिंच, आणि गूळ घालून केलेली चटणी सेवन करतात. ती पाने खाऊनच दिवसाची सुरवात करावी असे शास्त्र आहे.

कडूनिंब कडू असूनही आपल्या सण, उत्सावात त्याला मानाचे स्थान आहे. कारण त्यात अनेक औषधी गुणधर्म आहेत. अनेक आजारांचे मूळ नष्ट करणे हा महत्वाचा गुणधर्म कडूनिंबात आहे. या वृक्षात त्याच्या परिसरातील हवा शुद्ध आणि आरोग्यपूर्ण राखण्याचे सामर्थ्य आहे. दक्षिणेकडील सर्व मंदिरांच्या आवारात हा वृक्ष असतोच. या वृक्षाला वर्षभर पाने असतात म्हणून त्याला सदपर्णी वृक्ष असेही म्हणतात. या झाडाचे पान, फळ, फुल, साल, खोड आणि

काडया सर्व काही औषधी आहेत. अश्या विविध आणि असामान्य गुणधर्मांमुळे आपल्या नवीन वर्षाच्या सुरवातीला या वृक्षाचे पूजन आणि सेवन करणे योग्यच आहे.

दसरा:

दसरा' हा प्रारंभी एक कृषी विषयक लोकोत्सव होता. पावसाळ्यात पेरलेले पहिले पीक घरात आल्यावेळी शेतकरी हाउत्सव साजरा करत. नवरात्रात घटस्थापनेच्या दिवशी घटा खालच्या स्थंडिलावरून ऊधान्यांची पेरणी करतात व दसऱ्याच्या दिवशी त्या धान्यांचे वाढलेले अंकुर उपटून देवाला वहातात. कित्येक ठिकाणी शेतातल्या भाताच्या लोंब्या तोडून आणून त्या प्रवेशद्वारावर तोरणासारख्या बांधतात. ही प्रथा देखीलया सणाचे कृषीविषयक स्वरूपच व्यक्त करते. पुढे यच सणाला धार्मिक स्वरूप दिले गेले आणि इतिहास काळात तो एक राजकीय स्वरूपाचा सण ठरला.

मुळ कर्नाटकातील असणारा महाराष्ट्र ातील मराठवाडा विशेषतः लातूर, उस्मानाबाद, नांदेड, बीड जिल्ह्यासोबत शेजारील तालुक्यांमध्ये मार्गशीर्ष अमावस्या म्हणजेच वेळ अमावस्या मोठ्या उत्साहाने साजरी केली जाते. ही आमावस्या दर्शवेळा अमावस्या म्हणूनही ओळखली जाते. मूळ कानडी शब्द “येळळ अमावस्या” म्हणजे पेरणीनंतर येणारी सातवी अमावस्या म्हणजे येळी अमावस्या, याचाच अपभ्रंश होऊन वेळ अमावस्या शब्द रुढ झाला.

रब्बी हंगामातील पेरणी होऊन संपूर्ण शेत हिरवेगार झालेले असते. सर्वदात्या काळ्या आईचे आपण काहीतरी देणं लागतो. वेळ अमावस्येच्या दिवशी शेतकरी शेतात काळ्या मातीची यथासांग पूजा करित असतो. तसेच पिकांची देखील पुजा केली जाते. या दिवशी सर्वभाज्या एकत्र करून शिजवलेली भज्जी,

ताकाचे अंबिल आणि ज्वारीचे उंडे हे खास ग्रामीण पदार्थ असतात. गोड पदार्थ म्हणून गव्हाची खीर असते आणि तेच जेवण आपल्यासग्या-सोयऱ्यांना, मित्रांना अनअपरिचित पाहुण्यांना ही शेतकरी शेतात जेवायला देण्यात येते.

एकंदरीत विचार करता इतर सणांमध्ये आढळणारी निसर्गाची हानी या सणांत नाही. या उलट माणसाला निसर्गा जवळ घेऊन जाऊन त्याचे निसर्गाशी घट्ट नाते विणणारा हा सण. रंगीत फुलांच्या मुकुटा सहन टलेलाक रडा, कापणीसाठी आलेली तूर, परिपक्व होऊ लागलेला हरभरा, हवेच्या तालावर नाचणारा गहू, पाखरांना खुणावणारी पोट्यातील ज्वारी असा चोहीकडे दिसणार हिरवागार आणि प्रसन्न निसर्ग. अशा वातावरणात ऊन, वारा, पाऊस या निसर्गशक्तीं समोर नतमस्तक होऊन केलेली ही पुजा म्हणजे शेतकरी व निसर्गाची शतकानुशतके चालत आलेली भागीदारीच दर्शविते.

कोजागरी पौर्णिमा:

कोजागरी पौर्णिमा हा आश्विन पौर्णिमेला येणारा भारतीय हिंदू धर्म संस्कृतीतील महत्त्वाचा दिवस मानला जातो. इंग्रजी दिनदर्शिकेनुसार ‘कोजागरी पौर्णिमा’ बहुधा सप्टेंबर ते ऑक्टोबर या दरम्यान असते. ‘कोजागरी पौर्णिमा’ ही उजाळाची रात्र असल्यामुळे ह्या रात्री चंद्राची किरणे दुधात पडतात त्यामुळे जे आठवणारे दूध असते ते औषधीयुक्त तयार होऊन आपल्या शरीरासाठी उपयुक्त असते. कृषी संस्कृतीत ह्या दिवसाला विशेष महत्त्व आहे.

निष्कर्ष:

निसर्ग हा मानवी जीवन सुखकर करणारा आहे हे समजून घेऊन आपल्या पूर्वजांनी मोठ्या कल्पकतेने सण-उत्सव,

व्रतवैकल्ये यांची आखणी केल्याचे दिसून येते. या सणाच्या निमित्ताने निसर्ग आणि निसर्गातील विविध घटक म्हणजेच पाणी, फुले, पाने, पशू, पक्षी, नदी, समुद्र यांचे पूजन करायची प्रथा दिसून येते. उदा. नारळी पौर्णिमेच्या निमित्ताने समुद्राचे, व्रतवैकल्यांच्या निमित्ताने औषधी वनस्पती, वृक्ष, नवधान्याचे स्वागत करणारी नवरात्री इत्यादी आपले जीवन सुखकर करणाऱ्या प्रत्येक घटकाचे सण-उत्सवाच्या निमित्ताने स्मरण करायचे, पूजन करायचे आणि कृतज्ञता व्यक्त करायची अशी शिकवण अपली संस्कृती देते. रोजच्या धकाधकीच्या जीवनातून मनाला एक विरंगुळा म्हणून आणि आपल्या संस्कृतीची व प्रथांची आठवण ठेवण्यासाठी सर्वांनी सन आवर्जून साजरा करावा. याने आपल्याला सुदृढ शरीर तर लाभेलच पण त्याच बरोबर आपल्या मातीशी असलेली नाळ घट्ट होण्यास मदतदेखील होईल.

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The Role of Stem Education in Advancing Women's Empowerment and Leadership in Satara District

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Introduction:

Highest participation in STEM field is related to development of region. STEM deals with Science, Technology, Engineering and Mathematics field. In this emerging 4th revolution era, engagement in STEM field enhance status of individual, sustainable development, inclusive growth and social well-being. Hence STEM education become prerequisite in this era. However in India, women underrepresented in this field. Their participation is also in STEM workforce as compared to male. STEM education is crucial key indicator according to SDG 4 (to ensure equitable quality education and promote lifelong opportunities for all) and SDG 5 (to achieve gender equality and empower women and girls) for achieving goal of sustainable development 2030. According to World Bank report (2018), Women choosing STEM courses has been increasing, but less likely enter into STEM careers or STEM workforce and exit these careers earlier than male. There is need of equal access, equal opportunities for women increasing their contribution in STEM workforce. UNESCO is giving special attention to this issue through research, policy and capacity-building work to promote the empowerment of girls and women through education (www.unesco.org).

According to Pew Research center, some of the highest-earning STEM occupations such as computer science and engineering have the lowest percentage of women workers. Only around 21% of engineering majors are women, 19% of computer and information science majors are women. 80% of the healthcare workforce are women, but only 21% of health executives and board members are women and only about a third of doctors (www.aauv.org). STEM education enhance critical thinking skills, problem solving capabilities, creativity, innovation capacity of females in fast changing modern economic system.

Study Region:

Satara District locates at the Western limit of the Deccan plateau with hilly reliefs in southern of Maharashtra state. Extreme Western part of the district falls under Sahyadri ranges. The satara District extends between 17° 05' and 18°11' north latitudes and 73°33' and 74°54' East longitudes. There are four distinct river basins in the district that are basins of Krishna, Nira, Yerla and Man. In the Western part of the district, climate is cool and healthy as compared to eastern part. The Western part gets high rainfall. The temperature is high in the plains than on the hills. Medium black to

deep black soil, light soils are locally known as malran or murummam, laterite soils are found in district. According to 2011 census, the District has population of 30,03,741 which constitute 2,433,363 rural population and 570,378 urban population. The sex ratio of the District indicates 988 females per 1000 males which is higher as compared to State (929).

Objectives:

1. To study female's status in STEM education in Satara District.

Results and Discussion:

Importance of STEM Education for Females:

Women's Empowerment:

Females equipped with STEM knowledge and skill can solve real world problem. STEM education has power empowering women thorough enhancing their socio-economic status.

Provide Career Opportunities in huge quantity:

Fastest growing worldwide industries are STEM education oriented where females can't enter without acquiring STEM related knowledge, skill and

Leadership:

Table No. 1 Number of Institutions Affiliated to Shivaji University, Kolhapur.

Sr. No.	Type of Colleges	Total	Permanent	Temporary
1.	Arts, Science, Commerce	147	111	36
2.	Engineering Including Architecture	42	7	35
3.	Management	17	00	17
4.	Pharmacy	19	3	16

Source: www.unishivaji.ac.in

Women are participating in leadership through STEM. Eg. Tessy Thomas is known as the missie lady. She was the project leader for the Agni-IV and Agni-V missile in defence research and development organization. (Dr. Javed Ahmed).

According above table, most of colleges are Arts, Science and Commerce Colleges affiliated to Shivaji University,

technology. Hence it provide huge career opportunities. According to Pew Research center, a typical STEM worker earns two-thirds more than those employed in other fields. It help in increasing economic status of women individually.

Closing the Gender Gap:

Literacy rate of women is increasing but women are still underrepresented in STEM field specially in engineering. Hence increased percentage of STEM educated women can bridging the gender gap.

Social Impact:

Women with STEM can contributes in social reformation, social development, closing the gender biasness, destruction of hazardous social traditions and taboos.

Motivate Future Generations:

Successive women in STEM education and careers become role model for other women. It is helpful for enhancing female's confidence to choose STEM oriented education, career and job.

Individual High Socio-economic Status:

STEM helps in increasing socio-economic status for women and high socio-economic status of women is crucial for development of nation and society.

Kolhapur as compared to other faculties. It is noticeable that permanent colleges are more among Arts, Science and Commerce Colleges. On the contrast, data of temporary colleges shows highest number belongs engineering, management and pharmacy. Hence, it has impact on presentation of females in STEM field especially in engineering including architecture and pharmacy.

Table No. 2 Faculty and District Wise Affiliated Colleges

College Type	Kolhapur			Sangli			Satara		
	Granted	Aided	Non-Aided	Granted	Aided	Non-Aided	Granted	Aided	Non-Aided
Arts, Commerce, Science	1	50	16	0	36	17	0	35	17
Engineering and Technology	0	0	16	0	1	9	1	0	9
Architecture	0	0	2	0	0	2	0	0	2
Pharmacy	0	0	6	0	0	5	1	0	7

Source: www.unishivaji.ac.in

Above table indicates that there is only one Arts, Commerce and Science government college in Kolhapur District where as other districts have not. However Satara district has 1 granted Engineering and Technology College and 1 granted Pharmacy college. The highest no. of aided arts, commerce and science colleges are present in Kolhapur district and lowest in Satara district. The highest number of non-aided engineering and technology colleges seen in Kolhapur District (16) and lowest in

Satara and Sangli district i.e. 9 district. Non aided Pharmacy colleges are also high in number in Satara District (7) as compared to other districts and lowest in Sangli district (5). Total no. of Arts, Commerce and Science colleges and Engineering and technology colleges are less in quantity in Satara district as compared to Kolhapur district. This table explored that traditional streams of education are high in number in all three districts. It affects presentation of females in STEM education.

Table No. 3 Women's Colleges in Satara

Sr. No.	Tahsils	College Type	Frequency
1.	Satara	Arts and Commerce	1
2.	Karad	Arts, Commerec and Science	2
3.	Wai	Arts and Commerce	1

Source: District, [Socio-Economic Abstract 2018, Satara District.](#)

As per above table, In Satara district 4 colleges are women's colleges. Among them 2 are in Karad, 1 in Satara and I in Wai tahsil. These colleges are found in cities. Unfortunately, no one is related STEM field. These colleges belongs to traditional streams of education. Hence it could be say that it

has impact on women choice to select field. They have tend towards available field in this region. Women's colleges positively affects mindset of parents and female students. However no one women's college related to STEM is found in rural area.

Table No. 4 Category wise Students Admitted for Science and Technology in 2017-2018 in Satara District

Sr. No.	Category	Male (%)	Female (%)
1.	SC	7.75	8.04
2.	ST	0.70	0.50
3.	NT	9.87	8.90
4.	OBC	17.05	17.50
5.	OPEN	64.63	65.06
6.	Total	40.47	37.78

Source: www.unishivaji.ac.in

Data presented in above table indicates that female's contribution in Engineering and Technology faculty is low than male peers in all social categories except in open category. Presentation of females belongs to ST category (0.50) is

very low as compared to other categories. Admission of males (40.47%) is higher than females (37.78%) in this field. Admission of females of backward classes for Engineering and Technology presents very low proportion as compared to Open category.

Table No. 5 Admitted Students in Engineering and Technology by Sex for Years in Satara District

Sr. No.	Year	Male (%)	Female (%)
1.	2012-2013	22.31	11.02
2.	2013-2014	24.26	11.36
3.	2014-2015	23.16	13.25
4.	2015-2016	25.91	12.93
5.	2016-2017	25.07	12.50
6.	2017-2018	22.48	11.65

Source: www.unishivaji.ac.in

Above table represents that admission of female students from 2012 to 2018 years is very less than their counterpart. It is not more than 14%. Highest female students are admitted in year 2014-2015 (13.25%). Again from next year, admission of them decreased up to 2017-2018. In 2017-2018, it declined up to 11.65% which is lowest among last 5 years.

Conclusion:

Female's percentage is much less in the field of Engineering and Technology in Satara district which presents grim situation of women. Even basic right of education is denied to females. So it is difficult to women to reach at the leading positions in science, technology, engineering and mathematics. With the emergence of new technologies, there are various occupational opportunities to women in STEM field such as in automation, robotics, and artificial intelligence. However inadequate knowledge and skill of these technologies, women are underrepresented in STEM related workplaces. It is assumed that STEM fields are masculine and these are not suitable for women. Society underestimate girls' math

ability without testing their performance. General mindset of society is that males are superior than females in STEM field. There is need to change this mindset by developing echo system within schools and colleges by involving all stakeholders such as parents, teachers, administrations, governments and societies. Most of girls do not continue their studies after marriage especially in rural area and if they continue the studies, they usually preferred for humanities and social sciences. Male dominant culture in these fields are not supported or attracted to women and also women in minorities.

Role models also plays important role to change mindset and encouraging females. There are fewer role models in these field in world and negrofy in Satara district. There are limited examples of female scientists and engineers. Due to family constituents, most of women cannot tend to these field. Underrepresentation of female in STEM education, career and workforce have negative impact on gender equality as well as economic growth and sustainable development. STEM education to women also helps breaking gender

stereotypes, gender inequalities and other social expectations that limit female's options, access, opportunities and possibilities.

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Agro-Tourism - Socio-Economic Aspects of Tourism

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Introduction:

The tourism is a business of providing various type of services such as transport, food, entertainment for people who are on holiday.

Keyword: Agro-Tourism, Economic Impact, Mass Tourism, Environment.

Define of Tourisms:

“It is a travel for pleasure also the theory and practice of the business of attracting according accommodation and entertainment tourist and the business of operating tours.”- Oxford English dictionary

“The Tourism more generally in terms which go beyond the common perception of tourism as being limited to holiday activity only, as people travelling to and staying in places outside their usual environment for not more than one consecutive for leisure business and other purposes.”- The World Tourism Organization

Tourism can be local and international. In the recent times, the tourism has affected economy of many countries the economic transactions have increased in many countries. World travel and tourism Council produces reports and forecast of the economic and employment impact of Travel and Tourism for 180 countries and 30 Geographic or economic regions in the world. Our 12 year forecast also provides a unique understanding of travel and tourism for the growth economic importance and social influence. These reports are a vital

tool in helping us to equip public and provide sector bodies with hard evidence of the huge value Travel and Tourism brings to the economy. So that the policy making and investment decisions support our sector

The Tourism is economically important and it growing rapidly in India. The World Travel and Tourism Council calculated that tourism generated 8.31 lakh core of the nation's GDP in 2015 and supported 3700 million jobs, of its total employment. In the recent times there have been incensing different forms of tourism. One of the alternative tourism. This form of tourism is made specific purpose. Alternative tourism combines tourist products or industrial tourist services different from the mass tourism by means of supply, organization and the human resource involve.

The mass tourism is characterized by large number of people seeking relevant to their culture holidays in popular resort destinations. Alternatives tourism is sometimes referred to as special interest tourism or responsible tourism and usually taken to me alternative forms of tourism. Alternative tourism is a form of tourism that

are consist with natural social and community values and which allow both host and guests to enjoy positive and worthwhile interaction and shared experience. Here the three influent drivers of the movement to find alternative forms of tourism.

1. The recognition of the negative impacts of convocational tourism on the environmental and social culture of the destinations.
2. The appearance of development in the lodges which mostly seed the disadvantage of growth oriented development modernization, organization, and capitalism.
3. The human nation considerations and the recognition of the rights of local populations to manage change in their communities.

Objective:

The main objective of this paper is to discuss the socio – economic and positive and negative impact of tourism.

Methodology:

This paper is mainly based on secondary data which was collected throws internet, reference books and newspapers.

The alternative tourism can be seen both as a vision of the future and as an adaptation to mass tourism using this criteria. The alternative tourism exist purely a concern for the physical environment that is Agro Tourism to including Physical, economic, social and cultural consideration. Thus alternative tourism can be viewed as being synonymous with the concept of sustainable tourism development. The alternative tourism aim to shift away from mainstream heritage and traditions tourism has many potential benefits from rural areas. Town or Rural tourism is essentially and actively which takes place in the countryside it is multifaceted and may in till form agriculture, culture, nature, adventure and eco-tourism. Convent conventional tourism,

rural tourism has certain typical characteristics like it is an experience oriented the locations are sparely populated it is predominantly in the natural environment it means with seasonally and local events and is has on prevention of culture, heritage and traditions rural tourism has may potential benefits for rural areas.

Agro Tourism:

In this world the last 35 years old the century Agro tourism appeared in international literature. There exist a parallel the world Agro tourism the two terms have the sum meaning both terms consist of two parts agri or Agro and tourism the prefix agri drives from the Latin term agri with means field. The agro comes from the Greek term agros which means soil. While tourism is a form of active recreation from one's place of residence that is inspired by cognitive recreational and sports need the combinations of fix agree with non tourism results in the formation of New world Agro tourism. Agri Tourism that means human to reach actively whose to familiarize oneself with farming activity and recreation in an agriculture environment Agro Tourism can be defined as a range of activities services and amenities provided by farmers and rural people to attract tourist to their area in order to generate tick extra income for their business.

The agro tourism a specific form of rural tourism with close relation to nature and Country side of rural areas and direct relationship to agricultural activities. The base of this tourism is mainly agricultural. The difference between the Agro Tourism and Rural Tourism is critical. In the areas where farm production is divided and highly specialized and where it is possible to observe the closed relations in the rural community. It is advisable to use the term Rural Tourism to Agro Tourism. Agro tourism is a way of responsible and Sustainable Tourism Development. This

innovative activity helps to boost up the social economic condition of the rural area by providing employment and creation the markets for the rural products.

The Socio-Economic Impact of Agro Tourism on Rural Area:

Today the agro-tourism is very important for the communities in Urban as well as Rural. Agro Tourism can have several positive impacts on rural community.

Positive Economic Impact:

- Creation of employment and reduction of unemployment rates.
- Promotion of the social-economic development of under privileged areas, diversification of economic activity, in rural areas creating conditions and opportunities for the development of other types of activity in rural areas.
- Obtaining additional sources of income for farmers (increased revenue for farmer and thus income may be adopted to investment outlets for example construction or renovation works) which results in reduced dependence on farming diversification of local economy, which in this way becomes less fluctuations.
- Obtaining additional income for business comments, and local governments of a given town associations of communes or the region.
- Overcoming income recession additionally tourism is a revival factor in rural areas and the revitalization of the rural community by offering positive of social and economic advancement.
- Extension of accommodation facilities, maintenance of existing production, cells of creation form produce contribute to the formation and development of additional

markets for food staffs and different type of local services such as crafts, Handicrafts products, and artist metalwork.

All Positive Social Impact:

- Educational functions of Agro Tourism are connected with the learning about the real world (nature culture heritage), which modifies specific attitude in relation to difference aspects of reality, (the host and guest a group of tourist family) Agro tourism is also a medium to express once feeling (learning about and respect for farmers and farm produce), Agro Tourism offices and opportunity for tourists to be creative (participation in farm work, learning a folk, craft, etc.) contribute to good health, climate conditions, food, exercise.
- Meeting new people, a possibility to make new contents and social ties, exchange of experience, or attitudes on the part of farmers and their guests, increased the tolerance in relation to different attitude, behavior or opinions, broadening of knowledge on the world and other people on the part of farm owners, encouragement to develop hobbies and interests.
- A possibility to review rural traditions, promoting respect and revival of folk traditions and culture, the development of culture in rural areas, fuller utilization and reviewed revival of creation objects in villages (community centre, sports facilities etc.)
- Gaining new skills, experience and professions learning foreign language, gaining entrepreneurial skills, actualization of the rural community, formation of new capacities in tourists their services, broadening once knowledge or

learning more about once local area, its history and attractions encouragement of social initiatives or new opportunities of for rural women.

Positive environment impacts:

- Enhanced care for the environment nature protection, creating a friendlier environment for guests and visitors.
- The development of local infrastructure water supply, sewerage systems, sewage treatment plants, roads, public transport, recreation facility which makes life in the country easier and improves the standards of living for rural populations.
- Since Agri-Tourism in the process of development uses elements of the natural environment transforming them, spatial and environmental functions include the consequences of the development of Agri Tourism for the natural and anthropogenic environments.
- Countering mass migration from rural areas (mainly of young and educated people) and the population of rural areas.
- Improved aesthetic value of houses and areas in their vacancy, care for the aesthetic value of village, houses, streets and other public space aesthetic enhancement of villages.

Conclusion:

If a proper strategic planning is done for Agro tourism it could bring lot of benefit to our society. It could be a sustainable revenue generating project for rural development. It can help in flow to resources are urban to the rural economy. It can prevent migration of rural people to urban. Both short term and long term planning implementing and monitoring are vital in avoiding damage to rural areas environmental management local involvement, sound legislation, sustainable marketing and realistic planning are crucial for development of agro tourism. Agro tourism is emerging as an important instrument for sustainable Human Development including poverty, employment generate, generation environment, regression and development of remote areas and advancement of women and other disadvantage groups in the country apart from promoting social integration and international understanding. The government should promote Agro Tourism to ensure sustainable economic development and positive social change.

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कोल्हापूर जिल्ह्यातील शालेय विद्यार्थ्यांमधील आपत्ती व्यवस्थापन विषयक जाणीव जागृतीचा अभ्यास

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प्रस्तावना (Introduction):

आपत्ती व्यवस्थापन हे आधुनिक काळातील महत्वाचे आणि आवश्यक क्षेत्र आहे. नैसर्गिक आपत्तींचा अंदाज बांधता येत नसल्यामुळे त्यावर नियंत्रण मिळवणे कठीण होते, पण त्यातून होणारे नुकसान कमी करणे शक्य आहे. जागतिक पातळीवर पूर, भूकंप, चक्रीवादळ, दुष्काळ यांसारख्या नैसर्गिक आपत्ती प्रत्येक वर्षी मोठ्या प्रमाणावर मानवी जीवन व मालमत्तेचे नुकसान करतात. भारतासारख्या मोठ्या लोकसंख्या आणि विविध भौगोलिक परिस्थिती असलेल्या देशामध्ये नैसर्गिक आपत्तींची तीव्रता अधिक जाणवते. अशा आपत्तींमध्ये पूर ही सर्वात सामान्य आणि वारंवार होणारी समस्या आहे. कोल्हापूर जिल्हा याला अपवाद नाही.

कोल्हापूर जिल्हा महाराष्ट्राच्या पश्चिम भागात वसलेला असून, पंचगंगा नदी आणि इतर उपनद्यांच्या किनारी वसलेली गावे ही पूरस्थितीला वारंवार सामोरे जातात. विशेषतः 2019 आणि 2021 च्या पुरांमध्ये या भागाला प्रचंड हानी सहन करावी लागली होती. या परिस्थितीत फक्त प्रौढ नव्हे तर लहान मुलांनाही पूर परिस्थितीत योग्य प्रतिसाद देण्यास सक्षम असणे गरजेचे आहे. शालेय विद्यार्थी हे आपत्ती व्यवस्थापन कार्यक्रमांतील महत्वाचे घटक ठरू शकतात. त्यांच्या माध्यमातून केवळ त्यांच्याच कुटुंबाचे संरक्षण होणार नाही, तर त्यांच्यामुळे त्यांच्या आसपासच्या समाजालाही मदत होईल.

आपत्ती व्यवस्थापनाचे मुख्य उद्देश म्हणजे सामान्य जनतेमध्ये जागरूकता निर्माण करणे, आपत्तीपूर्व उपाययोजना राबवणे, आणि आपत्तीच्या वेळी तसेच त्यानंतर योग्य प्रतिसाद देणे. शालेय विद्यार्थ्यांमध्ये या बाबतीत जागरूकता निर्माण करणे आवश्यक आहे. ते फक्त शाळांमध्ये शिकत असले तरी आपत्तीच्या वेळी ते प्रभावी प्रतिसाद देऊ शकतात. अशा प्रकारची जनजागृती केल्याने त्यांच्यात जबाबदारीची भावना निर्माण होते आणि संकटांना सामोरे जाण्याचे आत्मभान निर्माण होते.

आजच्या घडीला, नैसर्गिक आपत्ती व्यवस्थापनाबाबत शिक्षण आणि प्रशिक्षणाच्या अभावामुळे विद्यार्थी व समाज आपत्तींचा सामना करण्यासाठी पुरेसे सज्ज नसतात. शाळांमध्ये विद्यार्थ्यांना आपत्ती व्यवस्थापन प्रशिक्षण, पूर परिस्थितीत आवश्यक उपाययोजना, आणि मदतीच्या उपायांबद्दल माहिती देणे आवश्यक आहे. अभ्यासातून हे स्पष्ट झाले आहे की शालेय विद्यार्थ्यांमध्ये आपत्ती व्यवस्थापनासंबंधी अधिक जागरूकता निर्माण केल्यास संकटांमधील मानवी व आर्थिक नुकसान मोठ्या प्रमाणावर कमी करता येते.

या संशोधनाचा उद्देश कोल्हापूर जिल्ह्यातील शालेय विद्यार्थ्यांमध्ये पूर व्यवस्थापन विषयक जनजागृतीचे महत्त्व समजावून घेणे आणि त्यावर आधारित शिफारशी सुचवणे आहे. प्रश्नावलीच्या माध्यमातून विद्यार्थ्यांच्या ज्ञानाची, तयारीची, आणि

दृष्टिकोनाची मोजणी करून या क्षेत्रातील कमतरता शोधल्या. तसेच, शाळांमध्ये पूर व्यवस्थापन प्रशिक्षणाचे महत्त्व अधोरेखित करण्यात आले.

शालेय विद्यार्थ्यांमध्ये जागरूकता वाढवण्यासाठी सरकार, शाळा आणि स्थानिक प्रशासन यांचे परस्पर सहकार्य आवश्यक आहे. यामुळे भविष्यात पूर परिस्थितीत होणारे नुकसान कमी करण्यासाठी प्रभावी उपाययोजना करता येतील. या संशोधनाद्वारे विद्यार्थ्यांना पूर व्यवस्थापनासाठी तयार करण्याचा प्रयत्न होणार आहे.

संशोधनाचे उद्देश (Objectives):

1. कोल्हापूर जिल्ह्यातील शालेय विद्यार्थ्यांमध्ये आपत्ती व्यवस्थापनाविषयी असलेल्या जागरूकतेचे मूल्यांकन करणे.
2. विद्यार्थ्यांमध्ये आपत्तीच्या वेळी योग्य कृती करण्याच्या तयारीचा अभ्यास करणे.
3. शाळांमध्ये आपत्ती व्यवस्थापन प्रशिक्षण आणि परिस्थितीसाठी राबविल्या जाणाऱ्या उपाययोजनांचे विश्लेषण करणे.
4. शालेय विद्यार्थ्यांमध्ये आपत्ती व्यवस्थापन परिस्थितीविषयी असलेल्या ज्ञानाच्या पातळीचा आणि प्रत्यक्ष कृतीतील तफावतीचा अभ्यास करणे.
5. विद्यार्थ्यांसाठी आपत्ती व्यवस्थापनाबाबत जागरूकता वाढवण्यासाठी शिफारशी सुचवणे.
6. पूर परिस्थितीत शालेय विद्यार्थ्यांचे योगदान अधिक प्रभावी करण्यासाठी शाळा, पालक, आणि स्थानिक प्रशासन यांच्यात समन्वय निर्माण करण्याचे महत्त्व अधोरेखित करणे.

कार्यपद्धती (Methodology):

कोल्हापूर जिल्ह्यातील आपत्ती व्यवस्थापन विषयक जनजागृतीचा अभ्यास करण्यासाठी विशिष्ट स्वरूपात रचना केली आहे. या अभ्यासाची कार्यपद्धती वर्णनात्मक (Descriptive) स्वरूपाची असून, शालेय

विद्यार्थ्यांच्या आपत्ती व्यवस्थापनविषयी ज्ञान, तयारी, आणि त्यांचा दृष्टिकोन यांचा अभ्यास केला. या संशोधन प्रक्रियेतील टप्पे खालीलप्रमाणे:

1. अभ्यासाचा प्रकार आणि उद्देश (Type and Purpose of Study):

अभ्यासाचा प्रकार वर्णनात्मक (Descriptive) आहे. या अभ्यासाद्वारे शालेय विद्यार्थ्यांमध्ये आपत्ती परिस्थितीबाबत असलेले ज्ञान, आपत्ती व्यवस्थापनाचे महत्त्व, आणि आपत्ती परिस्थितीत त्यांची तयारी यांचे मूल्यांकन केले. तसेच या विद्यार्थ्यांच्या ज्ञानात आणि त्यांच्या कृतीतील तफावत ओळखून त्यावर उपाययोजना सुचवल्या.

2. अभ्यास क्षेत्र (Study Area):

संशोधन कोल्हापूर जिल्ह्यातील ग्रामीण आणि शहरी भागातील काही निवडक शाळांचा अभ्यासासाठी समावेश करण्यात आला.

3. लोकसंख्या आणि नमुना निवड (Population and Sampling):

लोकसंख्या (Population): कोल्हापूर जिल्ह्यातील 6वी ते 10वी इयत्तेत शिकणारे शालेय विद्यार्थी संशोधनाचा मुख्य गट आहे.

नमुना निवड (Sampling): यादृच्छिक नमुना पद्धती (Random Sampling) वापरून ग्रामीण आणि शहरी भागातील शाळांमधून 400 विद्यार्थ्यांची निवड केली जाईल.

ग्रामीण भाग: 200 विद्यार्थी; शहरी भाग: 200 विद्यार्थी.

4. नमुना निवड निकष (Selection Criteria):

- a. 11 ते 16 वर्षे वयोगटातील विद्यार्थी सहभागी झाले.
- b. पालकांची आणि विद्यार्थ्यांची सहभागासाठी संमती घेतली.

5. डेटा संकलन साधने (Data Collection Tools):

अभ्यासासाठी प्रश्नावली आणि मुलाखतीचा वापर केला.

a. प्रश्नावली (Questionnaire): विद्यार्थ्यांच्या पुर्वज्ञानावर आधारित प्रश्नावली तयार करून ती

विद्यार्थ्यांना दिली. प्रश्नावलीमध्ये तीन मुख्य विभाग केले ते पुढील प्रमाणे:

- विद्यार्थ्यांची मूलभूत माहिती: वय, इयत्ता, शाळेचे स्थान इत्यादी.
- आपत्ती व्यवस्थापनाविषयी ज्ञान जाणून घेणारे प्रश्न.
- पूर परिस्थितीतील कृती आणि प्रशिक्षण: आपत्तीच्या वेळी घेतलेल्या कृती, शालेय प्रशिक्षणाचा अनुभव, आणि आपत्ती निवारणात मदत करण्याबाबत दृष्टिकोन.

b. मुलाखती (Interviews): काही निवडक विद्यार्थ्यांशी प्रत्यक्ष संवाद साधून परिस्थितीतील त्यांचे अनुभव जाणून घेण्यात आले.

6. डेटा संकलन प्रक्रिया (Data Collection Process):

प्रश्नावली भरून घेणे: शाळांमध्ये प्रत्यक्ष भेट देऊन विद्यार्थ्यांना प्रश्नावली भरायला सांगितली या पूर्वी त्यांना प्रश्न समजावून सांगितले.

मुलाखती घेणे: विद्यार्थ्यांशी आणि त्यांच्या शिक्षकांशी चर्चा करून आपत्ती व्यवस्थापन प्रशिक्षणाचे प्रभावी परिणाम जाणून घेण्यात आले.

कालावधी: डेटा संकलनासाठी एकूण 30 दिवसांचा कालावधी लागला.

7. डेटा विश्लेषण (Data Analysis): संकलित डेटा आकडेवारी पद्धतीने (Statistical Methods) विश्लेषित केला. विद्यार्थ्यांच्या प्रतिसादांची वर्गवारी करून टक्केवारी (Percentage) आणि सरासरी (Mean) काढण्यात आली. ग्रामीण आणि शहरी विद्यार्थ्यांमध्ये असलेल्या ज्ञान आणि तयारीतील तफावत स्पष्ट करण्यासाठी तक्ते आणि ग्राफचा वापर करण्यात येईल.

8. नैतिक विचार (Ethical Considerations): विद्यार्थ्यांच्या पालकांची अभ्यासात सहभागासाठी परवानगी घेतली. सर्व प्रतिसाद गोपनीय ठेवले. अभ्यासाचा उद्देश स्पष्ट करून विद्यार्थ्यांना व त्यांच्या पालकांना याबाबतची सविस्तर माहिती दिली.

9. मर्यादा (Limitations): अभ्यास फक्त निवडक 400 विद्यार्थ्यांवर आधारित असल्यामुळे सर्व शाळांचा समावेश करता आला नाही. विद्यार्थ्यांच्या उत्तरांमध्ये वैयक्तिक अनुभवांवर आधारित तफावत असू शकते. ही कार्यपद्धती विद्यार्थ्यांमध्ये आपत्ती व्यवस्थापन विषयक जागरूकतेची सखोल माहिती संकलित करण्यात उपयोगी ठरेल, कार्यपद्धती :

कोल्हापूर जिल्ह्यातील विविध शाळांमध्ये यादृच्छिकपणे निवडलेल्या 400 विद्यार्थ्यांसाठी एक सुव्यवस्थित प्रश्नावली तयार करण्यात आली. अभ्यासाच्या उद्देश नुसार प्रश्नावली मार्फत विद्यार्थ्यांच्या ज्ञानाचे मूल्यांकन आणि आपत्ती सज्जतेबाबत विद्यार्थ्यांमधील जागरूकतेचे मूल्यमापन करण्यात आले अभ्यासातून गोळा केलेला माहिती सांख्यिकी साधनांचा वापर करून विश्लेषित करण्यात आली.

गोळा केलेल्या माहितीच्या विश्लेषणाच्या आधारे तक्ता क्रमांक एक कोल्हापूर जिल्ह्यातील विद्यार्थ्यांमध्ये आपत्ती जागरूकता दर्शवते. नमुन्यात समाविष्ट केलेल्या सर्व विद्यार्थ्यांना आपत्ती व्यवस्थापन बदलची संकल्पना माहित आहे सुमारे ८२.७५ टक्के विद्यार्थ्यांना आपत्ती योजनेबद्दल माहिती आहे. 17.75% विद्यार्थ्यांना आपत्ती व्यवस्थापन कधी करावे हे माहित आहे. 39.25% विद्यार्थ्यांना मॉड ड्रिल बदल माहिती आहे आणि सुमारे 69.75% विद्यार्थ्यांना आपत्ती सज्जता याविषयी माहिती आहे. वरील अभ्यासातून विद्यार्थ्यांमध्ये आपत्ती बाबत फारशी माहिती नाही हे आढळून आले.

तक्ता क्रमांक दोन मध्ये केलेल्या प्रश्नावलीच्या विश्लेषणानुसार विद्यार्थ्यांमध्ये आपत्तीसाठी तयार व्हायचे आहे आणि आपत्तीसाठी योग्य नियोजन आणि व्यवस्थापन सामान्य जनतेचे प्रशिक्षण तसेच योग्य आपत्ती योजना तयार करण्यासाठी योग्य पावले उचलणे आवश्यक आहे याची माहिती मिळाली त्याचप्रमाणे तक्ता क्रमांक तीन दर्शवते की शाळेमध्ये कोणतेही

आपत्ती व्यवस्थापनासाठी अभिरूप सराव आणि प्रशिक्षण घेतले जात नाही तर दुसरीकडे विद्यार्थ्यांना संबंधित व्यवस्थापनेकडून पुरवलेल्या सुविधांच्या अधीन राहून आपत्तीसाठी सज्ज राहायचे आहे.सांख्यिकीय दृष्ट्या विद्यार्थ्यांच्या प्रतिसादामध्ये लक्षणीय फरक आहे.

निष्कर्ष:

प्रश्नावलीद्वारा गोळा केलेल्या माहितीचे काळजीपूर्वक विश्लेषण केले आणि त्यानुसार सांख्यिकीय साधनांचा वापर करणे योग्य प्रकारे निष्कर्ष काढण्यात आले. केलेला अभ्यासानुसार विद्यार्थ्यांमध्ये आपत्ती व्यवस्थापना बद्दल जागरूकता आणि तयारी याविषयीच्या माहितीचा अभाव आहे हे जाणवले. आपत्ती व्यवस्थापन प्रशिक्षण ही शिक्षणाची गरज आहे तसेच आपत्ती रोखण्यासाठी विद्यार्थी दशोपासूनच तयार

राहणे आवश्यक आहे. औपचारिक आणि अनौपचारिक अशा दोन्ही प्रकारच्या शिक्षणातून विद्यार्थ्यांना आपत्ती आणि आपत्ती व्यवस्थापन याविषयीची माहिती देऊन जागरूकता निर्माण करणे आवश्यक आहे.

विद्यार्थ्यांना आपत्ती व्यवस्थापन, आपत्तीच्या परिणामांविषयी जागरूक केले जाऊ शकते.यासाठी आपत्ती व्यवस्थापनाचा अभिरूप सराव शाळांमध्ये होणे देखील अत्यंत महत्वाचे आहे. आपत्ती निर्माण करणारी महत्वाची कारणे शोधून, समजून घेऊन त्यानुसार योग्य प्रकारे प्रत्येकाने आपली जबाबदारी ओळखून प्रत्येकाने आपली जीवनशैली बदलणे महत्वाचे आहे. जिल्ह्यात ओढावणाऱ्या आपत्तींना सामोरे जाण्यासाठी प्रत्येक नागरिकाला योग्य असे मुलभूत प्रशिक्षण मिळणे देखील आवश्यक आहे.

तक्ता 1: कोल्हापूर जिल्ह्यातील विद्यार्थ्यांमधील आपत्ती जागरूकता

अनु. क्र.	प्रश्न	होय (टक्केवारी)	नाही (टक्केवारी)	P मूल्य
1.	तुम्हाला आपत्ती म्हणजे काय माहिती आहे का?	100	0	<0.01
2.	तुम्हाला आपत्ती व्यवस्थापन म्हणजे काय माहित आहे का?	83.75	16.25	<0.01
3.	आपत्ती व्यवस्थापन कसे केले जाते याची माहितीतुम्हाला आहे का?	18.75	81.25	<0.01
4.	आपत्ती व्यवस्थापनामध्ये अभिरूप सराव घेतला जातो याविषयी तुम्हाला माहिती आहे का?	39.25	60.75	<0.01
5.	आपत्ती व्यवस्थापनासाठी अभिरूप सराव महत्वाचा आहे याबद्दल तुमचे मत काय आहे?	32.25	67.75	<0.01
6.	आपत्ती व्यवस्थापनातील तयारी बद्दल आपले मत काय आहे.	69.75	30.25	<0.01

तक्ता 2: कोल्हापूर जिल्ह्यातील विद्यार्थ्यांच्या आपत्ती तयारीबाबतच्या दृष्टिकोनावर आधारित उत्तरे

अनु. क्र.	प्रश्न	सहमत (टक्केवारी)	असहमत (टक्केवारी)	सांगता येत नाही (टक्केवारी)	P मूल्य
1.	मला आपत्ती व्यवस्थापन कसे केले जाते याची माहिती हवी आहे.	90.75	2	7.25	<0.01
2.	आपत्ती आल्यावर व्यवस्थापनाने पुरेशी तयारी करावी लागते.	92.75	3.5	3.75	<0.01
3.	आपत्ती व्यवस्थापन हे काही लोकांसाठीच आहे.	9.75	9.75	84.5	<0.01
4.	आपत्ती उद्भवल्यानंतर संभाव्य धोके ओळखणे आणि त्यांना सामोरे जाणे हे महत्वाचे आहे.	82.25	3.25	14.5	<0.01
5.	आपत्ती व्यवस्थापनाचे प्रशिक्षण सर्व विद्यार्थ्यांना मिळणे आवश्यक आहे.	91.25	3.75	5	<0.01
6.	आपत्ती व्यवस्थापन आवश्यक आहे का?	91.75	2.25	6	<0.01
7.	आपत्ती व्यवस्थापन नियमितपणे अद्याप होत करणे आवश्यक आहे.	84.25	2.75	13	<0.01
8.	आपल्या जिल्ह्यामध्ये आपत्ती येण्याची शक्यता नाही.	84	2.25	13.75	<0.01
9.	आपत्ती व्यवस्थापन हे फक्त सुशिक्षित लोकांसाठीच आवश्यक आहे का?	3.75	70.75	23.5	<0.01
10.	आपत्ती व्यवस्थापन ची माहिती सर्व शाळांमध्ये दिली जावी का?	75.25	2.75	22	<0.01

तक्ता 3: कोल्हापूर जिल्ह्यातील विद्यार्थ्यांमधील आपत्ती व्यवस्थापनाची तयारी.

अनु. क्र.	प्रश्न	होय (टक्केवारी)	नाही (टक्केवारी)	सांगता येत नाही (टक्केवारी)	P मूल्य
1.	तुमच्या शाळेमध्ये आपत्ती व्यवस्थापनाच्या सराव घेतला जातो का?	3.25	90.75	6	<0.01
2.	होय, असल्यास आपत्ती व्यवस्थापन सराव आवश्यक आहे का?	2.25	0	97.75	<0.01
3.	आपल्या शाळेमध्ये आपत्ती व्यवस्थापना संदर्भात काही प्रशिक्षणे होतात का?	1.75	86.75	11.5	<0.01
4.	आपत्ती व्यवस्थापन प्राधिकरणाद्वारे वेळोवेळी अद्यावत केले जाते का?	0	94.75	5.25	<0.01
5.	तुम्ही कधी कोणत्या आपत्तीचा सामना केला आहे का?	64.25	28.75	7	<0.01
6.	तुम्ही आपत्ती व्यवस्थापनातील कार्यकर्ते म्हणून काम केले आहे का?	2.75	81.75	15.5	<0.01
7.	तुमच्या जिल्ह्यामध्ये नुकत्याच आलेल्या आपत्ती बदल तुम्हाला कल्पना आहे का?	92.25	1.75	6	<0.01
8.	आपत्तीच्या विरोधात लढण्यासाठी सराव अपुरा आहे याबद्दल तुमचे मत काय आहे?	92.75	2	7.25	<0.01
9.	आपत्ती व्यवस्थापन प्रशिक्षण हा शिक्षण व्यवस्थेचा भाग असावा का?	94.25	1	4.75	<0.01

संदर्भ सूची :

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व्हन्नूर गावातील अवलंबन भार प्रमाणाचा चिकित्सक अभ्यास

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^{२,३,४,५}विद्यार्थी

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गोष्टवारा:

अवलंबन भार गुणोत्तर हे एक गंभीर लोकसंख्याशास्त्रीय सूचक आहे जे काम करणाऱ्या वयोगटातील लोकसंख्येवर अवलंबून असलेल्या व्यक्तींचे (मुले आणि वृद्ध) प्रमाण मोजते. हा अभ्यास महाराष्ट्रातील कागल तालुक्यातील व्हन्नूर गावाच्या अवलंबन भार गुणोत्तरावर केंद्रित आहे. प्रस्तुत अभ्यास लोकसंख्याशास्त्रीय माहितीचे विश्लेषण करून गावासमोरील आर्थिक आणि सामाजिक आव्हानांची अंतर्दृष्टी प्रदान करते.

प्रस्तावना:

कोल्हापूर जिल्हा महाराष्ट्र राज्यातील एक ऐतिहासिक, सांस्कृतिक, आणि नैसर्गिकदृष्ट्या समृद्ध भाग आहे. हा जिल्हा पावसाळी हवामान, सुजलाम सुफलाम जमीन, आणि कृष्णा, पंचगंगा यांसारख्या नद्यांच्या प्रवाहामुळे ओळखला जातो. जिल्ह्यातील प्रत्येक गावाला त्याची स्वतःची विशिष्ट ओळख आणि स्थानिक वैशिष्ट्ये आहेत. या गावांपैकी व्हन्नूर हे गाव आपल्या नैसर्गिक साधनसंपत्ती, कृषी उत्पादन, आणि सांस्कृतिक परंपरांसाठी महत्त्वाचे आहे. व्हन्नूर हे गाव कोल्हापूर जिल्ह्यातील एका समृद्ध सामाजिक आणि नैसर्गिक वारशाचे प्रतीक आहे. गावाचा परिसर प्रामुख्याने कृषीप्रधान असून शेती ही येथे मुख्य उपजीविका आहे. येथे पाण्याचा पुरेसा स्रोत, सुपीक जमीन, आणि नैसर्गिक संसाधने उपलब्ध आहेत. तरीसुद्धा, आधुनिक जीवनशैली आणि लोकसंख्येतील वाढ यामुळे या गावावर ताण निर्माण झाला आहे.

‘अवलंबन भार’ ही संज्ञा संसाधनांच्या वापराबाबत समाजावर आणि पर्यावरणावर येणाऱ्या

ताणाचे मोजमाप करते. एका विशिष्ट भौगोलिक क्षेत्रातील लोकसंख्या आणि त्यांची जीवनशैली नैसर्गिक संसाधनांवर किती अवलंबून आहे, हे या संकल्पनेद्वारे समजले जाते.

व्हन्नूरसारख्या ग्रामीण भागांमध्ये अवलंबन भार मुख्यतः शेती, पाणी, जळण, वने, आणि इतर स्थानिक संसाधनांवर अवलंबून असतो. गावकऱ्यांच्या उपजीविकेतील वाढत्या गरजा आणि नैसर्गिक साधनसंपत्तीतील मर्यादा यांचा संतुलन साधणे हा एक मोठा आव्हानात्मक मुद्दा आहे. गावातील लोकसंख्या आणि त्यांची जीवनशैली, कृषी पद्धती, औद्योगिक उपक्रम, तसेच पर्यावरणीय परिस्थिती या सर्वांचा एकत्रित अभ्यास करून गावाच्या अवलंबन भाराचे स्वरूप समजणे आवश्यक आहे.

अभ्यासाचे महत्त्व :

व्हन्नूरसारख्या गावांमध्ये टिकाऊ विकासाची धोरणे राबवण्यासाठी अवलंबन भार समजून घेणे महत्त्वाचे आहे. या संशोधनाद्वारे पर्यावरणीय आणि सामाजिक संतुलन राखण्यासाठी उपाययोजना सुचवता

येतील. अशा अभ्यासातून गावकऱ्यांच्या जीवनमानात सुधारणा घडवणे आणि शाश्वत विकास साधणे शक्य होईल.

संशोधनाची उद्दिष्टे:

- व्हन्नूर गावातील अवलंबन भाराचे स्वरूप समजून घेणे.

अभ्यास पद्धती :

प्रस्तुत प्रकल्प प्राथमिक व दुय्यम माहिती वर आधारित आहे. व्हन्नूर गावच्या अवलंबन भार गुणोत्तराचे विश्लेषण करण्यासाठी वर्णनात्मक संशोधन पद्धतीचा अवलंब केला आहे. माहिती संकलनामध्ये भारताची जनगणना (2011) आणि इतर अधिकृत स्रोतांमधील दुय्यम माहिती तसेच घरगुती सर्वेक्षण आणि मुलाखतींद्वारे एकत्रित केलेल्या प्राथमिक माहितीचा समावेश होतो. लोकसंख्याशास्त्रीय माहिती मिळविण्यासाठी एकूण १०० कुटुंबांचे सर्वेक्षण करण्यात आले. व पुढील सूत्राच्या सहाय्याने अवलंबन भाराचे मापन केले आहे.

अवलंबन भार = अवलंबीत

लोकसंख्या / कार्यक्षम लोकसंख्या * १००

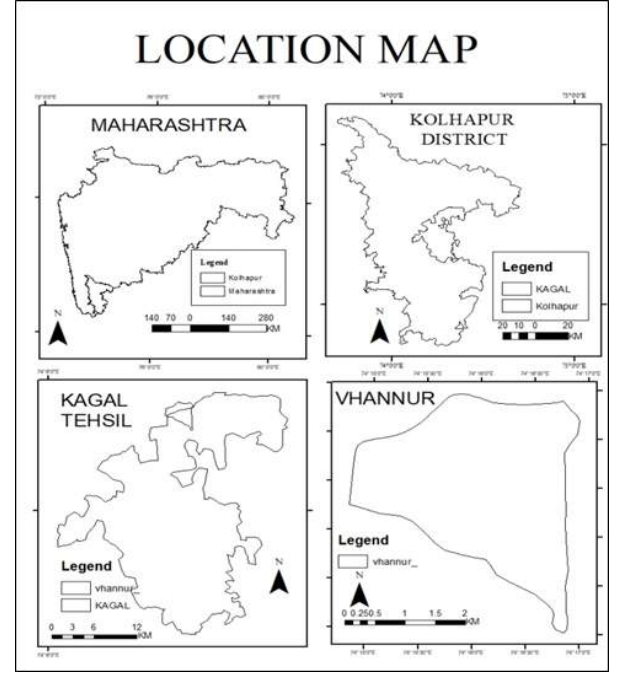
अवलंबीत लोकसंख्या = ०-१४ वयोगटातील बालके व ६५ वर्षांपेक्षा जास्त वृद्ध

कार्यक्षम लोकसंख्या = १५-६४ वयोगटातील लोकसंख्या

अभ्यासक्षेत्र :

व्हन्नूर हे महाराष्ट्रातील कोल्हापूर जिल्ह्यातील कागल तालुक्यातील एक गाव आहे, ज्याचे क्षेत्रफळ ९९९.६४ हेक्टर आहे. कागलपासून ६ किमी आणि कोल्हापूरपासून १५ किमी अंतरावर असलेल्या या गावाची लोकसंख्या २०११ च्या जनगणनेनुसार ४,०५६ आहे, आणि साक्षरता दर ७६.८२% आहे. गावात ८६५ कुटुंबे असून स्त्री-पुरुष गुणोत्तर १००० पुरुषांमागे ९६१ स्त्रिया आहे. व्हन्नूर स्थानिक रस्त्यांद्वारे NH48 आणि NH548H ला जोडलेले आहे, तर जवळचे रेल्वे स्थानके गुर मार्केट आणि कोल्हापूर एससीएसएमटी येथे आहेत. हवामान

उष्ण असून जानेवारी महिन्यात तापमान साधारणतः १८°C ते ३४°C दरम्यान असते.

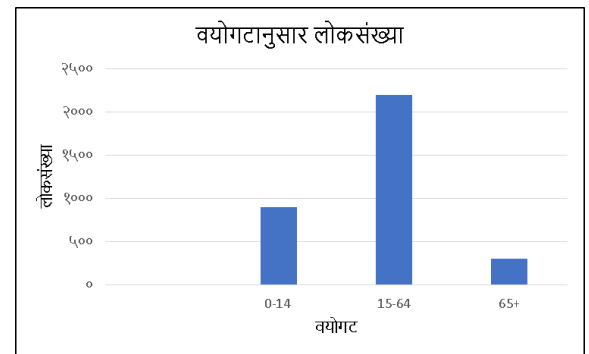


आकृती क्र. १ : अभ्यासक्षेत्र नकाशा

विश्लेषण:

व्हन्नूर गावाची लोकसंख्या रचना:

व्हन्नूर गावाची एकूण लोकसंख्या अंदाजे ३४५० आहे. लोकसंख्या तीन प्रमुख गटांमध्ये विभागली गेली आहे. ०-१४ वर्षे वयोगटातील मुले (९५० व्यक्ती), १५-६४ वर्षे वयोगटातील म्हणजेच कार्यरत वयोगटातील लोकसंख्या (२२०० व्यक्ती), आणि ६५ वर्षे व त्यावरील वृद्ध (३०० व्यक्ती) अशी विभागणी आहे. ही संख्या भारतातील सर्वसाधारण ग्रामीण लोकसंख्याशास्त्रीय रचना दर्शवते, जिथे मुले आणि वृद्ध मिळून लोकसंख्येचा एक महत्त्वपूर्ण भाग बनवतात.



आकृती क्र. २ वयोगटानुसार लोकसंख्या

अवलंबन भार गुणोत्तर गणना:

व्हन्नूर गावाचे अवलंबन भार गुणोत्तर हे सूचित करते की कार्यरत वयोगटातील प्रत्येक १०० व्यक्तींमागे ५७ अवलंबीत व्यक्ती आहेत. असे गुणोत्तर लोकसंख्येच्या उत्पादक भागावरील आर्थिक आणि सामाजिक दबाव अधोरेखित करते.

वयोगट वितरण:

०-१४ वर्षे वयोगटातील एकूण व्यक्ती या एकूण लोकसंख्येच्या २७.५४% आहेत, जे शिक्षण आणि बालसंगोपन सेवांसाठी उच्च संभाव्य मागणी असलेल्या तरुण लोकसंख्याशास्त्राचे प्रतीक आहे.

वृद्ध व्यक्ती (६५+ वर्षे) एकूण लोकसंख्येच्या ८.७०% आहेत, जे आरोग्यसेवा आणि सामाजिक सहाय्य सेवांच्या वाढत्या गरजांकडे निर्देश करतात.

काम करणाऱ्या वयोगटातील व्यक्ती (१५-६४ वर्षे) एकूण लोकसंख्येच्या ६३.७६% आहेत, जे गावाचा प्राथमिक आर्थिक कणा म्हणून काम करतात.

आर्थिक परिणाम:

प्रामुख्याने कृषी अर्थव्यवस्थेत विशेषतः मर्यादित उत्पन्न विविधीकरणासह ५६.८२ % हे अवलंबन भार गुणोत्तर काम करणाऱ्या वयोगटावर लक्षणीय आर्थिक जबाबदारी देते. ०-१४ वर्षे वयोगटातील मुलांच्या उच्च प्रमाणामुळे त्यांना भविष्यातील आर्थिक सहभागासाठी तयार करण्यासाठी शिक्षण आणि कौशल्य विकासामध्ये भरीव गुंतवणूक करणे आवश्यक आहे.

सामाजिक परिणाम:

काम करणाऱ्या लोकसंख्येचे शहरी केंद्रांकडे स्थलांतर झाल्यामुळे गावातील कौटुंबिक संरचना ताणतणावाखाली येण्याची शक्यता आहे. काम करणाऱ्या वयोगटातील लिंग असमतोल सूचित करते की पुरुष रोजगारासाठी शहरी भागात स्थलांतर करतात. या प्रवृत्तीमुळे महिलांवरील अवलंबन भार वाढतो आणि गावाच्या एकूण उत्पादकतेवर परिणाम होतो.

वृद्ध लोकसंख्येला योग्य आरोग्य सेवा उपलब्ध करून देण्याची आवश्यकता असते. गावातील मर्यादित रोजगार संधी आर्थिक दबाव वाढवतात. शिक्षण आणि आरोग्यसेवेला लक्ष्य करणारे सामाजिक कार्यक्रम सामाजातील विषमता कमी करू शकतात.

निष्कर्ष:

व्हन्नूर गावामध्ये दर १०० लोकांच्या मागे ५७ एवढा अवलंबन भार आहे. व्हन्नूर गावाचे अवलंबन भार प्रमाण लक्षणीय सामाजिक-आर्थिक आव्हाने अधोरेखित करतो. या समस्यांचे निराकरण करण्यासाठी शिक्षण, आरोग्य सेवा आणि रोजगारामध्ये लक्षित हस्तक्षेप आवश्यक आहे. गावाचा शाश्वत विकास सुनिश्चित करण्यासाठी धोरणकर्ते आणि स्थानिक प्राधिकरणांनी सहकार्य केले पाहिजे.

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व्हन्नूर गावाच्या व्यावसायिक संरचनेचा विश्लेषणात्मक अभ्यास

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प्रस्तावना :

पूर्वी मानवी समाज मर्यादित होता. त्यांच्या गरजा मर्यादित होत्या उपजीविकासाठी त्याला निसर्गावर अवलंबून राहावे लागत होते. अन्नाच्या शोधासाठी त्याला भटकंती करावी लागत असे पुढे जाऊन शेतीचा शोध हा मानवाचे जेवण स्थिरस्थावर होण्यास महत्वाचा ठरला शेतीच्या शोधातून मानवाचे जीवन स्थिरावले त्यानंतर नदीकाठी त्याने वसाहती स्थापन करण्यास सुरुवात केली यातूनच मानवाच्या समूह जीवनास सुरुवात झाली. समूहाच्या गरजा भागविण्यासाठी त्यांच्यात वस्तूंची देवाण-घेवाण सुरू झाली शेती व प्राण्यांवर आधारित व्यापारात सुरुवात झाली मानवी समाजाचा विकासाबरोबर उत्पादन वितरण वस्तूंचा उपयोग आणि विविध प्रकारचे सेवा यांच्यामध्ये अमुलार्ग बदल होत आहे. आर्थिक रचना हा मानवी व्यवसायावर परिणाम करणारा प्रमुख घटक आहे म्हणूनच जगात विविध प्रदेशांमध्ये विविध प्रकारच्या आर्थिक क्रिया आढळतात. जगात सर्वच भागात एकसारख्या आर्थिक क्रिया आढळत नाहीत औद्योगिक क्रांती नंतर मानवी व्यवसायामध्ये तंत्रज्ञानाचा वापर सुरू झाला आणि मानवाचे जीवन गतिमान बनत गेले यामुळे मानवी व्यवसायांचे स्वरूप आणि व्याप्ती यामध्येही बदल होत गेला. बदलते जग आणि जागतिकीकरण यांचा विविध प्रकारांच्या व्यवसायांवर मोठा परिणाम होत आहे. विज्ञान आणि

तंत्रज्ञानाचे युग विकसित होत असताना लोकांच्या गरजा बदलत आहेत आणि व्यवसाय सुद्धा बदलत आहेत.

मानवी व्यवसायाची व्याख्या केली तर ती मानव आपल्या गरजा भागविण्यासाठी व वैयक्तिक सामाजिक आणि विकासासाठी त्या समाजमान्य कृती करतो त्यास “मानवी व्यवसाय” म्हणतात. अशी करता येईल बहुतेक मानवी व्यवसाय आर्थिक विकासाशी संबंधित असल्याने त्यांना आर्थिक व्यवसाय (Economic Activity) असेही म्हणतात. प्राथमिक व्यवसाय, द्वितीय व्यवसाय, तृतीय व्यवसाय आणि चतुर्थक व्यवसाय असे मानवी व्यवसायांचे वर्गीकरण करता येते.

कागल तालुक्यातील व्हन्नूर हे एक ग्रामीण भागातील गाव असून, येथील प्रमुख आर्थिक क्रिया शेती, लघुउद्योग, आणि पशुपालनावर आधारित आहे. या गावाच्या व्यावसायिक संरचनेचा अभ्यास करणे हे महत्वाचे आहे, कारण यामुळे स्थानिक अर्थव्यवस्थेची सखोल माहिती मिळते आणि विकासासाठी योग्य उपाययोजना करता येतात. या संशोधनाचा उद्देश व्हन्नूरमधील व्यावसायिक क्रिया, त्यांच्या अडचणी, आणि विकासाच्या संधी यांचे चिकित्सक विश्लेषण करणे आहे.

अभ्यासाचा उद्देश :

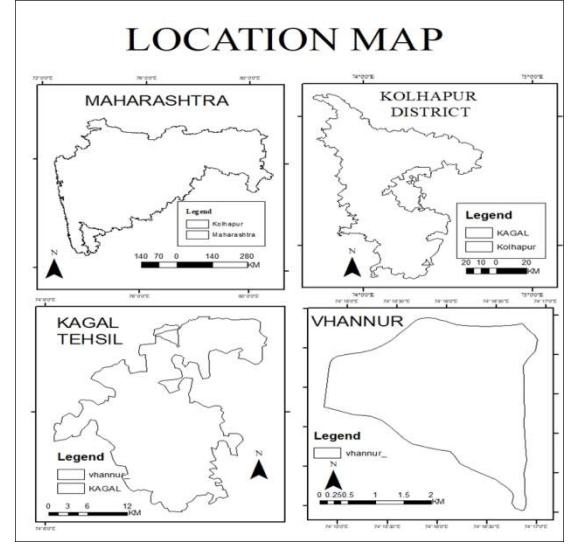
1. व्हन्नूर गावातील प्रमुख व्यवसायांचा आढावा घेणे.
2. व्यावसायिक क्षेत्रातील प्रमुख समस्यांचे विश्लेषण करणे.
3. व्हन्नूर गावाच्या विकासासाठी उपाययोजना सुचवणे.

अभ्यास पद्धती :

प्रस्तुत प्रकल्प प्राथमिक व दुय्यम माहिती वर आधारित आहे. माहिती संकलनामध्ये भारताची जनगणना (2011) आणि इतर अधिकृत स्रोतांमधील दुय्यम माहिती तसेच घरगुती सर्वेक्षण आणि मुलाखतींद्वारे एकत्रित केलेल्या प्राथमिक माहितीचा समावेश होतो. लोकसंख्याशास्त्रीय माहिती मिळविण्यासाठी एकूण १०० कुटुंबांचे सर्वेक्षण करण्यात आले. व्हन्नूर गावच्या व्यावसायिक संरचनेचे विश्लेषण करण्यासाठी वर्णनात्मक संशोधन पद्धतीचा अवलंब केला आहे .

अभ्यासक्षेत्र :

व्हन्नूर हे महाराष्ट्रातील कोल्हापूर जिल्ह्यातील कागल तालुक्यातील एक गाव आहे, ज्याचे क्षेत्रफळ ९९९.६४ हेक्टर आहे. कागलपासून ६ किमी आणि कोल्हापूरपासून १५ किमी अंतरावर असलेल्या या गावाची लोकसंख्या २०११ च्या जनगणनेनुसार ४,०५६ आहे, आणि साक्षरता दर ७६.८२% आहे. गावात ८६५ कुटुंबे असून स्त्री-पुरुष गुणोत्तर १००० पुरुषांमागे ९६१ स्त्रिया आहे. व्हन्नूर स्थानिक रस्त्यांद्वारे NH48 आणि NH548H ला जोडलेले आहे, तर जवळचे रेल्वे स्थानके गुर मार्केट आणि कोल्हापूर एससीएसएमटी येथे आहेत. हवामान उष्ण असून जानेवारी महिन्यात तापमान साधारणतः १८°C ते ३४°C दरम्यान असते.



आकृती क्र. १ : अभ्यासक्षेत्र नकाशा

प्रमुख व्यवसाय:

शेती: गावातील ८२ % लोकसंख्या शेतीवर अवलंबून आहे. मुख्य पिकांमध्ये भात, ऊस, आणि भाजीपाला यांचा समावेश होतो. पाणीपुरवठा आणि सिंचनाच्या मर्यादा असल्यामुळे उत्पादनावर परिणाम होतो.

पशुपालन: शेतीला जोडधंदा म्हणून बऱ्यापैकी सर्व शेतकरी पशुपालन हा व्यवसाय करतात. दुग्धव्यवसाय हा गावातील महत्वाचा व्यवसाय आहे. दूध उत्पादनासाठी गायी आणि म्हशींचा वापर केला जातो, आणि स्थानिक बाजारपेठेत दूध व दुग्धजन्य पदार्थांची विक्री होते.

लघुउद्योग: हस्तकला, बेकरी, आणि लघु यंत्रसामग्री यांसारख्या लघुउद्योगांचा गावात समावेश आहे. काही ग्रामस्थ गिरण उद्योग व किराणा माल दुकान हे व्यवसाय करतात. ३% ग्रामस्थ यामध्ये व्यस्त आहेत. तथापि, उद्योगासाठी आवश्यक भांडवल आणि कौशल्याची कमतरता आहे.

नोकरी: व्हन्नूर गावाच्या जवळ कागल व शिरोली हे दोन महाराष्ट्र औद्योगिक विकास महामंडळ (MIDC) आहेत. तसेच शिक्षणाच्या बाबतीत झालेल्या जागृतीमुळे त्यामुळे १५ % लोकसंख्या हि नोकरी करत आहे.

समस्या आणि अडचणी:

भौगोलिक आणि आर्थिक अडचणी: गावात अपुरी पायाभूत सुविधा जसे रस्ते, वीज, आणि जलपुरवठा यामुळे व्यावसायिक विकासात अडथळे येतात. नैसर्गिक आपत्तीमुळे पिकांचे नुकसान होण्याची शक्यता असते.

तंत्रज्ञानाचा अभाव: शेती आणि उद्योगासाठी अद्यावत तंत्रज्ञानाची कमतरता आहे, ज्यामुळे उत्पादनक्षमता कमी होते.

शासकीय योजनांचा अपुरा लाभ: अनेक शासकीय योजनांची माहिती लोकांपर्यंत पोहोचत नाही, आणि अर्ज व अंमलबजावणी प्रक्रियेत अडथळे येतात.

शिक्षण आणि कौशल्य विकासाचा अभाव: व्यावसायिक कौशल्ये विकसित करण्यासाठी प्रशिक्षण कार्यक्रमांची आवश्यकता आहे.

विकासासाठी उपाययोजना:

प्रशिक्षण आणि शिक्षण: व्यावसायिक कौशल्ये विकसित करण्यासाठी कार्यशाळा आयोजित करणे, आणि आधुनिक तंत्रज्ञानाची ओळख व त्याचा वापर याबाबत प्रशिक्षण देणे आवश्यक आहे.

तंत्रज्ञानाचा अवलंब: कृषी तंत्रज्ञान, सिंचन यंत्रणा, आणि औद्योगिक उपकरणांचा पुरवठा करणे, तसेच ई-कॉमर्सद्वारे उत्पादनांना व्यापक बाजारपेठ मिळवून देणे आवश्यक आहे.

शासकीय योजनांचा प्रभावी उपयोग: स्थानिक स्वराज्य संस्थांनी योजनांची माहिती लोकांपर्यंत पोहोचवणे, आणि योजनांच्या प्रभावी अंमलबजावणीसाठी तक्रार निवारण प्रणाली उभारणे आवश्यक आहे.

पायाभूत सुविधा विकास: रस्ते, वीज, आणि पाणीपुरवठा सुधारण्यासाठी शासकीय गुंतवणूक करणे, आणि ग्रामीण भागात औद्योगिक क्लस्टर उभारणे आवश्यक आहे.

निष्कर्ष:

वहन्नूर गावातील व्यावसायिक संरचनेचा अभ्यास दर्शवितो की, बहुतांश लोकसंख्या हि शेती व शेतीपुरक व्यवसाय म्हणजेच पशुपालन यामध्ये गुंतलेली आहे. तसेच MIDC मुळे नोकरी आणि लघुउद्योग यामधील लोकसंख्या वाढत आहे. तंत्रज्ञान, शिक्षण, आणि पायाभूत सुविधांच्या विकासाद्वारे मोठा बदल घडत आहे. गावाच्या सर्वांगीण स्थानिक प्रशासन, शासकीय संस्था, आणि नागरिक यांची संयुक्त जबाबदारी महत्त्वाची ठरेल.

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A Study of Geomorphological Changes in the Yetthinahole Catchment Area Using Geospatial Technology

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Abstract:

Geomorphological studies are essential for comprehending Earth's dynamic surface processes, offering insights into landscape evolution, river morphology, erosion patterns, and sediment transport. The Yetthinahole catchment in Karnataka's Western Ghats is a vital hydrological region characterized by diverse geomorphic features, including rugged terrains, dense forests, and numerous streams. This area is highly susceptible to geomorphological changes due to both natural processes and anthropogenic activities. The study of these changes using geospatial technology has gained prominence in recent years, as it provides accurate spatial and temporal analysis. Geospatial tools such as Remote Sensing (RS) and Geographic Information Systems (GIS) have revolutionized geomorphological research by enabling the mapping, monitoring, and modeling of surface features at multiple scales. Satellite imagery from sources like Landsat, Sentinel, and ASTER provides crucial data for detecting changes in landforms over time. Digital Elevation Models (DEMs) derived from these datasets allow for detailed terrain analysis, including slope, aspect, and watershed delineation. The use of automated techniques like stream order analysis, erosion modeling, and landform classification has further enhanced the efficiency of geomorphological studies. In the Yetthinahole catchment, recent studies have indicated significant changes in stream networks, sediment deposition, and land use patterns due to deforestation, agricultural expansion, and infrastructural development. Understanding these changes is critical for sustainable watershed management and mitigating the adverse impacts of geomorphological alterations. Employing geospatial technology for analyzing these shifts offers a robust framework for decision-makers to implement effective conservation strategies. This research aims to assess geomorphological changes in the Yetthinahole catchment over the past decades using geospatial techniques. It seeks to bridge the knowledge gap in regional geomorphology and contribute to sustainable land and water resource management.

Keywords: *Geomorphology, Yetthinahole catchment, geospatial technology, landscape evolution, watershed management*

Introduction:

Geomorphological studies play a critical role in understanding the Earth's dynamic surface processes, providing insights into landscape evolution, river morphology, erosion patterns, and sediment transport (Strahler, 1952; Schumm, 1977). The Yetthinahole catchment, located in the

Western Ghats of Karnataka, India, is a vital hydrological region characterized by diverse geomorphic features, including rugged terrains, dense forests, and numerous streams. This region is highly susceptible to geomorphological changes due to both natural processes and anthropogenic activities. The study of these changes using

geospatial technology has gained prominence in recent years, as it provides accurate spatial and temporal analysis (Chorley, 1971; Kondolf & Piegay, 2003). Geospatial technologies including as Remote Sensing (RS) and Geographic Information Systems (GIS) have revolutionized geomorphological research by enabling the mapping, monitoring, and modeling of surface features at multiple scales (Burrough, 1986; Bolstad, 2016). Satellite imagery from sources like Landsat, Sentinel, and ASTER provides crucial data for detecting changes in landforms over time. Digital Elevation Models (DEMs) derived from these datasets allow for detailed terrain analysis, including slope, aspect, and watershed delineation (Moore et al., 1991; Wilson & Gallant, 2000). The use of automated techniques like stream order analysis, erosion modeling, and landform classification has further enhanced the efficiency of geomorphological studies (Tarboton, 1997; Thorne, 1998). In the Yetthinahole catchment, recent studies have indicated significant changes in stream networks, sediment deposition, and land use patterns due to deforestation, agricultural expansion, and infrastructural development (Rai et al., 2017; Barman et al., 2020). Understanding these changes is critical for sustainable watershed management and mitigating the adverse impacts of

geomorphological alterations. Employing geospatial technology for analyzing these shifts offers a robust framework for decision-makers to implement effective conservation strategies (Das et al., 2021; Jain et al., 2023). This research aims to assess the geomorphological changes in the Yetthinahole catchment over the past decades using geospatial techniques. It seeks to bridge the knowledge gap in regional geomorphology and contribute to sustainable land and water resource management.

Study Area:

The Yetthinahole catchment area, located in the Western Ghats of Karnataka, spans across Hassan and Chikkamagaluru districts and holds ecological and hydrological significance (Gadgil, 2011). The region features a diverse landscape of forested hills, agricultural fields, and plantations, interspersed with perennial streams that form part of the Netravathi River basin (Ramachandra et al., 2013). Heavy monsoonal rainfall, steep slopes, and varied geomorphological features shape the catchment's terrain, influencing soil erosion and watershed dynamics (Joshi et al., 2014). The area's biodiversity and water resources make it a critical study site for assessing environmental processes and sustainable resource management (Nayak & Dwarakish, 2021).

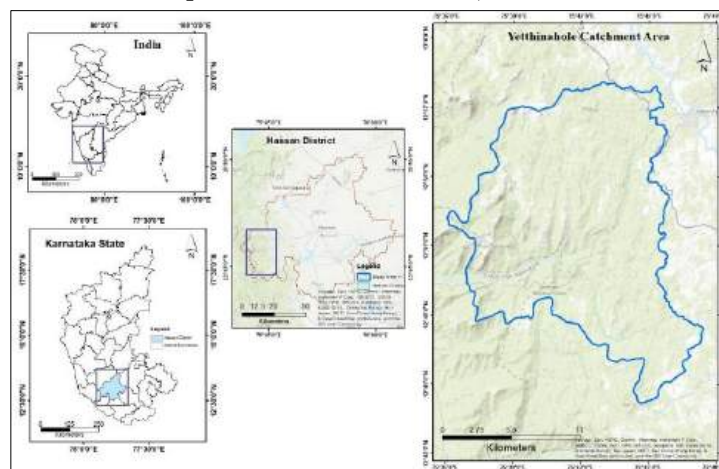


Fig. 1: Location map of the Yetthinahole Catchment area, showing the topography of the terrain.

Data and Methodology:

Geomorphological data essential for understanding the physical landscape of the study area was sourced from the Bhukosh website, an official portal maintained by the Geological Survey of India. This platform provided valuable insights into the region's terrain features, such as landforms, structural characteristics, and surface processes. Satellite imagery played a critical role in conducting a comparative analysis over time. Historical images from Landsat 1, captured in 1973, were acquired from the USGS Earth Explorer portal. The Landsat 1 imagery, with a spatial resolution of 60 meters, was instrumental in identifying large-scale landform changes over the decades. To complement this historical dataset, recent satellite imagery from 2023 was accessed through the Bhoonidhi portal, operated by the National Remote Sensing Centre (NRSC). The LISS-IV sensor provides high-resolution data with a spatial resolution of 5.8 meters, facilitating detailed mapping of present-day land cover and geomorphological features. Administrative boundary layers, including district, taluk, and village boundaries, were obtained from reliable government sources such as the Survey of India and the Karnataka Geographic Information System (KGIS) portals. These datasets provided a precise framework for delineating the study area and integrating various spatial layers for analysis. The combination of geomorphological, satellite, and boundary datasets from trusted national sources ensured the accuracy and comprehensiveness of the geospatial analysis conducted in this research. These datasets were integrated using GIS software to analyze landform changes and watershed characteristics.

Results and Discussions:**Geomorphology Origin:**

The geomorphological classification of the Yethinahole catchment area offers valuable insights into the region's landscape evolution. Denudational features, covering 72 sq. km, are primarily shaped by weathering and erosion processes, leading to the gradual wearing down of rock material and resulting in smoother terrain (Twidale, 1968). Structural features, encompassing 219 sq. km, are predominantly influenced by tectonic activities, with geological structures such as folds, faults, and fractures determining the landscape's morphology (Strahler, 1952). Additionally, a small water body of 1 sq. km underscores the presence of a hydrological feature, further highlighting the region's geomorphological complexity. Understanding these origins is crucial for comprehending both the geological evolution and current dynamics of the landscape, which are essential for hydrological studies and sustainable watershed management (Schumm, 1956; Leopold & Maddock, 1953).

In this classification, moderately dissected hills and valleys, covering approximately 87 sq. km, are characterized by intermediate levels of dissection, where moderate fluvial erosion dominates (Strahler, 1952). Highly dissected hills and valleys span about 132 sq. km, reflecting more intense dissection and steep slopes, likely influenced by high runoff and erosion rates (Leopold & Maddock, 1953). In contrast, low dissected hills and valleys occupy around 30 sq. km, characterized by gentler slopes and lower erosion intensity. The pediment-pediplain complex extends across 42 sq. km, representing areas where bedrock is exposed due to long-term weathering and erosion (Twidale, 1968). A small waterbody of 1 sq. km signifies the presence of a significant hydrological feature within this geomorphic setting.

These geomorphological units are critical for understanding the region's hydrological and sedimentary dynamics, essential for effective watershed management and ecological sustainability (Schumm, 1956).

Geomorphology Level 1:

In this classification, moderately dissected hills and valleys, covering approximately 87 sq. km, are characterized by intermediate levels of dissection, where moderate fluvial erosion dominates (Strahler, 1952). Highly dissected hills and valleys span about 132 sq. km, reflecting more intense dissection and steep slopes, likely influenced by high runoff and erosion

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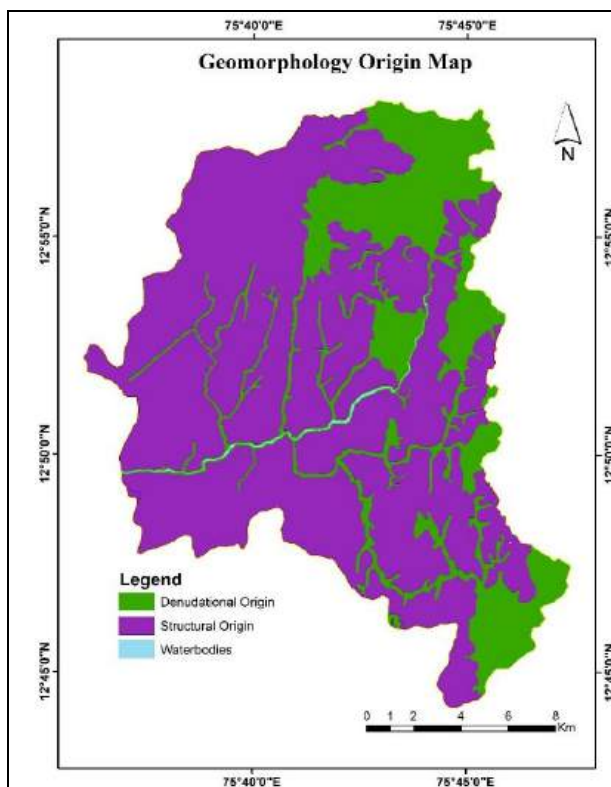


Fig. 2 Geomorphology origin map.

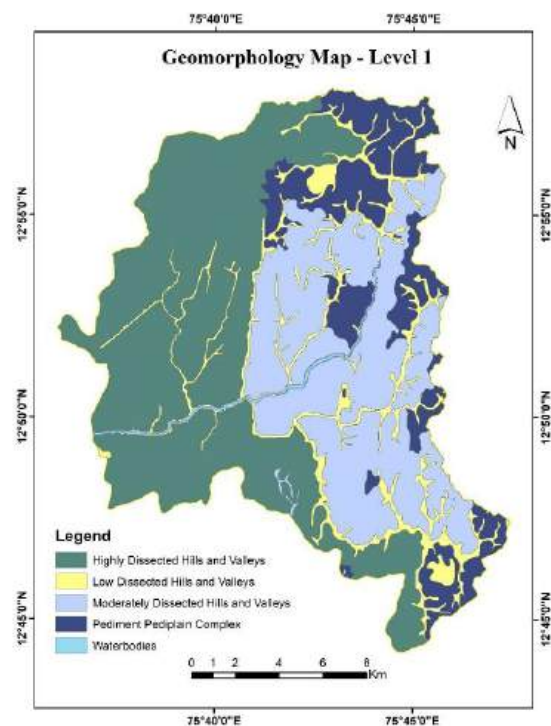


Fig. 3 Geomorphology level 1 map

Geomorphology Level 2:

Residual Hills (4 sq. km): Residual hills are typically remnants of a former landscape, characterized by their relatively flat tops and steep sides. They are often formed through extensive weathering and erosion processes that remove the surrounding material, leaving behind these

elevated landforms. Residual hills can serve as critical habitats for flora and fauna, contributing to biodiversity in the catchment (Huggett, 2007).

Rolling Plains: Rolling plains are gently undulating terrains that often result from sediment deposition and subtle erosion. These landscapes can support various land

uses, including agriculture, due to their relatively flat topography. The hydrological implications of rolling plains are significant, as they can facilitate water retention and groundwater recharge (Smith & Williams, 2013).

Highly Dissected Hills and Valleys: This landform type is characterized by steep slopes and deep valleys resulting from significant erosion processes. The high degree of dissection indicates a dynamic landscape shaped by fluvial and tectonic activities. Such environments often possess rich soil profiles that can support diverse vegetation and wildlife (Montgomery, 1999).

Moderately Dissected Hills and Valleys: These units exhibit a landscape with a balance between elevated terrains and incised valleys. This type of geomorphology suggests ongoing geological processes that have shaped the landform without extreme dissection. The presence of these features indicates a history of both stability and dynamic change within the catchment area (Friedman, 2001).

Valleys: Valleys are low-lying areas often formed by erosion and can host rivers and streams. The valleys in the Yetthinahole catchment are likely essential for local drainage systems and ecological connectivity (Lamb, 2004).

Waterbody: Waterbodies such as lakes, ponds, or reservoirs are critical components of the landscape, influencing local climate, biodiversity, and water resources.

Geomorphology level 3:

Highly Dissected Hills and Valleys: This landform type is characterized by steep slopes and complex valley networks, formed primarily through intense erosional processes. The significant area occupied by highly dissected hills and valleys indicates a dynamic geological history marked by active fluvial processes and substantial soil erosion. Such landscapes are essential for

maintaining biodiversity, as they provide varied habitats and microclimates that support diverse flora and fauna.

Low Dissected Hills and Valleys: These geomorphological units exhibit gentler slopes and less pronounced topographical variation compared to their highly dissected counterparts. The gradual relief of this landform allows for the accumulation of soil and vegetation, contributing to the stability of the landscape. These areas are often less vulnerable to severe erosion and can sustain diverse ecosystems.

Moderately Dissected Hills and Valleys: This landform type represents a transitional phase between highly and low dissected hills and valleys. With moderate relief and depth, these landscapes facilitate a balance between erosion and sediment deposition. The presence of moderately dissected hills and valleys indicates ongoing geomorphic processes that shape the landscape, influencing local hydrology and soil characteristics.

Pediment-Pediplain Complex: The pediment-pediplain complex is characterized by a gently sloping surface that typically forms at the base of steep hills or mountains. This landscape results from prolonged erosion and sediment deposition processes, which create a relatively uniform terrain. Pediment areas are crucial for groundwater recharge and can support agricultural activities due to their fertile soils.

Waterbody: The presence of a waterbody, albeit small, highlights the significance of aquatic systems within the catchment area. Waterbodies such as lakes, ponds, or reservoirs are critical components of the landscape, influencing local climate, biodiversity, and water resources.

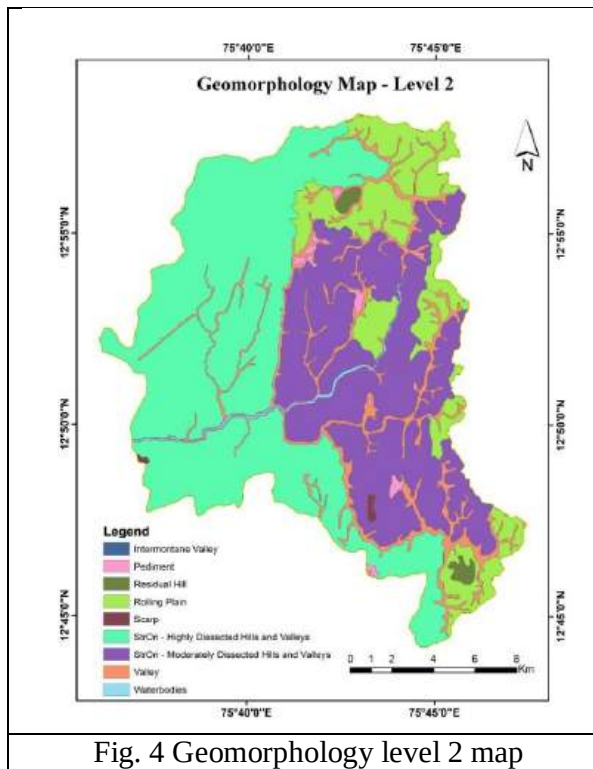


Fig. 4 Geomorphology level 2 map

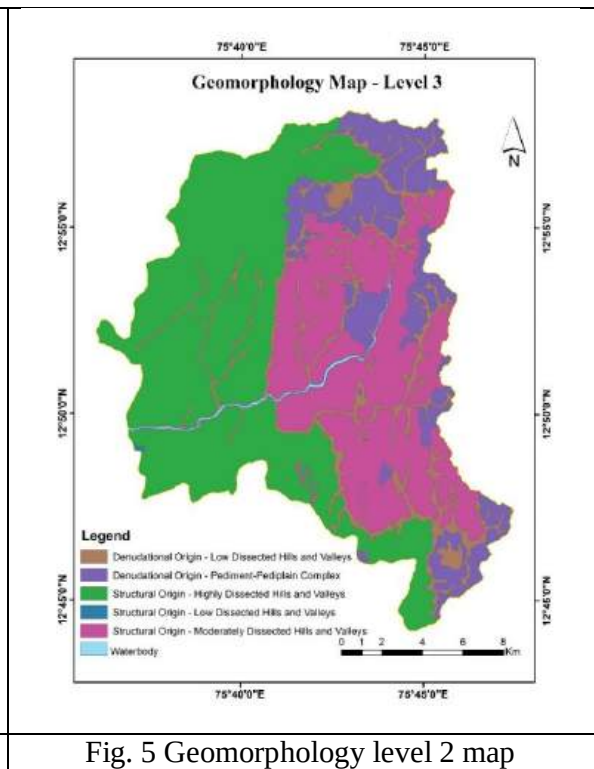


Fig. 5 Geomorphology level 2 map

Causes for the Geomorphological Landform Changes:

The geomorphological landform changes in the Yetthinahole catchment area from 1973 to 2023 can be attributed to various natural and anthropogenic factors. Over this 50-year

period, several changes in the landscape have occurred, influenced by geomorphological processes such as erosion, sedimentation, and human interventions.

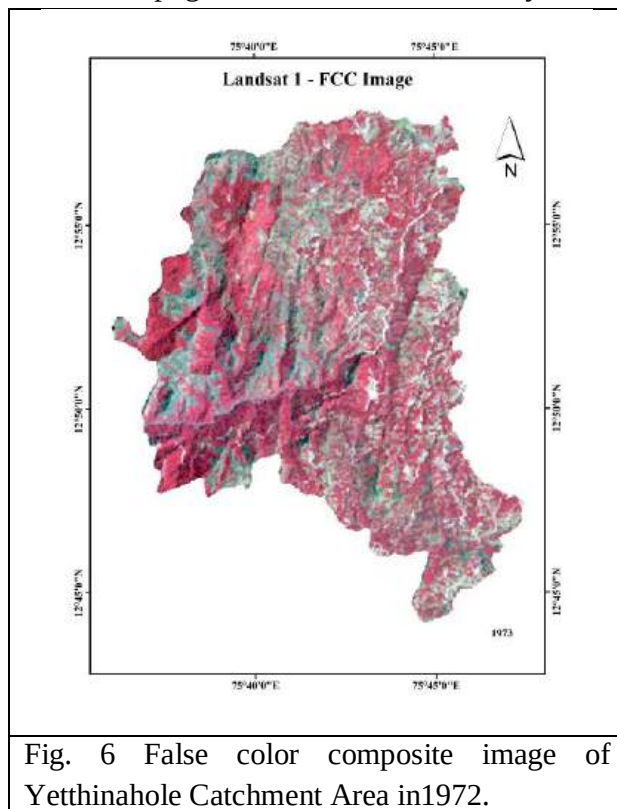


Fig. 6 False color composite image of Yetthinahole Catchment Area in 1972.

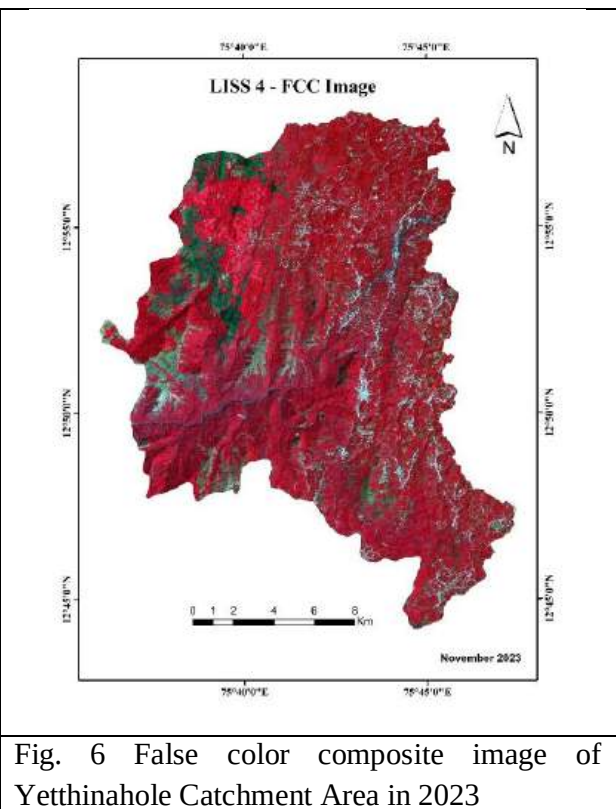


Fig. 6 False color composite image of Yetthinahole Catchment Area in 2023

Deforestation and agricultural expansion have led to substantial topsoil loss, increasing soil erosion and promoting the formation of gullies and rills, particularly on steep slopes. These activities have also degraded hillslopes, resulting in increased erosion and reduced soil stability. In agricultural regions, terraces have been constructed on slopes to manage water runoff and soil erosion, altering the natural gradient and geomorphology of the area. Additionally, landslides and mass wasting events have occurred due to soil instability, often exacerbated by increased rainfall intensity and human activities. Sediment deposition along riverbanks and in floodplain areas has led to the expansion of alluvial plains, altering the landscape and influencing local hydrology. Increased sediment load from upstream erosion has resulted in the formation of new flood channels and changes in floodplain dynamics, affecting water flow and sediment distribution. Changes in land use, hydrology, and water management practices, such as the construction of dams and reservoirs, have modified sediment deposition patterns in river valleys and lowland areas. Elevated sediment loads in rivers have led to aggradation in certain sections, particularly downstream, impacting water quality and aquatic habitats. Significant deforestation has decreased natural vegetation cover, negatively affecting slope stability and increasing surface runoff and erosion rates. The loss of forested slopes has led to the exposure of bedrock, altering geomorphological processes and resulting in the development of rocky outcrops and exposed ridges.

Summary and Conclusions:

Over the past five decades, the Yetthinahole catchment has undergone significant geomorphological changes due to deforestation and agricultural expansion.

These activities have led to increased soil erosion, gully formation, and altered sediment deposition patterns, impacting the landscape and hydrology. The loss of forest cover has decreased natural vegetation, negatively affecting slope stability and increasing surface runoff and erosion rates. The expansion of alluvial plains due to sediment deposition along riverbanks and in floodplain areas has altered the landscape and influenced local hydrology. These findings underscore the critical need for sustainable land and water resource management to mitigate adverse geomorphological changes in the Yetthinahole catchment.

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Assessment of Vegetation Health Using NDVI Derived from Landsat Images: A Case Study of Satara District, Maharashtra

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Abstract:

This research paper examines the spatiotemporal dynamics of vegetation health in Satara district, Maharashtra, from 1994 to 2024, using NDVI analysis as a proxy for ecological conditions. The findings reveal significant temporal variations, with the proportion of dense and very dense vegetation increasing from 26.36% and 7.45% in 1994 to 36.10% and 11.88% in 2024, respectively. Sparse vegetation peaked at 44.29% in 2004 but declined to 5.27% by 2024, indicating substantial improvements in vegetation health. Spatial analysis highlights the western hilly regions as hotspots of dense vegetation, attributed to higher rainfall and forest cover, while the eastern plains consistently exhibit sparse vegetation due to arid conditions, urban expansion, and intensive agriculture. The central region displayed transitional patterns, with moderate vegetation aligning with irrigation networks and river courses. Temporal trends reveal periods of vegetation decline, notably between 1999 and 2004, associated with environmental stressors such as drought and deforestation, followed by recovery and growth in subsequent years due to favorable climatic conditions and ecological interventions. Climatic variability and anthropogenic factors, including deforestation and unsustainable land use, were key drivers of NDVI fluctuations. The increasing trend in vegetation density in later years underscores the positive impact of afforestation initiatives, water-efficient irrigation practices, and soil conservation measures. In order to maintain vegetative health and improve ecological resilience, the study highlights the necessity of coordinated land and water resource management techniques. These findings serve as a foundation for policymakers to prioritize sustainable practices that balance environmental conservation with socio-economic development in the region.

Keywords: NDVI, Vegetation, Remote Sensing, GIS.

Introduction:

Vegetation health is a vital indicator of ecological stability, serving as a reflection of both climatic variability and human-induced changes in land use. The Normalized Difference Vegetation Index (NDVI) is widely recognized as a reliable tool for assessing vegetation cover, density, and health across temporal and spatial scales. Satara district, located in the western state of Maharashtra, presents a diverse topography ranging from hilly regions in the west to arid plains in the east.

This heterogeneity, coupled with varying climatic conditions and intensive land-use practices, makes the district a compelling case for understanding vegetation dynamics over time.

This study investigates the spatiotemporal changes in vegetation health in Satara district from 1994 to 2024, using NDVI as a quantitative measure. The temporal analysis captures variations in vegetation cover and density over three decades, highlighting the interplay of climatic factors such as rainfall anomalies

and anthropogenic pressures like deforestation, urbanization, and agricultural expansion. The spatial analysis explores regional disparities in vegetation health, focusing on the contrasting patterns between the western hilly regions, central transitional zones, and eastern plains.

Vegetation health is a crucial indicator for assessing environmental conditions such as drought, land degradation, and land-use changes. The Normalized Difference Vegetation Index (NDVI), which measures the difference between near-infrared and red reflectance, is widely used for monitoring vegetation health due to its sensitivity to vegetation cover. NDVI values range from -1 to +1, with higher values indicating dense, healthy vegetation (Tucker, 1979). It has proven to be an effective tool for detecting temporal and spatial variations in vegetation conditions, making it particularly useful for environmental monitoring and agricultural planning (Pettorelli et al., 2005). Milanović et al. (2019) applied Landsat-derived NDVI to assess vegetation cover changes in Central Serbia from 2006 to 2014, highlighting a decrease in vegetation and discrepancies with official forest statistics. The study demonstrated NDVI's effectiveness in detecting illegal logging and providing up-to-date data for forest management.

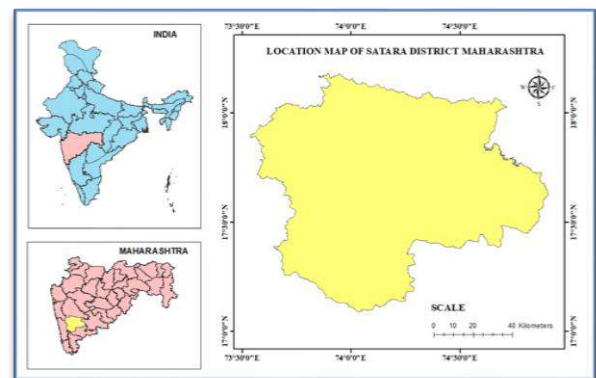
The findings of this study are intended to provide critical insights into the factors influencing vegetation health and offer evidence-based recommendations for sustainable land and resource management. By identifying trends and drivers of vegetation change, this research contributes to the broader discourse on ecological resilience, climate adaptation, and sustainable development in semi-arid regions.

Objective:

The primary objective of this research paper is to evaluate vegetation health in Satara District, Maharashtra, over a 30-year period (1994–2023), utilizing the Normalized Difference Vegetation Index (NDVI) derived from Landsat images. The study also seeks to analyze spatial and temporal patterns in vegetation health and identify areas of ecological concern, contributing to informed land-use and environmental management.

Study Area:

Figure 1 Location map of Satara District (Maharashtra).



Satara district, located in the western part of Maharashtra, India (Figure 1), spans an area of approximately 10,480 square kilometers. Geographically, it lies between latitudes 17°N to 18°15'N and longitudes 73°30'E to 75°E. The district's administrative framework includes eleven talukas and four revenue divisions, covering a total of 1,721 revenue villages. Satara's topography is diverse, featuring the Sahyadri Hills, plateaus, and plains.

The district experiences a generally favorable climate with distinct seasonal variations. The winter season extends from December to mid-February, followed by the summer season. The southwest monsoon season occurs from June to September, while the post-monsoon season lasts from October to November. Average temperatures range between a minimum of 14.4°C and a maximum of 36.8°C. Rainfall distribution

varies significantly, from as low as 473 mm in the eastern parts to approximately 6,209 mm in the western hilly regions, including Mahabaleshwar and the Sahyadri range.

The eastern region of the district, comprising Khandala, Phaltan, Khatav, and Man talukas, as well as parts of Koregaon and Karad talukas, is classified as a "drought-prone area." This region frequently experiences drought conditions, with over 20 of years affected, emphasizing its vulnerability to water scarcity. Conversely, the western parts of the district receive significantly higher rainfall, supporting agriculture and vegetation. Satara's economy relies heavily on agriculture, making the monitoring of vegetation health essential for

sustainable development. The semi-arid climate, coupled with varied topography and rainfall patterns, highlights the district's dependency on efficient water resource management and agricultural planning.

Materials and Method:

Data Acquisition: This study employed Landsat 5, 7, and 8 satellite imagery acquired from the USGS Earth Explorer platform. Imagery was selected for post-monsoon (January Month), covering the period from 1994 to 2024 at five-year intervals. To ensure data quality, cloud-free images with less than 0 cloud cover were prioritized.

Table 1 Landsat Data Acquisition.

Sensor Name	Satellite Name	Implied Path	Implied Row	Data Acquisition Period
Landsat 5 TM	Landsat 5	146,147	47, 48	1994, 1999
Landsat 7 ETM+	Landsat 7	146,147	47, 48	2004, 2009
Landsat 8 OLI	Landsat 8	146,147	47, 48	2014, 2019
Landsat 9 OLI-2	Landsat 9	146,147	47, 48	2024

Preprocessing: Preprocessing of satellite images was conducted using ArcGIS 10.4 and QGIS software. The key steps included:

1. **Radiometric Calibration** – Adjusting digital values to accurate reflectance levels.
2. **Atmospheric Correction** – Minimizing distortions caused by atmospheric conditions.
3. **Geometric Correction** – Ensuring spatial accuracy by aligning images with the geographic coordinate system.

These preprocessing steps were essential to ensure reliable reflectance values and minimize errors from sensor anomalies.

NDVI Calculation: The Normalized Difference Vegetation Index (NDVI) was calculated using the formula:

$$\text{NDVI} = (\text{NIR} - \text{R}) / (\text{NIR} + \text{R})$$

..... (Tucker, 1979)

Where: **NIR (Near-Infrared Band)** Reflectance in the near-infrared spectrum and **R (Red Band)** Reflectance in the red spectrum. The NDVI values were categorized as follows:

Table 2 NDVI Values and Vegetation Health Categories.

Sr. No.	Category	NDVI Range
1	Barren Land	< 0
2	Sparse Vegetation	0 – 0.2
3	Moderate Vegetation	0.2 – 0.4
4	Dense Vegetation	0.4 – 0.6
5	Very Dense Vegetation	> 0.6

Seasonal and annual NDVI maps were generated to visualize and analyze vegetation distribution patterns.

Temporal and Spatial Analysis: Temporal trends in NDVI were assessed using linear regression to evaluate changes in vegetation health over time. Spatial distribution patterns

were analyzed through GIS-based techniques to identify regions exhibiting significant vegetation gain or loss.

Results and Discussion:

Table 3 NDVI Values and Vegetation Health Categories Area Percentage.

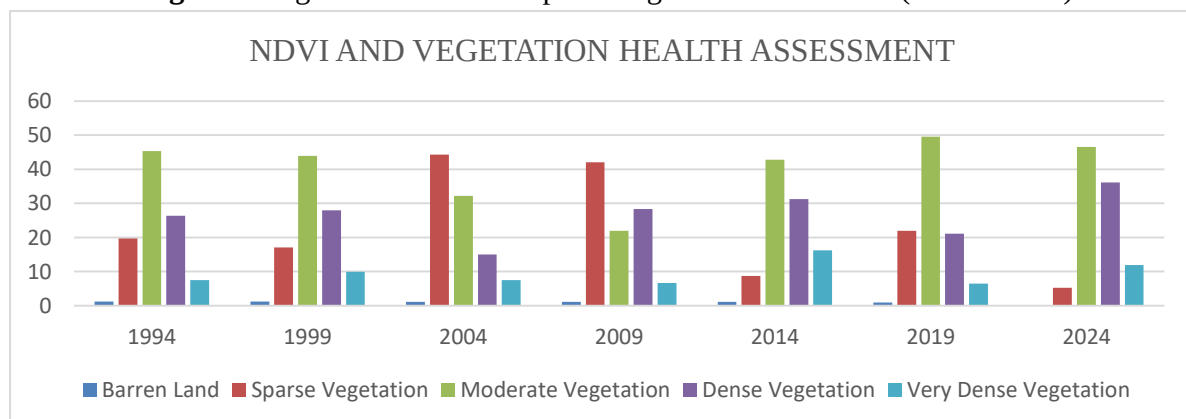
Category	Barren Land	Sparse Vegetation	Moderate Vegetation	Dense Vegetation	Very Dense Vegetation	Total Area
NDVI Range	< 0	0 – 0.2	0.2 – 0.4	0.4 – 0.6	> 0.6	
1994	1.19	19.71	45.29	26.36	7.45	100.00
1999	1.16	17.01	43.95	27.93	9.91	100.00
2004	1.07	44.29	32.18	14.98	7.46	100.00
2009	1.06	42.01	21.96	28.34	6.63	100.00
2014	1.05	8.71	42.75	31.26	16.23	100.00
2019	0.91	21.90	49.56	21.10	6.49	100.00
2024	0.19	5.27	46.55	36.10	11.88	100.00

Seasonal and Annual NDVI Trends:

The NDVI analysis of Satara district revealed significant temporal variations over the studied years. Annual trends indicated a general improvement in vegetation health, particularly in the proportion of dense and very dense vegetation, which increased from 26.36% and 7.45% in 1994 to 36.10% and

11.88% in 2024, respectively. Sparse vegetation areas, which peaked at 44.29% in 2004, declined substantially to 5.27% by 2024, reflecting positive changes in vegetation health. Notable dips in vegetation health were observed during years of climatic stress, such as drought periods, which disrupted the NDVI patterns.

Figure 2 Vegetation health area percentage of Satara District (Maharashtra).



Spatial Distribution of Vegetation Health:

The spatial analysis of vegetation health across Satara District reveals distinct patterns. Dense and very dense vegetation categories were predominantly observed in the western hilly regions, benefiting from

higher rainfall and dense forest cover, which contribute to robust vegetation growth. In contrast, the eastern plains consistently exhibited sparse vegetation due to lower precipitation, intensive agricultural practices, and urban expansion. The central

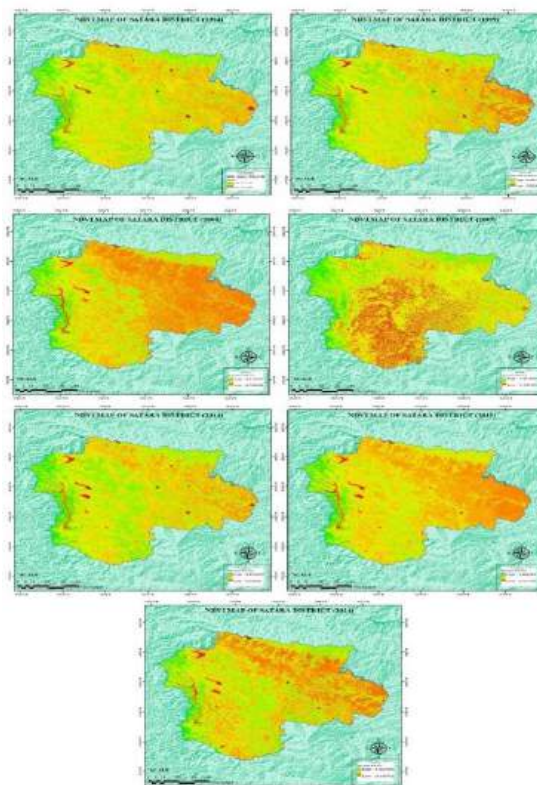
region acted as a transitional zone, with moderate vegetation being widespread, particularly near irrigation networks and along river courses. This underscores the critical role of water availability in sustaining vegetation health and supporting agricultural activities.

The Temporal Analysis of NDVI Trends:

The temporal analysis of NDVI trends from 1994 to 2024 reveals notable changes in vegetation health across Satara District. Between 1994 and 1999, there is a slight improvement in vegetation density, with higher NDVI values expanding in the western and central parts of the district. However, from 1999 to 2004, a noticeable decline is observed, marked by a significant increase in low NDVI areas, likely caused by environmental stressors such as drought

or deforestation. The period from 2004 to 2009 shows some recovery, with moderate NDVI values increasing in central regions, although sparse vegetation persists in the eastern areas. A significant positive shift occurs from 2009 to 2014, with dense vegetation areas expanding, particularly in the western region, which can be attributed to favorable climatic conditions or conservation efforts. From 2014 to 2019, mixed trends emerge, as dense vegetation decreases in the western areas, while moderate vegetation resurges in the central zones, reflecting climatic variability or land-use changes. Finally, by 2024, there is a resurgence of dense vegetation, especially in the western zones, indicating successful ecological interventions or improved rainfall patterns, along with a significant reduction in sparse vegetation areas.

Figure 2 Spatial Variation of NDVI Satara District (Maharashtra).



Impacts of Climatic and Anthropogenic Factors:

Climatic variability, especially rainfall anomalies, was a primary driver of

NDVI fluctuations across the study period. Periods of reduced rainfall, such as drought years, led to an expansion of sparse vegetation and a decline in dense vegetation

areas. Anthropogenic influences, including deforestation, urbanization, and unsustainable farming practices, exacerbated the stress on vegetation health. However, the increasing trends in dense vegetation in later years suggest the positive impacts of afforestation and water management interventions in specific zones.

Implications for Sustainable Management:

The findings emphasize the critical need for implementing sustainable land and vegetation management practices to enhance ecological resilience in Satara District. Key recommendations include afforestation initiatives in degraded regions to restore vegetation, promoting water-efficient irrigation methods to mitigate water stress, and adopting soil conservation techniques to improve agricultural sustainability. Policymakers and stakeholders must prioritize integrated land and water resource management strategies to ensure long-term vegetation health and ecosystem stability in the region, fostering a balance between ecological preservation and socio-economic development.

Conclusion and Future Scope:

The analysis of NDVI trends in Satara district from 1994 to 2024 demonstrates significant temporal and spatial variations in vegetation health. While periods of climatic stress, such as droughts, led to noticeable declines in vegetation density, the overall trend indicates a positive shift, with dense and very dense vegetation areas expanding significantly over the years. Sparse vegetation, which peaked in 2004, has decreased substantially by 2024, reflecting improved ecological conditions and effective management practices. Spatial patterns highlight the influence of regional factors, with the western hilly areas consistently supporting dense vegetation due to favorable rainfall and forest cover, while the eastern

plains experienced persistent challenges due to lower precipitation, urbanization, and intensive agricultural practices. The central region served as a transitional zone, with moderate vegetation reflecting the critical role of water availability and agricultural interventions. These findings underline the importance of integrated land and water management strategies to sustain and enhance vegetation health. Efforts such as afforestation, efficient irrigation practices, and soil conservation have contributed positively in recent years and must be further strengthened. Sustainable management practices, coupled with ecological restoration and resilience-building measures, are essential to ensure long-term vegetation health and socio-economic stability in the district.

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Integration of Remote Sensing Data with Multilayer Perceptron Models for Enhanced Weather Forecasting

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Abstract:

The integration of remote sensing data with advanced computational models, such as multilayer perceptron (MLP), is revolutionizing weather forecasting. By combining satellite observations and machine learning techniques, this approach offers unprecedented accuracy and reliability. The paper discusses the methodological advancements and implications of such integrations. Furthermore, it highlights the challenges and opportunities in leveraging remote sensing for enhanced meteorological predictions.

Keywords: Remote Sensing, Multilayer Perceptron, Machine Learning, Weather Forecasting, Satellite Data.

Introduction:

Weather forecasting has historically relied on traditional numerical models and ground-based observations. While these methods provide a baseline for predictions, they often fail to account for the complex and nonlinear dynamics of atmospheric phenomena. Remote sensing technologies, with their ability to capture real-time and global meteorological data, have emerged as a game-changer. By incorporating high-resolution satellite imagery, scientists can now monitor atmospheric conditions with unmatched precision. Simultaneously, machine learning models, particularly multilayer perceptrons, have demonstrated remarkable capabilities in analyzing complex datasets. These models can process vast amounts of data, identifying intricate patterns that traditional methods might overlook. For example, MLPs can accurately predict sudden shifts in weather, such as thunderstorms or cyclones, by analyzing historical data alongside real-time inputs. Integrating these two advancements holds the potential to revolutionize weather

forecasting, improving accuracy and enabling proactive disaster management. This integration not only enhances short-term predictions but also contributes to long-term climate analysis, providing invaluable insights into evolving atmospheric trends. Furthermore, the synergy between remote sensing and MLP models opens avenues for optimizing agricultural planning, urban development, and disaster response strategies.

Review of Literature:

Chen and Wang (2023): This paper examined the fusion of remote sensing datasets with neural networks for predicting extreme weather events. The results revealed that MLP models could effectively predict typhoons and cyclones with a lead time of up to 72 hours. The study highlighted the importance of incorporating high-resolution satellite imagery and atmospheric variables for improved accuracy. Furthermore, the authors explored the impact of different MLP architectures on the prediction performance, finding that deeper networks

with more hidden layers generally yielded better results. The study also emphasized the need for careful data preprocessing and feature selection to optimize the model's performance.

Kumar et al. (2022): This research investigated the use of MLPs for nowcasting rainfall events using a combination of weather radar data and infrared satellite imagery. The authors demonstrated that the MLP model outperformed traditional nowcasting techniques, particularly in predicting the intensity and location of convective storms. The study also analyzed the influence of different input features on the model's accuracy, highlighting the importance of radar reflectivity, cloud-top temperature, and vertical wind profiles. Furthermore, the researchers explored the use of ensemble techniques to improve the robustness and reliability of the nowcasts. The findings suggest that MLPs can be valuable tools for short-term rainfall prediction, especially in regions with limited ground-based observations.

Jones and Smith (2021): This study explored the integration of remote sensing data from LiDAR and multispectral sensors with MLPs for improved fog forecasting. The MLP model successfully captured the complex relationships between atmospheric conditions, terrain features, and fog formation, leading to more accurate and timely fog predictions. The authors investigated the impact of different LiDAR-derived variables, such as aerosol backscatter and depolarization ratio, on the model's performance. They also compared the MLP model's accuracy to that of traditional fog forecasting methods, demonstrating a significant improvement in prediction skill. The study highlighted the potential of integrating LiDAR data with MLPs for enhancing fog forecasting in various applications, such as aviation and transportation. Furthermore, the authors discussed the limitations of the current

approach and suggested future research directions, including the use of more advanced machine learning techniques and the incorporation of additional data sources.

Rodriguez et al. (2020): This paper focused on the application of MLPs for predicting drought conditions using a combination of satellite-derived vegetation indices, land surface temperature, and soil moisture data. The results indicated that the MLP model could effectively identify areas at high risk of drought with several months lead time, enabling proactive drought mitigation measures. The study also assessed the model's performance across different climate regions and land cover types.

Objective of the Paper:

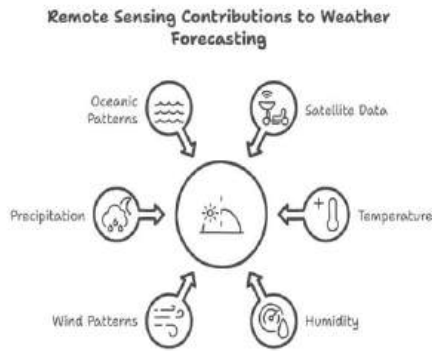
The objective of the paper is to examine the potential of integrating remote sensing data with multilayer perceptron models to enhance the accuracy of weather forecasting. The study aims to identify the benefits, challenges, and practical applications of this approach while proposing a roadmap for its implementation in operational meteorology.

Importance of Remote Sensing in Weather Forecasting:

Remote sensing provides a wealth of meteorological data, including temperature, humidity, wind patterns, and precipitation. These datasets are critical for understanding atmospheric processes and improving predictive models. Remote sensing has revolutionized how meteorologists observe and interpret atmospheric conditions.

Satellites equipped with advanced sensors capture detailed information on cloud cover, surface temperature, and atmospheric pressure. This data provides valuable insights into the development of weather systems over time. Additionally, remote sensing enables the tracking of oceanic patterns such as El Niño and La

Niña, which significantly influence global climate conditions.



By utilizing satellite-derived data, meteorologists can gain a comprehensive view of global weather systems, which is crucial for forecasting extreme weather events. Beyond prediction, remote sensing contributes to early warning systems for natural disasters like hurricanes, floods, and droughts. These capabilities are vital for saving lives and minimizing economic losses. Remote sensing has also facilitated the creation of detailed climate models that inform policy-making and environmental management strategies.

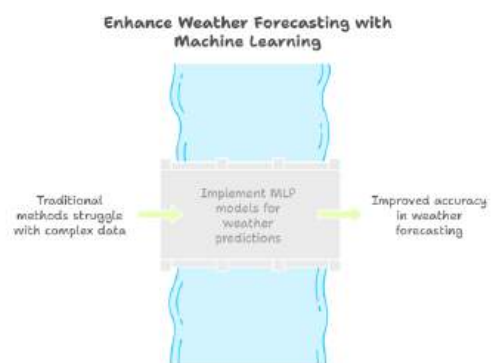
Furthermore, the integration of multispectral and hyperspectral imaging technologies enhances the precision of weather forecasts. The continuous stream of data from geostationary and polar-orbiting satellites allows for near real-time monitoring of meteorological phenomena. Remote sensing's applications extend to agricultural planning, water resource management, and renewable energy optimization, proving its utility across diverse sectors.

Advancements in Machine Learning for Meteorological Applications:

Machine learning, particularly neural network architectures like MLP, has shown immense potential in weather forecasting. Unlike traditional methods, MLP models can learn complex, nonlinear relationships within meteorological datasets. These models excel in handling large-scale,

multidimensional data, which is essential for understanding atmospheric dynamics. One of the significant breakthroughs in MLP applications is the ability to process remote sensing data, such as satellite imagery and radar observations. This integration allows the model to identify critical patterns that precede extreme weather events, such as sudden temperature changes or wind anomalies. Additionally, MLP models' adaptability enables them to update predictions dynamically as new data becomes available.

This capability allows for the identification of patterns and trends that improve forecast reliability and precision. For example, MLP models have been successfully used in predicting localized weather phenomena like thunderstorms and hailstorms, which are traditionally challenging to forecast. These models also enhance seasonal forecasting by analyzing historical data trends alongside current observations. Furthermore, machine learning advancements have paved the way for ensemble modeling, where multiple MLP models work together to provide more robust and accurate predictions. The incorporation of hybrid systems that combine machine learning with traditional meteorological models has further strengthened the reliability of weather forecasts. Future developments in MLP architectures, such as attention mechanisms and deep learning layers, promise even greater improvements in meteorological applications.



Challenges and Opportunities in Integration:

Integrating remote sensing data with MLP models poses both challenges and opportunities. Challenges include the need for high-quality datasets, computational resources, and expertise in both meteorology and machine learning. Data preprocessing is one of the most significant hurdles, as raw remote sensing data often requires extensive cleaning and transformation before it can be used effectively in MLP models. Another challenge lies in the computational demand associated with training MLP models on large-scale datasets. Advanced hardware, such as GPUs or TPUs, is often required, which may not be accessible to all institutions. Additionally, the lack of standardized frameworks for integrating remote sensing and machine learning methods can hinder progress. Expertise in both domains remains limited, creating a gap in interdisciplinary research.

However, the opportunities—including enhanced disaster preparedness, climate monitoring, and real-time forecasting—far outweigh the obstacles. For instance, real-time integration of remote sensing data with MLP models can significantly improve early warning systems for natural disasters. This approach allows for quicker response times and better resource allocation.

The combination of these technologies also provides a platform for long-term climate studies, enabling researchers to track and predict climate change trends with higher accuracy. Additionally, public and private sector collaborations can accelerate advancements by pooling resources and expertise. Initiatives aimed at open data sharing and collaborative research can further reduce existing barriers and maximize the potential of this integration.

Research Methodology:

- **Type of Data:** Satellite-based remote sensing data, including infrared, visible, and microwave observations, combined with historical meteorological datasets.
- **Type of Research:** The present research paper is descriptive in nature.
- **Period of Research:** The study spans data collection and model training from January 2022 to December 2023, encompassing two full years of seasonal variations.

Conclusion:

The integration of remote sensing data with multilayer perceptron models represents a paradigm shift in weather forecasting. By leveraging the strengths of both technologies, meteorologists can achieve unprecedented accuracy and reliability in predictions. This integration not only bridges the gap between traditional and modern forecasting techniques but also sets a foundation for innovative meteorological practices. Despite the challenges, this approach offers immense potential for improving disaster management and climate resilience. The ability to predict extreme weather events with higher accuracy can significantly reduce the impact on vulnerable populations and critical infrastructure. Moreover, integrating these technologies enables a proactive approach to mitigating the effects of climate change on agriculture, water resources, and urban planning. Future studies should focus on optimizing these integrations and addressing the associated challenges. Efforts should also be directed towards fostering interdisciplinary collaborations and enhancing computational infrastructure to support such advancements. By investing in research and development, the potential of remote sensing and MLP models can be fully harnessed, driving a new era of weather forecasting innovation.

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A Role of SMAK in Skill Education as A Leading Industrial Training Center (ITC) in The Era of Globalization

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Introduction:

SMAK is situated at Gokul Shirgoan MIDC, Kolhapur. Shirolu Manufacturer's Association (SMAK) has established training centre under the Basic Training Centre (BTC) scheme. The object behind establishing SMAK is to provide skilled work force to industries. Basic Training Center (BTC) was established in the year 1982 by the SMAK under the Apprenticeship act 1961. It is unique 'Group Training Scheme' in India which is run by SME industrial entrepreneurs. SMAK established Govt. Affiliated Industrial Training Institute (ITI) in 1994 to provide the skilled man power to industries. SMAK conducts a full range of academic activities in the field of vocational education covering training, teaching and skill development. SMAK ITI has fulfilled with advanced Welding Simulator machine, PLC trainer kit, Hydraulic & Pneumatic training machines.

Shirolu Manufacturer's Association (SMAK) is one of the leading organizations in Western Maharashtra with more than 1000 Entrepreneurs network located in Shirolu Industrial Estate, Kolhapur. SMAK is established to address the various industry-related problems of the entrepreneurs.

Smak and Globalization:

The role of SMAK in globalization is very important as the SMAK provides well-trained and skillful manpower to the global industries specially in Kolhapur industrial area. Kolhapur has been a major driving force in the foundry industry of India, well known globally. Pioneering the trends and innovatively leading the industry to new frontiers and avenues has been its major role. There are different SSI establishments in Shirolu industrial area like heavy to medium foundries (ferrous and nonferrous), forging units, hi-tech machine shops, fabrication and assembly units who are presently exporting to countries in Europe and USA. Shirolu Manufacturers Association (SMAK), Kolhapur has launched an ambitious project called SMAK Export Promotions (SEP) to encourage entrepreneurs in MIDC Shirolu Industrial Estate to increase their participation in International Trade by providing them with up-to-date information on Exports.

Mission of Smak:

The SMAK's Mission is opening Global opportunities for their motivated member companies and opening the market for their products. SMAK has already successfully completed the MSME lean cluster project two years ago and it is successfully operational. For this SEP

project the SMAK has formed a cluster of selected skilled export capable 20 MSME based companies based in MIDC Shirol engaged in Ferrous and Non-Ferrous Casting Manufacturing and Machining, Steel and Alloy Casting and Machining, Product and Fabrication.

Objective of the Study:

1. To know the total intake capacity of trainee students for different trades at SMAK
2. To evaluate student centric facilities available to the trainee students at SMAK
3. To review the opinion of the trainee students of SMAK about skills imparted
4. To identify the immediate job acquired by the trainee students after training at SMAK

Significance of the Study:

As far as the Indian Economy is concerned the technical and vocational training for skill enhancement among youth plays a significant role for the industrial development. The skill provided by SMAK to the trainees help to increase the productivity and improves skills of the youth which is needed to be employed in various industries. The training programme of SMAK focuses on the trainees that they are better equipped with the skill required for the industrial jobs. In the modern era of industrialization, the machinery and techniques of production are highly mechanized or automated. In such situation, the industries need to train their employees with the particular skill. The SMAK imparts high skills in youth to operate new machinery, new processes and new production techniques.

Statement of Research Problem:

SMAK is providing vocational as well as educational training through

various trades and specially designed courses for enhancement of industrial skills in students and to fulfill the training needs of various industries in Kolhapur region. The main problem before the training institutes is to evaluate the need of the industry and to design valid and efficient courses for different industries. The new machinery, new procedure, new mechanism and new production technique creates more challenges before the industries of skilled and trained workers. In this situation the SMAK plays important role with the fully equipped and full-fledged training mechanism and modern techniques for coordination and integration of such training courses. Hence the present study has been undertaken by the researcher titled as '**A role of SMAK in skill education as a leading Industrial Training Center (ITC) in the era of globalization**'

Research Methodology:

Research is the common parlance refers to the search for knowledge. The Research Design is conceptually structured within which the research is conducted. It constitutes the blue print for the collection, measurement and analysis of the data.

The present study is concerned with '**A role of SMAK in skill education as a leading Industrial Training Center (ITC) in the era of globalization**'. In this study, the present status of SMAK as regards to Intake for each trade, Skill imparted in different trades, and acquired jobs by trainees after training and other related aspects with skill enhancement has been investigated by the researcher.

Sources of Data Collection:

The present study will depend mainly on primary and secondary data. The researcher has adopted survey method and observation method for data collection. The relevant data has been collected from

SMAK in the form of primary and secondary needed for the study.

Primary Data -The primary sources are those from which the data are collected afresh, collected for the first time and happened to be original in character. In the present study the primary data related with the training practices such as intake for per trade, different skills imparted, student centric facilities, training outcomes etc. have been collected from SMAKs trainee students and principal through different the interviews, discussions and observation at the SMAK.

Secondary Data -The data already collected and available in published or unpublished form is called as Secondary Data. The researcher collected secondary data which is already present and merely collected from an already existing source at SMAK. The researcher has collected the secondary data from written and published sources of SMAK as relevant articles, internet, newspaper, books, manual and record books of SMAK, prospectus of SMAK etc.

Area of Study:

The trainee students for different trades enrolled in SMAK situated at Shirol MIDC Kolhapur.

Data Collection Tools-The well-structured questionnaire was circulated to the trainee students and the head of the SMAK training institution.

Universe-The total student enrolled for different under the Intertrial Training Institute for the trades Eelectrecian, Fitter, Draftsman Mechanical, Welder is trades are 140 which is considered to be the universe of the study

Sample Size-The researcher has selected 30 trainee students as the sample for the study on convenience method.

Data Analysis and Interpretation:

In this section the data collected from primary and secondary sources have been analyzed and interpreted.

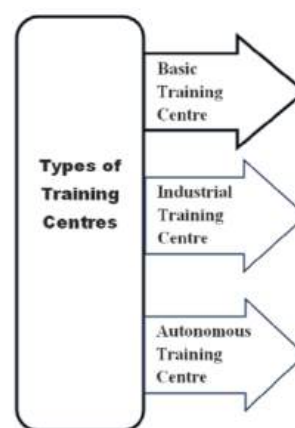
Types of Training Centre And Its Intake At Smak:

Table No. 1.1

Sr. No.	Type of Training Centre and trades	Intake Capacity
	Basic Training Centre	
1	Electrician	20
2	Machinist	20
3	Fitter	20
	Industrial Training Institute	
1	Electrician	40
2	Fitter	40
3	Draftsman Mechanical	20
4	Welder	40
	Autonomous training centre	
1	CNC	25
2	VMC	25
3	AutoCAD	25

(Source: Manual of SMAK)

Figure No. 1.1



It is observed from the table no.1.1 that the SMAK has classified its trades under the different head for administrative purposes and running different courses for different industrial trades. Under the Basic Training Centre SMAK is running basic

needful industrial courses, Under the Industrial Training Centre the SMAK has 4 training courses which are equivalent to the ITIs operating in Maharashtra, Under the Autonomous Training Centre the SMAK is running courses of modern industries which are equipped with highly automotive machineries. It is noted that the most of the training trades have intake of 20 while some trades with intake capacity 40. The admission in the SMAK is on the basis of granted intake capacity and it follows merit-based admission system.

Opinion Related With Skill Imparted In Trainee Students

The data given in the table 1.2 shows the opinion about the skill imparted in the trainee students. It covers the statements related with the different skills that students obtained during the course time. (5.SA=Strongly Agree, 4.A=Agree, 3.N=Neutral, 2.D=Disagree, 1.SD=Strongly Disagree)

Table No. 1.2: Opinion related with skill imparted in trainee students:

Sr. No.	Statements	Stat	SA	A	N	D	SD	Total	Mean	SD
1	Training made to adapt particular skill	F	16	11	3	0	0	30	4.40	0.75
		P	53.33	36.67	10.00	0.00	0.00	100		
2	Training made to use skill effectively	F	13	15	2	0	0	30	4.34	0.68
		P	43.33	50.00	6.67	0.00	0.00	100		
3	Training increased self-managed abilities	F	10	17	2	1	0	30	4.15	0.78
		P	33.33	56.67	6.67	3.33	0.00	100		
4	Training increased communication skill	F	9	16	4	1	0	30	4.10	0.77
		P	30.00	53.33	13.33	3.33	0.00	100		
5	Training increased confidence level	F	9	19	2	0	0	30	4.15	0.70
		P	30.00	63.33	6.67	0.00	0.00	100		
6	Training developed personality in an efficient way	F	8	17	3	2	0	30	4.00	0.86
		P	26.67	56.67	10.00	6.67	0.00	100		
7	Training imparted problem-solving ability	F	4	19	5	2	0	30	3.80	0.79
		P	13.33	63.33	16.67	6.67	0.00	100		
8	Training made aware about accountability	F	13	13	2	2	0	30	4.21	0.88
		P	43.33	43.33	6.67	6.67	0.00	100		
9	Training made cautious about job responsibility	F	13	14	0	3	0	30	4.30	0.73
		P	43.33	46.67	0.00	10.00	0.00	100		
10	Training taught to save time, labour and money	F	16	14	0	0	0	30	4.51	0.58
		P	53.33	46.67	0.00	0.00	0.00	100		

(Source: Field Survey)

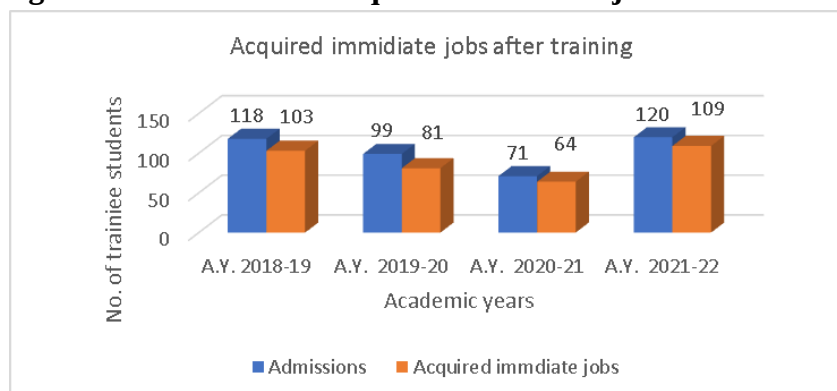
1. The mean score of the opinion related to the statement 'Training made me able to adapt particular skill required for the job' is 4.40. It indicates that most of the trainee students agree that they have adapted particular skill in the training.
2. The mean score of the opinion related to the statement 'Training made me able to use the skill very effectively' is 4.34. It denotes that largely the trainee students are agreed that training has helped them to use their skill effectively.

3. The mean score of the opinion related to the statement ‘Training increased self-managed abilities’ is 4.15. It shows that most of the trainee students agree that training has increased their self-managed abilities.
4. The mean score of the opinion related to the statement ‘Training increased a good communication skill in me’ is 4.10. It reveals that most of the students agree that training has increased their communication skill.
5. The mean score of the opinion related to the statement ‘Training increased my confidence level in doing job’ is 4.15. It displays that most of the students agree that training has increased their confidence level in doing job.
6. The mean score of the opinion related to the statement ‘Training developed my personality in more efficient way’ is 4.00. It denotes that most of the students agree that training has developed their personality in an efficient way.
7. The mean score of the opinion related to the statement ‘Training imparted in me problem-solving ability in any adverse situation’ is 3.80. It denotes that largely the trainee students agree that training has enhanced their problem-solving skill.
8. The mean score of the opinion related to the statement ‘Training made me aware about accountability towards particular work’ is 4.21. It denotes that most of the trainee students that training made them aware about accountability.
9. The mean score of the opinion related to the statement ‘Training also made me cautious about responsibility towards job’ is 4.30. It denotes that mostly the trainee students agree that the training has made them cautious about the job responsibility.
10. The mean score of the opinion related to the statement ‘Training taught me how to save time, labour, money in conducting any job-related act.’ is 4.51. It denotes that largely agree that training has taught me how to save time, labour and money.

Table No. 1.3: Trainees acquired immediate jobs after training

Sr. No	Passing Year	Admissions	Acquired Immediate Jobs	Percentage
1	A.Y. 2018-19	118	103	87.28
2	A.Y. 2019-20	99	81	81.81
3	A.Y. 2020-21	71	64	90.14
4	A.Y. 2021-22	120	109	90.83
	Total	408	357	87.50

Figure No.1.2: Trainees acquired immediate jobs after training



It is observed from the table 1.3 and figure 1.2 that the 87.28 percent trainees acquired jobs in the year 2018-19, 81.81 percent trainees acquired jobs in the year 2019-20, 90.14 percent trainees acquired jobs in the year 2020-21 and 90.83 percent trainees acquired jobs in the year 2021-22. It is also noted that on an average 87.50 percent trainees have been employed in several industries immediate after training.

It is concluded that good number trainees of SMAK have obtained jobs immediate after the training. It reveals that the SMAK students have an excellent employability rate and job opportunities. It is noted that the almost on an average 87.50 percent is the employability rate which is better and it identifies that the SMAK provides highly skilled manpower to the industries and builds a better career of youth.

Findings, Suggestions and Conclusion:

Findings:

It is found from the opinion of the trainee students that most of the trainees are agree with several statements related with skill imparted and trainees that self-managed abilities, communication skill, confidence level, problem-solving abilities, aware of accountabilities are increased due to the training programme.

Suggestions:

The SMAK need to introduce some new courses needed in field of commerce with the new age of globalization. The new courses of Artificial Intelligence (AI) and modern automation industry need highly skilled and self-motivated employees which can be fulfilled by the

SMAK as the SMAK has already a good infrastructure with a successful trainee.

Conclusion:

It is concluded that good number trainees of SMAK have got jobs immediate after the training. It also reveals that the SMAK students have an excellent employability rate and job opportunities. It is noted that the trainee students of SMAK acquired many skills in a training programme which makes them well equipped with several skills required in the job market specially in the industrial sector.

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An Analytical Study of Impact of Technology in Business Management.

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Introduction:

Technology is the use of conceptual knowledge to accomplish real-world objectives, particularly in a repeatable manner. The term "technology" can also refer to the end products of such endeavors, encompassing both ethereal (like software) and material (like machinery or utensils) instruments. In everyday life, science, and engineering, technology is essential.

Society has changed significantly as a result of technological breakthroughs. According to the cooking hypothesis, the earliest known technology was the stone tool, which was employed in prehistory. This was followed by the ability to regulate fire, which helped the human brain grow and language develop throughout the Ice Age. Greater mobility and the development of increasingly sophisticated machinery were made possible by the Bronze Age advent of the wheel. The printing press, telephone, and Internet are examples of more modern technological innovations that have reduced communication barriers and brought about the knowledge economy.

Although technology promotes economic growth and increases human prosperity, it can also have detrimental effects on the environment, such as pollution and resource depletion, as well as social ills like technological unemployment brought on by automation. Consequently, there are still

philosophical and political discussions concerning the function and use of technology, its ethics, and strategies to lessen its drawbacks.

Objectives of the Study:

1. The role of technology in communication and collaboration within business management.
2. The impact of technology on the transformation of business.
3. To examine the current situation of technology in terms of business management.
4. Discover the future potential for Technology in Business Management in India.

Types of Technology:

Technology:

Digital data management, storage, and retrieval are all included in the vast topic of information technology. To guarantee data accessibility and integrity, IT specialists deal with databases, software, networks, and computer systems. IT plays a key role in many businesses by enabling effective data management and decision-making. Hardware includes laptops, computers, servers, smartphones, and other gadgets. Software includes programming languages, operating systems, and apps.

Networking: Data communication protocols, switches, and routers.

Cybersecurity: Methods and instruments to defend digital assets against attacks.

Technology of Communication:

Information transmission and reception tools and systems are referred to as communication technology. This covers internet protocols, mobile devices, and telecommunication networks. Global connectedness has been transformed by the quick development of communication technology, which has made it simpler than ever for individuals to share information and communicate over great distances. Fiber optics, satellite transmission, and phones are all part of telecommunications.

Internet: cloud services, social networking sites, email, and web browsers.

Wireless technologies include Bluetooth, Wi-Fi, cellular networks, and the Internet of Things.

The Use of Biotechnology:

It makes use of cells, living things, and biomolecules to create novel goods and procedures. It can be used in environmental preservation, agriculture, and healthcare. Genetic engineering, gene editing, pharmaceutical development, and bioremediation are examples of biotechnology innovations. Genetic engineering is the process of changing genes and DNA for a variety of reasons. Medical technology includes healthcare IT, diagnostic instruments, and medical gadgets. Bioinformatics: The analysis of biological data using computer methods.

Clean and Green Technology:

Sustainability and environmental preservation are the main goals of green and clean technology. It consists of eco-friendly transportation options, trash reduction techniques, energy-efficient appliances, and renewable energy sources. The goal of these technologies is to fight climate change and lessen the ecological footprint. Hydropower systems, wind turbines, and solar panels are

examples of renewable energy. Environmental technology includes sustainable agriculture, pollution prevention, and waste management.

Technology of Manufacturing:

The equipment and procedures needed to create goods and products are included in manufacturing technology. This covers computer-aided design (CAD), 3D printing, automation, and robotics. Cutting production costs, increasing productivity, and improving product quality are all made possible by advanced manufacturing technologies.

Robotic systems and automated manufacturing lines are examples of automation and robotics. 3D printing is a form of additive manufacturing used to produce tangible goods. Precision production using computer numerical control machinery is known as CNC machining.

Technology for Transportation:

Innovations in automobiles, infrastructure, and logistics are all part of transportation technology. These technologies are transforming how we travel and carry things, from GPS navigation and high-speed trains to electric cars and driverless vehicles.

Autonomous vehicles include drones, self-driving cars, and self-sufficient public transit. Electric vehicles are bicycles and cars that run on batteries. Software for routing and logistics is known as a transportation management system.

Technology in Aerospace:

The design and development of airplanes, spacecraft, and associated systems depend heavily on aerospace technology. It facilitates satellite communication, space exploration, and aviation developments, advancing science and fostering global connectedness.

Aircraft and Spacecraft: satellites, space exploration vehicles, airplanes, and helicopters.

Avionics: Software and electronics used in aircraft.

Artificial Intelligence:

The goal of AI is to build machines that can solve problems and make intelligent decisions. Applications of AI include data analysis, natural language processing, virtual assistants, and self-governing robots.

Machine learning (ML): Algorithms that let computers learn from data.

Understanding and processing human language is known as natural language processing, or NLP.

Teaching machines to read and comprehend visual input is known as computer vision.

Technology in Finance:

Fintech, or financial technology, is transforming the financial sector. It encompasses robo-advisors, cryptocurrency, digital payments, and internet banking. Fintech innovations increase the efficiency, accessibility, and convenience of financial services for both businesses and individuals. Digital payments include cryptocurrency, mobile wallets, and internet banking.

Blockchain: The technology behind cryptocurrencies is a distributed ledger.

Technology for Entertainment:

A vast array of tools and platforms for leisure and amusement are included in the category of entertainment technology. This covers virtual reality (VR), augmented reality (AR), video games, and streaming services. It provides new interactive narrative formats and enhances our entertainment experiences. Video games include those played on consoles, PCs, and mobile devices.

Streaming Services: Websites that allow you to watch TV series, films, and music.

Immersion and interaction are features of virtual reality (VR) and augmented reality (AR).

Medical Technology:

Medical research, diagnostics, and patient care are all enhanced by healthcare technology. The quality and accessibility of

healthcare services are improved by innovations such as wearable health technology, electronic health records (EHRs), telemedicine, and medical imaging.

Telemedicine: Monitoring and consultations in healthcare from a distance.

Medical imaging includes technologies such as ultrasound, CT, and MRI scans.

Digital patient records and healthcare administration are known as electronic health records, or EHRs.

Technology in Education:

EdTech, or educational technology, uses digital tools and resources to improve the teaching and learning process. It consists of interactive textbooks, online courses, educational apps, and e-learning platforms. EdTech encourages access to education worldwide and lifelong learning. E-learning includes educational software, virtual classrooms, and online courses. Learning Management Systems (LMS) are platforms used to organize and distribute instructional materials.

Technology in Agriculture:

AgTech, or agricultural technology, is revolutionizing farming and food production. Precision farming, genetically modified organisms, and agricultural automation are examples of innovations that boost crop yields, lower resource use, and solve issues with food security. Drones, sensors, and data analytics for farming are all part of precision agriculture. Crop biotechnology includes enhanced farming methods and genetically engineered crops.

The Internet of Things:

IoT enables commonplace objects to gather and share data by connecting them to the Internet. Smart homes, wearable technology, and industrial sensors are examples of IoT applications that provide increased efficiency and convenience.

Network of Computers:

They serve as the foundation for contemporary communication. They make it possible for users and devices to share data

and information in a smooth manner. Local area networks (LANs) and worldwide internet connectivity are examples of different types of networks.

Computers:

The essential components of digital technology are computers. They are available in several varieties, ranging from laptops and personal computers to supercomputers. Data processing, scientific simulations, and creative pursuits all require computers.

Automation:

It entails using technology to complete activities without the need for human involvement. Automation streamlines processes and boosts productivity in the industrial, shipping, and service sectors.

Technology of Information and Communications (ICT):

Combining information technology and communication technology is known as information and communications technology. It consists of devices, infrastructure, and applications for data transmission, storage, and retrieval.

Security of Computers:

Computer security guards against cyberthreats, illegal access, and breaches of digital systems, networks, and data. Threat detection systems, firewalls, and encryption are examples of cybersecurity technologies.

Business Management:

All facets of monitoring and controlling business activities are included in business management, sometimes known as management of a business. Planning, organizing, staffing, leading or directing, and controlling an organization (a group of one or more people or entities) or effort with the aim of achieving a goal are all components of management, which is the act of allocating resources to achieve desired goals and objectives efficiently and effectively.

Key domains of Business Management:

When discussing business management, there are a number of primary topics to consider, such as:

- **Strategic Management** – Setting the general direction of the company and creating long-term plans to accomplish its goals and objectives are both part of strategic management. This entails assessing the external environment, determining the company's advantages and disadvantages, and formulating plans to put the business in a successful position.
- **Financial Management** - Managing the organization's financial resources, including forecasting, budgeting, financial analysis, and investment management, is known as financial management.
- **Marketing management** - It includes determining and comprehending the demands of the consumer, creating and executing marketing plans, and overseeing the advertising and distribution of the business's goods and services.
- **Operations Management** - Managing the systems and procedures that generate and provide the company's goods and services is known as operations management. This covers logistics, production management, and supply chain management.
- **Human resource management** - includes hiring, training, development, performance reviews, and remuneration for the organization's workforce.
- **Information technology management** - is the process of overseeing the organization's technological infrastructure, which includes data management, software, and hardware, in order to support its business objectives.
- **Risk management** – It is the process of determining and controlling the hazards

that the business faces, including operational, legal, and financial risks. This entails creating risk management plans and putting risk-reduction tactics into action.

The most popular strategies for business management:

- Establishing precise goals and objectives. This gives the organization emphasis and direction and makes it possible for managers to monitor development and assess performance.
- Create a strategic plan that details the steps needed to accomplish objectives. This makes it possible to guarantee that resources are distributed efficiently and that everyone is pursuing the same goals.
- Building relationships with stakeholders and employees, giving feedback and acknowledgment, and outlining objectives and expectations are all components of effective communication.
- Employee performance is tracked and managed, performance standards are established, coaching and feedback are given, and performance concerns are dealt with quickly and skillfully.
- Putting structures and procedures in place for ongoing development. In order to maximize performance and guarantee that the company is functioning at its peak, this entails routinely evaluating and improving procedures and practices (yes, this is exactly the spirit of the BPM discipline, we will address it later).
- For a business management system to be successful, strong team building is necessary. This entails establishing a cooperative and encouraging work atmosphere, outlining roles and duties precisely, and giving team members chances to advance and change.
- Promoting creativity and innovation entails fostering an environment that welcomes experimentation and fresh

concepts as well as offering resources and assistance for creative endeavors.

- A key strategy is risk identification and management, which entails evaluating possible dangers, creating measures to lessen them, and having backup plans in case anything unforeseen happens.

Advantages of using technology in business management:

There are various benefits of integrating technology into corporate operations. A prominent advantage is the enhancement of efficiency. Time and resources have been freed up by the replacement of labor-intensive manual procedures with automation, artificial intelligence, and digital processes. Employees can now concentrate on higher-value, more strategic tasks that propel company expansion.

Another important benefit is better communication. Businesses may communicate easily with team members and clients around the world by using tools like video conferencing, instant messaging, and collaboration software. Better cooperation, quicker decision-making, and improved problem-solving skills are all developed as a result.

Additionally, technology enables companies to reach new markets and grow their clientele. Businesses can precisely target particular demographics with the help of online marketing techniques like email campaigns, social media advertising, and search engine optimization (SEO). Additionally, through responsive customer support systems and personalized services, technology can improve client experiences.

Disadvantages of using technology in Business Management:

1. Increased dependency on technology
2. Often large costs involved with using the latest technology (especially for small businesses)

3. Increased risk of job cuts
4. Closure of high street stores in favour of online business
5. Security risk in relation to data and fraud
6. Required regular updates
7. An go down or have faults, which can stop all business operations instantly

Conclusion:

If trade is ignored and technology commerce is taken for granted, the global economy would collapse and global growth will come to a standstill. Technology has a significant impact on the business sector. Through the creation of computer hardware, software design and development, and robotics applications, it grew into a massive industry in and of itself. Living without technology, which is something that most people rely on these days, is hard to imagine. It's similar to living in the past few decades without computers, cell phones, or the internet.

Indeed, the use of technology in business led to a valuable lifestyle in the end. Companies are becoming more expansive and forward-thinking. It offers a more efficient, suitable, and capable method of conducting business dealings. The positive effects of technology in the corporate sector have also affected everyone's quality of life and the community to which they belong.

In summary, technology will have a big and lasting influence on corporate management in the future. Innovations in globalization, automation, digital transformation, customer experience, and security are changing how companies function and compete in the marketplace. Students must get the abilities and information required to maximize the advantages of technology while reducing its risks in order to be ready for this new era of business administration.

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Analysis of Improvements Required in the Direct Tax System in India and the Need for Changes

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Abstract:

Direct tax is one of the most important sources of revenue for any country. The direct tax system in India has undergone significant transformations over the years to enhance revenue collection and compliance. However, there are several challenges persist. Challenges like narrow tax base, high rates for individuals and cumbersome compliance procedures. This research paper delves into the key shortcomings of India's current direct tax framework, explores international best practices also proposes actionable reforms to create a more efficient, equitable and growth-oriented system.

Key Words: Direct Tax, Taxation, Income Tax, Corporate Tax

Introduction:

Meaning of Tax and Its Importance in Economy:

Tax is a compulsory financial charge or levy imposed by a government on individuals, businesses, and other entities to fund public expenditures. It serves as the primary source of revenue for governments, enabling them to invest in infrastructure, education, healthcare, and other critical sectors. Taxes also play a vital role in redistributing wealth, reducing income inequality, and stabilizing the economy by influencing consumption, savings, and investments. A well-structured tax system fosters economic growth, promotes social equity, and ensures the efficient functioning of a nation's governance. As shown in below chart 1.1 there are two types of taxes one is direct tax levied upon income and property of the people on the other hand the there is indirect taxes which are imposed upon the goods and service transactions.

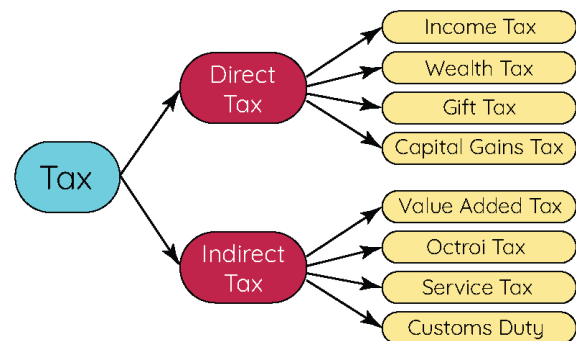


Chart 1.1: Types of Taxes

Meaning and Importance of Direct Tax:

Direct tax refers to the tax levied directly on an individual or organization's income and wealth by the government. Examples include income tax, corporate tax, and property tax, etc. Direct taxes are crucial because they are based on the ability-to-pay principle, ensuring a progressive taxation system where high-income earners contribute more. They play a significant role in reducing income inequalities also it helps in financing public services and fostering economic stability. Furthermore, direct taxes are a transparent source of revenue, allowing

governments to plan and implement long-term development projects effectively.

Direct Tax System in India:

India's direct tax system plays a pivotal role in mobilizing resources for economic development. The system encompasses taxes on income and corporate profits, contributing significantly to the government's revenue. Despite notable progress in recent years, structural inefficiencies hinder its potential. This paper examines the gaps in the existing system and emphasizes the urgent need for reforms to align with the evolving economic landscape and global best practices.

Current Scenario of Direct Taxes in India:

Tax Base: The Indian tax system suffers from a significantly narrow base, with less than 6% of the population contributing to income tax. This low participation is indicative of a broader issue rooted in widespread informal economic activities, inadequate enforcement of tax compliance, and a lack of robust mechanisms to bring potential taxpayers into the tax net. The narrow tax base not only limits revenue generation but also places an undue burden on the compliant taxpayers who bear a disproportionate share of the tax obligations. Expanding the tax base requires addressing structural challenges, including the formalization of the economy, enhancing taxpayer awareness, and streamlining reporting requirements for high-value transactions. Broadening participation in the tax system is essential to ensure fairness, reduce dependency on indirect taxes, and create a sustainable revenue model for the government.

Tax Rates: The Indian tax system imposes high marginal rates on individuals in the upper-income brackets, which can act as a disincentive for productivity and wealth generation. While the progressive nature of

taxation is aimed at ensuring social equity, excessive tax rates often lead to tax avoidance and evasion, reducing the overall efficiency of the system. Balancing the need for revenue generation with the importance of maintaining economic incentives is crucial. Moderating these rates could improve compliance, enhance disposable income, and stimulate consumer spending, thereby fostering economic growth. A restructured approach that reduces the marginal rates while expanding the base could strike a balance between equity and efficiency.

Corporate Taxation: Recent reforms have brought down corporate tax rates for domestic firms to competitive levels, positioning India as an attractive destination for businesses. However, significant challenges persist in harmonizing India's corporate taxation system with global standards. Issues such as the treatment of multinational corporations, double taxation avoidance agreements, and the effective implementation of transfer pricing regulations require attention. Simplifying corporate tax structures, ensuring consistency in policy, and fostering a stable investment climate are imperative to sustain economic growth and attract foreign investments. Addressing these challenges will strengthen India's position in the global economic landscape and enhance its competitiveness.

Compliance Burden: The Indian tax system is characterized by complex filing procedures and frequent policy changes, which deter voluntary compliance among taxpayers. The multiplicity of forms, ambiguous regulations, and lack of streamlined processes contribute to increased compliance costs for individuals and businesses alike. Frequent amendments to tax laws further exacerbate uncertainty and hinder long-term financial planning. Simplifying compliance requirements, leveraging technology for seamless tax

filing, and ensuring stability in tax policies are critical steps to enhance taxpayer confidence and encourage greater participation in the formal economy. Reducing the compliance burden not only improves ease of doing business but also fosters a culture of voluntary compliance, which is essential for the system's sustainability.

Key Issues in India's Direct Tax System:

Narrow Tax Base:

- High dependence on a limited number of taxpayers.
- Significant informal economy contributing to tax evasion.

Complexity and Lack of Transparency:

- Multiple exemptions and deductions create confusion.
- Frequent amendments undermine stability and predictability.

High Litigation:

- Overburdened tax tribunals and courts with prolonged disputes.

Economic Inequity:

- Limited redistribution mechanisms to address income disparities.

Administrative Challenges:

- Insufficient use of technology in tax assessments and audits.
- Inconsistent application of tax laws leading to inefficiency.

Need for Changes:

Broaden the Tax Base:

Broadening the tax base is a critical measure to ensure sustainable revenue generation for governments while promoting economic equity. One key approach to achieving this is encouraging the formalization of the economy. By providing targeted incentives such as tax holidays, simplified compliance procedures, and access to financial resources for small and medium enterprises (SMEs), governments can motivate informal businesses to transition into the formal sector. This not

only enhances tax collection but also fosters business growth and contributes to job creation. Additionally, strengthening reporting requirements for high-value transactions plays a pivotal role in minimizing tax evasion. Implementing robust mechanisms, such as mandatory electronic records, transaction tracking, and stricter enforcement of reporting obligations, can significantly improve transparency and accountability. These measures, combined, expand the tax net by bringing more individuals and businesses into the fold, ensuring a fairer distribution of tax liabilities and creating a more robust financial foundation for public spending and development initiatives.

Simplify Tax Structure:

Simplifying the tax structure is a pivotal step toward creating a more efficient and equitable taxation system. Reducing the number of tax slabs and eliminating redundant exemptions can make the tax code more transparent and easier to understand for taxpayers. A simpler structure minimizes confusion and ensures that individuals and businesses can accurately calculate their tax liabilities without the need for extensive expert assistance. Additionally, a streamlined system helps to reduce opportunities for tax evasion and avoidance, thereby increasing overall compliance. Alongside structural simplification, streamlining procedures to reduce the compliance burden is equally critical. By leveraging technology, such as automated filing systems and digital platforms, governments can significantly cut down the time and effort required for tax compliance. Simplified processes, such as pre-filled tax forms, unified tax filings, and efficient dispute resolution mechanisms, further enhance taxpayer confidence and participation. Together, these measures foster a more inclusive and efficient taxation environment, promoting both voluntary compliance and revenue growth.

Lower Tax Rates:

Lowering tax rates is a strategic approach to fostering compliance and stimulating economic growth. Moderating individual tax rates can encourage greater voluntary compliance by reducing the financial burden on taxpayers and making it more attractive to operate within the formal economy. Lower rates can also enhance disposable income, boosting consumer spending and driving economic activity. Similarly, aligning corporate tax rates with global benchmarks is crucial for attracting foreign investments and maintaining competitiveness in the global market. Competitive tax rates create a business-friendly environment that encourages both domestic and international companies to invest, expand, and innovate. This, in turn, leads to job creation, technological advancement, and overall economic growth. However, lower tax rates must be balanced with robust tax collection mechanisms to ensure that revenue generation is not compromised. By fostering a fair and predictable tax regime, governments can achieve a dual objective of promoting compliance while creating an environment conducive to economic development.

Adopt Technology:

Adopting advanced technology is a transformative step toward creating a more efficient, transparent, and fair taxation system. Leveraging artificial intelligence (AI) and big data analytics for fraud detection enables tax authorities to identify irregularities, uncover patterns of evasion, and predict potential risks with greater accuracy. These technologies can analyse vast volumes of financial and transactional data in real-time, providing actionable insights that strengthen enforcement and improve compliance. Alongside these innovations, expanding the faceless assessment initiative can further enhance transparency and reduce the scope for discretionary decision-making and

corruption. By removing the need for physical interactions between taxpayers and tax officials, faceless assessments promote impartiality and build trust in the system. Digital platforms supporting seamless document submission, virtual hearings, and automated decision-making streamline processes and minimize delays. Together, these technological advancements not only improve the effectiveness of tax administration but also foster a culture of accountability and fairness, ultimately driving higher compliance and revenue collection.

Enhance Redistribution:

Enhancing redistribution through targeted tax policies is a vital strategy for addressing economic inequality and fostering social cohesion. Introducing measures like wealth taxes or higher taxes on luxury goods ensures that individuals with greater financial capacity contribute proportionately more to public revenue. These taxes can serve as a means to curb excessive wealth accumulation and fund essential social and economic programs. Complementing this approach, strengthening social welfare schemes funded by direct taxes is crucial for creating a safety net for vulnerable populations. Investments in healthcare, education, affordable housing, and employment initiatives funded by equitable tax contributions can significantly improve living standards and promote inclusive growth. By effectively channelling resources from wealthier segments of society to those in need, these measures create a more balanced economic environment. Coupled with transparent administration and robust accountability mechanisms, this approach not only reduces disparities but also reinforces public trust in the tax system, fostering a sense of shared responsibility and collective progress.

International Direct Tax System Comparisons

- **United States:** Progressive tax rates combined with robust compliance mechanisms.
- **Singapore:** Simplified tax structure with lower rates to promote growth.
- **Scandinavian Countries:** High tax rates offset by comprehensive welfare benefits.
- **China:** Expanding the tax base through the formalization of the economy.

Proposed Improvements and Reforms:

Legislative Reforms:

- Codify tax laws to minimize ambiguities and ensure consistency.
- Implement a unified tax code consolidating direct and indirect taxes.

Administrative Overhaul:

- Establish faster dispute resolution mechanisms.
- Regularly train tax officials to ensure fairness and efficiency.

Policy Stability:

- Avoid frequent changes in tax laws.
- Introduce long-term policies with periodic reviews.

Benefits of Reforms:

- **Increased Revenue:** A broader base and better compliance mechanisms would boost collections.
- **Economic Growth:** Lower rates and simpler systems would attract investments.
- **Equity:** Progressive reforms would reduce income disparities.
- **Global Competitiveness:** Aligning with international best practices would enhance India's economic standing.

Conclusion:

India's direct tax system requires comprehensive reforms to address its structural inefficiencies and align with

global best practices. By broadening the tax base, simplifying compliance and adopting modern technologies, the government can create a robust framework that promotes equity and economic growth. Urgent action is needed to ensure the direct tax system becomes an enabler of India's development aspirations.

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Application and Challenges of Data Analytics implementing in Accounting

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Abstract:

In the technological world, Data analytics is one of the tools in the hands of professionals for analysing data. It is nothing but a subset of Business Intelligence (BI), which is itself a subset of Business Analytics (BA). Data science and Business Intelligence (BI) helps in analysing a large amount of structured data to forecast and predict the future events. After introduction of GST in 2017, there is vast growth in the work of professionals as well as businesses, hence it is the need to businessman and accountants to make use data analytics to take a better decision. Though there are various tools used in accounting like tally prime, it is advanced one with different aspects. This study is purely based on secondary data to understand the applications and to face challenges in implementing data analytics in accounting.

Keywords: Data Analytics, Technology, Accounting, Benefits, Challenges, Implementation

Introduction:

Data analytics is called as the Double-Edged Sword in Accounting. It has made revolution in various industries and accounting is no exception to this. Data analytics is a process which uses algorithms to extract and analyze information from large amounts of data. Accounting data analytics is a subset of this process where the information extracted comes from financial transactions, such as invoices, payments, and receipts. Accounting data analytics allows businesses to make informed decisions based on the analysis of this information.

Due to the introduction of Goods and Services Tax (GST), the enormous documentation of transactions is increased, as a result businesses are facing the problems of documentation. The task and need of professionals like, tax consultant, CAs, Auditors, Accountants are increasing

as the size or volume of business becoming large. Hence, data analytics is an emerging tool in the hands of professionals to reduce the burden of time and cost.

Data analytics gather and organise substantial amounts of data to manage demands time, discipline with a specific set of skills. A professional should have such skills with a background in data analytics. Their knowledge and experience increase an efficiency to maintain the data and extract its value. The skilled accountant with background of data analytics is the need of businesses.

The accountant or professionals use the analytics to make a decision on the basis of static data with continuous monitoring. It provides a holistic view and empowers to make more accurate and timely decisions. Generally, the accountant uses following four types for data analysis:

Types and Functions of Data Analytics

Sr. No	Type of analytics	Functions
1	Descriptive Analytics	to create reports and financial statements.
2	Diagnostic Analytics	to create dashboards that analyse completed business periods.
3	Predictive Analytics	to create models illustrating possible business results.
4	Prescriptive Analytics	come into play when developing data-backed business plans.

The descriptive analytics reveals the data regarding What's going on? While Diagnostic analytics analyses and provides data related to Why? Descriptive Analytics. The Predictive analytics anticipate the trends that influence these predictions. As same the prescriptive analytics help to accountants to create reports based on facts that can be turned into practical steps.

Tools for Data Analytics in Accounting:

An accountant should have technical expertise to achieve success with data analytics. The knowledge of programming as Python and "R" is required to develop algorithms and data models. The accountant should have knowledge of following skills to perform better. The following tools will reveal the relevance of the accounting data.

Tools for Data Analytics in Accounting

Sr. No	Tool	Nature of Company	Use in Accounting
1	Excel	Small business	creating budgets, making financial statements, and building balance sheets.
2	Tableau	mid-sized company	to represent data visually. Deal with extensive data
3	Power BI (BI + Data Visualisation)	Any Company or Business	linking with Excel, Quick books, Google Analytics, and other applications. It enables accountants to consolidate various data streams using Power BI.
4	IDEA	Any Company or Business	software designed specifically for data analytics. Data can be imported and analysed swiftly, effectively, and in a format that is easy for users to navigate.
5	A.I. and Analytics	Any Company or Business	critically assess, interpret, and formulate business plans using the provided data.

Objectives of the study:

Followings are the objectives aimed by the researcher:

1. To know the relevance of accounting and data analytics.
2. To study the tools for data analytics in accounting.
3. To understand the applications and challenges in implementing data analytics in accounting.
4. To draw a conclusion for proper implementation of data analytics.

Statement of the Problem:

In the advanced technological world, the technology like AI, Chatbot, Data analytics and knowledge is moving with hand in hand. An accountant, a tax consultant or a professional has to analyse the data effectively for business decision.

Scope of the Study:

This research paper has a wide scope as technological, professional, economical, to prosper the wings of future accounting for businesses. The application of data analytics

is necessary to achieve various benefits of technology.

Research Methodology:

This research paper is purely based on secondary data as available in journals, annual reports, government reports and websites.

Analysis and Interpretation:

The analysis and interpretation of the data is based on the following two important aspects i.e. Application of Data analytics and Challenges of Implementing Data Analytics

in Accounting as it is descriptive study and based on secondary data.

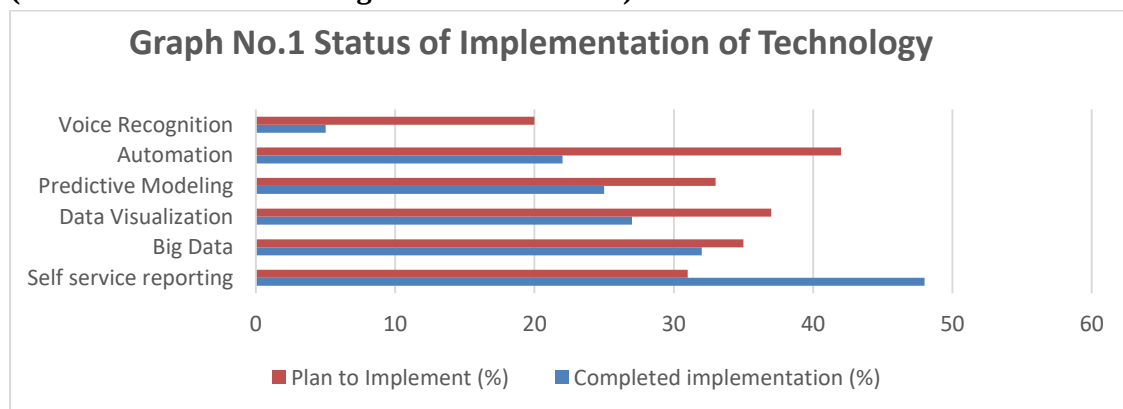
Applications of Data Analytics in Accounting:

As per the available data from Institute of Management Accountants most of the companies or finance firms have implemented data technologies for accounting and financial services. On the other hand few companies are planning to implement. The following table will reveal the status

Table No.1 Status of Implementation of Technology

Technology	Completed implementation (%)	Plan to Implement (%)
Self-service reporting	48	31
Big Data	32	35
Data Visualization	27	37
Predictive Modeling	25	33
Automation	22	42
Voice Recognition	5	20

(Source: Institute of Management Accountants)



The above table and graph indicates that 48 percent finance firms have implemented technology for self service reporting, Big data (32), Data visualization (27), Predictive Modeling (25), Automation (22) and very less in Voice recognition (5). On the other hand, some of the finance firms in the verge of implementation these technologies.

It is observed that most of companies are implementing these technologies for the application of fraud

detection, financial forecasting, Risk assessment and Audit efficiency.

The application of data analytics helps in identifying the irregular financial transitions i.e duplication of receipts or payments, unauthorised access and fraudulent claims. Further it helps to get alerts to avoid risk in financial transactions.

The finance firms also implement data analytics for analysing historical data to get future financial trends and performance.

It helps in making decisions about budgeting, investment and risk management.

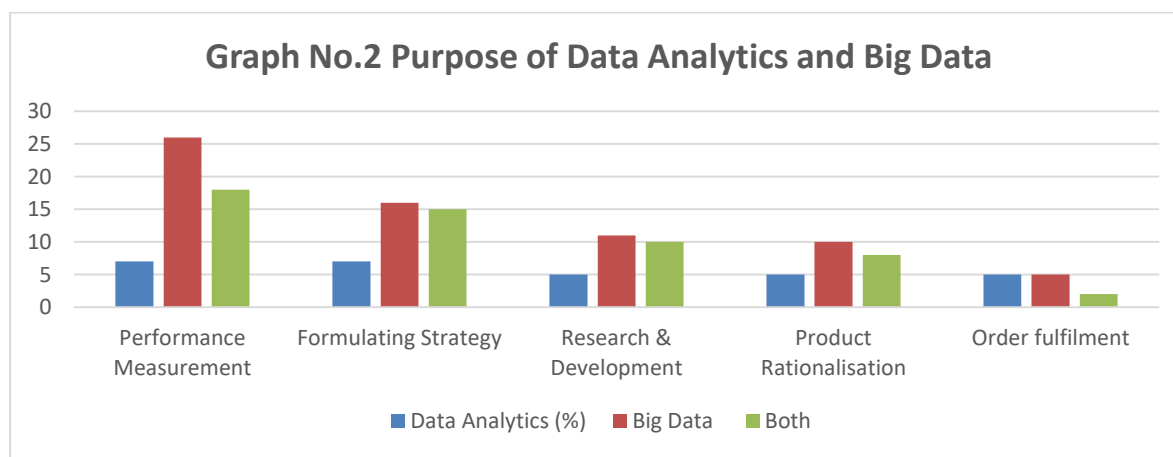
financial, credit, market and operational risk. It extracts, reconciles and analyse data.

It is observed that data analytics also help in identifying and assessing various

Table No.2 Purpose of Data Analytics and Big Data

Purpose	Data Analytics (%)	Big Data (%)	Both (%)
Performance Measurement	7	26	18
Formulating Strategy	7	16	15
Research & Development	5	11	10
Product Rationalisation	5	10	8
Order fulfilment	5	5	2

(Source: Institute of Management Accountants)



It is observed that the data analytics has lesser share as compared to use of big data. Hence there is requirement to develop awareness amongst the firms to implement data analytics for effective accounting.

From the above data and graph, it is observed that most of the companies are facing the challenges in implementing data analytics. The companies may be facing the challenges like data quality, or misleading data, lack of skilled professionals in data science, statistics, and accounting, ethical factors like privacy, security and bias and implementation cost of software and training issues etc.

Conclusion:

Though Data analytics offer various opportunities for accountants to enhance their efficiency, accuracy, and decision-making capabilities, the finance firms or

companies planning to implement data analytics due to certain challenges before them. It is a need to overcome the coming challenges by improving skill and technological knowledge and know-how for effective implementation of data analytics in accounting for better services.

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Environmental Accounting Practices: Problems and Prospects in Indian Industries

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Abstract:

Environmental accounting is the practice of measuring and disclosing the environmental impact of an organization's activities. The objective of this paper is to examine the prospects and practices of environmental accounting in the Indian industry. The paper analyzes the current state of environmental accounting practices in India, identifies the gaps, and suggests measures to improve the same. The scope of the study is limited to the Indian industry, with a focus on selected sectors such as mining, manufacturing, and energy. The paper concludes that there is a need for greater transparency and accountability in environmental accounting practices in India.

Environmental accounting is a tool that helps to integrate environmental costs and benefits into decision-making processes in the business world. The Indian industry has seen rapid growth in the last few decades, which has led to increased environmental degradation. In this paper, we examine the current state of environmental accounting practices in Indian industries, as well as the prospects for future development. We also discuss the potential benefits and challenges of implementing environmental accounting in Indian industries.

Environmental accounting practice is an emerging concept in the field of accounting that focuses on integrating environmental considerations into business decision-making. This paper explores the problems and prospects of environmental accounting practices in the Indian industry. The objective of this paper is to examine the current status of environmental accounting practices in India, identify the challenges that hinder its implementation, and suggest measures to overcome these challenges.

Environmental accounting is a practice that recognizes and measures the environmental costs and benefits of an organization's operations. It helps organizations to understand the impact of their operations on the environment, and make informed decisions to reduce their negative impact. This paper aims to investigate the problems and prospects of environmental accounting practices in Indian industry. The study reviewed relevant literature, identified the main issues faced by Indian industry, and proposed solutions to enhance the prospects of environmental accounting practices.

Keywords: Environmental Accounting Practices, Indian Industry, Sustainable Development, Challenges, Recommendations.

Introduction:

The concept of environmental accounting emerged in the 1970s when the public began to recognize the negative impact of business operations on the environment. Environmental accounting aims to identify, measure, and report the

environmental costs and benefits of an organization's operations. The benefits of environmental accounting include improved environmental performance, cost savings, and enhanced reputation. Despite the benefits, the adoption of environmental accounting practices in India has been slow.

This paper investigates the problems and prospects of environmental accounting practices in Indian industry.

Environmental accounting is a concept that emerged in the late 20th century as a response to the increasing concerns over the impact of industrial activities on the environment. Environmental accounting refers to the process of integrating environmental costs and benefits into financial statements and decision-making processes. It helps to identify, measure, and report the environmental costs associated with business operations and products, as well as the potential benefits of environmental management practices.

The Indian industry has seen rapid growth in the last few decades, which has led to increased environmental degradation. The government of India has recognized the importance of environmental sustainability and has introduced several regulations to address environmental issues. However, the implementation of these regulations has been challenging due to the lack of awareness and inadequate resources.

The concept of environmental accounting is gaining importance worldwide as companies are recognizing the importance of integrating environmental factors into their business decision-making. India is no exception, and the Indian industry is slowly adopting environmental accounting practices. However, the implementation of environmental accounting practices in India is still at a nascent stage, and several challenges hinder its adoption. This paper examines the current status of environmental accounting practices in India, identifies the challenges faced by the Indian industry in implementing environmental accounting practices, and suggests measures to overcome these challenges.

Environmental accounting practices are becoming increasingly important in today's world, where sustainability and environmental protection are critical issues

for the future of our planet. In India, as in many other countries, industries are facing mounting pressure to adopt environmentally sustainable practices, not only from regulators but also from consumers, investors, and other stakeholders. Environmental accounting practices can help industries to manage their environmental impact more effectively, by providing a structured framework for measuring, monitoring, and reporting on environmental performance. This research paper aims to explore the problems and prospects of environmental accounting practices in Indian industry, with a view to identifying the challenges faced by the industry in implementing environmental accounting practices, and providing recommendations for improving their effectiveness.

Environmental Accounting Practices in Indian Industries:

Environmental accounting practices in Indian industries are still at a nascent stage. Most Indian industries do not have a dedicated environmental accounting system, and environmental costs are often not reflected in financial statements. However, some companies have started to recognize the importance of environmental sustainability and have started to implement environmental accounting practices.

One example is Tata Steel, which has implemented an environmental accounting system to measure and report environmental costs associated with its operations. The system helps the company to identify potential cost savings and to develop strategies to reduce environmental impacts.

Another example is Hindustan Unilever Limited (HUL), which has implemented a life cycle assessment (LCA) approach to measure the environmental impacts of its products. The LCA approach helps the company to identify areas for improvement in product design and to

reduce the environmental impact of its products.

Review of Literature:

The concept of environmental accounting has been defined and discussed in various studies. Environmental accounting refers to the identification, measurement, and reporting of environmental costs and benefits (Jain et al., 2018). Environmental accounting can be applied at various levels, such as product, process, and corporate levels (Babu and Reddy, 2017).

Several studies have highlighted the benefits of environmental accounting, including improved decision-making, better resource management, and increased stakeholder engagement (Kaur and Kaur, 2017). However, the implementation of environmental accounting practices in Indian industry has been limited. Many businesses lack the necessary skills and knowledge to implement environmental accounting, and there is a lack of standardization and guidelines for environmental accounting practices (Kumar et al., 2019).

Environmental accounting practices are becoming increasingly popular around the world due to the growing concern about environmental degradation and sustainability. According to a study by KPMG, the use of environmental accounting practices has increased by 44% in the last decade (KPMG, 2017). However, the implementation of environmental accounting practices is still a challenge for many organizations.

In India, the concept of environmental accounting is still in its nascent stage. Although some companies have started to implement environmental accounting practices, the majority of companies are still lagging. According to a study by Joshi and Yadav (2018), only a few companies in India are implementing environmental accounting practices, and

most of them are in the manufacturing sector. This is due to the lack of awareness, regulatory pressure, and the perception that environmental accounting is an additional cost rather than an investment.

Environmental accounting practices encompass a range of activities, including environmental audits, life cycle assessments, environmental performance indicators, and carbon footprint analysis (Kolk et al., 2018). These practices provide a structured approach to measuring and reporting on environmental performance, which can help companies to identify areas where they can improve their environmental impact.

The significance of environmental accounting practices lies in their ability to help companies to make more informed decisions about their environmental impact. By providing a framework for measuring and reporting on environmental performance, companies can identify areas where they can reduce their environmental impact and implement strategies to improve their environmental performance (Nasir et al., 2020).

However, despite the benefits of environmental accounting practices, there are still many challenges that need to be addressed in order to promote their widespread adoption in Indian industry. These challenges include lack of awareness and understanding of environmental accounting practices, inadequate reporting frameworks, and limited access to financial resources (Talib et al., 2020).

Environmental accounting practices have been widely researched and documented globally. However, studies on environmental accounting practices in India are limited. A study conducted by Shrivastava (2000) on environmental accounting practices in India found that there was a lack of awareness and understanding of environmental accounting among Indian companies.

Another study by Roy and Gupta (2015) highlighted the need for environmental accounting practices in the Indian cement industry, given the significant environmental impact of cement production.

In contrast, studies on environmental accounting practices in other countries have identified the benefits of environmental accounting. For instance, a study by Bao et al. (2021) found that environmental accounting practices in China helped firms to reduce their environmental impact and improve their financial performance.

Environmental accounting practices have been widely discussed in academic literature. Scholars have examined the benefits of environmental accounting practices for businesses, including cost savings and improved environmental performance. They have also highlighted the challenges of implementing environmental accounting practices, such as the lack of standardized reporting requirements and difficulty in quantifying environmental impacts.

Studies conducted in the Indian context have also focused on the challenges of implementing environmental accounting practices. Gupta et al. (2019) found that the lack of awareness and expertise in environmental accounting was a significant barrier for Indian companies. They also noted that companies were reluctant to invest in environmental accounting due to the perceived high costs of implementation.

Similarly, Shankar et al. (2017) found that Indian companies faced challenges in implementing environmental accounting practices due to the lack of regulatory requirements and reporting standards. They also noted that the lack of data on environmental impacts made it difficult for companies to quantify and report their environmental performance accurately.

Environmental accounting practices have gained significance in recent times due to the increasing concern about environmental degradation and sustainability. A study by Tariq et al. (2021) found that environmental accounting practices can help companies in identifying and reducing their environmental impact, improving their reputation, and reducing their environmental costs. Similarly, another study by Jabbour et al. (2020) found that environmental accounting practices can help companies in achieving sustainable development goals and enhancing their competitiveness.

Statement of Problem:

India is one of the fastest-growing economies in the world, with industrialization as a key driver of growth. The Indian industry is facing significant environmental challenges, including air pollution, water pollution, and land degradation. The lack of environmental accounting practices in the Indian industry has made it difficult for companies to assess their environmental impact accurately. This lack of data has made it challenging to identify areas of improvement and implement effective environmental management strategies.

Significance:

This research paper is significant as it seeks to explore the problems and prospects of environmental accounting practices in the Indian industry. By identifying the challenges faced by organizations in implementing environmental accounting practices, this paper will help to inform policy makers and other stakeholders on the need for greater support and incentives for organizations to adopt such practices.

This study is significant because it identifies the problems and prospects of environmental accounting practices in Indian

industry. The study contributes to the literature on environmental accounting practices in India and provides insights for policymakers and practitioners.

Objectives:

The primary objective of this paper is to examine the prospects and practices of environmental accounting in the Indian industry. The specific objectives of the study are:

1. To review the current state of environmental accounting practices in India.
2. To identify the gaps in the existing practices and suggest measures to improve them.
3. To analyze the prospects of environmental accounting in the Indian industry.
4. To recommend best practices for the adoption and implementation of environmental accounting in the Indian industry.

Scope:

The scope of this study is limited to the Indian industry, with a focus on selected sectors such as mining, manufacturing, and energy. The study will examine the current state of environmental accounting practices in these sectors and identify the gaps in the existing practices. The study will also analyze the prospects of environmental accounting in these sectors and recommend best practices for the adoption and implementation of environmental accounting in these sectors.

Methodology:

This research paper is based on a qualitative research approach, which includes a review of the existing literature on environmental accounting practices in India. A systematic review will be conducted, and relevant studies will be identified using various databases such as

Google Scholar, Scopus, and Web of Science.

This study is based on a literature review of various research papers, books, and reports related to environmental accounting practices in India. The data collected were analyzed to identify the problems and prospects of environmental accounting practices in India.

Problems:

Some of the problems in environmental accounting practices in Indian industry are:

Lack of awareness: The Indian industry lacks awareness of the importance of environmental accounting practices. Companies are not aware of the benefits of incorporating environmental accounting into their business practices, such as reducing environmental risks, improving efficiency, and enhancing their reputation.

Inadequate data availability: Companies in India often lack comprehensive data on environmental costs and benefits, which makes it challenging to measure and report on these metrics accurately. There is a lack of reliable data on environmental costs and performance, which makes it difficult to accurately measure the impact of environmental practices on the bottom line.

Lack of standardization: There are no standard guidelines or principles for environmental accounting practices in India. As a result, companies have different approaches to environmental accounting, which makes it difficult to compare and evaluate their environmental performance.

Limited stakeholder involvement: Companies in India do not involve stakeholders such as local communities, NGOs, and regulators in their environmental accounting practices. This lack of engagement leads to a limited understanding of the impact of company activities on the environment.

Limited regulatory requirements: The regulatory environment in India does not

mandate the reporting of environmental costs and benefits. As a result, many companies do not report on these metrics or prioritize them in their decision-making processes.

Insufficient expertise: There is a shortage of trained professionals in environmental accounting and sustainability reporting, making it difficult for companies to implement effective environmental accounting practices.

Short-term focus: Many organizations in India have a short-term focus on profitability and may not prioritize long-term environmental sustainability.

Inadequate training and awareness: Many companies do not have employees who are trained in environmental accounting practices or who are aware of the importance of reporting environmental costs and benefits.

Inadequate integration of environmental accounting with financial accounting: Many companies do not fully integrate environmental accounting with financial accounting, leading to incomplete reporting.

Costly implementation: Environmental accounting practices can be costly to implement, especially for small and medium-sized enterprises (SMEs) that may not have the resources to invest in the necessary infrastructure and training.

Prospects of Environmental Accounting Practices in India:

Environmental accounting, which integrates environmental considerations into accounting and reporting practices, is a growing field in India. As environmental concerns increase and the government enforces stricter regulations, the prospects for environmental accounting practices in India are quite promising. Here are some key aspects to consider:

Government Regulations and Policies:

- **Environmental Laws and Compliance:** The Indian government has made substantial efforts in environmental protection, such as the Environment Protection Act (1986), the National Action Plan on Climate Change (NAPCC), and the adoption of Sustainable Development Goals (SDGs). Compliance with these regulations requires businesses to track, report, and manage their environmental impacts, which directly supports the need for environmental accounting.
- **Corporate Social Responsibility (CSR):** Under the Companies Act 2013, large companies in India are mandated to allocate a percentage of profits to CSR activities, which often include environmental initiatives. This regulatory requirement increases the need for companies to report on environmental expenditures and activities, fostering the growth of environmental accounting.

Corporate Sustainability:

- **Green and Sustainable Business Practices:** There is a growing trend of corporate sustainability, as businesses realize the financial and reputational benefits of adopting green practices. Environmental accounting helps businesses track and report on energy usage, water consumption, waste management, and carbon emissions, allowing them to make more sustainable business decisions.
- **Investor Demand:** Investors, particularly from global markets, are increasingly considering environmental, social, and governance (ESG) factors when making investment decisions. In response, Indian companies are beginning to embrace environmental accounting to ensure transparency and attract investment.

Financial Implications of Environmental Impact:

- **Cost Management:** Environmental accounting helps businesses quantify the financial costs and benefits of environmental actions, such as energy efficiency measures, waste management, and pollution control. By measuring the financial impact of environmental initiatives, companies can identify cost-saving opportunities and improve profitability.
- **Tax Incentives:** The Indian government provides tax incentives for businesses that engage in green activities, such as renewable energy projects and pollution control measures. Environmental accounting allows businesses to track and report these activities, ensuring they benefit from such incentives.

Rising Public Awareness

- As public awareness about environmental issues such as climate change, air pollution, and deforestation increases, consumers are more inclined to support businesses that demonstrate commitment to sustainability. Environmental accounting can help companies communicate their environmental efforts and build stronger relationships with customers and the public.

International Standards and Global Trade

- **Adherence to Global Standards:** Many Indian businesses, particularly those in the export sector, are required to comply with international environmental standards such as ISO 14001 (Environmental Management Systems) and GRI (Global Reporting Initiative) standards. Environmental accounting helps companies in India meet these global reporting requirements.

- **Competitiveness in Global Markets:** As global consumers increasingly demand environmentally responsible products and services, Indian companies that adopt environmental accounting can improve their competitiveness and expand into international markets.

Future Prospects:

- **Integration with Financial Reporting:** In the future, environmental accounting may become more integrated with traditional financial reporting, as sustainability becomes a core aspect of business performance. The adoption of integrated reporting frameworks that combine financial and environmental data is likely to grow.
- **Technological Advancements:** Advancements in technology, such as blockchain for transparency and AI for data analysis, can enhance the efficiency and accuracy of environmental accounting practices in India.
- **Increased Focus on Climate Change:** With the growing impact of climate change, environmental accounting will likely focus more on carbon footprint analysis, climate-related financial disclosures, and adaptation strategies. This will become critical for businesses in India, particularly in sectors like agriculture, manufacturing, and energy.

Findings:

The study found that environmental accounting practices in the Indian industry are still in their infancy. Most organizations do not have a standardized system for measuring and disclosing their environmental impact. The study also found that there is a lack of awareness and understanding of environmental accounting practices among organizations. This is evident from the fact that most organizations

do not have a separate budget for environmental accounting or a designated team for the same.

The study identified several gaps in the existing environmental accounting practices in the Indian industry. These include a lack of standardization, inconsistent reporting, and a lack of integration with financial accounting. The study also found that there is a need for greater transparency and accountability in environmental accounting practices.

The study analyzed the prospects of environmental accounting in the Indian industry and found that there is a growing awareness of environmental issues among organizations. This is evident from the fact that many organizations have started to report their environmental impact voluntarily. The study also found that there is a growing demand for standardized environmental accounting practices among stakeholders, including investors, customers, and regulators.

The prospects of environmental accounting practices in the Indian industry are positive. The Indian government has launched several initiatives to promote environmental sustainability, such as the National Action Plan on Climate Change and the Swachh Bharat Abhiyan. These initiatives are expected to increase the demand for environmental accounting practices in the Indian industry.

Suggestions:

- Based on the findings of the study, the following suggestions are recommended:
- Organizations should adopt standardized environmental accounting practices, such as the Global Reporting Initiative (GRI) or the Carbon Disclosure Project (CDP).
- Organizations should integrate environmental accounting with

financial accounting to provide a more comprehensive picture of their performance.

- Organizations should allocate a separate budget for environmental accounting and designate a team for the same.
- Organizations should increase transparency and accountability by disclosing their environmental impact on their website and in their annual reports.
- Regulators should mandate environmental accounting practices for organizations in sectors with a significant environmental impact, such as mining, manufacturing, and energy.
- The government should develop policies and regulations that encourage companies to adopt environmental accounting practices.
- Companies should invest in training programs for their employees to increase awareness about environmental accounting practices.
- Standardization of environmental accounting practices should be developed to provide a consistent framework for reporting environmental performance.
- Companies should develop a reporting framework that meets the needs of stakeholders, including investors, customers, and regulatory bodies.

Conclusion:

The study concludes that the implementation of environmental accounting practices in India is still at a nascent stage. However, there are several prospects for the adoption of environmental accounting practices in India. The challenges faced by the Indian industry in adopting environmental accounting practices can be overcome by creating awareness, providing regulatory support, investing in personnel training, standardizing environmental

accounting practices, and viewing environmental accounting practices as an opportunity to improve environmental performance.

Environmental accounting is an essential tool for businesses to manage their environmental impact effectively. The lack of implementation of environmental accounting practices in Indian industry is a significant problem that needs to be addressed. This study has identified the problems and prospects of environmental accounting practices in Indian industry and suggested possible solutions. The government, businesses, and other stakeholders should work together to promote the implementation of environmental accounting practices in Indian industry.

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Evaluating Service Quality in Housing Finance: A Comprehensive Study

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Abstract:

This research paper explores the critical role of service quality in the housing finance sector, focusing on its impact on customer satisfaction and loyalty. Utilizing the SERVQUAL model as a foundational framework, the study evaluates five key dimensions of service quality: reliability, responsiveness, assurance, empathy, and tangibles. Through a combination of quantitative and qualitative methodologies, data were collected from a diverse group of customers to assess their expectations and perceptions of service quality.

The findings reveal significant gaps between customer expectations and actual service delivery, particularly in areas such as responsiveness and empathy. The study highlights the importance of reliability and assurance in fostering customer trust and satisfaction. Additionally, the role of technology in enhancing service quality is emphasized, with digital platforms improving responsiveness and convenience. Challenges such as delays, lack of transparency, and inadequate customer support are identified as critical areas needing improvement. This study deals with service quality gaps in banks as after nationalisation of several commercial banks competition was restricted but with the entry of new generation tech-savvy private banks the banking sector has become too competitive. For comparative purposes, five service quality dimensions are used i.e. tangibility, reliability, assurance, responsiveness and empathy. Gap analysis was applied to find the gaps between expected and performed service in private banks of NCR using SPSS version 20 to find difference between male and female perception and expectation. The study provided an insight into which attributes of service quality in private bank were most important in providing satisfaction to customers and areas where significant gaps existed. From the present study it can be concluded that the highest gap was found in the dimension of reliability and empathy and few suggestions have been provided to improve on these factors.

Keywords: Service Quality, Housing Finance, Banks, SERVQUAL, Expectation etc.

Introduction:

The housing finance sector plays a crucial role in the economic development of a nation by facilitating home ownership and contributing to the stability of the housing market. In this context, the quality of service provided by housing finance institutions becomes a pivotal factor in determining customer satisfaction and loyalty. Service quality, encompassing various dimensions such as reliability, responsiveness, assurance, empathy, and tangibles, directly

impacts the overall customer experience and trust in financial institutions. Despite the significant role of service quality, many housing finance institutions face challenges in consistently meeting customer expectations. This study aims to evaluate the service quality in the housing finance sector, identifying key factors that influence customer perceptions and satisfaction. By leveraging established service quality models and frameworks, such as the SERVQUAL model, this research seeks to

provide a comprehensive understanding of the strengths and weaknesses in service delivery. Service quality is a comparison of expectations with performance. From the viewpoint of business administration, service quality is an achievement in customer service. It reflects at each service encounter. A customer's expectation of a particular service is determined by factors such as recommendations by peers, personal needs and past experiences. The expected service and the perceived service sometimes may not be equal, thus leaving a gap. The service quality model or the „GAP model" developed by the authors- Parasuraman, Zeithaml and Berry at Texas and North Carolina in 1985, highlights the main requirements for delivering high service quality. It identifies „gaps" that cause unsuccessful delivery of service. Customers generally have a tendency to compare the service they 'experience' with the service they 'expect'.

The findings of this study will offer valuable insights for housing finance institutions, helping them to enhance their service quality and, consequently, their competitive advantage. Additionally, this research will contribute to the academic literature by filling the existing gaps in the understanding of service quality in the housing finance sector. Through a combination of quantitative and qualitative analyses, this study will explore the intricate relationship between service quality dimensions and customer satisfaction, providing actionable recommendations for practitioners and policymakers.

Review of Literature:

Parasuraman, Zeithaml, and Berry (1988)

This seminal study introduced the SERVQUAL model, a widely used tool for measuring service quality across various industries, including financial services. The model identifies five key dimensions of

service quality: tangibles, reliability, responsiveness, assurance, and empathy.

Anyanwn J.C. (1991) has studied on 'role of domestic financial institutions'. The researcher has calculates lending rate of the service quality of the banks. It is a housing development programme the role of government is of utmost importance, the government has to create and ensure a bouquet and vibrant financial system and economy that can provide sufficient funds for housing. The role of the government in these areas and particularly in providing housing for the low-income earners can hardly be over emphasized.

Jennifer George and Gareth Jones (1991) have studied on development of state housing finance agencies'. The main objective is measuring financing activities. Customer service quality is an important issue in the management of service organizations. If customers are treated homogeneously, salespeople will strive to treat all customers with the same level of service; since it is a busy time, this may not be feasible.

Cronin and Taylor (1992) Critiquing the SERVQUAL model, this study proposed the SERVPERF model, which focuses on measuring service performance rather than expectations. This research highlights the importance of performance-based assessments in evaluating service quality.

Zeithaml, Berry, and Parasuraman (1996)

This research further develops the SERVQUAL model by emphasizing the role of service quality in achieving customer satisfaction and loyalty. The study provides a deeper understanding of the link between service quality and business outcomes.

Rust and Oliver (1994) Their work explores the multidimensional nature of service quality, suggesting that customer satisfaction is influenced by both the functional and technical quality of services provided. This framework is particularly relevant for housing finance services.

Grönroos (1984) Grönroos introduces the concept of perceived service quality, distinguishing between technical quality (what is delivered) and functional quality (how it is delivered). This dual perspective is crucial for understanding service quality in housing finance.

Bitner (1990) This study focuses on the role of physical environment, or service scape, in shaping customer perceptions of service quality. The findings underscore the importance of tangible aspects in financial services.

Lewis and Mitchell (1990) They investigate the customer's perspective on service quality, highlighting the gap between expected and perceived service. Their research provides insights into customer expectations in the housing finance sector.

Loveman (1998) Loveman's research examines the link between employee satisfaction and customer satisfaction, suggesting that internal service quality is a critical driver of external service quality. This is particularly relevant for service-oriented sectors like housing finance.

Anderson and Sullivan (1993) This study analyzes the relationship between service quality, customer satisfaction, and customer retention. The findings suggest that improving service quality can lead to higher levels of customer loyalty in the financial sector.

Leyland F. Pitt, Richard T. Watson and C. Bruce Kavan (1995) they have focused on service quality and information systems effectiveness'. The researchers have used SERVQUAL techniques to measure their effectiveness. He said that does not always clearly discrimination of SERVQUAL among the dimensions of service quality. The conventional goal of a group is to build, maintain, and operate information delivery systems.

Thomas Dyke and Leon Kappelman (1997), have studied on measuring

information about the service quality of the use of SERVQUAL' questionnaire. The researchers have used five dimensions to measure the service quality. In this study researchers have identified several literatures. They found that SERVQUAL suffers from a number of conceptual and empirical difficulties. An important contribution of this effort was made with the suggestion of a modified version of the SERVQUAL model.

Siddiqi (2011) Siddiqi's research focuses on the banking sector, evaluating the impact of service quality on customer satisfaction and loyalty. The study uses empirical data to validate the SERVQUAL dimensions and offers insights applicable to housing finance.

These studies provide a comprehensive foundation for understanding the various dimensions of service quality and their impact on customer satisfaction in the housing finance sector. They also offer valuable theoretical frameworks and empirical findings that can inform and guide this research.

Research Methodology:

Descriptive research design has been used in this research. Primary data has been collected mainly through structured questionnaire. Secondary data has also been collected through the various websites and articles in newspapers, Books & Journals. Through a systematic analysis of existing literature, empirical research findings, and practical case studies, this paper will explore emerging trends and future directions in Service Quality in Housing Finance.

Perception and expectation of private bank's customers has been obtained on a 5-point Likert scale, ranging from "highly disagree to highly agree". The data has been collected from Satara city using convenience sampling and sample size of 100. The banks covered under the study were ICICI, HDFC, and Axis Bank.

Objectives of the Study:

The objectives of the study are as follows:

1. To identify the gap between customer expectation and their perception of service quality provided by private banks.
2. To identify the main attributes of service quality in which customers are more satisfied or dissatisfied in private banks.

Results and Findings:

The SERVQUAL scale is the principal instrument widely utilized to assess service quality for a variety of services. Parasuraman et al., (1988) have conceptualized a five dimensional model of service quality such as: reliability, responsiveness, empathy, assurance and tangibility. Their measurement instrument is known as SERVQUAL, which has become almost the standard way of measuring service quality. Further, each item of SERVQUAL has been used twice: to measure expectations and perceptions of service quality.

The central idea in this model is that service quality is a function of difference scores or gap between expectations and perceptions. The five dimensions of SERVQUAL Includes:

TANGIBLES: Physical facilities, equipment and appearance of personnel.

RELIABILITY: Ability to perform the promised service dependably and accurately.

RESPONSIVENESS: Willingness to help customers and provide prompt service.

ASSURANCE: Knowledge and courtesy of employees and their ability to inspire trust and confidence.

EMPATHY: Caring and individualized attention that the firm provides to its customers and other Dimensions are Security Accessibility, Price, Product variety.

Service Quality Gaps Score for Private Banks:

The service quality model developed by Zeithamal, Parsuraman and Berry (1988) has been used in the present study. The main assumption of the model is that service quality is multidimensional concept. These dimensions contribute to the assessment of the service quality in any setting. A construct 'SER VPERF' based upon the model has been used to ascertain the service quality in different banks under study. The statements in the construct are one-dimensional and performance based, which incorporate the statements of 'SERVQUAL' model that can be used as measurement (Cronin Jr. & Taylor, 1992). The statements have been grouped under five dimensions mentioned earlier. In order to ascertain the perceptions of service quality, Likert's S-point scale has been used for its suitability to estimate the range and variations in the perceptions. The scale 1 - 5 represents '5' as mostly agree and '1' as mostly disagree. A pilot study was conducted to ascertain the suitability of the construct in the Indian bank setting. After the ascertaining of the suitability, the questionnaire was administered to the customer's sample size of 100 respondents. After the ascertaining of the validity, the data was analyzed to reach at conclusions regarding the customer's perceptions of service quality.

Major Findings:

Key Dimensions of Service Quality: The study identified that the five dimensions of service quality—reliability, responsiveness, assurance, empathy, and tangibles—play a significant role in shaping customer perceptions. Among these, reliability and assurance were found to be the most critical in influencing customer satisfaction in housing finance.

Impact of Service Quality on Customer Satisfaction: A positive correlation was observed between service quality and customer satisfaction. Higher service quality

levels, particularly in terms of reliability and responsiveness, were associated with increased customer satisfaction and loyalty.

Customer Expectations vs. Perceptions:

The research revealed a noticeable gap between customer expectations and perceptions of service quality. While customers expected high levels of personalized service and timely responses, their actual experiences often fell short, particularly in terms of responsiveness and empathy.

Role of Technology in Service Delivery:

The study found that technology plays a crucial role in enhancing service quality. The use of digital platforms for loan processing, customer service, and communication significantly improved customer perceptions of responsiveness and convenience.

Challenges in Service Quality: Key challenges identified included delays in processing, lack of transparency in communication, and limited customer support. These issues negatively impacted customer trust and satisfaction, highlighting areas for improvement in service delivery.

Influence of Employee Behaviour: The behaviour and professionalism of employees were found to be pivotal in shaping customer experiences. Empathy and assurance provided by staff members significantly contributed to positive service encounters, reinforcing the importance of employee training and engagement.

Importance of Tangibles: Tangible aspects, such as the physical environment of branches and the clarity of documentation, were found to influence customer perceptions of service quality. Well-maintained facilities and user-friendly documentation improved customer confidence and satisfaction.

Customer Retention and Loyalty:

Improved service quality was linked to higher customer retention rates. Satisfied customers were more likely to recommend

the institution to others, demonstrating the long-term benefits of investing in service quality enhancements.

Variability Across Demographics: The study highlighted differences in service quality perceptions across various demographic groups. Younger customers prioritized digital services, while older customers valued personalized, face-to-face interactions.

Recommendations for Improvement: The research concluded with several recommendations, including adopting customer-centric service models, enhancing digital capabilities, improving transparency and communication, and investing in continuous employee training to address identified service quality gaps.

These findings underscore the multifaceted nature of service quality in housing finance and provide actionable insights for financial institutions aiming to enhance their service delivery and customer satisfaction.

Conclusions:

From the present study it can be concluded that the highest gap was found in the dimension of reliability and empathy. The banks have to reduce this gap giving individual personal attention to understand customer specific needs. The customers trust the public sector banks. These banks have existed in the market for a longer period than the private sector banks. The reliability factor is a positive factor for these banks. Therefore private banks should position themselves in the market on the basis of this dimension and promote themselves aggressively.

Last but not the least, the customer base of the public sector banks is very big as compared to the private sector banks, therefore it is important to retain them with the banks. It becomes imperative for the private sector banks to train their employees to treat the customers with empathy.

Banking legislation aims at protecting the interests of the depositors. The Law of Contract' is the foundation upon which the superstructure of the modern business is built.

In conclusion, this research underscores the necessity for housing finance providers to invest in service quality enhancement. By focusing on the identified critical dimensions and adopting a holistic approach to service delivery, institutions can achieve greater customer satisfaction, loyalty, and overall business success. Future studies could further explore the impact of emerging technologies and digital transformation on service quality in housing finance, providing deeper insights into evolving customer needs and preferences.

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Impact of 'Mahila Sanman Yojana' on Financial Performance of MSRTC with Special Reference to Kolhapur Division

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Introduction:

The rise of specialized devices and digital technologies has transformed industries, including transportation, which plays a vital role in economic growth by connecting people and facilitating trade. With increasing demand for fast, comfortable, safe, and affordable travel, the Maharashtra State Road Transport Corporation (MSRTC) stands out as a cost-effective option.

Founded in 1950 and starting operations in 1973, MSRTC has grown from its first bus route in 1948 (Pune to Ahmednagar) to a fleet of over 18,000 buses serving 67 million passengers daily. It has modernized over time, introduced overnight routes, and extended services to rural areas, including goods and mail transport, all while staying true to its motto, '*Pravashyanchya Sevesathi*' (For Passenger Service).

Travel oriented Annual Discount Card, Monthly Pass, Quarterly Pass, Travel Anywhere Scheme etc. concessions are offered by the MSRTC to compete today's transport and attract passengers. Recently, it has introduced 'Mahila Sanman Yojana' for women passengers.

Statement of the Problem:

Effective negotiators don't just compromise; they craft creative solutions through calculated concessions. A concession is a willingness to yield

something or surrender something to reach a mutually beneficial agreement. By making concessions, parties can find common ground, create value and build trust. The wisest negotiator knows that sometimes, giving up a little now means gaining even more later.

Mahila Sanman Yojana is a concession offered by the MSRTC on the travel ticket for women passengers. Therefore, to understand the impact of the Mahila Sanman Yojana on financial performance of the MSRTC Kolhapur Division, researcher has undertaken research work under the title **Impact of 'Mahila Sanman Yojana' on Financial Performance of MSRTC with Special Reference to Kolhapur Division.**

Objectives of the Study:

1. To study historical background of MSRTC
2. To understand various schemes provided by MSRTC for passengers especially 'Mahila Sanman Yojana'
3. To study the financial performance of MSRTC Kolhapur Division from 2019-20 to 2023-24
4. To understand the impact of the Mahila Sanman Yojana on financial performance of the MSRTC Kolhapur Division.
5. To find conclusions
6. To give suggestions

Scope of the Study:**Regional Coverage:**

The MSRTC is divided into several divisions, including Mumbai, Pune, Nashik, Nagpur, Kolhapur, etc. which are further branched into regions or sub-divisions. This study will specifically focus on the Kolhapur Division.

The Kolhapur Division of MSRTC, comprising 12 depots—Ajara, Chandgad, Gadhinglaj, Gaganbawada, Gargoti, Ichalkaranji, Kagal, Kolhapur, Kowad, Malkapur, Radhanagari, and Sambhajinagar—covers 12 talukas across Kolhapur district, which includes urban, semi-urban, and rural areas. These talukas are connected by MSRTC bus routes that ensure accessibility for daily commuting, trade, and travel. The division spans both the Deccan Plateau and parts of the Western Ghats, supporting diverse agricultural and industrial activities. MSRTC services provide crucial transport links between cities, towns, and remote villages, contributing to regional, economic and social integration.

Time Span Coverage:

This study analyses the financial performance of the MSRTC Kolhapur Division over five financial years, from 2019-20 to 2023-24, with a particular focus on assessing the impact of the **Mahila Sanman Yojana** on its performance.

Research Methodology:**1. Sampling Method:**

The present study is basically an Explanatory Research. This research utilizes Statistical Tools and Techniques, Causal Inference Methods, and Data Visualization Tools to analyze the data and draw meaningful insights. By integrating these tools, the research aims to provide a comprehensive understanding of the MSRTC Kolhapur Division's financial

performance and assess the impact of the Mahila Sanman Yojana on its operations.

The MSRTC is divided into several divisions like Mumbai, Pune, Nashik, Nagpur, Kolhapur, etc. This study will specifically focus on the Kolhapur Division. The researcher has used Convenience Sampling Method.

2. Data Collection:

In order to accomplish the above-mentioned objectives, it was necessary to collect the required data from various sources. The primary data is collected through informal discussions, personal interviews with officers and employees of the MSRTC, Kolhapur Division and observation.

The secondary data is collected through published record of M.S.R.T.C. as well as financial statements provided by MSRTC, Kolhapur Division.

To ensure thorough research, researchers have supplemented findings with information from various books, articles and websites.

Various schemes provided by MSRTC for passengers:

The Maharashtra State Road Transport Corporation (MSRTC) offers a comprehensive fare concession system aimed at making travel more accessible and affordable for a wide range of passengers. These concessions are designed to support various groups, including senior citizens, students, people with disabilities, award recipients, and patients in need of medical treatment. The discounts provided by MSRTC vary from 33.33% to 100%, depending on the eligibility criteria, ensuring that travel is more inclusive for those who require assistance. For example, freedom fighters, award-winning athletes, students from rural areas, and individuals suffering from specific medical conditions such as cancer, tuberculosis, and dialysis patients can avail of free or highly discounted travel.

Additionally, MSRTC offers discounts to government officials, journalists, and families participating in cultural or religious activities. This initiative reflects MSRTC's commitment to fostering a more inclusive and supportive public transport system across the state.

100% Discount (Full Fare Waiver):

1. Freedom fighters and one companion.
2. Dr. Babasaheb Ambedkar Society Awardees and one companion.
3. Students from rural areas (5th to 12th grade under the Ahilyabai Holkar Scheme).
4. Government-accredited journalists traveling on Shivshahi sleeper buses.
5. Senior citizens (75 years and above).
6. Lunchboxes for students.
7. Arjuna, Dronacharya, and award-winning players.
8. Tribal awardees and one companion.
9. Lok Shahir Annabhau Sathe awardees and their companions.
10. Married couple of a government-puja-recognized devotee during specific pilgrimages.
11. Legislative assembly members (current and former) and one companion.
12. Disabled awardees and their companions.
13. Patients suffering from sickle cell disease, HIV, dialysis, haemophilia.
14. Mahatma Gandhi State-level Drug-Free Service Awardees.
15. Balasaheb Thackeray Martyr Respect Scheme.
16. Police/Jail motor warrant holders.

75% Discount:

1. Disabled persons with 40% or more disability.
2. Patients undergoing treatment for tuberculosis, cancer, or leprosy.

66.67% Discount:

1. Students with monthly passes for educational/technical purposes.
2. Children from rescue homes for annual trips.

3. Mentally disabled students from Mumbai Rehabilitation Centres for a trip.
4. Beneficiaries under the Skill Bridge Scheme for study programs lasting up to 6 months.

50% Discount:

1. Senior citizens (65 to 75 years).
2. Special bus service for students.
3. Students traveling for exams, vacations, educational camps, or to visit ill parents.
4. Assistants for blind or disabled persons with 65% or more disability.
5. Educational sports.
6. Mahila Sanman Yojana.

33.33% Discount:

1. Winning competitors in government-sponsored sports.

Mahila Sanman Yojana:

In the Maharashtra State Budget for the year 2023-24, a 50% discount on all types of bus fares for women traveling on State Transport Corporation buses has been announced. This scheme was made applicable from 17th March 2023 and all women are entitled to a 50% concession on bus fares for all types of buses within the state limits of the Maharashtra State Road Transport Corporation. The government will reimburse the cost of this concession.

Analysis and Interpretation:

Financial condition of MSRTC Kolhapur Division from Financial Year 2019-20 to 2023-24

To understand the financial performance of MSRTC Kolhapur Division from Financial Year 2019-20 to 2023-24 researchers have studied some important parameters from financial statements.

Traffic Receipts:

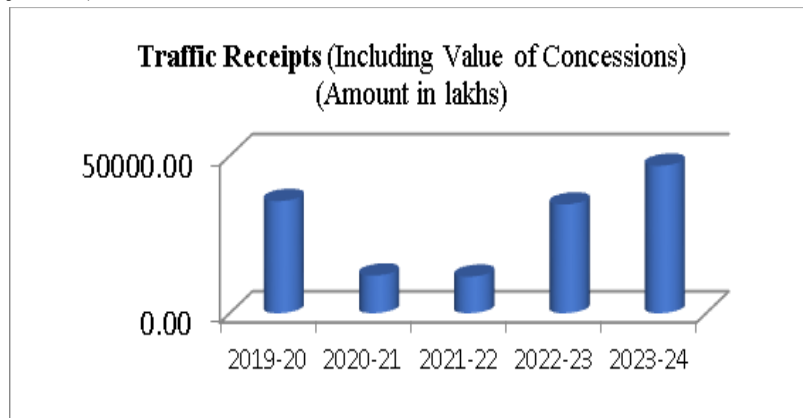
The following table shows traffic receipts of all 12 depots included under Kolhapur division and cumulative total in the last column as DIVISION.

Traffic Receipts

(Amount in Lakhs)

Financial Year	Kolhapur	Sambhajinagar	Gadhinglaj	Ichalkaranji	Gargoti	Malkapur	Chandgad	Kurundwad	Kagal	Radhanagari	Gaganbawada	Ajara	DIVISION
2019-20	5692.53	3207.15	2568.14	3433.89	2542.76	1423.93	1699.64	1532.87	2619.50	1679.36	557.83	1174.64	28132.24
2020-21	1918.43	1188.31	904.56	1391.84	845.33	633.93	547.87	541.07	1037.76	592.92	187.34	422.75	10212.11
2021-22	2540.61	964.80	840.73	1264.16	831.77	623.11	519.75	488.05	749.50	469.48	132.75	387.09	9811.80
2022-23	5399.19	2858.36	2542.33	3769.39	2482.90	1430.21	1392.20	1634.61	2310.99	1615.72	449.35	1089.64	26974.91
2023-24	5337.82	3049.03	3056.48	3950.54	3051.12	1472.63	1767.19	1601.70	2262.74	1782.92	512.38	1367.53	29212.08

(Source: Primary Data)



From the table, it can be easily observed that in the financial year 2020-21 and 2021-22 Traffic Receipts are lower. In the financial year 2020-21, whole world faced COVID-19 pandemic. Due to the outbreak of COVID-19, public transportation services were suspended to help curb the spread of the virus and ensure the safety of passengers and staff. This was the main cause for lower receipts in that financial year.

In the year 2021-22 over 95,000 employees of the Maharashtra State Road Transport Corporation (MSRTC) went on strike, triggered by demands for better wages, job security, and improved working conditions. The strike began on October 28, 2021, after failed negotiations over salary hikes, implementation of the 7th Pay Commission, and fears of privatization and job cuts. Employees also sought the merger of MSRTC with the state government for enhanced benefits and security. The strike disrupted transportation services across Maharashtra, especially during the Diwali

festive period, causing significant commuter inconvenience.

The state government responded by issuing legal notices, dismissing some workers, and hiring temporary replacements. After weeks of protests, partial agreements were reached on wage increases and service improvements, but the demand for MSRTC's merger with the state government remained unresolved. The strike highlighted ongoing issues in public sector labour relations and the future of state-run transport services in Maharashtra.

Traffic Receipts (Including Value of Concessions):

MSRTC provides various concessions to its commuters. State government reimburses the cost of such concessions. Following table and graphical representation shows traffic receipts which includes such value of concession.

Traffic Receipts (Including Value of Concessions)

(Amount in Lakhs)

Financial Year	Kolhapur	Sambhajinagar	Gadhinglaj	Ichalkaranji	Gargoti	Malkapur	Chandgad	Kurundwad	Kagal	Radhanagari	Gaganbawada	Ajara	DIVISION
2019-20	6556.42	4094.11	3451.94	4263.99	3432.99	1780.13	2125.96	2037.81	3449.13	2220.47	686.19	1531.14	35630.28
2020-21	2113.01	1392.88	1135.23	1568.92	1071.96	729.89	656.13	644.15	1200.37	718.17	219.70	516.81	11967.22
2021-22	2775.78	1126.45	1056.85	1506.27	1049.96	737.71	648.83	604.08	882.62	583.42	155.77	469.27	11597.01
2022-23	6366.30	3729.00	3475.27	4669.26	3398.55	1797.52	1818.75	2180.58	2988.56	2094.28	575.57	1446.74	34540.35
2023-24	8054.76	4939.92	4972.30	6371.11	5108.24	2344.69	2691.03	2743.45	3678.78	2973.81	852.37	2117.70	46848.17

(Source: Primary Data)

Earning per Kilometre:

Earnings Per Kilometre (EPK) is a metric used to assess the financial performance of the organization based on its revenue generation from the services provided. It measures the revenue MSR TC earns for every kilometre its buses travel. This is an important indicator for evaluating the operational efficiency and profitability of the corporation.

It is calculated as:

Earning Per Kilometre =

$$\frac{\text{Total Revenue from Operations}}{\text{Total Kilometers Travelled by Buses}}$$

It helps determine whether its services are financially sustainable or if adjustments are needed to improve earnings. It also helps in identifying areas for improvement, such as increasing passenger occupancy or optimizing routes to maximize earnings per kilometre.

Earning per Kilometer

(Amount in Rs.)

Financial Year	Kolhapur	Sambhajinagar	Gadhinglaj	Ichalkaranji	Gargoti	Malkapur	Chandgad	Kurundwad	Kagal	Radhanagari	Gaganbawada	Ajara	DIVISION
2019-20	36.05	30.39	28.31	33.01	29.38	29.91	28.32	30.81	27.62	26.02	31.08	27.87	30.53
2020-21	28.85	28.13	25.46	30.02	25.42	26.78	24.60	25.19	25.52	23.64	23.93	23.74	26.69
2021-22	37.74	30.64	31.23	34.02	31.32	31.52	29.73	28.49	29.58	25.91	29.43	28.09	32.11
2022-23	38.68	34.61	32.72	37.90	34.90	32.16	30.16	32.79	33.07	31.14	33.75	30.47	34.51
2023-24	36.54	33.12	32.71	35.55	34.31	31.80	31.69	31.46	31.44	31.14	33.58	31.46	33.48

(Source: Primary Data)

The above table show earning per kilometre of MSRTC Kolhapur division. From financial year 2019-20 to 2023-24 Earning per Kilometer has upward trend with average Rs. 31.46.

Cost per Kilometer:

It is a metric that measures the total operating cost incurred by MSRTC for every kilometre its buses travel. It is a crucial financial indicator used to evaluate the efficiency and sustainability of its operations. The cost per kilometre helps

MSRTC to understand its operational expenses and compare them against its revenue (like Earnings Per Kilometer) to assess profitability.

Cost Per Kilometer =

$$\frac{\text{Total Operating Cost}}{\text{Total Kilometers Travelled by Buses}}$$

Total Operating Costs: This includes all the costs associated with running MSRTC's buses and related operations. They can be explained as under:

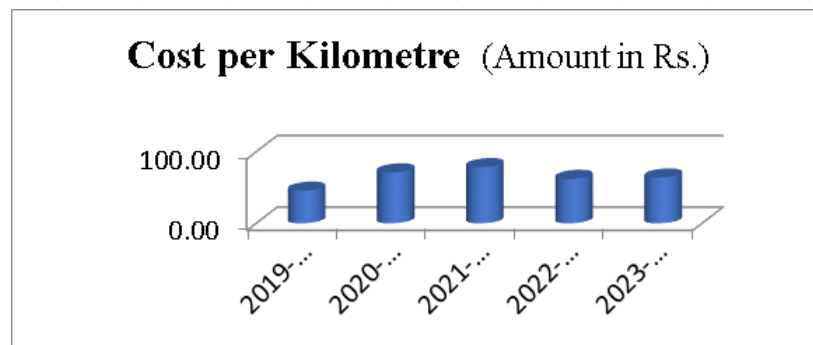
1. **Fuel Costs:** The cost of diesel or other fuels used to run the buses.
2. **Driver and Staff Salaries:** Compensation paid to the drivers, conductors, and other operational staff.
3. **Maintenance and Repairs:** Regular maintenance, spare parts replacement, and repair costs for the buses.
4. **Depreciation:** The reduction in value of the buses over time due to wear and tear.
5. **Insurance:** Costs associated with insuring the buses.
6. **Other Miscellaneous Costs:** These could include tolls, parking fees, and administrative overheads.

This table and graph indicate cost per kilometre of Kolhapur division for respective financial years.

Cost per Kilometer

(Amount in Rs.)

Financial Year	Kolhapur	Sambhajnagar	Gadhinglaj	Ichalkaranji	Gargoti	Malkapur	Chandgad	Kurundwad	Kagal	Radhanagari	Gaganbawada	Ajara	DIVISION
2019-20	47.77	46.05	43.69	46.24	44.88	45.17	41.73	48.58	45.10	44.20	47.93	45.82	45.63
2020-21	69.40	73.84	70.38	69.08	74.37	64.53	67.01	75.45	72.15	76.32	71.53	71.47	71.16
2021-22	71.23	85.97	79.92	74.77	82.80	72.00	75.33	77.50	85.53	85.43	94.46	83.92	78.53
2022-23	62.38	63.94	61.57	60.07	62.17	59.87	58.04	60.37	65.01	63.21	70.30	64.20	62.13
2023-24	65.33	65.33	64.28	64.08	64.99	61.89	56.71	63.33	67.03	61.84	68.48	62.60	64.00



Cost Per Kilometre helps MSRTC in identifying areas where costs can be reduced. If Cost per Kilometre is compared with Earning per Kilometre profitability can be evaluated. Greater **Earning per Kilometre than Cost per Kilometre** means MSRTC is making a profit, but if cost per kilometre is greater than Earning per Kilometre means, MSRTC may be operating at a loss on certain routes or services, indicating a need for operational adjustments. Cost Per Kilometre is also helpful in making strategic decisions, such as whether to introduce new routes, invest in more fuel-efficient buses, or reduce the number of trips on less profitable routes, etc.

Margin:

Margin typically refers to the profit margin — a measure of the financial health of the organization, indicating the difference between revenue (what MSRTC earns) and costs (what it spends) relative to its overall revenue. It helps MSRTC understand how efficiently it is converting its revenues into profits and whether its operations are financially sustainable.

The Gross Profit Margin:

The gross profit margin refers to the difference between **revenue** and **direct operating costs**, specifically the costs directly tied to running the buses (like fuel, maintenance, and driver salaries).

Operating Profit Margin:

The operating profit margin considers the **total operating costs** (including both direct costs and fixed costs like administrative overheads) and gives a clearer picture of how much profit MSRTC makes from its overall operations, after covering all its costs but before considering non-operating expenses (like interest or taxes).

Net Profit Margin:

The net profit margin reflects the final profitability of MSRTC after all expenses have been deducted, including interest, taxes, and other non-operating costs. It shows the overall financial health of the organization.

$$\text{Net Profit Margin} = \frac{\text{Net Profit (Revenue - Total Cost)}}{\text{Revenue}} \times 100$$

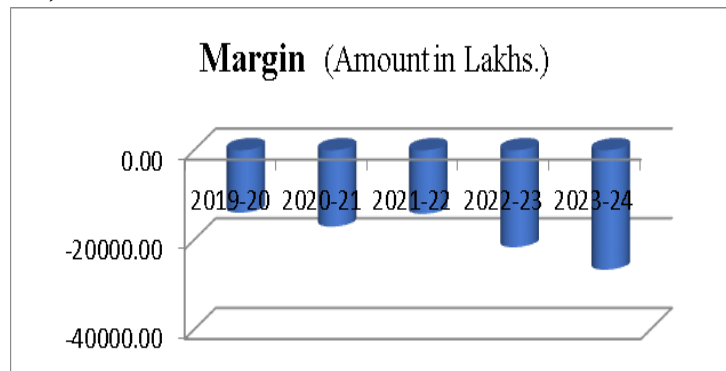
This margin provides the clearest picture of MSRTC's overall profitability, showing how much of its revenue translates into actual profit after all expenses.

Margin

(Amount in Lakhs)

Financial Year	Kolhapur	Sambhajinagar	Gadhinglaj	Ichalkaranji	Gargoti	Malkapur	Chandgad	Kurundwad	Kagal	Radhanagari	Gaganbawada	Ajara	DIVISION
2019-20	-1850.85	-1652.16	-1395.18	-1376.85	-1341.20	-726.75	-804.31	-883.80	-1658.45	-1172.68	-302.46	-756.69	-13921.38
2020-21	-2695.85	-1930.56	-1596.03	-1811.38	-1627.48	-893.51	-944.53	-1079.66	-1896.63	-1321.28	-372.73	-850.19	-17019.83
2021-22	-2253.97	-1742.50	-1310.79	-1514.27	-1367.40	-800.40	-797.00	-839.56	-1417.76	-1078.43	-293.27	-769.36	-14184.72
2022-23	-3308.00	-2422.45	-2240.74	-2205.37	-1939.55	-1231.86	-1286.65	-1374.59	-2231.17	-1664.17	-486.67	-1205.85	-21597.08
2023-24	-4205.27	-2965.42	-2950.55	-3170.03	-2727.85	-1393.61	-1395.26	-1622.34	-2560.92	-1757.46	-532.59	-1353.06	-26634.36

(Source: Primary Data)



From the table and graph, it can be easily observed that Net Profit Margin of MSRTC Kolhapur Division **is negative**. It means it is operating at a loss. Total costs of running its operations exceed its total revenues, resulting in a negative value for the net profit margin. In simpler terms, MSRTC is spending more than it earns, leading to a financial loss.

It needs to reassess its operations, cut costs, or find ways to increase revenue (e.g., by

improving passenger load, reducing fuel consumption, or optimizing routes).

Passengers carried:

Passengers Carried is the total count of individuals who board MSRTC buses, whether they are traveling on short or long routes, intercity or intracity services, or local or express services. This can be measured for different time frames, such as daily, weekly, monthly, or annually, or for specific routes.

Passengers Carried

(Amount in Lakhs)

Financial Year	Kolhapur	Sambhajinagar	Gadhinglaj	Ichalkaranji	Gargoti	Malkapur	Chandgad	Kurundwad	Kagal	Radhanagari	Gaganbawada	Ajara	DIVISION
2022-23	131.64	126.08	93.99	46.94	57.34	81.04	96.01	55.41	14.12	55.63	0.00	0.00	758.20
2023-24	160.38	159.14	118.53	55.48	71.16	101.37	129.49	71.98	20.85	65.21	0.00	0.00	953.59

(Source: Primary Data)

Above table indicates Passengers Carried during the two financial years by Kolhapur Division and following is the table

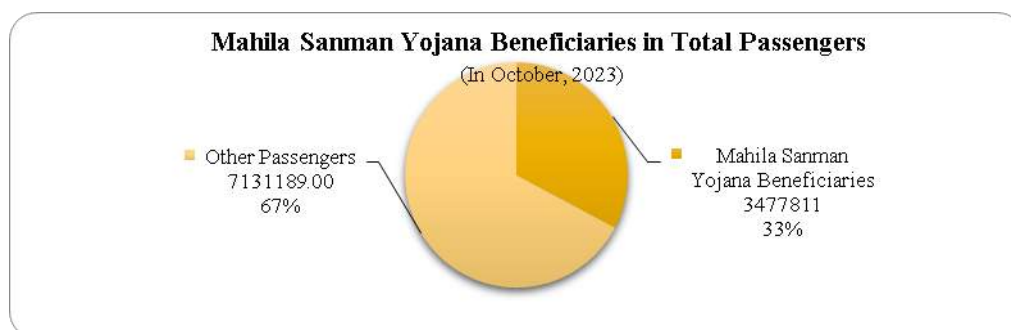
showing the women passengers who have benefited by the 'Mahila Sanman Yojana'

Mahila Sanman Yojana

Number of Beneficiaries

Month	KLP	SBN	GDL	ICL	GRT	MLK	CHD	KWD	KGL	RDN	GBD	AJR	DIVN
Mar-23	149238	139848	202644	165485	117481	75038	68212	120133	136787	80161	21175	66500	1342702
Apr-23	389820	356484	421284	490959	267702	180735	173964	280676	327812	216317	54480	169366	3329599
May-23	470409	421845	576164	612279	341898	224138	222967	324876	371060	257127	68944	228666	4120373
Jun-23	407979	400423	468198	560852	303680	202926	200959	323896	367089	233482	66765	191489	3727738
Jul-23	361805	324410	388823	562554	269274	170247	134328	322979	346666	200066	51610	140654	3273416
Aug-23	407132	394038	417332	609217	330181	189176	173636	350417	366928	254457	64117	161757	3718388
Sep-23	370136	324350	374094	509212	288137	156503	166265	276734	358410	198230	57727	147716	3227514
Oct-23	406498	384251	400445	557665	301951	180334	175446	287938	342814	222625	61478	156366	3477811
Nov-23	416692	374246	421327	566332	306088	171200	155177	301341	350314	212767	61193	157197	3493874
Dec-23	441851	413809	445288	611773	340131	192409	183140	342053	384725	228892	62592	163327	3809990
Jan-24	442667	404599	433988	580901	331423	179442	178859	322460	373825	225232	56177	164974	3694547
Feb-24	404651	365403	406115	587777	306321	159934	177482	296493	350208	209757	54340	159615	3478096
Mar-24	383402	387007	450751	611063	343888	199600	194809	315132	371977	239750	65486	180318	3743183

(Source: Primary Data)



Mahila Sanman Yojana has likely led to an increase in the number of passengers on MSRTC buses, specifically among women. By offering subsidized fares, the scheme has made public transportation more affordable and accessible for women, which has encouraged more women to use MSRTC buses for their daily commutes, education, and other purposes. This increase in women passengers, in turn, contributes to higher overall ridership on MSRTC services. With the introduction of the fare discount, more women from rural and semi-urban

areas who previously faced financial barriers are likely now able to travel more often.

In discussions with MSRTC employees, it was noted that when women from rural areas utilize the bus services, they often travel with their family members. This is particularly evident in cases where women are traveling for pilgrimages or other community-based activities. The Mahila Sanman Yojana, by making travel more affordable for women, not only increases the number of women passengers but also indirectly boosts overall ridership by

encouraging family travel. This trend highlights the broader social and cultural factors influencing transportation patterns, where the primary female passengers often act as catalysts for family mobility, thereby increasing the overall demand for MSRTC services.

Conclusions:

1. In 2020-21, public transport was suspended due to COVID-19 to ensure the safety of passengers and staff, leading to a sharp drop in revenue. In 2021-22, over 95,000 employees of the Maharashtra State Road Transport Corporation went on strike which further reduced traffic receipts and added to the financial challenges.
2. The Maharashtra State Road Transport Corporation (MSRTC) has been struggling financially due to its long-standing issue of higher expenses compared to its revenue. Despite efforts to increase income, the corporation's operational costs, including salaries, maintenance, fuel, and other overheads, have remained disproportionately high, leading to consistent losses.
3. The introduction of the Mahila Sanman Yojana, a scheme aimed at providing affordable and accessible transportation for women, resulted in a significant increase in passenger numbers. This surge in ridership

brought in additional revenue and highlighted the scheme's success in attracting more commuters.

4. However, lack of effective cost-control measures, combined with the rising operational expenditures, has prevented the MSRTC from overcoming its financial challenges. As a result, even with increased earnings from higher ridership, the corporation continues to operate at a loss.
5. It needs to reassess its operations, cut costs, or find ways to increase revenue (e.g., by improving passenger load, reducing fuel consumption, or optimizing routes).

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Impact of Technology in Business Management

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Abstract:

This research paper explores the role of technology in business management, examining both its positive and negative impacts on organizational operations and decision-making. The study aims to provide a comprehensive understanding of how technological advancements are transforming business practices and the challenges they introduce. The research addresses two primary objectives to study the core concepts of technology and business management and to analyze the benefits and drawbacks of technology integration in business. Based on secondary data from various books, journals, and websites, the paper discusses how technology enhances communication, collaboration, efficiency, and productivity, while also exploring issues such as high implementation costs, cybersecurity threats, job displacement, and privacy concerns. The findings highlight the necessity for businesses to adopt a balanced and strategic approach to technology adoption, ensuring that they leverage its advantages while mitigating its associated risks. The conclusion emphasizes the importance of responsible technology use for sustainable success in an increasingly digital world.

Key words: *Technology, Business Management, CRM, Global Market Access, Job Displacement, Workforce Resistance*

Introduction:

In today's rapidly evolving business environment, technology has become an integral part of organizational management and operations. The fusion of technology and business management has revolutionized the way businesses operate, communicate, and make strategic decisions. This research paper delves into the concept of technology and its pivotal role in business management, exploring both the positive and negative impacts of technology on business practices. The objective of this study is to examine how technological advancements are reshaping business operations and to evaluate their benefits and challenges.

The study addresses two primary objectives: first, to understand the core concepts of technology and business management, and second, to analyze the

positive and negative effects of technology on business management practices. The paper relies on secondary data sourced from various books, journals, and websites, providing a comprehensive overview of the current state of technology in business management.

As organizations increasingly rely on technology for enhancing efficiency, productivity, and decision-making, they also face significant challenges such as cybersecurity risks, high implementation costs, and the displacement of workers. The research aims to highlight both the opportunities and risks associated with technology, offering insights for businesses to navigate the complexities of technological integration.

By examining the concepts and impacts of technology in business

management, this study offers valuable insights into the ways businesses can harness the power of technology while mitigating its associated risks. The conclusion emphasizes the need for a balanced and strategic approach to technology adoption, ensuring that businesses can thrive in an increasingly digital and interconnected world.

Objectives of the Study:

This study carried on the basis of following objectives-

1. To study the concept of technology and business management.
2. To know the positive and negative impact of technology in business management.

Methodology of the Study:

Present study is based on secondary source of data. The secondary data and other information has been collected from various books, journal, websites are also used for collecting the required information.

Concept of Technology :

Technology refers to the application of scientific knowledge, tools, methods, and systems to solve problems, enhance efficiency, and achieve specific objectives. It encompasses a broad range of innovations and creations, from simple tools like the wheel and lever to advanced systems like artificial intelligence, robotics, and quantum computing.

Concept of Business Management:

Business Management refers to the process of organizing, planning, leading, and controlling the activities and resources of a business to achieve its goals efficiently and effectively. It encompasses a wide range of functions, roles, and strategies aimed at ensuring the smooth operation and growth of an organization.

Positive Impact of Technology in Business Management:

Positive impact of technology in business management explain with the following points

Enhanced Communication and Collaboration:

Technology has revolutionized how businesses communicate internally and externally. Tools like email, instant messaging, and video conferencing allow for seamless communication across different locations. Cloud-based platforms such as Microsoft Teams and Slack enable real-time collaboration, ensuring that teams can work together effectively despite geographical barriers.

Increased Efficiency and Productivity:

Automation and artificial intelligence (AI) have significantly improved the efficiency of business processes. Tasks that previously required hours or days can now be completed in minutes using technologies like robotic process automation (RPA). Employees can focus on strategic and creative initiatives while repetitive, time-consuming tasks are automated.

Better Data Management and Decision-Making:

Advanced data analytics tools allow businesses to collect, organize, and analyze large amounts of data efficiently. Big data and predictive analytics help organizations anticipate market trends, understand customer behavior, and make informed, data-driven decisions. Business intelligence (BI) tools enable managers to visualize data and identify actionable insights for better strategic planning.

Cost Reduction: Technologies like IoT and automation reduce operational costs by improving process accuracy and efficiency. For example, IoT-enabled supply chain monitoring optimizes inventory management, reducing wastage and storage costs. Cloud computing eliminates the need for costly on-premise infrastructure, offering scalable and cost-effective solutions.

Improved Customer Relationship Management (CRM):

CRM software like

Sales force and Hub Spot provides businesses with tools to track and analyze customer interactions. This enables organizations to deliver personalized customer experiences, foster loyalty, and improve overall satisfaction. Social media and digital marketing tools further strengthen customer engagement and brand visibility.

Global Market Access: Technology enables businesses to reach global markets with ease. E-commerce platforms, digital advertising, and online marketplaces allow companies to expand their customer base internationally. Tools like payment gateways and global shipping solutions simplify cross-border transactions.

Innovation and Competitive Advantage: Technology drives innovation by offering businesses new ways to create value. Companies that adopt emerging technologies like AI, machine learning, and blockchain often gain a competitive edge by delivering unique products and services or optimizing operations more effectively than competitors.

Flexibility and Remote Work: Cloud computing and collaboration tools have made remote work viable and efficient. Employees can access resources, communicate, and collaborate from anywhere, enabling businesses to adapt to changing work environments and attract talent globally.

Negative Impact of Technology in Business Management:

Negative impacts of technology in business management explain with the following points

High Implementation Costs: Implementing advanced technology often requires significant financial investment. Costs associated with purchasing software, upgrading infrastructure, and training employees can be prohibitive, especially for small and medium-sized enterprises (SMEs).

Moreover, ongoing maintenance and subscription fees add to long-term expenses.

Cybersecurity Threats: Increased reliance on technology exposes businesses to cybersecurity risks, such as data breaches, hacking, and ransomware attacks. Sensitive customer data, proprietary information, and operational systems can be compromised, leading to financial losses, reputational damage, and legal liabilities.

Job Displacement and Workforce Resistance: Automation and artificial intelligence (AI) have replaced many manual and repetitive jobs, leading to job losses in certain sectors. This creates challenges for displaced workers and can lead to resistance from employees who fear losing their roles. Additionally, adapting to new technologies may require retraining, which not all employees may be willing or able to undertake.

Overreliance on Technology: Excessive dependence on technology can make businesses vulnerable to disruptions caused by system failures, software bugs, or power outages. For instance, downtime in cloud services or ERP systems can halt operations, leading to revenue loss and customer dissatisfaction.

Privacy Concerns: The collection and analysis of large volumes of customer and employee data raise significant privacy issues. Businesses must navigate stringent regulations like the General Data Protection Regulation (GDPR) to ensure compliance, or risk heavy fines and loss of trust.

Complexity and Integration Challenges: Integrating new technologies with existing systems can be complex and time-consuming. Compatibility issues between legacy systems and modern solutions can disrupt workflows and delay the benefits of technological investments. Poorly implemented technologies can also lead to inefficiencies instead of improvements.

Social Isolation and Reduced Interpersonal Interaction: Overuse of communication technologies, such as emails

and messaging platforms, can reduce face-to-face interactions among employees. This may hinder relationship building, creativity, and collaboration in some cases, leading to a decline in organizational culture.

Rapid Obsolescence: Technology evolves quickly, and businesses must frequently upgrade systems to remain competitive. This constant need for updates can strain budgets and create operational disruptions. Companies that fail to keep up with technological advancements risk falling behind their competitors.

Ethical Concerns: The use of AI and data analytics raises ethical issues, such as bias in algorithms and lack of transparency in decision-making. Businesses must ensure that their use of technology aligns with ethical standards and does not inadvertently harm employees, customers, or society.

Environmental Impact: The production, use, and disposal of technology contribute to environmental issues, such as electronic waste and carbon emissions. Businesses must consider sustainable practices when adopting technology, such as recycling old devices and optimizing energy consumption.

By acknowledging these challenges, businesses can take proactive steps to mitigate risks and ensure that their technological investments are both effective and responsible.

Conclusion:

In conclusion, the integration of technology into business management has brought both significant advantages and challenges. On the positive side, technology has revolutionized communication, collaboration, and efficiency, enabling businesses to make data-driven decisions, reduce operational costs, and enhance customer relations. Moreover, it has provided organizations with global reach, fostered innovation, and allowed flexibility in the workforce through remote work options. However, the negative impacts cannot be overlooked, including high

implementation costs, cybersecurity risks, job displacement, and concerns regarding overreliance on technology. Ethical issues, privacy concerns, and environmental impacts also pose challenges that businesses must address proactively.

Ultimately, businesses must strike a balance between leveraging technology for growth and managing its associated risks. Adopting a strategic approach to technology implementation, investing in cybersecurity measures, and focusing on employee retraining can help organizations maximize the benefits while mitigating the potential downsides. Technology, when used responsibly, has the power to transform business management and propel organizations toward sustainable success in an increasingly digital world.

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Performance of Maharashtra in India's Export of Agriculture Commodities

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Abstract:

Agriculture trade has been playing vital role in achieving economic growth and alleviating poverty for developing countries like India. Figures from last several years describes India's agriculture export is continuously increasing and the country has developed export competitiveness also. India's agricultural export touched the highest ever level of US\$50.21 billion in the year 2021-22. Considering these, the present study examined the performance of Maharashtra in comparison with India's export of agriculture commodities. In the present study Maharashtra's export of major fruits and vegetables in comparison with India is analysed. Study revealed that in the year 2021-22 India's revenue through fruit export was Rs. 4903 crore in which Maharashtra's share was Rs. 3714 crore. Maharashtra's fruit export of Mango, Grapes and Orange has been playing crucial role in the fruit export of India, in the year 2021-22 Maharashtra's revenue in India's revenue of Mango, Grapes and Orange export was 86.54%, 82.10% and 94.08% respectively.

Keywords: Agriculture, Export, Commodity, Fruits.

Introduction:

Agriculture is the main occupation of majority Indians and also major economic factor of India. The role of agriculture growth in uplifting income level of rural people is inherent in country like India. The country has increased agriculture production and become self-sufficiency in the majority of the crops. India has historical background of export of spices and cotton. India's vast production base of agriculture products offers big opportunities for export. India is the largest producer as well as largest exporter of cereal products in the world. Rice occupies the major share in India's total cereals export. Maharashtra is in the top positions in production of Cereals, pulses, oil seeds, dairy products, fisheries and animal products and also leading state in the India for export of agriculture produce. Maharashtra stood first in the export of horticulture crops of country which includes

fruits like grapes, banana, orange etc. and in many vegetables also.

Objectives:

The study focuses on examining the trends and growth of fruits and vegetables exports of the India and Maharashtra.

Scope of the Study:

The present study focuses on comparative analysis of India and Maharashtra's Fruits and vegetables export during the year 2019-20 to 2021-22.

Research Methodology:

This research paper is descriptive in nature. This study is mainly based on secondary data. The data required for such study has been collected from secondary sources such as books, journals, articles, research papers and internet.

Review of Literature:

Bhatia, J.K. (2021) explores the growth and output of agricultural exports from India during the period 2000-2019. It is revealed that Indian agricultural exports have increased, but the proportion of agricultural exports to the country's overall exports has decreased. Study concluded that Indian agriculture export will be more in the future, particularly rice and spices. C Paramasivan, & R Pasupathi (2017) analyzed the status of agro based food products and its exports performance of India. ResearcherS. explore that Agro based industries are playing important role and increases employment to the farmers, agricultural workers, wholesalers, retailers, exporters, Malini L Tantri (2021) provides a detailed analysis of the trends and characteristics of agricultural exports in India and also critically evaluates the trajectories of agriculture policy making in India. Vinod Kumar (2021) in his research analyse the trends and performance of agricultural trade during 1990-91 to 2020-21. He explore that the largest markets for India's agricultural products are USA, China, Bangladesh, UAE, Vietnam, Saudi Arabia, Indonesia, Nepal, Iran and Malaysia. The study also revealed that share of agricultural exports to agricultural gross value added (GVA) increased 4.6 per cent from 1990-91 to 2020-21.

Agricultural Export of India:

India has historical background of export. Historically, spices and cotton goods have been exported from India to the rest of the world. But in recent years India's export is not limited to spices and cotton only. Now days, India supplies many agricultural commodities, such as tea, coffee, rice, cashew, oil meals, fruits, vegetables, meat in international markets. Over the years, India has developed export competitiveness in certain specialised products (ITA, 2021). In terms of global agriculture production, India stands second, whereas with 2.2 per cent share in global exports, it ranks in the eighth position (WTO, 2019). Recent figures explore that, India is among the top ten exporters of agricultural products in the world. The Agriculture Export Policy (AEP) 2018 of the Government of India (GoI), aims at achieving an export target of US\$ 60 billion by 2022 and US\$ 100 billion within a few years, thereafter. In actual, during the financial year 2021-22, India's agricultural export touched the highest ever level of US\$50.21 billion even under global crisis of Covid; this is indeed great achievement even under such critical condition. As per provisional data realised by department of commerce India's total agricultural export were US\$53.15 billion during the financial year 2022-23.

Table No. 1: Fruits Export of Maharashtra and India

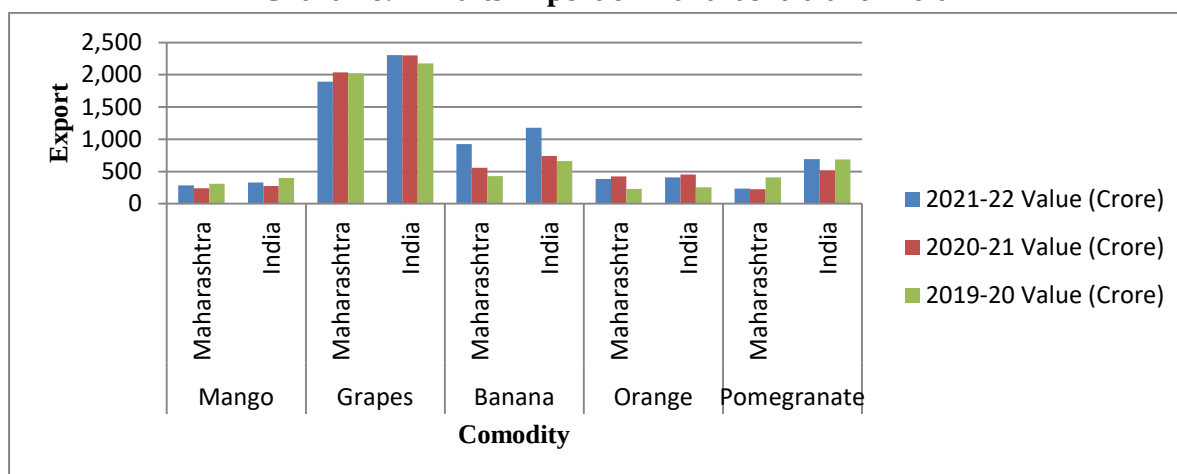
Sr. No.	Commodity	Export	2021-22		2020-21		2019-20	
			Quantity (MT)	Value (Crore)	Quantity (MT)	Value (Crore)	Quantity (MT)	Value (Crore)
1	Mango	Maharashtra	20,874	283	19,184	241	29,884	307
		India	27,873	327	21,034	272	49,657	400
2	Grapes	Maharashtra	1,65,245	1,890	1,79,126	2,034	1,53,693	2,019
		India	2,63,076	2,302	2,46,107	2,298	1,93,690	2,177
3	Banana	Maharashtra	2,73,381	923	1,63,696	556	1,08,961	429
		India	3,76,572	1,179	2,32,518	740	1,95,746	659
4	Orange	Maharashtra	1,07,826	382	1,46,565	424	84,353	230
		India	1,19,548	406	1,62,540	454	93,879	254
5	Pomegranate	Maharashtra	16,381	236	17,724	224	32,137	408
		India	99,043	689	67,977	517	80,548	688

(Source: Commissionerate of Agriculture, GoM)

Table No. 1 shows details of five major fruit exports from Maharashtra and India during 2019–20 to 2021–22. Data shows that grapes occupy number one in total fruit exports of India and Maharashtra as well. It shows that grape exports from India have increased constantly, but there are ups and downs in Maharashtra's grape exports. In 2019–20, Maharashtra's share in India's grape exports was 92.74%, which decreased up to 82.10% in 2021–22. In the fruit exports of India and Maharashtra, banana and orange are the two most important fruits after grapes. Data shows that in 2021–22, Maharashtra's average

share in total fruit exports of India was 75.05%. Considering Maharashtra's share in India's fruits export in the year 2021-22 mangos have 86.54% share, grapes have 82.10% share, bananas have 78.28% share, oranges have 94.08% share, and pomegranates have 34.25% share. It shows that among all fruits exported by India in 2021–22, Maharashtra's share in orange exports is very high (94.08%), whereas pomegranates occupy a low share (34.25%). Comparing Maharashtra's fruits export during the study period, banana is the only fruit that shows continuous increasing trend.

Chart No. 1 Fruits Export of Maharashtra and India



Above chart No.1 indicates that India's grapes export increased from Rs. 2177 crore in 2019-20 to Rs. 2302 crore in 2021-22; on the other hand, Maharashtra's grape export decreased from Rs. 2019 crore in 2019-20 to Rs. 1890 crore in 2021-22. Considering the total revenue generated through fruit exports by Maharashtra (Rs. 3714 crore) in 2021–22, grapes contributed 50.88% of the total revenue, followed by bananas at 24.85%, oranges at 10.28%, mangoes at 7.61%, and pomegranates at 6.35%. Data shows that, in 2021–22, India

generated Rs. 4903 crore through fruit exports, of which Maharashtra's share was Rs. 3714 (75.73%). Out of India's total fruit export (Rs. 4903 crore) in 2021–22, Maharashtra's grape export was Rs. 1890 crore (38.54%), followed by bananas at Rs. 923 (18.82%) crore, oranges at Rs. 382 crore (7.79%), mangoes at Rs. 283 (7.61%) crore, and pomegranates at Rs. 236 crore (6.35%). Grapes contributed 46.95% of India's total fruit export in 2021–22, and on the other hand, Maharashtra's revenue was 82.10% of India's total grapes export in 2021–22.

Table No. 2 Vegetables Export by Maharashtra and India

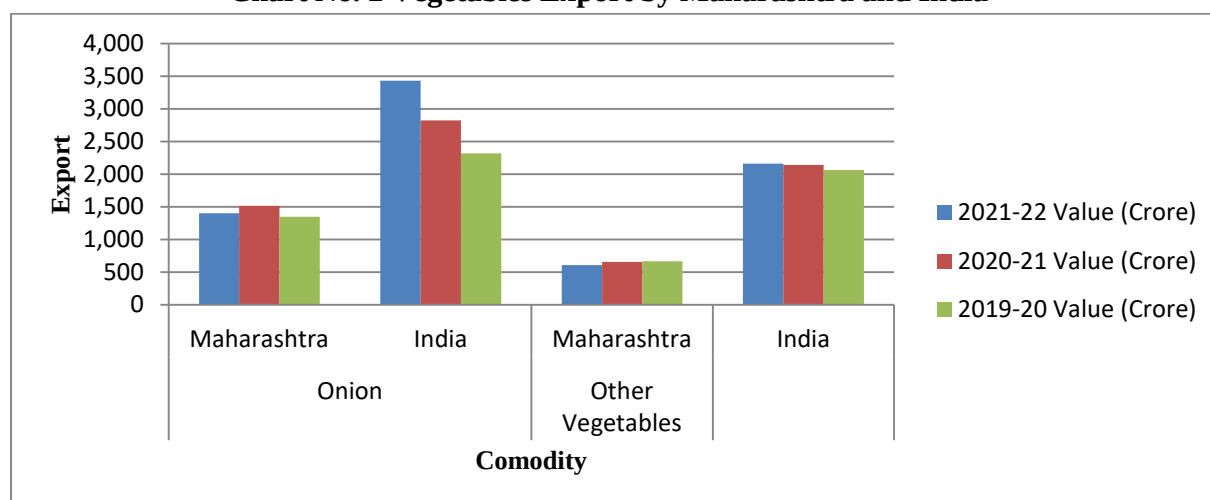
Sr. No.	Commodity	Export	2021-22		2020-21		2019-20	
			Quantity (MT)	Value (Crore)	Quantity (MT)	Value (Crore)	Quantity (MT)	Value (Crore)
1	Onion	Maharashtra	5,78,473	1,400	7,96,898	1,515	7,29,563	1,350
		India	15,36,905	3,431	15,75,923	2,822	11,48,924	2,319
2	Other Vegetables (Other than Onion)	Maharashtra	1,09,242	607	1,12,363	655	1,31,023	669
		India	7,70,233	2,161	6,82,086	2,143	7,54,007	2,065

(Source: Commissionerate of Agriculture, GoM)

Table No. 2 shows export of onion and other vegetables of Maharashtra and India from 2019-20 to 2021-22. Data shows that Maharashtra's share in onion export of India was 58.23% in the year 2019-20, which decreased up to 53.68% in the next year and it further decreased up to 40.80% in the year 2021-22. Above table explore that the Maharashtra's share in vegetables (Other than Onion) export was 32.39% in the year

2019-20 which decreased up to 31.03% in the next year and it further decreased up to 28.08% in the year 2021-22. Data shows that onion export of Maharashtra and India was increased after 2019-20 but it decreased after 2020-21. Figures showed that Maharashtra's export of other vegetables has been continuously decreased during the three years of study period. (C)

Chart No. 2 Vegetables Export by Maharashtra and India



Above chart shows vegetable export of India was Rs. 4384 crore in the year 2019-20. It showed a continuously increasing trend and reached up to Rs. 5592 crore in 2021-22. But considering vegetable export of Maharashtra, it was Rs. 2019 crore in 2019-20 which decreased up to Rs. 2017 in 2021-22.

Findings:

1. Maharashtra has been playing crucial role in fruit export of India.
2. Mangos, Grapes and Mango are the three important fruits of Maharashtra which also share major part of fruits export of India.
3. In the year 2019-20 Maharashtra's share was 81.21% of India's total fruits export, which decreased up to 75.74% in 2021-22.

4. India's fruits export is increased by 17.35% from the year 2019-20 to 2021-22 whereas Maharashtra's fruits export is increased by 9.46% in the same period.
5. During 2019-20 to 2021-22 Maharashtra's share in India's onion export was decreased by 17.41% and other vegetables decreased by 4.31%.
6. In the year 2021-22 India generated Rs. 4903 crore through fruit export out of which Maharashtra's share was Rs. 3714 crore.
7. Maharashtra's fruit export of Mango, Grapes and Orange has been playing crucial role in the fruit export of India, in the year 2021-22 Maharashtra's revenue in India's revenue of Mango, Grapes and Orange export was 86.54%, 82.10% and 94.08% respectively.

Conclusion:

Over the years, Indian agricultural products have come to hold a crucial role in the global market, this exhibit that agriculture production also play vital role in earning foreign currency for India. There are several agriculture commodities which got key export spot in India's overall export. Study reveals that Maharashtra has been playing crucial role in fruit export of India. In the year 2021-22 Maharashtra's share in fruit export of India was 75.74 percent, it indicates that among all states of India Maharashtra is leading state in agriculture export. Mangos and Grapes are the two important fruits of Maharashtra which occupy major share in agriculture export of India. India as well as Maharashtra's fruits export has been increases over the period.

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Role of Artificial Intelligence in Commerce Education

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Abstract:

Artificial intelligence has become a very important factor nowadays. Artificial intelligence gives us more information in less time than we need. We can create information as needed. Artificial intelligence is currently being used in education. Artificial intelligence is currently being used extensively in the field of commerce. Many transactions, records, purchases, sales, import and export information can be recorded on the basis of artificial intelligence.

Keywords- *Artificial intelligence, AI , e-Commerce, NEP etc.*

Introduction:

In the era of modernization, artificial intelligence is being specially used. Artificial intelligence is seen to be especially used in the commercial sector. Artificial intelligence is emerging as an enabling option for research students while working for research purposes. The impact of artificial intelligence on employment is increasingly visible. Producers, advertising exporters have to work hard to survive in the competition. In the new education policy, the commerce sector will be very advanced in the coming time.

Objectives of the Study:

- 1) To study the Concept of artificial intelligence.
- 2) To study the types of artificial intelligence.
- 3) To study the ethical Considerations of artificial intelligence.
- 4) To study the future trends of artificial intelligence.
- 5) To give proper Suggestion.

Significance of the Study:

Artificial intelligence will gain special importance in the future. Artificial intelligence is likely to be used exclusively in the industrial sector. In this research writing, the researcher has tried to present accurate information about artificial intelligence. The information in this article may help other researchers to generate new information. It is necessary to use the concept of artificial intelligence with positive thinking. The new generation can use it effectively to benefit it a lot. Artificial intelligence is contributing immensely while working in the field of commerce.

Research Methodology:

The present study is based on secondary source of data. Secondary data is collected through various books, Journals, Websites and Internet. For the collection of primary data the researcher has paid visit to market committees (Secretary), farmers and agents .It is after having detailed discussion the present data is collected.

Data Collection:**Primary Data:**

For the collection of primary data the researcher has paid visit to market committees (Secretary), farmers and agent's. It is after having detailed discussion the present data is collected.

Secondary Data:

The secondary data is derived from the following sources:

1. Books
2. Magazines
3. Journals
4. News paper

Concepts:

Machine Learning (ML): A subset of AI that involves training algorithms on data to enable them to make predictions or decisions without explicit programming.

Deep Learning: A type of ML that uses neural networks with many layers (deep networks) to analyze various factors of data. It has been particularly effective in image and speech recognition.

Natural Language Processing (NLP): The ability of a machine to understand and interpret human language as it is spoken or written. Applications include chatbots and translation services. Artificial Intelligence (AI) refers to the simulation of human intelligence in machines programmed to think and learn.

Types of Artificial Intelligence:

Narrow AI (Weak AI): Designed for a specific task (e.g., voice assistants like Siri or Alexa, recommendation systems, etc.). - Most prevalent form of AI today. Examples: Virtual assistants (like Siri or Google Assistant), recommendation algorithms, and chatbots.

General AI (Strong AI): Hypothetical form of AI that possesses the ability to understand, learn, and apply knowledge in a generalized manner, similar to a human. Currently, this level of AI does not exist.

Super intelligent AI: A level of intelligence that surpasses human intelligence across all

Healthcare: AI is used for diagnosing diseases, personalized medicine, and managing healthcare records

Finance: Fraud detection, algorithmic trading, and risk management.

Transportation: Autonomous vehicles and traffic management systems.

Manufacturing: Robotics for production lines and predictive maintenance.

Entertainment: Content recommendation systems (like Netflix or Spotify), video game AI, and content creation.

Ethical Considerations:

- 1) Bias: AI systems can perpetuate or amplify biases present in training data.
- 2) Privacy: Concerns over data collection and surveillance.
- 3) Job Displacement: Automation may lead to job losses in certain sectors, raising questions about the future of work.

Future Trends:

- a) Explainable AI: Increasing focus on creating AI systems that provide transparent insights into their decision-making processes.
- b) AI in Edge Computing: Deploying AI algorithms on local devices to reduce latency and bandwidth use, enhancing real-time processing.
- c) Human-AI Collaboration: Developing AI systems that work alongside humans rather than replace them, enhancing productivity and decision-making.
- d) Regulation and Governance : As AI technology advances, there will likely be more emphasis on developing ethical guidelines and regulatory frameworks to ensure responsible AI use.
- e) AI is a rapidly evolving field with the potential to transform numerous aspects of society and industry. It

brings both opportunities and challenges that need to be carefully managed.

Increased integration of AI in everyday applications. Ongoing research in explainable AI, which aims to make AI decision-making processes more transparent. Advances in general AI, though this remains a long-term goal. AI continues to evolve rapidly, influencing various aspects of society, economy, and technology. Artificial Intelligence (AI) is a branch of computer science focused on creating systems capable of performing tasks that typically require human intelligence. Here's an overview of AI, including its types, applications, challenges, and future trends:

Conclusions:

The concept of artificial intelligence seems to be very useful nowadays. Artificial intelligence is likely to be used effectively in the field of commerce. The researcher has

tried to make an important statement about artificial intelligence. On the basis of artificial intelligence, it will be possible to do many tasks in the commercial sector, such as obtaining information about products, obtaining information about markets, trying to provide accurate information to customers, and providing more information in less time.

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The Rise of Online On-Demand Services and Challenges and Opportunities for Offline Retailers

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Abstract:

Traditional retail patterns have been upended by the quick growth of internet on-demand services, which presents serious difficulties for physical merchants. The main effects of this change are examined in this paper, including decreased foot traffic, heightened competition, and changing consumer expectations. It also looks at ways that offline stores might be able to adjust, such as implementing hybrid business models, offering individualized customer service, and incorporating technology. Internet services spur innovation and open the door to a more cohesive retail ecosystem, even though they also pose significant hurdles. Offline retailers can overcome potential threats from online service providers by strategically integrating online and offline elements and positioning themselves for long-term success in the evolving marketplace.

Keywords: *Traditional Retail Patterns, On-Demand Services, Heightened Competition Hybrid Business Model*

Introduction:

Online on-demand services, which provide previously unheard-of accessibility, variety, and convenience, have completely changed how consumers behave. (Murgai, 2022) With the advent of technology and the internet, people have several things available at their fingertips. (M, 2023) Be it getting repaired by a malfunctioning air conditioner or clearing a clogged tap, one can get things done with the click of their smartphone. Moreover, home services in India have turned out to be lifesavers for those who tend to switch their locations often. The sector has been experiencing steady growth in recent years and is able to expand its footprint beyond Tier I cities. (Saroj, 2018) With the rise of e-commerce giants like Amazon and on-demand delivery services like DoorDash, Zepto, Blinkit, Instacart, the retail industry has seen significant change.

Once the backbone of business, offline stores are now confronted with dwindling foot traffic, fierce competition, and pressure to change with the market. The market for online, on-demand services is expected to reach USD 6396.81 million by 2029, with a CAGR of 8.0% over the forecast period of 2022–2029, as per Data Bridge Market Research. (Singhal, 2022). This study is purely based on secondary data and examines the various ways that online on-demand services affect offline retailers and suggests ways to help them thrive.

Literature Review:

(Saroj, 2018)–Explores the evolution, current trends, challenges, and future opportunities in the Indian online retail market. It highlights how online retailing is transforming traditional retail practices, particularly with the rise of internet access,

smartphone usage, and digital payment systems. Key players like Amazon, Alibaba, Flipkart, and Snapdeal are analysed, showcasing their strategies, investments, and the competitive landscape. It emphasizes the increasing acceptance of online payments, the convenience of shopping, and the potential for market expansion into untapped regions. However, the author remains optimistic about the exponential growth of e-commerce, especially as infrastructure and technology improve.

(Hole et al., 2019)-Examines the significance of omnichannel retailing (OC), a strategy that integrates online and offline retail to provide a seamless customer experience. The study outlines the benefits of OC retailing, including enhanced customer engagement, increased consumer loyalty, and streamlined operations. It highlights the role of digital technology, data analytics, and customer behaviour in driving the adoption of OC strategies. Additionally, the study explores the practices of prominent OC retailers globally and in India, offering insights into their innovative approaches

(Murgai, 2022)- Discusses how on-demand services, fuelled by technological advancements, have revolutionized the service industry. It highlights the convenience, speed, and affordability of these services, which cater to the needs of urban, tech-savvy consumers. On-demand solutions, ranging from transportation, home services and food delivery have become integral to modern life. The study identifies the primary drivers of growth for the on-demand economy, such as the proliferation of smartphones, internet access, and consumer preference for convenience. The paper also examines the Indian on-demand service market, its challenges and its contributions to economic growth.

(M, 2023)-Explores the rise of e-commerce in India and its effects on traditional retail businesses. It highlights the growth of online shopping driven by internet penetration,

convenience, and changing consumer preferences. The study details the negative impact on offline retailers, such as declining customer loyalty, reduced profit margins, and competition from online discounts. However, it notes that some retailers adapt by offering personalized services, home delivery, and unique in-store experiences. It emphasizes that while e-commerce reshapes the retail landscape, businesses must strategize to balance its opportunities and challenges.

(Wang, 2023)-Explores how e-commerce has transformed the retail sector. It highlights the rapid growth of e-commerce and its effects, including intensified price competition, reduced in-store foot traffic, and changing consumer behaviour. To remain competitive, offline retailers are adopting strategies like omnichannel retailing, enhancing in-store experiences, leveraging data analytics, and forming strategic partnerships. It concludes that while e-commerce poses challenges, it also offers opportunities for innovation, with experiential shopping and advanced technologies key to future success.

Research Gap:

After a rigorous literature review researcher found that despite extensive research carried on the rise of online on demand services and its impact offline retailers. Limited research on how **small-scale and local retailers**, particularly in rural or semi-urban areas, are affected by e-commerce. Only few researchers able to figure out challenges faced by offline retailers. It has been also seen that available literature was sporadic and no researcher was able to outline future opportunities and strategies for offline retailers to overcome massive threat imposed due to technological advancement and change in consumer perception after covid pandemic.

Research Purpose and Significance:**Research Purpose:**

This study aims to understand the swift growth of online on-demand services and assess how they affect physical retailers and try to understand the elements propelling the expansion of online on-demand services. Researcher wants to understand the challenges offline retailers are having as a result of this digital shift. It also aims to highlights opportunities that physical merchants encash to stay relevant and competitive in an industry that is becoming more and more reliant on digital technology.

Significance of the Research:

The Significance of this study resides in its capacity to tackle important issues and prospects arising from the expansion of online on-demand services and their influence on physical merchants. The research provides a comprehensive analysis of how the retail industry is being reshaped by technological advancements and evolving consumer preferences. Understanding these shifts can help stakeholders anticipate future trends and navigate the complexities of a rapidly changing market.

Overview of online on Demand Services and Offline Retailing:**Online On-Demand Services:**

Online on-demand services refer to digital platforms and applications that provide immediate or scheduled access to goods and services, often tailored to individual needs. These services span various industries, including retail, transportation, healthcare, food delivery, and entertainment.

Prominent Examples: Platforms like Amazon, Flipkart enable seamless online shopping, Swiggy and Zomato connect customers with restaurants.

Offline Retailing:

Offline retailing refers to the traditional method of selling goods and services through physical stores. This model is characterized by face-to-face interactions between buyers and sellers and the ability for customers to inspect products in person before purchase.

The Rise of Online On-Demand Services:

Over the past decade, online on-demand services have transformed the way people access goods and services. Fuelled by advancements in technology and the ubiquity of the internet, these platforms provide convenience, speed, and flexibility, catering to the fast-paced lifestyles of modern consumers.

What Are Online On-Demand Services?

Online on-demand services enable consumers to access products or services almost instantaneously through digital platforms. This model spans numerous industries, including:

- **Travel &Transportation:** Ride-hailing services like Uber and Ola have revolutionized how people commute.
- **Food Delivery:** Platforms like Zomato, Swiggy, and Uber Eats allow users to order meals from local restaurants with ease.
- **Streaming Media:** Services like Netflix, Spotify, and Disney+ offer entertainment on demand, eliminating the need for physical media or scheduled broadcasts.
- **E-commerce and Retail:** Amazon Prime and Instacart bring groceries, clothing, and household items directly to consumers' doorsteps.
- **Professional Services:** Platforms like TaskRabbit and Fiverr connect individuals with professionals for tasks ranging from home repairs to graphic design.
- **Healthcare:** Telemedicine platforms provide instant consultations with healthcare professionals.

Key Drivers of Growth:

- **Technological Advancements:** These services have been made possible in large part by the widespread use of smartphones, high-speed internet, and GPS.
- **Changing Consumer Behaviour:** Convenience is a top priority for modern consumers, who appreciate the opportunity to save time and effort.
- **Gig Economy Workforce:** More services are now available thanks to gig economy platforms' flexible labour models.
- **Pandemic Effects:** As individuals looked for contactless and remote options for services, entertainment, and commerce, COVID-19 speed up operation

Features & Advantages:

- **Convenience:** Users can access services anytime, anywhere.
- **Personalization:** Algorithms to tailor recommendations to individual preferences.
- **Cost-Efficiency:** Competitive pricing & promotional offers
- **Convenience:** Online services provide 24/7 access to products and services.
- **Technology Integration:** Innovations like AI, machine learning, and data analytics enhance personalization and operational efficiency.
- **Broad Reach:** Global accessibility allows online retailers to cater to diverse demographics.

Challenges for Offline Retailers:

The rise of online on-demand services has transformed consumer habits, leading to significant challenges for offline retailers. Disruptive digital technologies, Artificial Intelligence in consumer behaviour, e-commerce, and changing

consumer perception has had a significant challenge for offline retailers. Here's an overview of key challenges:

Declining Foot Traffic: Customers are choosing online shopping more and more, which results in fewer in-store visits. Online services are constantly available, in contrast to conventional retailers' set operating hours.

Fearsome Competition: Offline retailers find it difficult to match the discounts and offers that online platforms provide also vast selection of products available on internet platforms outweighs the small selection of products available in physical storefronts.

Changing Consumer Expectations:

Convenience: Customers now expect seamless and fast services.

Technology: Offline retailers are pressured to adopt digital tools, such as mobile payment systems and loyalty apps.

Supply Chain Challenges: Options for Instant/Fast delivery establish high standards. The inventory management transparency of online platforms draws attention to the shortcomings of offline methods.

Market Share Erosion:

Niche Markets: Although they are small one but profitable, where online retailers catering diversified needs.

Consumer Loyalty: Traditional retailers' client base is being eroded by the move to online platforms.

Small Businesses Finding difficult to sustain: Online Leaders like Amazon, Flipkart ruling market through aggressive pricing, fast delivery, and broad selection. Small retailers face difficulty competing on price and reach.

Competitive Pricing Pressure: Online platforms often operate with lower overhead costs, it allows them to offer competitive pricing, also offering several discounts by partnering with leading banks. Offline retailers find it difficult to match these prices while maintaining profitability. Clearcut price comparison between online and offline

intensifies competition by making it easy for consumers to find cheaper options.

Opportunities for Offline Retailers:

Despite the challenges posed by online service providers and changing consumer behaviour, offline retailers have unique strengths and opportunities to thrive in the evolving retail landscape. Below is a detailed analysis of these opportunities:

Omni channel Integration: Offline retailers can bridge the gap between physical and digital shopping by adopting omnichannel strategies. Developing own applications, in store returns for online purchases, and local delivery. Integrating online inventory visibility and personalized digital recommendations in-store.

Experiential Retail: Shopping in offline establishments can produce engaging, unforgettable experiences that are impossible to duplicate online. holding in-store events, classes, or live demos. fostering social media interaction to draw in younger, experience-based clients.

Localized Advantage: Local communities' unique demands can be met by offline merchants. supplying goods that represent local inclinations and tastes. establishing trusting connections with neighbourhood clients by providing individualized service.

Immediate Gratification: Customers can immediately see, touch, and take-home things at physical stores, unlike online retailers. highlighting the products' availability for hurried or last-minute buying. concentrating on industries like electronics, grocery, and fashion where speed is crucial.

Sustainability and Ethical Practices: By exhibiting sustainable practices, offline merchants can attract customers that care about the environment. utilizing energy-efficient store designs, procuring locally produced goods, and cutting down on packaging waste.

Personalized Customer Service: Online platforms find it difficult to match the human touch and individualized support that offline businesses can provide. educating employees to deliver outstanding customer service and personalized product suggestions. predicting requirements and preferences with the help of customer data.

Community Engagement: By cultivating relationships with locals, offline retailers can establish themselves as community centres, arranging activities, obtaining sponsorships, or forming alliances with nearby groups. assisting regional projects or causes to foster brand loyalty

Niche and Specialized Markets: Offline merchants can differentiate themselves in competitive markets by concentrating on specific goods or services. serving handmade products, hobbies, or niche markets that are hard to obtain online. supplying knowledge and carefully chosen products to draw connoisseurs and enthusiasts.

Emotional Connection and Brand Loyalty: Offline retailers can build emotional connections by creating a welcoming atmosphere and prioritizing relationships. Encouraging customers to spend time in stores through comfortable layouts, cafes, or lounges. Building loyalty programs that reward in-store visits and purchases.

Technological Enhancements: Investing in in-store technology can enhance the shopping experience and attract tech-savvy customers. Development of Application Software (App) with Artificial Intelligence support can do wonders for offline retailers.

Case Study:

Online platforms, quick commerce spoil the party for D Mart

D Mart chain of stores, is feeling the pressure from quick-commerce channels as consumers turn to convenience and instant gratification for their grocery needs. The

retail landscape is rapidly evolving, and nowhere is this more evident than in the grocery segment. With the rise of online grocery services like Blinkit, Swiggy Instamart, Zepto, and BigBasket, traditional brick-and-mortar stores like D-Mart are facing fierce competition. These online platforms are not only convenient but are increasingly popular with younger, tech-savvy consumers who prioritize ease and speed. While D-Mart has attempted to adapt with its own online platform, DMart Ready, which grew by 21.8% in the first half of FY 2025, it's still lagging behind its digital-first competitors. The rapid growth of these online services is siphoning off potential customers, moderating store growth, and adding further pressure on margins. In this digital race, Avenue Supermarts is trying to keep pace, but it remains to be seen if it can close the gap with the likes of Blinkit and Zepto.

Conclusion:

The rise of online on-demand services has transformed the retail ecosystem, creating both challenges and opportunities for offline retailers. Online on-demand services capitalize on convenience, speed, and advanced technology, offline retailers possess unique advantages such as personalized customer service, the ability to offer experiential retail, and fostering community connections. However, to remain competitive in this evolving ecosystem, offline retailers must adapt to the changing dynamics by embracing digital tools, leveraging omnichannel strategies, and focusing on differentiation. Offline retailers face challenges such as declining foot traffic, intense price competition, and shifting consumer expectations. At the same time, they have the opportunity to redefine their role in the customer journey by blending physical and digital experiences, partnering with on-demand platforms, & emphasizing sustainability. Success in this

dynamic environment requires a strategic approach that aligns innovation with the inherent strengths of physical retail. (khan, 2024)

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Role of Technology in Accounting Field

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Introduction:

Accounting is an art of recording classifying and summarizing business transactions in a significant manner. Accounting technology in the form of tools, software and systems that play a vital role in accounting field. Accounting technology changed how accounting is done moving from manual, Paper- based process to digital workflows. Tasks that take weeks can now be completed in minutes. Accounting technology acts as a catalyst increased efficiency, enhanced accuracy and time saving for accounting teams in all over industries. Automation reduces manual errors and saves time. Advanced security measures protect sensitive information. A significant technological revolution that has affected various aspects of business operations including accounting.

Objective of the Study:

1. To study various Technology used in Accounting field.
2. To study effects of Technology on working of Accounting field.

Methods of Data Collection:

For present study secondary source of data collection like books, magazines, web sites are used.

Major Technologies that play pivotal role in Accounting:

Automation and Artificial Intelligence (AI):

Tasks that were repetitive labour – intensive, time consuming such as audit, tax preparation payroll and banking transactions are now efficiently handled through AI and automation. This enables accountants to concentrate more complex tasks such as financial analysis and strategic planning. Automated systems reduce the risk of human error which results in more accurate financial reporting, Data entry, account reconciliations and report generation. AI transforms accounting processes include handling routine tasks, minimizing human errors and enhancing the accuracy of business transactions and financial statements. AI enables detailed analysis of extensive data in a shorter time, detected risks overlooked in traditional auditing. AI enables detection of fraud, risk assessment data analysis.

Machine Learning (ML):

Machine learning utilizing algorithms to create models, which process extensive data sets. Machine learning in accounting handling vast data sets which are laborious for human analysis. Advanced Machine learning models contribute to accuracy and fraud preventing in modern accounting. Machine learning can automate repetitive tasks such as data entry and reconciliation. It help detect and prevent

fraud. Machine learning is very relevant for the fields of accounting and finance. Machine learning sees patterns that human could never see. Machine learning can solve accounting problems like data entry, bank reconciliation and invoice processing. Machine learning for accounting can improve efficiency and accuracy, saving your precious time and headaches. Although there are several benefits of machine learning, it has challenges also. Technology can miss something that a human would catch. Machine learning can solve accounting problems like data entry, Bank reconciliation and invoice processing. Accountants can use machine learning to streamline tasks, catch errors, and reduce operational costs.

Cloud based accounting:

In modern accounting, the storing data in a centralized location accessible via internet. This centralized storage encourages teamwork, continuous updates, empower clients and accountants to make accurate decisions while workflow automation save time and enhance accessibility and security. Transforming manual financial tracking into computerized systems. Real time financial reporting possible allowing businesses to take decisions on the latest information

Robotic process automation (RPA):

This software driven solution enables execution of routine accounting processes without requiring human intervention. Accountants uses Robotic process automation for atomic invoice processing, identifying discrepancies in financial records, addressing vendor inquiries. It reduces the time spent on repetitive tasks, reducing the risks of human errors. Robotic process automation cuts down processing time, allowing accountants and financial experts focus on more value added tasks such as detailed data analysis and report preparation. Robotic accounting is artificial intelligence that provides helping

hand to finance department Robotic accounting software run across any and every accounting platform a business uses. The future of Robotic process automation looks bright as organization continue to adopt automation to remain competitive. This automation drastically reduces the time and cost associated with manual processing. Robotic process automation systems are flexible and can be adjusted according to business needs.

Block Chain:

Block Chain Accounting provides full transparency Accountant, auditor and client can access an identical ledger to verify the information on it. Record stored on the block chain are permanent and transparent. The Information cannot be erased. Unlike a traditional ledger, block chain is not owned by a single person or organization instead of the ledger exist across multiple computers, cannot be controlled by a single entity. The use of cryptographic keys, which lock and unlock data helps to keep block chain records safe and secure. Storing financial data safety and securely has always been of vital importance in the Accounting industry. With layers of encryption and cryptographic keys, block chains offer a high security. Once transactor on the block chain, transactions cannot be altered or removed which means auditors can trace them back.

Big Data:

It allows collection and analysis of vast financial data from various sources. This helps Accountants to gain deeper insights into a company's financial performance. They can identify trends, patterns that might go unnoticed with traditional methods. Earlier, manual data recording methods limited the visibility of data. Rise of technology and big data in Accounting has revolutionized how auditing is done. Big data analysis is a most powerfully tool in detecting and preventing financial fraud. Using big data analytics tools allows to process data faster and

reduce costs, save time and increase overall efficiency. Big data is used in machine learning, predictive, modeling and other advanced analytics to solve business problems and make informed decisions.

Impact of Modern Technology on Accounting:

Technology has basically changed the accounting field. This technological advancement is both an asset and as liability for the company's accountant. Technology has produced three effects on accounting positive, negative and neutral. Each effect requires accounting profession to adopt to the new reality.

Positive impacts of technology on Accounting:

- **Improved Accuracy:** Computer system reduce errors and offer reliable financial information with minimizing the risk of human mistakes. Information Technology significantly impacted the field of accounting also how tasks are performed and managed.
- **Increased efficiency:** Technology allows accountants to access information and automatically update records as transactions happens.
- **Faster processing:** Technology helps accountants to speedily generate reports for quick management decision making.
- **Better Collaboration:** Technology helps accountants to collaborate more easily with other stakeholders.
- **Reduced repetitive tasks:** Technology allows accountant to spend less time on repetitive work, such as manual data entry.
- **Improved decision making:** Technology allows accountants to find financial documents, collect information and evaluate the effect on financial decisions.
- **Enhance Accounting Accuracy:** Accounting Software allows for the quick creation of countless entries in

the ledger with little chance of data manipulation. Software prepares all the necessary reports as compare to traditional manual accounting system; it prepares manual reports, increasing chance of making errors, takes lot of time.

- **Minimize Frauds:** Accounting work made via computers reduces human involvement and thus frauds. Data visualization aids in identifying sings of dishonest behavior in transactions whereas data mining is applied in identifying red flags of acquisition fraud and misleading data.
- **Auditing:** Technology provides relevant information for internal as well as external audit. Auditors utilize the data techniques used in risk assessment and controls testing, to arrive at decisions and judgement. The level of accuracy and efficiency of audits are currently being redefined by automated devices.

Negative Impacts of Technology on Accounting :

The Acceptance of modern technology in the accounting sector has improved several works in accounting but at the same time, use of Advanced technology has some demerits also----

- **Redundancy of previous technologies:** The outdated accounting technology making it challenging to keep using them. To keep with updated latest technology results in additional expenses which leads to reduce profitability of an organization.
- **Limitations on Automation:** Automation allows transfer of data in the form of payments and invoices automatically too many users simultaneously. It reduces time, if data is incorrect at one level; the errors build up in the following level.
- **Security Threats:** Accounting technology store the data and information in the electronic form, which is convenient to store and

retrieve. On the contrary accounting system may hack by cybercriminals if the networks safety measures are not allowed properly which results in leakage of sensitive financial data and trade secrets. Also risk of unlawful access accounting access accounting information during information exchange.

- **Impact on accounting jobs:** Accepting modern technologies in accounting has totally transferred the accounting tasks. Work at entry level accounting like purchasing billing, order entry, reporting on costs, accounts payable and accounts receivable are automated. This result in the reduced demand for fresh manpower. At present, nearly 60 % of the service that accountants and other professionals perform can be automated using the available technology.

Conclusion of the Study:

Innovations will change how accountants work but technology cannot replace human judgement, strategic advice, relationships. Education and ethics will continue to be vital in the industry. Change will requiring accountants to continuously learn and adopt to new tools and regulations. As systems become more intelligent and automated, accountant's responsibilities will broaden. As technology Advances, accounting will become more engaging, dynamic and vital to business strategy. Accountants, who use

new tools, seek self-improvement and stay agile will find many opportunities ahead.

Suggestions of the Study:

As per necessity and requirements, technology should used. Be careful while using modern technology. Proper security measures should take into account.

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The Need for Change in the Tax System of India

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Abstract:

The tax system of India plays a pivotal role in supporting the economy, ensuring equitable distribution of wealth, and financing government expenditures. However, over the years, it has evolved to become increasingly complex, inefficient, and inequitable, necessitating reform. This paper examines the key challenges facing the Indian tax system, including high tax evasion, complex compliance procedures, a regressive tax structure, and a heavy reliance on indirect taxes. It analyzes the impact of these issues on the economy and highlights the pressing need for a tax overhaul that promotes transparency, equity, and efficiency. Key reforms discussed include the need for broadening the tax base, enhancing digitalization to reduce compliance burdens, moving towards a progressive tax system, and improving tax administration. The paper also explores successful international models and suggests ways these can be adapted to the Indian context. The findings suggest that while there are substantial barriers to reform, implementing systemic changes could significantly improve tax collection, reduce tax evasion, and increase fairness within the Indian tax system. Such reforms would ultimately contribute to sustainable economic growth and social development, aligning with the nation's goals for fiscal prudence and equitable growth.

Keywords: Tax, Transparency, Development, Growth, Economy Etc.

Introduction:

Taxation is a primary tool for resource mobilization and economic governance. In India, the tax system is divided into direct and indirect taxes, encompassing personal income tax, corporate tax, Goods and Services Tax (GST), and various other levies. Despite its significant contribution to the economy, the tax system has faced criticism due to issues such as a narrow tax base, high compliance costs, and inadequate revenue generation. This paper explores these challenges and the need for comprehensive reforms to address them.

India's economy is growing rapidly, and its tax system must evolve to match the complexity of modern markets and global trade. Overcoming long-standing issues such as tax evasion, administrative inefficiencies, and an over-reliance on indirect taxes is critical for ensuring sustainable development and a fair distribution of wealth. As the government continues to implement digitalization measures and structural reforms, analyzing the existing system's performance and identifying areas for improvement becomes increasingly important.

Research Objectives:

The primary objectives of this study are:

1. To analyze the current structure of the Indian tax system.
2. To identify major inefficiencies and inequities.
3. To examine the impact of these inefficiencies on economic growth and social equity.
4. To propose actionable reforms based on data-driven insights.

Methodology:

The research is based on secondary data collection from:

- Reports by the Ministry of Finance and the Comptroller and Auditor General (CAG).
- Economic surveys and data from the Reserve Bank of India (RBI).
- Research articles and policy papers.
- Surveys and feedback from taxpayers and businesses.

Data analysis includes trend analysis, comparative analysis with other countries, and statistical evaluation of tax compliance rates and revenue generation. The study also incorporates qualitative insights from expert opinions and case studies to provide a holistic understanding of the tax system's challenges.

Findings and Discussion:**Complexity and Compliance Costs:**

India's tax system is often perceived as overly complex, with frequent changes in regulations, a high volume of paperwork, and a lack of clarity. Small and medium enterprises (SMEs) and individual taxpayers bear a disproportionate compliance burden, deterring voluntary compliance. According to data from the World Bank's Ease of Doing Business report, India ranks low in terms of tax compliance, highlighting the need for simplification.

Narrow Tax Base: India has a low tax-to-GDP ratio compared to global standards,

with less than 5% of the population paying income tax. This indicates a significant portion of the economy operating outside the formal tax net, particularly in the informal sector. According to the Economic Survey 2022-23, the lack of formalization and low penetration of digital transactions contribute to this issue.

Inequity in Taxation: The current tax structure is often criticized for being regressive, especially in the context of indirect taxes like GST. While direct taxes are more progressive, their contribution to total revenue is disproportionately low. For example, high GST rates on essential goods affect lower-income households more significantly, exacerbating income inequality.

Tax Evasion and Black Money: Tax evasion and the prevalence of black money undermine the credibility and efficiency of the tax system. Despite measures like demonetization and stricter compliance norms, significant challenges remain in curbing tax evasion. The introduction of data-matching techniques and linking PAN with Aadhaar has shown some promise, but enforcement mechanisms need further strengthening.

GST Implementation Issues: The introduction of GST was a landmark reform, aiming to unify the indirect tax structure. However, its implementation has faced issues such as multiple tax rates, frequent changes, and technical glitches in the GST Network (GSTN). Stakeholders, particularly small businesses, report challenges in adapting to the system due to limited digital literacy and high compliance costs.

Global Comparisons: Comparing India's tax system with those of developed economies reveals several gaps. Countries with higher tax-to-GDP ratios often have simpler tax codes, better enforcement, and a higher reliance on direct taxes. For example, Scandinavian countries prioritize equitable

taxation through progressive income taxes, ensuring greater social equity.

Recommendations for Reform:

Simplification of Tax Codes: A simpler and more transparent tax code, with fewer exemptions and deductions, can reduce compliance costs and improve understanding among taxpayers. Codifying tax laws in a user-friendly manner and providing multilingual resources can enhance accessibility.

Expanding the Tax Base: Efforts should focus on bringing more individuals and businesses into the tax net through better integration of technology, data sharing between government departments, and incentives for voluntary compliance. Initiatives such as digital literacy programs and tax awareness campaigns can encourage participation. **Progressive Taxation:** A more equitable tax system can be achieved by increasing reliance on direct taxes and reducing the burden of indirect taxes on lower-income groups. Introducing a wealth tax or enhancing estate duties for high-net-worth individuals could also contribute to equitable resource distribution.

Strengthening Enforcement: Advanced data analytics and artificial intelligence can be employed to detect and prevent tax evasion. Stricter penalties and faster resolution of tax disputes are also essential. The establishment of dedicated tax courts could expedite the resolution process and enhance taxpayer confidence.

GST Rationalization: Streamlining GST by reducing the number of tax slabs and ensuring uniformity across states can improve its efficiency and acceptance among stakeholders. Measures to enhance the GSTN's technical capacity and provide robust support systems for taxpayers are crucial.

Encouraging Digital Transactions: Promoting digital payments and ensuring their widespread adoption can enhance

transparency and reduce cash-based transactions, which are often associated with tax evasion. Incentives for digital transactions, such as cashback or tax rebates, can further drive this shift.

Conclusion:

The Indian tax system is at a crossroads, requiring urgent reforms to address its inefficiencies and inequities. By simplifying tax codes, expanding the tax base, and leveraging technology for enforcement, India can create a tax system that is fair, efficient, and conducive to economic growth. A reformed tax system would not only enhance revenue generation but also foster social equity, ensuring that the benefits of economic progress are distributed more evenly across society.

The findings of this study highlight the need for a comprehensive and inclusive approach to reform, ensuring that the tax system evolves in line with India's development goals. Policymakers must prioritize these changes to unlock the full potential of India's economic engine while building trust and compliance among taxpayers.

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Bridging the Divide: Analyzing Income and Wealth Inequality in India for Inclusive Growth

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Introduction:

Inequality can be seen from different perspectives. Most common metric is income and wealth inequality, which refers to the extent to which income is evenly distributed within a population. In India, income and wealth inequality have been a persistent challenge, which reflects deep structural problem of the country's socio-economic ailment. Despite noteworthy economic growth have been achieved, the benefits have not been equitably distributed among the population of the country. As per the world Bank, India's Gini Index is 35.2 (0.35) as of March 2020 remains highest in the world, reflecting a huge gap between the rich and poor. This picture shows broad idea of the human society and its disparity, where majority of the people lacks from their basic necessities. Therefore, it is necessary to explore the scale and trends of inequality in India, the factors driving it, and its implications for economic stability.

Objectives of the Study:

1. To study the conceptual framework of Inequality.
2. To overview the income and wealth inequality in Indian perspective.

Conceptual Framework:

Income and wealth inequality refer to the uneven distribution of financial resources and assets among individuals or groups within a society. While these two concepts are closely related, they address

different aspects of economic disparity. Income inequality refers to the disparity in earnings among individuals and households in the society. While the term wealth inequality refers to disparities in the distribution of assets and net worth of the individuals or households. For measuring the income inequality, the metrics like Gini coefficient, income share ratios or Lorenz curves are used.

Wage gaps between high and low-skilled workers, unequal opportunities or access to education facilities, highly automation in industry and service sector etc. are causes for income inequality. Income disparities often lead to wealth disparities over time. And other side wealth provides additions income streams which reinforcing the cycle of inequality.

Inequality in Income and wealth at Globe:

Global income and wealth inequality remains persistent problem. As per the data of world bank the number of economies tracks with high inequality. These are defined with a Gini index based on income and consumption from household survey. The recent household survey data, 49 countries of the world where approximately 22 percent population lives, had a Gini index over 40. Nearly half of the world's wealth is concentrated in the hands of the top 1 percent of the richest individuals. The wealth of many billionaires is equivalent to

the combined of millions of lower-income individuals. As of 2023, the 26 wealthiest billionaires in the world controlled a staggering \$2.872 trillion, as reported by the latest UBS Global Wealth Report. To put this into perspective, their combined fortune surpasses the annual economic output of most countries, based on World Bank GDP data. Globalization, technological change, labour market trends, tax and social policies etc. are the key drivers of global disparities.

Income and wealth inequality in India:

India has been lauded by the President of the World Economic Forum, who envisions the country will reach at \$10 trillion economy near future. While India's economic growth is undoubtedly gaining momentum, the benefits of this progress aren't reaching everyone, particularly those who are marginalized. According to the data published by Govt. of India, inequality declined post-independence till the 1980s,

but it began rising from 1991 and has hit the roof after 2014s. After independence India adopted social democracy and framed the economic policies for inclusive growth while opposing the perceived inequalities and monopolies. Inequality in both rural and urban areas has widened significantly between 2012-13 and 2022-23, as the report of National Sample Survey Office. By the end of 2022-23, the wealth and income share of the top 1 % reached a historical high of 40.1%. Another report reveals that the wealthiest 1 % of Indian now hold 58 percent of the country's wealth and the top 10 percent control a staggering 80 percent while poorer half of the population struggles to hold onto a mere 4.1 percent of the nation's wealth. This trend has consistently increased, it means richer are getting rich much faster than the poor. It causes widening the income gap and shows the failure of economic policies.

Table 1: Income inequality in India, 2022-23

Income Group	Income Share (%)	Average Income	Ratio to Average
Average	100.0	2,34,551	1.0
Bottom 50 %	15.0	71,163	0.3
Middle 40 %	27.3	1,05,413	0.7
Top 10 %	57.7	13,52,985	5.8
Top 1 %	22.6	20,73,846	22.6
Top 0.1 %	9.6	2,24,58,442	95.8
Top 0.01 %	4.3	10,18,14,669	434.1
Top 0.001%	2.1	20,01,98,548	2,068.6

Source: 1) *Combining national income accounts aggregates, tax tabulations and surveys on income and consumption*. 2) *Income and wealth inequality in India: 1922-2023*, Nitin Kumar Bharati, Lucas Chancel, Thomas Piketty, Anmol Somanchi

The table presents income distribution in India in 2022-23, all INR values in current 2022 prices. This table presents an analysis of income distribution, highlighting disparities across income groups. The average income is set as the baseline for comparison with a ratio of 1.0. It is seen as stark disparity between income groups, particularly between the lower 50 percent and top earners.

The bottom 50 percent income group hold just 15 percent of total income. Average income of this group is 71,163

rupees, which is only 30 percent of the average income and in ratio it is 0.3. The income share of the middle is 27.3 percent and ratio to average income is 0.7. Top ten percent control 57.7 percent of the total income, the ratio of the average income of this group is 5.8 times to the national average income. Top 1% alone command 22.6% of the total income, which is equal the combined share of the bottom 50 %. Average income was 22.6 times greater than national average national income. Top 0.001 % command 2.1 % of the national income.

Average income of this group is over 20 crore which is 2068.6 times high than national average income. This group

epitomizes ultra-high net worth individuals, highlighting the apex of income inequality.

Table 2: Wealth inequality in India, 2022-23

Income Group	Wealth Share (%)	Average Wealth	Ratio to Average
Average	100.0	13,49,029	1.0
Bottom 50 %	6.4	1,73,184	0.1
Middle 40 %	28.6	9,63,560	0.7
Top 10 %	65.0	87,70,132	6.5
Top 1 %	40.1	5,41,41,525	40.1
Top 0.1 %	29.7	40,04,54,807	296.8
Top 0.01 %	22.2	2,99,67,73,491	2,221.4
Top 0.001%	16.8	22,61,33,54,928	16,762.7

Source: 1) Combining national income accounts aggregates, tax tabulations and surveys on income and consumption. 2) Income and wealth inequality in India: 1922-2023, Nitin Kumar Bharati, Lucas Chancel, Thomas Piketty, Anmol Somanchi

This table provides an overview of the distribution of wealth among different income groups, highlighting extreme inequalities. In India, top 0.001 percent people holds 16.8 percent of total wealth. This is an elite group with an average wealth of 2.2 thousand crore rupees, making them 16,762.7 times wealthier than the average person. Top 1 percent richer controls 40.1 percent while top 10 percent wealthier accumulated 65 percent of total wealth.

Bottom 50 percent holds only 6.4 percent of total wealth, with an average wealth significantly below the overall average which was 0.1 times the average. In case of middle 40 percent population holding 28.6 percent of wealth. Their wealth levels were approximately 0.7 times the overall average, indicating a moderate share of resource. This group represents a broader middle class. It was examined from the above table that wealth becoming increasingly concentrated as we ascend the income pyramid.

The concentration of wealth in the hands of some people has been passed down from generation to generation, which has perpetuated inequality, as the rich pass on the benefits of their wealth to their descendants.

Property inheritance right, inadequate land reforms, crony capitalism,

skewed distribution of economic gains, regressive taxation policies, lack of society safety net and welfare programs, wage gaps, caste discrimination, gender inequality, lack of access to education, technological deprivation etc. are the major causes for income and wealth inequality.

Various measures have been implemented to address inequality by the Government of India. These measures are focused on inclusive growth, social justice and empowerment of human. The key initiatives are as; Income redistribution through taxation, Employment Generation Programs like Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA), Skill India Mission, Start-up and Stand-up India, Mudra Yojana, Right to Education, National Food Security Act (NFSA), Reservation Policies, Financial Inclusion Policies.

For improving the lives of the people and aiming to reduce poverty in all dimensions, Govt. of India has made remarkable progress with various programmes and policies. The programmes like Poshan Aahar, Anemia Mukht Bharat, Targeted Public Distribution System under National Food Security Act, Pradhan Mantri Garib Kalyan Anna Yojana etc. have made significant contribution to uplift the life of poor. According the data published by the

Govt., Public Distribution System covers 81.35 crore beneficiaries which is world's largest food security programme. The programmes like maternal health, clean cooking fuel distribution through Ujjwala Yojana, improved electricity coverage via Saubhagya, and transformative campaigns like Swachh Bharat Mission and Jal Jeevan Mission have collectively elevated living conditions and overall well-being of people.

While the performance of States varies, some States which were traditionally having high poverty have made remarkable progress in helping people escape poverty, thus reducing inter-state disparities in multidimensional poverty. With this, the fundamental problems in accessing basic services are getting resolved fast so that the country can look towards becoming a developed nation. The measures for reducing inequality in India have made significant impression upto 1990s which assisted boosting consumption and aggregate demand, improved the earning capacity of rural households. The number of billionaires in India has grown significantly after 1991, yet the disparity between income and wealth has widened at an alarming pace since 2014. For India to realize its dream of becoming a global superpower, it is imperative to focus on inclusive development, ensuring that prosperity reaches every stratum of society.

Conclusion:

Income and wealth inequality in India reflects deep-rooted structural challenges despite the country's notable economic growth and various government measures intended at reducing disparities. The stark figures of income and wealth concentration among the top 1% and the bottom 50% highlight a critical imbalance that continues to widen.

While India's economic growth places it on the path to becoming a global superpower, the benefits have largely remained concentrated in the hands of a few. Wealth inheritance, limited access to quality education, inadequate redistributive policies

etc. have worsened disparity. The persistence of such disparities hampers social cohesion and poses challenges to sustainable development.

The government has introduced numerous initiatives aimed at fostering inclusive growth, such as MGNREGA, financial inclusion programs and social security schemes. These measures have improved access to basic necessities and consumption of the society. However, the rapid pace at which wealth is accumulating among the top earners (Billionaires) indicates the need for a more equitable redistribution framework.

To achieve a balanced and inclusive growth model, India must address basic causes of inequality through comprehensive policies focusing on education, skill development, progressive taxation and social welfare programs. By bridging this disparity can India ensure that its economic prosperity benefits all sections of society and realize its vision of becoming a truly developed nation.

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Gross National Happiness Index: A Need For India Towards Sustainable Development

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Abstract:

Concepts such as maximization and happiness have been key concepts in business psychology for years. The happy movement represents a new concept that includes social, economic and environmental processes to enhance human well-being through sustainability indicators. Exciting currencies are being used worldwide to collect information, and governments are beginning to explore their legal use. The Himalayan nation of Bhutan has pioneered the development and promotion of another development model known as Gross National Happiness, which aims to use a balanced approach to determine what needs to be done first to ensure the happiness of people and their people. It is important that Indian policymakers are coordinated and involved in the process as the concept of Total National Happiness takes shape. This paper proposes and presents a new strategy to investigate the relationship between sustainability and health to promote sustainable development in India. It may help in investigating the importance and significance of GNH in policy making.

Introduction:

Happiness is the ultimate goal of humanity because it is the only goal sought – “for its own sake and not for anything else” (Aristotle, Nicomachean Ethics, 19-34). The concept of karma highlights the importance of happiness by saying that happiness is the result of actions in this life and in the past (Srivastava and Misra, 2003). This means that there is a greater balance between the economy, society and the environment so that the development of the present generation will be at least as good as or better than the development of the future generation. Gross National Happiness offers a new concept to explore the relationship between security, development and happiness.

He said that the role of the state is to look after the happiness and health of its citizens through good governance. Today,

we live in a world that strives for economic growth, has decided to provide the country with sufficient financial resources to finance many programs and improve the lives of the same people based on the principles of justice and fairness. This is where the economic development model that dominates the thinking of most people in the world tries to provide a solution. But experience shows that when we continue to focus on economic growth and economic development, we start to be controlled by the market, so the workforce starts to control all our decisions, regardless of whether it is a person, organization or country is closed. The trap of working harder, earning more, helping more, will weaken the social fabric of a country. In short, this situation is alarming. We need to think not only about economic development, but also about other ways of economic development; we need to

think not only about infrastructure, but also about human development. The measure of gross domestic product as a variable is gradually losing its importance, especially in the world where production or economic growth transforms them into capital but with family ties.

The Concept of Happiness in Economics:

Maxim for maximization, happiness such notions been the center point of economic theories. Happiness was once at the center of economic research. However, things changed dramatically with the evolution of welfare economics. From Adam Smith to Arthur Cecil Pigou (one of the founding fathers of contemporary welfare economics), Alfred Marshall, Paul Samuelson many economists has been giving importance to happiness in their theories, research or vie

Since the 1970s things have changed once more. Along with a greater optimism about the possibility of interpersonal comparison of utilities, an increasing number of economists are getting interested in happiness. Furthermore, moral philosophers have never ceased to be interested in happiness, and more recently, with a trend similar to that of economists, psychologists too have carried out intensive research on happiness. As a result, happiness is at the moment at the core of a comprehensive research programme which involves not only economists, but also philosophers, psychologists and social scientists in general.

The economics of happiness is supposed to support the old wisdom according to which money, after all, is not that crucial to people's happiness. Happiness economics study the relationship between individual satisfaction and socio-economic conditions to help governments design better public policies.

However, Richard Easterlin was the first modern economist to re-visit the

concept of happiness, beginning in the early 1970s. More generalized interest took hold in the late 1990s by various economists Bruno Frey, Richard Layard, Med Jones, Benjamin Radcliff, Amartya Sen, Blanchflower, Oswald, Stutzer, Graham and Pettinato.

The United Nations resolution 65/309 on happiness, which was co-sponsored by 68 countries, was adopted by consensus in July 2011. The happiness resolution stated that gross domestic product (GDP) alone is not an adequate measure of human prosperity and we need a more inclusive, equitable and balanced approach is needed to promote sustainability, eradicate poverty, and enhance wellbeing.

Components of Gross National Happiness:

Until the mid-1970s, there was no law anywhere in the world that placed happiness at the center of governance. In 1972, Bhutan's fourth king, Jigme Singye Wangchuck, coined the term National Happiness (GNH) at a conference held in 1972. The research institute published the Bhutan GNH Index. It also included GNH from 193 countries.

The meaning of the National Happiness Index is the belief that happiness is the ultimate need of everyone and that the state's responsibility and purpose is to create the conditions necessary for people to live a good life. Therefore, All Happiness in the Nation supports the idea that happiness is sought and achieved in the context of the greater good of society, in the context of the happy individual having the best of his/her ability to continue. To this end, the Happiness of the Country directly addresses the issue of happiness through public policies that prioritize development and plan for Nature.

National Happiness is based on the belief that wealth alone cannot bring happiness, nor can it bring people

satisfaction and prosperity. Clean economy and innovation should not affect people's quality of life or traditional values. It is a holistic development concept that balances the results of people's physical and mental health and the measurement of goals and progress. It takes into account both the objective, measurable dimension of development and the subjective, immeasurable dimension of development. In general, Total National Happiness means creating a society or country where the goal of governance is shared happiness. The purpose of government is to create greater happiness.

The original four pillars of GNH philosophy are:

1. The promote of sustainable development
2. Preservation and promotion of cultural values
3. Protect of the natural environment
4. Establish of good governance

Good Governance is considered pillars for happiness because it determines the conditions in which citizen thrive. While policies and programs that are developed in a nation are generally in line with the values of GNH, there are also a number of tools and processes employed to ensure the values are indeed embedded in social policy.

Sustainable and socio-economic development a thriving GNH economy must value social and economic contributions of households and families, free time and leisure given the roles of these factors in Happiness.

Preservation and promotion of culture happiness is believed to be contributed by preserving the culture. Developing cultural resilience, which can be understood as the culture's capacity to maintain and develop cultural identity, knowledge and practices, and able to overcome challenges and difficulties from other norms and ideals.

Environmental Conservation is considered a key contribution to GNH because in addition to providing critical services such as water and energy, the environment is believed to contribute to aesthetic and other stimulus that can be directly healing to people who enjoy vivid colours and light, untainted breeze and silence in nature's sound. These are divided into nine general contributors. 9 areas further divided into 33 indicators which articulate the different elements of GNH in detail and form the basis of GNH measurement, indices and screening tools.

- Standard of living
- Education
- Health
- Environment
- Community Vitality
- Time-use
- Psychological well-being
- Good Governance
- Cultural resilience and promotion

From 2007 to 2014 Thailand, Canada, South Korea, United Kingdom, Dubai, Seattle in Washington, Singapore, china, Canada, launched their happiness index. Many governments around the world are considering measures of happiness as alternatives to Gross Domestic Product (GDP) for the purpose of guiding economic policy making.

INDIA: Practice of GNH and Policy:

India's current understanding of GNH remains unclear. Ideas play a major role in policy making. India is an ancient civilisation and a treasure trove of the world's religious, cultural and environmental heritage. It also has powerful technology and strong trade. The changes that will take place in the coming years as India transforms into a superpower are unpredictable. When this happens, using traditional measures of progress and development will not be enough for a diverse, large and populous country. India

will need its own version of GDP indicators that include the unique character and makeup of its people. These measures will help ensure India's diversity so that the fruits of balanced development, social investment will be conservation, environment and culture. Despite its rapid development, the heritage is strong and the country is strong and united. and change is booming. We still have many social problems like poverty, unemployment, illiteracy, child labor, population, lack of health facilities and other problems like people's dissatisfaction with the law, too much stress, unhappiness, people's lack of peace, conflict. , Let the people be rich.

Loosing work culture, loosing identity, corruption, also ecological degradation many more such problems are here. Presently a few key initiatives are being taken in India towards happiness movement.

- I. Meghalaya govt. planned to adopt GNH concept
- II. While Goa govt. in their vision document 2035 decide to work on GNH concept with having four pillars as Cultured Goa, Sustainable Goa, Well Governed Goa, and Happy Goa.
- III. Indian government in their policy initiative towards environment cleanness, to present a better picture of India and to make it a good place to live, using different ways like Swachhata Abhiyan,
- IV. Odd-Even Formula, Policies to avoid depression, suicidal behavior of students in coaching institutes in kota, where happiness has been placed centered in policies.
- V. In April 2016 Madhya Pradesh government also shown interest to work on gross national happiness concept and created an Ananda ministry.
- VI. A few private spiritual organisations solely working in this directions like Paavan chintan dhara by Pawan sinha ,

Art of living, Patanjali yoga piitha, Ishayog foundation, brahmakumari university, Gandhian peace foundation, Jaipur peace foundation.

- VII. The concept of Rajasthan Government "Of the people and for the people", the very fascinating idea of "Sarkar Aapke Dwar" to fill the gap between the Government and people by letting the Government know what is not happening and what is required to make it done, is a step taken by government closer towards a happy state.
- VIII. Rajasthan C.M. Vasundhara raje initiates work in the direction of enhancing (khushhali) happiness index by adopting public friendly policies. Toy bank, cloth bank and food stores for the poor are a few initiatives in this direction by govt., also focuses on monitoring of development work in tribal and desert area to find whether people are happy with the progress or not.
- IX. Rajasthan Govt. with high Khushhali index as primary objective wants to achieve the vision of a healthy, educated, gender sensitive, economically well-developed and prosperous Rajasthan.

While Venezuela, Ecuador, UAE, Bhutan has happiness ministries we officially haven't given priority on this important aspect. This is the right time to efficiently work on this for central government of India.

Conclusion:

While the basic economic development framework focuses on the management of the environment and resources or health services, this health system focuses on human behavior or food management, that is, the need for sustainable development. If people do not take care of their own health, it will be difficult to achieve the current security development framework that only addresses different

needs. Unless people grow to the point where they can appreciate higher or inner happiness, they will not care about others or future generations. This new happiness shows that people can live a peaceful life with moderation, cooperation and compassion, living in harmony with nature. Such development can improve people's health and transmission, thus leading to social happiness and sustainable development. Many governments around the world are considering measuring happiness as an indicator of gross domestic product (GDP) to drive economic growth and development.

This article shows the path to happiness and growth based on inner happiness through various measures. Therefore, this article introduces a new concept of sustainable development.

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Price Fluctuations and its Impact on the Agricultural Sector of India

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Abstract:

The agricultural sector remains a cornerstone of India's economy, contributing significantly to GDP and employment. However, price fluctuations of agricultural commodities pose a persistent challenge for farmers, policymakers, and stakeholders. This research paper examines the causes, trends, and impacts of price fluctuations on India's agricultural sector. It also highlights the role of government policies, global market dynamics, and climate factors in influencing agricultural prices. Relevant data from recent years, case studies, and references to scholarly research provide a comprehensive understanding of the issue.

Keywords: Price Fluctuations, Agricultural Sector, Commodity Prices, Farmers, India, Agricultural Markets, Policy Interventions.

Introduction:

Agriculture forms the backbone of India's economy, employing over 40% of the workforce and contributing approximately 17-18% to the GDP (Government of India, 2022). Despite its importance, the agricultural sector faces substantial volatility in commodity prices. These fluctuations directly impact farmer incomes, food security, and overall rural economic stability. The primary objective of this paper is to analyse the factors contributing to price fluctuations and their implications for the agricultural sector in India.

Causes of Price Fluctuations:

Demand and Supply Mismatch:

Agricultural production in India largely depends on monsoons, leading to periodic mismatches between supply and demand. For example, surplus production can cause price crashes, while shortages lead to spikes.

Climatic and Seasonal Variability:

Unpredictable weather patterns, droughts, and floods disrupt agricultural yields. Data from the Indian Meteorological Department (IMD, 2021) shows that irregular rainfall patterns have been a significant cause of price volatility in recent years.

Market Intermediaries: The role of intermediaries in agricultural markets often leads to price distortions. Farmers are often compelled to sell produce at low prices due to lack of direct market access.

Global Market Trends: The prices of agricultural commodities in India are influenced by international trade, exchange rates, and global demand. For instance, global fluctuations in wheat and rice prices during 2020 had a cascading impact on Indian farmers.

Government Policies and MSP (Minimum Support Price): The government's Minimum Support Price (MSP) system plays

a crucial role in stabilizing farmer incomes. However, its limited coverage and irregular implementation exacerbate price instability.

Impact of Price Fluctuations:

Impact on Farmers' Incomes: Farmers bear the brunt of price volatility, leading to uncertainty in incomes. A case study from Maharashtra in 2021 indicated that onion farmers faced significant losses due to sudden price drops.

Food Security: Price fluctuations in staple crops like rice, wheat, and pulses disrupt food security for the poor. For example, the sharp rise in pulse prices in 2016 created widespread affordability issues.

Rural Employment: Unstable agricultural prices reduce rural employment opportunities, as farming activities become unsustainable.

Impact on Consumers: While low prices benefit consumers in the short term, prolonged price instability leads to supply shortages, inflation, and price shocks.

Role in Inflation: Agricultural price fluctuations significantly contribute to food inflation in India, impacting the overall economy. For example, vegetable price inflation in 2019-2020 contributed 1.8% to overall inflation (RBI Report, 2021).

Data Analysis and Trends:

Year	Crop	Price Fluctuation (%)	Cause of Fluctuation
2016	Pulses	+45%	Low production, high demand
2019	Onions	-30%	Overproduction and supply chain issues
2020	Wheat	+10%	Export restrictions during COVID-19
2021	Tomatoes	-25%	Seasonal oversupply
2022	Mustard Oil	+35%	Global oil price surge

Sources: Agricultural Prices Commission, RBI Reports (2016-2022)

Government Policies and Interventions:

- Minimum Support Price (MSP):** The MSP system ensures price stabilization but requires greater coverage and timely implementation.
Example: MSP revisions for pulses and oilseeds in 2021.
- eNAM (Electronic National Agriculture Market):** A digital platform that connects markets to ensure better price realization for farmers.
- Public Distribution System (PDS):** Stabilizes food grain availability and shields the poor from price shocks.
- Agricultural Infrastructure Schemes:** Investments in warehousing, cold storage, and transportation to reduce post-harvest losses.

Policy Recommendations:

- Strengthening MSP Mechanism:**
Broaden MSP coverage to include all major crops.
Timely procurement to protect farmers from price crashes.
- Investment in Infrastructure:**
Develop robust storage, transportation, and market infrastructure.
- Market Reforms:**
Reduce intermediary roles by promoting direct farmer-consumer platforms.
Expand eNAM and ensure market accessibility.
- Climate-Resilient Farming:**
Promote technologies for drought-resistant and high-yield crops.
- Global Trade Policies:**
Ensure balanced import-export policies to avoid over-dependence on global markets

Conclusion:

Price fluctuations significantly impact India's agricultural sector, affecting farmers' incomes, food security, and rural development. While government policies like MSP and eNAM aim to stabilize prices, there remains room for improvement. Addressing the challenges through infrastructure development, market reforms, and climate-resilient practices will play a vital role in mitigating the adverse impacts of price fluctuations. A balanced approach involving policymakers, farmers, and market players is critical to ensuring price stability and a sustainable agricultural sector in India.

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आंतरराष्ट्रीय व्यापारात भारताची भूमिका

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गोष्टवारा :

मानवी गरजांची पूर्तता करण्यासाठी प्राचीन काळापासून मानव विविध मार्गांचा वापर करत आहे. पूर्वी मानव व्यवहारात गरजांच्या पूर्ततेसाठी वस्तू विनिमय पद्धतीचा वापर करत होता. विनिमय पद्धतीत मानव स्वतः जवळच्या तयार केलेल्या वस्तूंची देवाणघेवाण करून आपल्या गरजा पूर्ण करत असे, पण त्याकाळी मानवाच्या गरजा या मर्यादित होत्या पण बदलत्या काळानुसार मानवाच्या गरजा वाढल्या व व्यापाराच्या देवाणघेवाणीचे स्वरूप बदलत गेले त्यानंतर विनिमयाचे साधन म्हणून पैशाचा शोध लागला व विनिमय व्यवहारात क्रांती घडून आली. व्यापार म्हणजे वस्तू व सेवांची देवाण-घेवाणीचा व्यवहार होय. जगामध्ये औद्योगिक क्रांती पूर्वीच्या काळामध्ये स्थानिक पातळीवर देशांतर्गत भागांमध्ये व्यापार केला जात होता मात्र औद्योगिक क्रांतीनंतर आंतरराष्ट्रीय व्यापाराला मोठ्या प्रमाणात सुरवात झाली. जगातील अनेक देशांनी जागतिकीकरणाचा स्वीकार केल्यामुळे आंतरराष्ट्रीय आर्थिक व्यवहारात अमुलाग्र बदल घडून आला आहे. प्रत्येक देशातील नैसर्गिक साधन संपत्ती, हवामान, जमीन, वातावरण भिन्नभिन्न असते त्यामुळे नागरिकांच्या सर्व गरजा यामध्ये पूर्ण होऊ शकत नाहीत त्यासाठी दुसऱ्या देशाची मदत घ्यावी लागते एखाद्या वस्तूचे उत्पादन आपल्या देशात होताना उत्पादन खर्च जास्त येत असेल तर त्यावेळी त्या वस्तूची दुसऱ्या देशातून आयात करणे चांगले आणि ज्या वस्तूचा उत्पादन खर्च कमी असतो त्या वस्तूचे अधिकाधिक उत्पादन करून अशा वस्तूंची निर्यात केली तर त्या व्यापारात देशाचा लाभ होतो विदेशी चलन सुद्धा देशाला मिळू शकते आंतरराष्ट्रीय व्यापारामुळे या देशातील संबंध सुधारण्याचे मदत होते तसेच विकसित व विकसनशील देशांमध्ये कच्चा माल, पक्का माल, आधुनिक तंत्रज्ञान यंत्रसामग्री यांची देवाणघेवाण होते त्यामधूनच देशा - देशात सहकार्याची भावना वाढीस लागते.

प्रस्तावना :

आंतरराष्ट्रीय व्यापारामुळे वस्तूंच्या उत्पादनात आणि उपभोगात वाढ होते म्हणजेच आंतरराष्ट्रीय व्यापारात लाभ होतो. आंतरराष्ट्रीय व्यापार देशाच्या आर्थिक विकासाच्या प्रक्रियेमध्ये महत्वाची भूमिका बजावतो आंतरराष्ट्रीय व्यापारामुळे विविध देशांमध्ये वस्तूंच्या देवाण घेवाणीत वाढ होते आणि त्यामुळे सहाजिकच वस्तूंच्या मागणीत वाढ होते जे देश या व्यापारात सहभागी होतात ते देश विकसित

होतात याउलट जे देश या व्यापारात सहभागी होत नाहीत ते काही प्रमाणात मागास रहातात देशातील उत्पादन घटकाच्या उपलब्धतेमुळे आणि उत्पादन खर्चातील फरकामुळे स्थितीशील लाभ मिळतात आंतरराष्ट्रीय व्यापारामुळे देशाच्या आर्थिक विकासामुळे गतिशील लाभ मिळतात. आंतरराष्ट्रीय व्यापार आणि आर्थिक विकास यांचा धनात्मक संबंध असतो आंतरराष्ट्रीय व्यापाराचा सनातनी सिद्धांत हा आंतरराष्ट्रीय व्यापाराच्या लाभावर आधारित आहे

.ॲडम स्मिथ यांच्या मते, राष्ट्रीय आणि आंतरराष्ट्रीय स्तरावर श्रम विभागणी आणि विशेषीकरणाच्या लाभांमुळे आंतरराष्ट्रीय व्यापारात लाभ प्राप्त होतो कारण उत्पादन खर्चात निरपेक्ष फरक असतो रेकॉर्डच्या मते आंतरराष्ट्रीय व्यापारामुळे वस्तूच्या मात्रा आणि एकूण लाभामध्ये वाढ होते देशातील वस्तूच्या उत्पादन खर्च वाढ होत असेल व त्याच वस्तू आयात केल्यास फायदा होत असेल तर असा व्यापार अनुकूल ठरत असतो.

उद्दिष्टे :

१. आंतरराष्ट्रीय व्यापाराचे महत्व, स्वरूप, दिशा यांचा अभ्यास करणे .
२. भारताच्या आंतरराष्ट्रीय व्यापारातील भूमिकेचा अभ्यास करणे .
३. आंतरराष्ट्रीय व्यापारातील आव्हानांचा अभ्यास करणे .

संशोधन पद्धती:

प्रस्तुत शोधनिबंधाच्या अभ्यास उद्दिष्टांची पूर्तता करण्यासाठी दुय्यम साधनसामग्री वापरण्यात आली आहे. विविध पुस्तके, मासिके, दैनिक, शासकीय योजना, अहवाल, पुरवण्या इत्यादी साहित्यातून माहितीचे संकलन करण्यात आले आहे .

आंतरराष्ट्रीय व्यापाराचे स्वरूप आणि दिशा:

आंतरराष्ट्रीय व्यापाराचे स्वरूप आणि दिशा जागतिकीकरणावर अवलंबून असते. जागतिकीकरणामुळे राष्ट्रीय सीमांचे बंधन कमी झाले आहे आणि व्यापार आणि गुंतवणुकीचा प्रवाह वाढला आहे. आंतरराष्ट्रीय व्यापाराचे स्वरूप आणि दिशा खालीलप्रमाणे आहे:

- आंतरराष्ट्रीय व्यापारातून राष्ट्रांना जागतिक अर्थव्यवस्थेत सहभागी होण्याची संधी मिळते.

- आंतरराष्ट्रीय व्यापारामुळे देशांमधील सुसंवादी संबंधांना प्रोत्साहन मिळते.
- आंतरराष्ट्रीय व्यापारामुळे देशांच्या अर्थव्यवस्था कार्यक्षम बनतात.
- आंतरराष्ट्रीय व्यापारामुळे देशांना परदेशी गुंतवणुकीच्या संधी मिळतात.
- आंतरराष्ट्रीय व्यापारामुळे देशांना परकीय चलन मिळते.
- आंतरराष्ट्रीय व्यापारामुळे उत्पादनाच्या किफायतशीर घटकांशी संबंधित भविष्यातील आवश्यकता पूर्ण होतात.

आंतरराष्ट्रीय व्यापाराचे महत्व :

आर्थिक वाढ - आंतरराष्ट्रीय व्यापार गुंतवणूक, उद्योजकता आणि देशांमधील आर्थिक वाढीमध्ये महत्त्वपूर्ण भूमिका बजावते. आंतरराष्ट्रीय व्यापारातून रोजगाराच्या संधी आणि उत्पन्न निर्माण होते. औद्योगिकक्रांती नंतर उत्पादन वाढीबरोबर नवनवीन बाजारपेठांची निर्मिती झाली. श्रमविभागणी आणि विशेषीकरण यामुळे दर्जेदार व गुणवत्तापूर्ण उत्पादनाला चालना मिळाली त्यामुळे देशांमध्ये आर्थिक वाढ होत आहे.

नाविन्य आणि तंत्रज्ञान – तांत्रिक ज्ञान, व्यावसायिक अनुभव व तंत्रज्ञान हे देशाच्या आर्थिक विकासास आवश्यक असतात. तंत्रज्ञान हे आजच्या जागतिकीकरणासाठी चालक आहे कारण कंपन्यांना त्यांच्या क्रियाकलापांना गती देण्यासाठी प्रत्येक गोष्टीला तांत्रिक समर्थनाची आवश्यकता आहे. आंतरराष्ट्रीय व्यापारामुळे नवनवीन तंत्रज्ञानाची देवाणघेवाण होत आहे.

राजकीय सहकार्य - व्यापार धोरणे, पर्यावरणीय धोरणे इत्यादींमधील सहकार्यामुळे दोन देश आर्थिकदृष्ट्या परस्परावलंबी असल्यामुळे योग्य वाटाघाटी, संप्रेषण किंवा विवाद सोडवणे सुलभ करते व दोन देशांच्या

मध्ये आर्थिक बरोबरच राजकीय सहकार्य आंतरराष्ट्रीय व्यापारामुळे निर्माण होते.

सांस्कृतिक देवाणघेवाण - दोन देशांमधील व्यापारामुळे भिन्न संस्कृती असलेल्या विविध देशातील लोकांना समजून घेणे आणि एकमेकांचा आदर करणे यामुळे देशादेशात सहकार्याची भावना वाढीस लागते. आंतरराष्ट्रीय व्यापारामुळे एकमेकांस आवश्यक असणाऱ्या वस्तू व सेवा उपलब्ध होतात . आपत्ती काळात एकमेकांना मदत होते .यातून शैक्षणिक, सामाजिक, सांस्कृतिक इ. क्षेत्रात देवाणघेवाण वाढते . आंतरराष्ट्रीय सहकार्य निर्माण होऊन जागतिक मानव समूहाचा विकास होतो.

रोजगाराची संधी - आंतरराष्ट्रीय व्यापारामुळे रोजगाराच्या संधी निर्माण होतात ज्यामुळे व्यापारात गुंतलेल्या देशांमधील लोकांचे जीवनमान सुधारण्यास मदत होते.आंतरराष्ट्रीय व्यापारामध्ये देशातील आयातीमुळे उद्योगांना आवश्यक असणारा कच्चा माल,तंत्रज्ञान इ उपलब्ध होते तसेच निर्यातीमुळे देशातील उत्पादनाला व कच्च्या मालाला मागणी वाढते यातून एकूण उत्पादनात वाढ होते .उत्पादन घटकांना रोजगाराच्या संधी प्राप्त होतात.

नैसर्गिक संसाधनांचा योग्य वापर - आंतरराष्ट्रीय व्यापारात ग्राहकांच्या गरजा पूर्ण करण्याबरोबरच अतिरिक्त वस्तू इतर देशात निर्यात केल्या जातात.तसेच नैसर्गिक संसाधनांचा इष्टतम वापर केला जातो.व त्यातून योग्य ते उत्पादन घेतले जाते.

आर्थिक स्थैर्य – देशात चलनवाढीची परिस्थिती असते तेव्हा देशाला आयातीद्वारे आवश्यक असणाऱ्या वस्तू मिळवता येतात म्हणून वाढणाऱ्या किंमत पातळीवर नियंत्रण ठेवता येते चलन घटीच्या काळात निर्यातीद्वारे अतिरिक्त उत्पादन परदेशात पाठविता येते. म्हणून वस्तूंचा पुरवठा योग्य प्रमाणात राहतो . घटत्या किंमत पातळीवर नियंत्रण येते यातून देशाला आर्थिक स्थैर्य मिळते.

औद्योगिक उत्पादनात वाढ -देशातील प्रत्येक वस्तूचे उत्पादन करण्यासाठी श्रम, भांडवल, संयोजन, इंधन,

यंत्रसामग्री, कच्चा माल अशा अनेक घटकांची गरज असते पण प्रत्येक देशात हे सर्व घटक उपलब्ध होतात असे नसते अशा वेळी आपल्याला इतर देशांची मदत घ्यावी लागते आणि त्यावेळी त्या देशांच्या मध्ये अनुकूल व्यापार घडून येतो आणि यामुळे आंतरराष्ट्रीय व्यापारात वाढ होत आहे व त्याच बरोबर औद्योगिक उत्पादनात वाढ होत आहे.

भारताची आंतरराष्ट्रीय व्यापारातील भूमिका:

आंतरराष्ट्रीय व्यापारात भारताची भूमिका खूप महत्त्वाचे आहे कारण भारताचा आंतरराष्ट्रीय व्यापार अनेक पैलूवर अवलंबून आहे. यामध्ये भारताची आयात,निर्यात व्यापार, तूट व मुक्त व्यापार यांचा समावेश आहे. २०२२ मध्ये भारत जगातील सातव्या क्रमांकाचा सेवा निर्यातदार देश होता. भारताची ही निर्यात अमेरिका आणि युरोप सारख्या देशांच्या बाजारपेठेवर अवलंबून आहे भारत हे जगातील सर्वात मोठी लोकशाही आहे आणि सर्वात जास्त लोकसंख्या असलेले राष्ट्र आहे त्यामुळे शिक्षण, ज्ञान, संशोधन,व्यापार त्याचबरोबर परकीय व्यापार या दृष्टीने जगामध्ये भारताचे योगदान महत्त्वाचा आहे तसेच चीनच्या खालोखाल विकसित अशी अर्थव्यवस्था आहे.सद्य स्थितीत भारताच्या आंतरराष्ट्रीय व्यापारात अनेक बदल दिसून येतात आयात आणि निर्यात यामध्ये बदलते स्वरूप दिसत आहे आंतरराष्ट्रीय व्यवसायामध्ये विविध देशांचा व्यापार वस्तू व सेवा यामध्ये तंत्रज्ञानाचा समावेश झाला आहे तसेच वेगवेगळ्या व्यवसायांना मोठ्या बाजारपेठामध्ये प्रवेश मिळत आहे त्यामुळे व्यापारात विविध संधी उपलब्ध होतात आज जगामध्ये आंतरराष्ट्रीय व्यापार जागतिक अर्थव्यवस्थेचा अविभाज्य भाग बनलेला आहे .अनेक छोट्या उद्योगापासून मोठ मोठे व्यवसाय बहुराष्ट्रीय कंपन्या यांचे स्वरूप विस्तारित आहे आणि ते आंतरराष्ट्रीय व्यापारात सहभागी होत आहेत.

भारत IT सेवा, फार्मास्युटिकल्स, कृषी निर्यात, कापड, ऑटोमोटिव्ह उत्पादन आणि दागिने

यांच्या नेतृत्वाद्वारे जागतिक व्यापारात योगदान देतो. हे सॉफ्टवेअर, जेनेरिक औषधे, तांदूळ, कपडे, कार आणि पेट्रोलियम उत्पादनांच्या मोठ्या प्रमाणावर निर्यातीसाठी ओळखले जाते, तसेच स्टार्ट-अप आणि तंत्रज्ञान नवकल्पनाचे प्रमुख केंद्र देखील आहे.

1. IT आणि सेवा निर्यात: TCS आणि Infosys सारख्या कंपन्या जगभरातील ग्राहकांना सेवा देत असलेल्या IT सेवा, सॉफ्टवेअर आणि BPO सेवांचा भारत हा एक सर्वोच्च जागतिक प्रदाता आहे.

2. औषध क्षेत्र : "जगातील फार्मसी" म्हणून ओळखले जाणारा भारत देश जेनेरिक औषधे आणि लसींची निर्यात करतो, विशेषतः COVID-19 महामारीच्या काळात जागतिक आरोग्यामध्ये महत्त्वपूर्ण भूमिका बजावत आहे.

3. कृषी: भारत हा तांदूळ (बासमतीसह), गहू, चहा आणि मसाल्यांचा प्रमुख निर्यात आहे, जे अनेक देशांमधील अन्न पुरवठ्यात महत्त्वपूर्ण योगदान देत आहे त्यामध्ये भारत अग्रेसर आहे.

4. कापड आणि वस्त्रे: कापड निर्यातीत भारत हा प्रमुख आहे, जो कापूस, रेशीम आणि तयार कपड्यांसाठीच्या निर्यातीत अग्रेसर म्हणून ओळखला जातो. जो युरोप, यूएसए आणि त्यापुढील बाजारपेठांना आवश्यक तो पुरवठा करतो.

5. ऑटोमोबाईल्स: टाटा मोटर्स आणि बजाज ऑटो सारख्या ब्रँड्स विविध आंतरराष्ट्रीय बाजारपेठेत पोहोचून भारत कार, मोटरसायकल आणि ऑटो घटकांची निर्यात करतो.

6. दागदागिने आणि रत्ने: सुरत आणि मुंबई सारखी शहरे प्रमुख केंद्रे असलेल्या हिरे कापणी आणि पॉलिशिंग तसेच सोन्याच्या दागिन्यांच्या निर्यातीत भारत जागतिक पातळीवर आघाडीवर आहे.

7. पेट्रोलियम: भारत आशिया, आफ्रिका आणि युरोपमध्ये पेट्रोलियम उत्पादने जसे की डिझेल आणि गॅसोलीनची निर्यात करतो, त्यांच्या मोठ्या शुद्धीकरण क्षमतेचा फायदा घेत आहे.

8. जागतिक पुरवठा साखळी: भारत इलेक्ट्रॉनिक्स, ऑटोमोटिव्ह आणि रासायनिक पुरवठा साखळींमध्ये वाढत्या प्रमाणात एकत्रित होत आहे, जे जागतिक उत्पादन आणि व्यापारात योगदान देत आहे.

9. व्यापार करार: भारत द्विपक्षीय आणि प्रादेशिक व्यापार करारांमध्ये सक्रियपणे गुंतलेला आहे, जागतिक व्यापार धोरणांवर प्रभाव टाकतो आणि अनेक देशांशी आर्थिक संबंध वाढवतो.

आंतरराष्ट्रीय व्यापाराची आव्हाने:

आंतरराष्ट्रीय व्यापारात अनेक आव्हाने व समस्या आहेत. पायाभूत सुविधा, वाहतूक आणि स्टोरेज इन्फ्रास्ट्रक्चरमधील समस्यांमुळे वितरणास विलंब होऊ शकतो, लॉजिस्टिक खर्च वाढू शकतो आणि जागतिक पुरवठा साखळींच्या कार्यक्षमतेवर परिणाम होऊ शकतो. या कमतरतेमुळे मालाच्या कार्यक्षम प्रवाहावर परिणाम होतो, परिणामी डिलिव्हरी वेळ आणि अतिरिक्त खर्च येतो. या आव्हानांवर मात करण्यासाठी आणि लवचिक आणि प्रभावी लॉजिस्टिक पायाभूत सुविधा सुनिश्चित करण्यासाठी आधुनिकीकरण, विस्तार आणि प्रगत तंत्रज्ञानातील गुंतवणूक महत्वाची आहे. एकूणच परकीय व्यापार हा जागतिक अर्थव्यवस्थेचा एक मूलभूत घटक आहे. राष्ट्रांना जोडणारा आणि आर्थिक वाढीस चालना देतो. तथापि, नियामक अडथळे आणि चलनातील चढउतारांपासून ते सांस्कृतिक समस्या आणि पर्यावरणीय जोखमींपर्यंतच्या जटिल आव्हानांना सामोरे जावे लागते. या आव्हानांवर मात करण्यासाठी अनुकूल धोरणे, आंतरराष्ट्रीय सहकार्य आणि लवचिकतेमध्ये गुंतवणूक आवश्यक आहे. या अडथळ्यांना सक्रियपणे संबोधित करून, कंपन्या आणि सरकार अधिक टिकाऊ आणि कार्यक्षम आंतरराष्ट्रीय व्यापारासाठी एक भक्कम पाया तयार करू शकतात."

निष्कर्ष :

आंतरराष्ट्रीय व्यापारामुळे देशांना बाजारपेठ विस्तृत करण्याची, वस्तू आणि सेवांमध्ये प्रवेश करण्याची आणि जागतिक अर्थव्यवस्थेत सहभागी होण्याची संधी मिळते. आंतरराष्ट्रीय व्यापाराचे काही निष्कर्ष खालीलप्रमाणे:

1. आंतरराष्ट्रीय व्यापारामुळे बाजारपेठ अधिक स्पर्धात्मक होते.
2. आंतरराष्ट्रीय व्यापारामुळे ग्राहकांना स्वस्त उत्पादने मिळतात.
3. आंतरराष्ट्रीय व्यापारामुळे देशांची कार्यक्षमता वाढते.
4. आंतरराष्ट्रीय व्यापारामुळे जागतिक अर्थव्यवस्थेत पुरवठा आणि मागणी या दोन्ही गोष्टी प्रभावित होतात .
5. आंतरराष्ट्रीय व्यापारामुळे देशांना थेट परदेशी गुंतवणुकीसाठी (एफडीआय) संधी मिळते.
6. आंतरराष्ट्रीय व्यापारामुळे देशांमधील वाणिज्य वाढते.
7. आंतरराष्ट्रीय व्यापारामुळे देशांमधील आर्थिक परस्परसंवाद वाढतो.

सारांश:

प्राचीन काळापासून मानव व्यापार करत आला आहे परस्परावलंबन व परस्पर सहकार्य यामुळे मानवी समाजामध्ये व्यापाराला महत्व प्राप्त होते व्यापारामुळेच अर्थव्यवस्थेच्या विकासाला गती प्राप्त होते देशातील नागरिकांच्या विविध गरजांची पूर्तता होण्याच्या दृष्टीने देशांतर्गत व्यापार जितका महत्वाचा तितकाच आंतरराष्ट्रीय व्यापार सुद्धा महत्वाचा ठरतो

विविध देशाचे भिन्न भौगोलिक स्थान नैसर्गिक अनुकूलता इत्यादीमुळे प्रत्येक देश विशिष्ट वस्तू उत्पादनावर लक्ष केंद्रित करतात ज्या वस्तूचे मुबलक प्रमाणात उत्पादन करणे शक्य आहे त्या वस्तूंची इतर देशात निर्यात करणे व स्वतःला आवश्यक अशा वस्तूंची इतर देशाकडून आयात करणे या धोरणातून आंतरराष्ट्रीय व्यापार घडून येतो 19 व्या शतकापासून आंतरराष्ट्रीय व्यापारामध्ये मोठी वाढ झाली तसे आंतरराष्ट्रीय व्यापार क्षेत्रात निर्माण होणाऱ्या आर्थिक प्रश्नांची स्वतंत्रपणे उकल करणे आवश्यक बनले सध्या आंतरराष्ट्रीय अर्थशास्त्राच्या अभ्यासाला महत्त्व प्राप्त झाले आहे. आंतरराष्ट्रीय अर्थशास्त्रामध्ये आंतरराष्ट्रीय व्यापार क्षेत्राला महत्त्व प्राप्त झाले आहे .

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आदिवासी समाजातील स्त्रियांच्या शैक्षणिक समस्यांचे अध्ययन

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प्रस्तावना:

आदिवासी समाजात स्त्रियांचे प्रमाण साधारणपणे 50 % आहे. स्त्री ही मातृत्वाची भूमिका पार पाडते. प्रत्येक व्यक्तीच्या जीवनातील पहिला गुरु आई असते. आईने दिलेल्या संस्काराची परिणामकता भावी पिढीच्या जडण घडणाशी संबंधीत आहे. त्यासाठी स्त्री ही सुशिक्षित व सुसंस्कृत असणे आवश्यक आहे. आदिवासी महिलांची प्रगल्भता, जाणकारी, साक्षरता इतर महिलांपेक्षा कमी आहे. महिलांच्या सहभागाशिवाय कुटुंबास पूर्णत्व प्राप्त होत नाही. भारतातील आदिवासी समाज हा देशाच्या समृद्ध सांस्कृतिक विराटतेचा एक महत्त्वपूर्ण भाग आहे. हा समाज आपल्या अद्वितीय परंपरा, रीतिरिवाज आणि जीवनशैलीसाठी ओळखला जातो. आदिवासी समाजातील स्त्रिया भारतीय समाजाच्या विविधतेचा एक महत्त्वाचा भाग आहेत, परंतु त्यांचे शैक्षणिक स्तर अत्यंत कमी आहे. शिक्षण हे कोणत्याही समाजाच्या विकासाचे मूलभूत साधन आहे, पण आदिवासी महिलांना अनेक अडथळ्यांचा सामना करावा लागतो. पारंपरिक रूढी, आर्थिक संकट आणि शिक्षणाच्या सुविधांचा अभाव यामुळे त्यांच्या शैक्षणिक प्रवासात अनेक अडचणी येतात. आदिवासी समाजातील स्त्रिया शिक्षणाच्या क्षेत्रात कमी प्रतिनिधित्व करतात, ज्यामुळे त्यांच्या सामाजिक व आर्थिक स्थितीवर प्रतिकूल

परिणाम होतो. सामाजिक, आर्थिक आणि भौगोलिक अनेक कारणांमुळे ह्या समाजातील लोकांना अनेक आव्हानांचा सामना करावा लागतो. यापैकी एक प्रमुख आव्हान म्हणजे आदिवासी महिलांचे शिक्षण. आजही आदिवासी महिलांच्या शिक्षणाची स्थिती अतिशय चिंताजनक आहे. त्यांना शिक्षणाच्या मुख्य प्रवाहातून दूर ठेवले जाते. यामागे अनेक कारणे आहेत.

या संशोधन निबंधात आदिवासी समाजातील स्त्रियांच्या शैक्षणिक समस्यांचे सखोल अध्ययन करण्यात आले आहे. यामध्ये आदिवासी समाजातील स्त्रियांच्या शैक्षणिक समस्यांच्या कारणांचा अभ्यास करण्यात आला आहे. तसेच आदिवासी महिलांच्या शैक्षणिक स्थितीमध्ये सुधारणा करण्यासाठी आवश्यक उपाययोजनांचा शोध घेण्याचा प्रयत्न केला आहे.

1961 ते 2011 च्या जनगणनेनुसार सर्व सामाजिक गट व अनुसूचित जमाती यांच्या साक्षरतेची तुलना (टक्केवारी मध्ये) खालील प्रमाणे-

वर्ष	सर्व सामाजिक गट			अनुसूचित जमाती		
	पुरुष	स्त्रिया	एकूण	पुरुष	स्त्रिया	एकूण
1961	40.4	15.35	28.3	13.83	3.16	8.53
1971	45.96	21.97	34.45	17.63	4.85	11.30
1981	56.38	29.76	43.57	24.52	8.04	16.35
1991	64.13	39.29	52.21	40.65	18.19	29.60
2001	75.26	53.67	64.84	59.17	34.76	47.10
2011	80.89	64.64	72.99	68.53	49.35	58.96

आधार : www.tribalministry.com.in Tribal Profile At a Glance, PDF, 2014, P.No.10

1961 ते 2011 च्या जनगणनेनुसार इतर समाजाशी अनुसूचित जमातीच्या साक्षरतेची तुलना केली असता अनुसूचित जमातीमध्ये साक्षरतेचे प्रमाण कमी आढळून आले आहे. आदिवासी समाजात साक्षरतेचे प्रमाणात वाढ होत आहे मात्र ही वाढ अतिशय संथ गतीने होत आहे. 1961 मध्ये आदिवासी जमातीची एकूण साक्षरता 8.53 % इतकी होती त्यामध्ये वाढ होऊन 2011 मध्ये साक्षरतेचे प्रमाण 58.96 % इतके झाले आहे. आदिवासी समाजातील पुरुषांच्या तुलनेत स्त्रियांच्या साक्षरतेचे प्रमाण अतिशय कमी आहे. 1961 मध्ये आदिवासी समाजातील स्त्रियांचे साक्षरतेचे प्रमाण 3.16 % होते तर 2011 मध्ये साक्षरतेचे प्रमाण 49.35 % इतके होते.

उद्दिष्टे:

1. आदिवासी समाजातील स्त्रियांसमोरील शैक्षणिक समस्यांचा अभ्यास करणे.
2. आदिवासी समाजातील स्त्रियांमधील साक्षरतेचे प्रमाण अभ्यासणे.

तथ्य संकलन:

प्रस्तुत संशोधनासाठी दुय्यम तथ्य सामग्रीचा आढावा घेण्यात आला आहे. यामध्ये भारत सरकारच्या अधिकृत संकेतस्थळांबरोबरच महाराष्ट्र

शासनाचे अहवाल, संशोधन निबंध तसेच संदर्भ ग्रंथांचा अभ्यास करण्यात आला आहे.

आदिवासी स्त्रियांसमोरील समोरील शैक्षणिक समस्या:

1. **पारंपारिक रूढी:** आदिवासी स्त्रियांसमोरील शैक्षणिक समस्यांमध्ये पारंपरिक रूढींचा प्रभाव अत्यंत महत्त्वाचा आहे. या पारंपरिक रूढी अनेक पिढ्यांपासून चालत आलेल्या आहेत आणि त्या आदिवासी समाजाच्या सांस्कृतिक, सामाजिक आणि आर्थिक जीवनात खोलवर रुजलेल्या आहेत. अनेक ठिकाणी मुलींना शिक्षण घेण्याऐवजी घरगुती कामे करण्यास प्राधान्य दिले जाते. यामुळे मुलींच्या शिक्षणाची संधी कमी होते. अनेक कुटुंबांमध्ये, विशेषतः ग्रामीण भागात, मुलींना घरकामात मदत करण्यासाठी लहान वयातच कामाला लावले जाते. आदिवासी समाजात मुलींच्या शिक्षणाबद्दल नकारात्मक धारणा असू शकतात. काही समुदायांमध्ये, शिक्षित झालेल्या मुलींच्या विवाहाच्या संधी कमी होण्याची भीती व्यक्त केली जाते. यामुळे कुटुंबे मुलींना शिक्षित करण्याऐवजी त्यांना लवकर विवाहासाठी तयार करण्यात लक्ष केंद्रित करतात.
2. **आर्थिक अडचणी:** आदिवासी कुटुंबे बहुतेकदा गरीब असतात. शिक्षणाच्या खर्चामुळे किंवा कुटुंबाच्या आर्थिक गरजांमुळे मुलींना शाळेत

पाठवणे शक्य होत नाही. अनेक वेळा, कुटुंबातील सदस्यांच्या कामाच्या आवश्यकतेमुळे मुलींना शिक्षणापासून वंचित राहावे लागते. शालेय युनिफॉर्म, पुस्तके, वाहतुकीचा खर्च यामुळेही आर्थिक ताण वाढतो. त्यामुळे मुलींच्या शिक्षणावर प्राधान्य देण्याऐवजी कुटुंबे त्यांच्या दैनंदिन गरजांवर लक्ष केंद्रित करतात. अनेक वेळा, आदिवासी भागांमध्ये शाळांची गुणवत्ता कमी असते आणि खासगी शाळा महाग असतात. कुटुंबाला उच्च गुणवत्तेचे शिक्षण मिळवण्यासाठी आर्थिक ताण सहन करावा लागतो. शिक्षणाची किंमत ही एक मोठी अडचण आहे, ज्यामुळे अनेक कुटुंबे मुलींना शिक्षणासाठी पाठवण्यात संकोच करतात.

3. **शिक्षणाच्या सुविधांचा अभाव:** आदिवासी भागांमध्ये शालेय सुविधा उपलब्ध नसल्याने विद्यार्थ्यांना शिक्षण घेणे कठीण जाते. अनेक ठिकाणी शाळा नाहीत किंवा शाळांची गुणवत्ता कमी आहे. शिक्षकांची कमतरता, शिक्षणाची पद्धत, आणि शालेय इन्फ्रास्ट्रक्चर यामुळे विद्यार्थ्यांना योग्य शिक्षण मिळत नाही. आदिवासी समुदाय बहुधा दुर्गम आणि पर्वतीय भागात वसलेले असतात, जिथे शाळा किंवा शिक्षण संस्थांची उपलब्धता कमी असते. या ठिकाणी पोहोचणे कठीण असते, ज्यामुळे मुलींना शाळेत जाण्यासाठी मोठा प्रवास करावा लागतो. अनेक आदिवासी भागांमध्ये प्राथमिक आणि माध्यमिक शाळा उपलब्ध नसतात. त्यामुळे, मुलींना शिक्षण घेण्यासाठी लांबच्या ठिकाणी जाण्याची आवश्यकता भासते, ज्यामुळे त्यांचा शिक्षणाचा मार्ग खडतर होतो.
4. **लिंगभेद:** आदिवासी समाजात लिंगभेद मोठा असतो. मुलांना अधिक महत्त्व दिले जाते, ज्यामुळे मुलींवर शिक्षणाचा दबाव वाढतो. शिक्षण घेण्याच्या बाबतीत मुलांना प्राधान्य दिले जाते, त्यामुळे मुलींच्या शिक्षणाची संधी कमी होते.

आदिवासी भागांमध्ये मुलींच्या सुरक्षिततेसाठी आव्हाने असतात. शाळेत जाणाऱ्या मुलींना भेदभाव, छळ किंवा इतर असुरक्षिततेच्या घटनांचा सामना करावा लागतो. यामुळे अनेक कुटुंबे मुलींना शाळेत पाठवण्यात संकोच करतात. समाजातील लिंगभेदाची मानसिकता मुलींवर दबाव आणते. शिक्षणाचे महत्त्व त्यांच्या कुटुंबांमध्ये कमी मानले जाते, ज्यामुळे त्यांना शिक्षण घेण्यास प्रोत्साहन मिळत नाही.

5. **जागरूकतेचा अभाव:** आदिवासी महिलांना त्यांच्या हक्कांची आणि शिक्षणाच्या महत्त्वाची जाणीव नसते. यामुळे त्यांना शिक्षण घेण्यास प्रोत्साहन मिळत नाही. अनेकदा, त्यांना त्यांच्या अधिकारांची माहिती नसल्याने ते शिक्षणाच्या संधींवर विचार करत नाहीत. अनेक आदिवासी समुदायांमध्ये शिक्षणाची गरज आणि त्याचे फायदे समजून घेण्यात अडचणी येतात. शिक्षणामुळे मिळणाऱ्या संधी, आर्थिक स्थिरता, आणि सामाजिक बदल याबद्दल माहिती नसल्याने मुलींच्या शिक्षणाकडे दुर्लक्ष केले जाते. आदिवासी भागांमध्ये शाळा आणि शिक्षण कार्यक्रमांची उपलब्धता असली तरी, त्याबद्दल माहिती नसल्याने कुटुंबे त्यांच्या मुलींना शाळेत पाठवण्यास कचरतात. स्थानिक स्तरावर शाळांच्या कार्यप्रणाली, शैक्षणिक योजनांबद्दल जागरूकतेचा अभाव असतो.

उपाययोजना:

1. आदिवासी महिलांमध्ये शिक्षणाची इच्छा व ओढ निर्माण होण्यासाठी दृक श्राव्य माध्यमांचा वापर मोठ्या प्रमाणात करणे.
2. मुलींना शिष्यवृत्ती देण्याची योजना अधिक प्रभावीपणे राबविणे.
3. आदिवासी युवक युवतींना मागदर्शन करणे.

4. आदिवासी समुदायांमध्ये मुलींच्या शिक्षणाचे महत्त्व पटवून देण्यासाठी जागरूकता मोहीम राबवाव्यात.
5. ग्रामसभेत आणि इतर सामाजिक कार्यक्रमांमध्ये मुलींच्या शिक्षणाबद्दल चर्चा करून त्याचे महत्त्व स्पष्ट करावे.
6. शिक्षक हे समाजातील एक महत्त्वाचे घटक आहेत. त्यांनी मुलींना शिक्षण घेण्यासाठी प्रोत्साहित करावे.
7. आदिवासी बहुल भागांमध्ये शाळांची संख्या वाढवावी.
8. आदिवासी भाषांमध्ये शिकवणे सुरू करून मुलींना शिकण्यास प्रोत्साहन द्यावे.

समारोप:

आदिवासी समाजातील स्त्रियांच्या शैक्षणिक समस्या हा एक जटिल प्रश्न आहे. या समस्येचे निराकरण करण्यासाठी सरकार, शैक्षणिक संस्था आणि सामाजिक संघटना यांच्या ' संयुक्त प्रयत्नांची आवश्यकता आहे. या संशोधनातून असे दिसून येते की आदिवासी समाजातील स्त्रियांच्या शैक्षणिक समस्यांचे मूळ कारण आर्थिक, सामाजिक आणि सांस्कृतिक घटक आहेत. या समस्यांचे निराकरण करण्यासाठी

शासनाने विशेष योजना आणि कार्यक्रम राबविले पाहिजेत.

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Impact of Gender Inequality of Economic Development

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Abstract:

Gender equality is essential for the realization of human rights and sustainable development. Because gender equality is the key to sustainable development. If there is equality between men and women, it is possible to establish many businesses and achieve equal opportunities for economic development and sustainable development is achieved. Through sustainable development, many individual ambitions will be fulfilled, many people's talents will be developed and equal opportunities will be achieved in education and in all fields. All women will be completely free from gender based violence. However, gender inequality still exists in our country and women are excluded or given less important and less responsible jobs in decision-making processes, workplaces and society. Empowerment of women is important if gender equality is to be promoted. Also gender needs to be mainstreamed. Gender mainstreaming aims to increase the empowerment of women in population and development activities. For this it is necessary to address the known gender inequality in areas such as division of labor by paying attention to both the social and economic status and location of women as well as men. Programs should be designed so that both women and men can participate fully as equal partners in private and social life. Gender equality does not only mean equality between men and women, but it also means empowering men and giving them important rights. Men have more family responsibilities, so many economic problems are faced by men, so men also need to be brought to the level of equality. If men do not get the right opportunity, they drink alcohol, or commit suicide. For this, the government should prepare a suitable draft plan by looking at the role and needs of men, the economic development of the country depends on both gender equality and sustainable development. This important point has to be acknowledged.

Keywords: *GBV- Gender- Based violence, UN - United Nations, GDP-Gross domestic Product, SDG- Sustainable Development Goals*

Importance:

Gender equality is not only a matter of justice and inclusive growth, but it is a prerequisite for sustainable development. Women play a key role in energy use, production and consumption, but they are still marginalized and face many barriers, which limit their participation in many areas. If the country wants to achieve sustainable development, first it is necessary to eliminate sexual violence against women and girls. Women are still victims of exploitation such as trafficking in women,

sexual exploitation, and financial exploitation, emotional and physical coercion. Also, child marriages of girls are still taking place. Women are deprived of education. To this end, the United Nations has emphasized gender equality in Sustainable Development Goal Five (S.D.G.5). Some of the targets for achieving Sustainable Development Goal 5 include the various forms of gender-based violence experienced by women around the world. These include forced marriage, child marriage, female genital mutilation as well

as physical, emotional, and financial coercion, where women are deprived of freedom of decision. Violence against women is a global problem. Although these harmful practices are decreasing but the ongoing efforts to eliminate all these practices by 2030 are not enough. For this, steps should be taken in the future by considering what exactly is the need of the country and what should be done to bring equality between men and women, and also prepare various plans and schemes. If there is to be a social revolution, a big plan must be created. It is necessary to find the root cause why women are exploited in many ways. Also measures should be taken to reduce this exploitation. Only if these measures are implemented, it can be said that sustainable development is taking place in the true sense. In the present article, the oppression of women, their causes, and measures to achieve equality between men and women have been discussed. If the people of the country are starving, their character is being violated, they are not getting jobs according to their education, their economic life properly. It will not work and they will remain dissatisfied. For this, a proper plan should be prepared considering the exact needs of men and women so that gender equality can be achieved and sustainable development can be achieved. Gender equality doesn't just mean women's empowerment, but what do men do to drive their economic careers? Are they happy in worldly life? How does their biography work? Do they get the right salary for their education from the government on time? What should be done for the educated unemployed need to get proper salary for their education? How is the standard of living of educated people? Are the farmers getting fair price for their produce? What is the standard of living of the farm laborer? This experience should also be included in this. Taking a holistic view of everything and finding solutions to

that problem is an important goal of sustainable development. For this, it is necessary to consider the latent resource wealth in the country. Equal rights to economic resources, property, and financial services should be given to women and men. Often the income earned by women is not counted in the national income. They are not given ownership of that income. Women are not given the right to inherit property in many areas. By increasing the use of technology, women in rural areas should be provided with various opportunities. If we want to change the society, it is not only the role of the government, but this change should happen from within ourselves, from the society itself. Everyone should be made aware of the equality of men and women.

Objectives:

1. To explore the relationship between sustainable development and gender equality
2. To study the Sustainable Development Goals in the context of gender equality.
3. To suggest solutions to reduce gender inequality.
4. To highlight the empowerment of women.

Gender Equality and Economic Development:

The World Bank Group's Accelerate Equality initiative has reviewed the progress made in reducing gender disparities over the past decade. It has made the following changes

Progress has been slow:

The World Bank Group published the World Development Report 2012: Gender Equality and Development. It found that maternal mortality rates have fallen by 10 percent and the number of girls in secondary school has increased by 5 percent. The Women's Business and Law Index

shows that women's economic rights have improved and that women's participation in national parliaments has increased worldwide. In many low-income countries, women's participation in the labor force is low and there is a gap in income. In many countries, women still accept low-paid jobs for fear of protection. Women take on especially caring for the elderly and domestic work. The World Bank Group reports that women are underrepresented in high-level leadership positions and are doing more. However, according to the Women's Business and Law Index, women's economic rights have improved and more women are now participating in national parliaments than ever before. Women are voluntarily moving forward, breaking away from traditional norms, changing their jobs, taking up male-dominated professions, and completing their education and becoming independent. The practice of early marriage is now decreasing. Also, violence against women and girls, including rape, is still increasing globally. Due to gender inequality, women cannot exercise their right to equal citizenship. Women have to follow many social rules. Customs, practices, and traditions hold women back from their responsibilities. A patriarchal culture still exists in rural as well as urban areas.

Growing Debt and Pandemic Challenges:

Violence against women and girls has increased due to the COVID-19 crisis. Women are more likely than men to lose their jobs in Latin America and the Caribbean. An estimated 11 million girls will not return to school due to the COVID-19 pandemic, according to a report by UN Women. Violence against women has intensified since the start of COVID-19. The available data on adolescent girls' return to school is alarming and a serious problem. Of the girls who did not return to school, 27% cited pregnancy as the reason for not

returning. This illustrates the violence against adolescent girls.

Investment Gives People A Way Forward:

If we want to create inclusive growth, equal society, and empowerment, we have to face the challenges of protecting women and girls, as well as investing. Gender equality does not only mean empowering women, but also empowering men. Men should also be empowered by providing them with appropriate work opportunities, fair wages, and opportunities. We should recognize the full potential of people and provide them with jobs according to their education. If gender equality is created in employment, GDP will be almost 20 percent higher. With quality education, healthcare, and security, people can better cope with shocks like climate change and economic crises. The needs of women and girls who face disadvantages like poverty, unemployment, migration, and disability should be addressed. Their problems should be solved.

Climate Change Impacts Women's Empowerment:

Climate change impacts economic opportunities for both men and women while implementing national policies and development strategies. Involving women in national policies is the key to economic development. Girls' education, family planning, reproductive health, reducing child marriage, and women's opportunities in leadership are important in women's empowerment. There needs to be a transformative change towards equality between men and women, for which concerted efforts are needed. This requires further changes in laws and policies. Now, society needs to accept climate change and take steps towards gender equality. Rather than the government bringing about change, all people need to change within themselves. Only then will equal economic opportunities

be available to women and men. Women should be encouraged to be adventurous.

Gender Equality And Social Inclusion Are Two Important Things To Create Sustainable Development:

Gender Equality:

Gender equality means equal rights, responsibilities and opportunities for women and men. There will be no discrimination in this. This means that women and men should have equal opportunities to shape their lives and participate in social processes by choosing the right opportunities, using the available resources. If this is the case, equality between women and men increases. The rights, responsibilities and opportunities given to each person will have nothing to do with gender, and every person should have equal opportunities, benefits in socio-economic and political terms, and should have equal access to every service.

Social Inclusion:

Social inclusion means increasing social awareness among people, as well as accepting social obligations, developing ourselves by remembering that we are a part of society, getting various opportunities, making full use of our abilities and finding a place in society and eliminating inequalities wherever they appear is an important part of inclusion. Gender equality and social inclusion are two very important aspects from the point of view of economic development. Economic policies and programs should be designed in such a way that all women, all men and excluded groups at the bottom do not have a way of worrying and everyone benefits and the needs of all are fulfilled. If sustainable development is to be achieved through gender equality, the contribution of every woman and man is necessary.

Gender Equality Facts: Sustainable Development Goal No. 5

The fifth of the UN's 17 Sustainable Development Goals is to achieve gender equality and empower all women and girls. Justice, dignity, health, and equal opportunities for all to achieve a future are important from a gender equality perspective. Here are some gender equality facts that explain the SDGs:

SDG Goal No. 5 Targets:

End All Forms Of Discrimination Against All Women And Girls Everywhere:

1. To measure this target, the success is measured by whether there is a legal framework for gender equality and non-discrimination on the basis of sex. In this regard, the World Bank has released the following statistics: According to the 2021 edition of "Women in Business and the Law", there are 88 countries that prevent women from working in some jobs. 49 countries do not have laws against domestic violence. 45 countries do not have laws against sexual harassment. And 112 countries are where marital rape is not a crime. These things confirm gender inequality. For this, it is necessary to formulate policies to protect women's rights in the home, workplace and public places. Only then will gender equality be achieved.
2. Another important UN goal is to end all forms of violence, trafficking and sexual and other forms of exploitation against all women and girls in the public and private sectors. This gender inequality is due to factors such as class, ethnicity, age, sexual orientation, disability status or culture, etc. GBV affects one in three women and girls, and is linked to crises such as gender inequality, poverty, conflict, and the COVID-19 lockdown. For example, the World Bank has ranked Pakistan among the lowest in the world in terms of gender equality, based on its background. According to a UN report, 70 to 90 percent of Pakistani women experience physical, emotional or

psychological abuse by a partner or intimate partner.

Covid-19:

As poverty levels have risen during the Covid-19 lockdown, many parents have forced their teenage daughters to marry off because they cannot afford to take care of their children. This has resulted in teenage girls missing out on their education, facing domestic violence at home and suffering for the rest of their lives. Premature births and deaths from these are on the rise among young girls. UNICEF estimates that this is particularly prevalent in sub-Saharan Africa, particularly in Niger, the African Union and Chad. UNICEF estimates that 21% of married women aged 20 to 24 were married before their 18th birthday. Every year, 12 million girls are married before they are legally adults. The good news is that many in South Asia have been prevented by laws and community participation, with 25 million child marriages prevented in the past decade.

Inclusion of Women's Domestic Work In GDP:

The fourth goal of Sustainable Development Goal 5 is to ensure that women do 2.6 times more paid and domestic work than men. That work should be included in GDP. It is necessary to include women in public service infrastructure and social protection policies, as well as to recognize and value domestic work. When women are able to work for pay in many sectors, economies are stronger. According to a report by the Making Sense Global Institute, if women played the same role as men in the labor market, the global annual GDP could be added by \$28 trillion, or 37 percent, by 2025. However, in many countries, due to patriarchal cultures, there is a perception that men's and women's work are different and this needs to change.

Globally, Women Make Up Only 25% of National Parliaments:

Research shows that governments are increasingly focusing on legislation that promotes gender equality. However, globally, women make up just 25% of national parliaments. Only four countries have at least 50% female representation in their legislative branches. These are the United Arab Emirates - 50%, Bolivia - 53%, Cuba - and Rwanda - 61%. Many challenges need to be addressed at the legislative level to increase gender equality, and more women need to be represented in policy-making.

Every Day, 808 Women Die Between Pregnancy and Childbirth:

That's one woman every two minutes, and according to the United Nations Population Division, an estimated 20 to 30 percent of women who die are injured during pregnancy and childbirth. These deaths are preventable through access to good maternal and child health care and access to family planning resources. Safe and voluntary family planning is a human right. However, the UN estimates that 218 million women in low-income countries do not have access to effective family planning methods, or that women who want to avoid pregnancy do not have access to them. This is because many cultures are patriarchal. Many women cannot go to the doctor without the permission of their husbands, fathers, or brothers, and do not have access to adequate medical facilities. This can be a dangerous environment for both mother and child.

Women Own Less Than 20% of The World's Land Because of Male-Dominated Inheritance Practices:

It is often seen that women can farm land but do not have ownership rights. This system must be changed to bring about gender equality. The fifth Sustainable Development Goal of the Sustainable

Development Goals is to ensure that women have equal rights to economic resources, land and other forms of property, in other types of service concessions, in government reservation in employment, and in ownership and control over natural resources. Many laws are being enacted in this regard.

However, many improvements are being made through technology and communication to promote women's empowerment. It is necessary to increase the number of health nurses in remote areas and provide them with mobile phones. Pregnant women and children should be protected with high-quality care. The future generation should be strengthened by taking special health care. If technology is used properly, the challenge of gender equality can be faced.

Importance of Gender Equality:

Gender equality is important for improving the economic condition of the country and eradicating poverty.

Educated Women Reduce Mortality Rates:

If a woman is educated, the risk of infant mortality is reduced by five to ten percent. If a woman completes secondary education, infant mortality is reduced by half. Also, if all mothers complete primary education, the maternal mortality rate will be reduced by two-thirds, and the health of women and children will improve. Women's education will prevent teenage pregnancy and child marriage.

Women's Labor Power Strengthens Economies:

According to a report by the Mexico Global Institute, if women played a role in the labor market, the global annual GDP could be added to \$28 trillion, or 26%, by 2025.

At the global level, women face many barriers to entering the labor market. According to UNESCO, more than 2.7 billion women are legally prohibited from

choosing the same jobs as men. In fact, women can work in many sectors along with men, which boosts the economy and also helps to provide for the family. This allows families to have access to education, adequate food, and other basic needs.

Gender Equality is Essential for Good Health:

Almost a thousand women die every day due to preventable causes related to pregnancy and childbirth. Inadequate health care facilities have a devastating impact on the family, and children of sick mothers are more likely to not receive health care. Older siblings are often left at home to care for their younger siblings, preventing them from attending school. Educational facilities are inadequate in rural areas, and children who drop out of school are often left behind. When women take proper care of their children, the health of the family is not affected. For this, women must first be educated. Not only does the family develop because of women, but society develops as a result.

If The Government Focuses On Gender Equality And Makes Laws In This Regard, It Will Improve The Legal System:

All forms of gender-based violence exist in all countries. Every culture treats men and women differently. For example, girls who marry at a young age do not get quality education. Also, child brides often face high levels of discrimination and violence, which is why the maternal mortality rate is high in many countries. Forced and early marriage is a major form of violence against women and girls. The government is helping through laws to change these customs and traditions. This will improve the legal system.

Women Are Less Likely To Re-Engage In Conflict If They Are Involved In Peace Talks:

The 2015 UN Women report on gender equality and conflict concludes that

“women’s participation is key to sustainable peace.” When women mediate or negotiate peace agreements, they are more likely to last.

To Break The Cycle Of Poverty, We Must First Break The Cycle Of Gender Inequality:

Gender inequality is a vicious cycle that endangers the lives of women and children and kills millions of mothers and children every year. Gender inequality is both a cause and a consequence of poverty and hunger. The World Food Programme estimates that 60% of the world's hungry are women and children, and the UN estimates that 70% of the 1.3 billion people living in poverty worldwide are women. The global estimated risk of a woman dying from maternal and child causes is one in 4,900. This figure rises to one in 180 in low-income countries. The sad reality is that these deaths are largely preventable, so the vicious cycle of gender inequality must be broken first.

The first and foremost human right is equality between men and women. It means that women, men, boys, girls of all classes and races participate equally in society and have equal value and rights. They have the right to access resources, freedom and opportunity. Gender equality is one of the main objectives of the United Nations Universal Declaration of Human Rights. The objective behind this is that men and women should be treated equally in social, economic and other aspects of society and should not be discriminated on the basis of their sex.

Linkage between Women’s Economic Empowerment and Sustainable Development:

Women’s economic empowerment is essential to promote sustainable development. The following issues are important in the context of women’s economic empowerment.

Women’s Right to Participate in Economic Decision-Making:

Enhancing women’s meaningful participation in economic decision-making at all levels, from the household to the international level, promoting women’s economic justice and economic rights, and closing the gender gap in the workplace are the 2030 Agenda for Sustainable Development. And this is very important for achieving the Sustainable Development Goals. When more women work, economies grow, women’s incomes increase, women’s economic empowerment and income equality are achieved. Thus, closing the gender gap could provide a USD 7 trillion boost to the global economy.

Providing technical education to women and girls is important for their health and income opportunities, as well as for rapid technological change and sustainable development. It has also been observed that women perform better in senior management positions in many large companies. Many companies that utilize the intellectual potential of women are today very profitable. It has been observed that women have better organizational skills. Reducing gender inequality in industrial sectors will not only lead to economic empowerment of women but also achieve sustainable economic development.

Current Status of Women:

One in 10 women lives in extreme poverty. Gender inequalities in employment and job quality require the creation of social protection benefits that are earned through employment, such as pensions, unemployment benefits and maternity protection. Globally, an estimated 73.5% of women in paid employment do not have access to social protection. The gender gap in food insecurity has increased from 1.7% in 2019 to more than 4% in 2021. Lack of water and sanitation continues to plague women and girls, whether at home, school or

work. Women are less likely to have bank accounts in the financial sector. Globally, women's participation in internet use is very low, at just 37%.

Gender Differences in Law:

Gender disparities in the law affect women in both developing and developed economies. As of 2023, more than a third of the 190 economies (69 economies) have laws restricting women's decision to work. And 43 economies have no laws preventing sexual harassment in the workplace.

That is, the inclusion of women in the labor market is less than that of men. Also women are more likely to be unemployed than men. And women are overrepresented in informal and precarious employment. According to a 2018 research, globally nearly 60 percent of women are involved in the informal economy in terms of employment. This proportion is over 90% in low-income countries. In agriculture, women are overrepresented in seasonal informal part-time and low-wage jobs. Globally, in sub-Saharan Africa, 66 percent of women are employed in agri-food systems, compared to 47 percent in South Asia. 71 percent of female workers are involved in the agri-food system compared to male workers.

Women farmers are not given ownership rights over their productive assets. Globally, less than 15 percent of agricultural landholders are women. Reducing the gender gap in agricultural productivity could increase global gross domestic product by one percent. That is almost USD 1 trillion. Women are paid less than men. Women face many disadvantages while starting a new business, thus the potential of women to become entrepreneurs is low. Women face many barriers in the industrial sector.

Gender Norms:

Gender norms are rules about how men and women should behave, express themselves, and interact with others. Media, socialization, and culture contribute to the development of gender norms, and they vary by place and time. Gender socialization affects students. For example boys learn to be assertive, competitive, and independent while girls become emotional and disobedient. Research has shown that adherence to gender norms has a negative impact on children's mental health, social development, and academic performance.

Some examples of gender norms are as follows

Media: Many TV shows and movies portray male protagonists as strong, dominant and aggressive while women are portrayed as emotional and oppressed.

Education: Teachers treat boys and girls differently in school. In books or reading materials, men are portrayed as inventors and leaders while women are given passive roles. In school sports, male players are preferred while female teams are neglected.

Family: Parents have different expectations or set different rules for their children. For example, boys are given opportunities to pursue careers in different fields, while in the case of girls, raising a family and cultivating relationships, getting married early are given priority. Boys are given outdoor chores while girls are given domestic chores e.g. Jobs like cooking and cleaning are provided.

How to Break Gender Norms:

There are many misconceptions about gender and sexuality in society. It is possible to remove this misunderstanding only with the initiative of schools and society. A positive attitude of men towards women in Indian patriarchal culture should be inculcated in students through education. Family, society and school should create

awareness of gender equality among students.

Article 14, 15 (1 & 3), 16, 19, 21 (a), 26 (1) and 46 of the Constitution of India provide for gender equality and attempt to address gender inequality by referring to the constitutional provision. According to the National Education Policy 1986, the element of gender equality has been included in ten major core elements.

Major Findings:

1. Although significant progress has been made in recent years towards gender equality, women still face many barriers to participating in the economy on an equal footing with men.
2. Women's ability to earn a living is limited by multiple household responsibilities and lack of capital, digital tools, markets and childcare. Many jobs cannot be done by women due to social norms. Also low-income women especially face these barriers as some social norms prevent women from full participation
3. Women should come forward themselves in some fields,
4. But due to many types of fear, they cannot do new business. Also they do not get family support. Almost 50 percent of women have not participated in economic development.

Suggestion:

1. First gender inequality in all sectors should be reduced, and for this various government schemes should be adopted.
2. Increasing women's participation is important in terms of human capital and inclusive growth. If these women work in many sectors, the national income will increase and our economy will be strengthened.
3. Reducing inequality between Men and women must first begin with each family.
4. Laws regarding gender equality should be implemented, especially women should be exercise their rights. Men should also try to reduce patriarchal culture.

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Appropriate Technology Movement: An Overview

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Introduction:

First of all is necessary to understand the concept of Appropriate Technology. In this regard, as Kumar (2002) points out, “improved management of natural resources in the light of proper engineering, technological and business practices combined with both the order, indigenous knowledge and the modern agro industrial technologies, biotechnology, informatics and micro-electronics can go a long way in preventing further damage and restoring the earth system by introducing feedbacks on climate which can help stabilize and regulate its environment. In the past, ‘appropriate’ technology used to be considered under the ‘small is beautiful’ frame. It has now advanced to a level expressing what technology should really be about anyway – a means of enhancing the livelihood of humankind in tune with a healthy and clean environment” (Kumar H.D.: 2002).

Many people are coming to realize that neither our economy nor our population can continue to grow forever. We are running out of the natural resources necessary to sustain ourselves. In addition we are limited in our ability to deal with the social and environmental problems that result from continuous growth. There seems to be a growing dissatisfaction with the complexity and hectic lifestyle of 20th century society. Many people would prefer to return to a simpler way of life.

Appropriate technology is attractive because it makes households and industries more self-sufficient, and most things can be managed at a local level. We may have to do more hand labour instead of depending on automation to satisfy our basic needs. However, there are many advantages to simplifying our lives. By growing more of our own food and producing and buying goods in our own communities, we spend less time and money on transportation, produce less waste and consume fewer environmental resources(<http://lsa.colorado.edu/essence/texts/appropriate.htm>).

We should think of eco-friendly technology. Alternative technology is a term sometimes used by environmental advocates to refer to technologies which are more environmentally friendly than the functionally equivalent technologies dominant in current practice. There are many factors which may be cited as implying greater environmental friendliness, such as greater efficiency, or different fuels or power sources. The term also includes products or production processes that promote or enhance material recovery, recycling or marketing of secondary materials, or that reduce or eliminate waste or emissions at the source of generation (<http://www.daenvis.org/introessat.htm>).

The term “Environmentally Sound Appropriate Technology” (ESAT) is

amalgamation of two terms; environmentally sound technology and appropriate Technology. An environmentally sound technology is a technology that serves the goals of development and also reduces the risk of harm to human health (or the environment), enhancing cost-effectiveness (of achieving environmental protection), improving process efficiency, and creating products and processes that are environmentally beneficial. Appropriate Technology is a term that represents the social and cultural dimension of innovation. The idea here is that the value of a technology lies not only in its economic viability and its technical soundness, but also in its adaptation to the local social and cultural environment. Taken together, ESAT is a technology that has two considerations. Firstly, it protects the environment, is less polluting, uses all resources in a more sustainable manner and secondly, it springs from indigenous creativity in response to local needs and possibilities.

The Environmentally Sound Appropriate Technology, primarily, shares three characteristics:

1. It is relevant and ready for use by the common people and aims directly to improve the quality of their lives.
2. It derives maximum leverage from the local cultural environment, by drawing upon the existing managerial and technical skills and providing the basis for extending them.
3. It uses the physical potential of an area, and maintains man's harmony with nature.

Assessing the appropriateness of a technology necessarily involves some sort of value judgment, both on the part of the developer of technology as well as the user of technology. This also implies that a technology that is environmentally sound and appropriate in one condition may be inappropriate in a different condition, meaning thereby that (ESAT) is a condition

specific technology, a relative notion that varies in space and time (www.daenvis.or.htm).

The concept of "Appropriate Technology" can be outlined as follows:

1. The design of technology is more in response to the local needs, thus it promotes ingenuity of the local people.
2. It compliments human labour and skills rather than attempting to replace human labour and eliminating human skills; there is an effort to make the human element more productive and creative.
3. The processes and procedures involved are simple, at which people without sophisticated management training can work together and understand what they are doing.
4. It allows a more economical operation by minimizing the transport of goods in an era of expensive energy, allowing greater interaction of local industry and permitting greater use of local resources (both human as well as material).
5. It makes unnecessary many expensive or unavailable finance, transportation, education advertising, and management and energy services; and avoids the loss of local control that the use of such outside services implies.
6. It helps to establish a self-sustaining and expanding reservoir of skills in the community, which begins from already existing skills;
7. It tends towards decentralization of production, thus permitting the full benefits of work to remain within a community; this also allows the control to remain within community;
8. It provides a region with a cushion against the effects of outside economic changes (e.g. the sudden unavailability of fertilizer);
9. It helps to reduce economic, social and political dependency between individuals, between regions, and between nations, by recognizing that

people can and will do things for themselves if the obstacles to this are removed.

10. It is in harmony with the cultural traditions of the area; this does not mean it is stagnant, but that it evolves along with the culture; and does not contradict values the people believe to be important. ([www.daenvis. or.htm](http://www.daenvis.or.htm)).

In a nutshell, ‘Appropriate Technology’ is harmonious to use social and cultural level. It will decrease the adverse effect of traditional technology which most of use. Now, it is necessary to see the origin and history of the appropriate technology movement at length.

The Statement of the Research Problem:

The social, economic and environmental impact of appropriate technologies on the beneficiaries of such technologies has not received much research attention from social scientists. This is more so in India where 68.08% (2011, Census) of the population lives in the villages, where majority of population is illiterate and this has inhibited the use of appropriate technology for sustainable development. ‘Alternative and Appropriate Technology’ has emerged as a key instrument for influencing the process of development especially after 1990s. It is because of this that there is a paucity of studies in this area. Hence it has motivated the researcher to undertake the proposed study.

Objectives of the Study:

The specific objectives of the study were as under:

1. To study the emergence of the appropriate technology movement.

Research Methodology:

The following methodological procedures are adopted for present investigation.

Type of Research Design:

With regards to the nature of this kind of study, the descriptive research design has been adopted for the present study.

Tools and Techniques Used For Data Collection:

For the present study secondary sources of data are used. Secondary sources of data are mainly collected from various project proposals, project reports, government reports, books, journals, articles, encyclopedia, dictionaries, periodicals, government and non-government web sites.

Appropriate Technology Movement:

Appropriate technology is an ideological movement (and its manifestations) originally articulated as “intermediate technology” by the economist Dr. Ernst Friedrich “Fritz” Schumacher in his influential work, “Small is Beautiful”. Though the nuances of appropriate technology vary between fields and applications, it is generally recognized as encompassing technological choice and application that is small scale, labour intensive, and energy efficient, environmentally sound and locally controlled (Hazeltine, B.; Bull, C.:1999:3). Both Schumacher and many modern-day proponents of appropriate technology also emphasize the technology as people centered.

Appropriate technology is most commonly discussed in its relationship to economic development and as an alternative to transfers of capital-intensive technology from industrialized nations to developing countries (<http://www.amazon.com>).

However, appropriate technology movements can be found in both developing and developed countries. In developed countries, the appropriate technology movement grew out of the energy crisis of

the 1970s and focuses mainly on environmental and sustainability issues (<http://www.ncat.org>).

Appropriate technology has been used to address issues in a wide range of fields. The well-known examples of appropriate technology applications include: bike- and hand-powered water pumps (and other self-powered equipment), the universal nut Sheller, self-contained solar-powered light bulbs and streetlights, and passive solar building designs.

Generally appropriate technology is proving sustainable. It is small scale, labour intensive, energy efficient and most important thing is environmentally sound. In our country Mahatma Gandhi is the pioneer of this movement. His concept of Self-Reliance is the heart of appropriate technology. So we should study his concept of Self-Reliance in detail.

Mahatma Gandhi: Concept of Self-Reliance:

Indian ideological leader Mahatma Gandhi is often cited as the “father” of the appropriate technology movement. Though the concept had not been given a name, Gandhi advocated for small, local and predominantly village-based technology to help India’s villages become self reliant. He disagreed with the idea of technology that benefited a minority of people at the expense of the majority or that put people out of work to increase profit (<http://scholar.lib.vt.edu>).

In 1925 Gandhi founded the All-India Spinners Association (AISA) and in 1935 he retired from politics to form the All-India Village Industries Association (AIVIA) both organizations focused on village-based technology similar to the future appropriate technology movement (<http://www.mkgandhi.org>).

Mahatma Gandhi advocated small, local, mostly village-based technology to help India’s villages become self reliant,

resisting the dependence associated with colonialism, to aid in the freedom struggle against British and wealthy Indians.

Gandhi promoted the philosophy of “swadeshi” or self-reliance. He did not believe that technological development was inherently synonymous with progress. He believed the powers of technology should be produced and used artfully and the benefits should be close to the individual and widely produced and distributed in a decentralised fashion. Gandhi stated that his favourite technologies were the sewing machine, because it was invented out of love, and the bicycle, because it kept one’s feet close to the ground. He felt that technology should not disenfranchise people or be used for violence - rather that it should be used to empower people broadly. The movement for self-rule was based on local economies, and Gandhi championed the spinning wheel, or charka, employed in the khadi movement in the 1920s, which produced cloth locally in an act of civil disobedience, causing the British monopoly on textiles to collapse. The spinning wheel is today seen at the centre of the Indian national flag, and the flag itself must, by law, be made of khadi.

In India, our father of nation M. K. Gandhi promoted the concept of ‘Self-Reliance’ or ‘Swadeshi’. He accepted the all rural development of man including spiritual which is very close to appropriate technology as a term appropriate technology was invented by E. F. Schumacher in his book, ‘Small is Beautiful’.

E. F. Schumacher: Small is Beautiful:

Dr. Ernst Friedrich “Fritz” Schumacher is credited as the founder of the appropriate technology movement. A well-known economist, Schumacher worked for the British National Coal Board (BNCD) for more than 20 years, where he blamed the size of the industry’s operations for its uncaring response to the harm black-lung disease inflicted on the miners

(<http://scholar.lib.vt.edu>). However it was his work with developing countries, such as India and Burma that helped Schumacher to form the underlying principles of appropriate technology. Schumacher first articulated the idea of “intermediate technology,” now known as appropriate technology, in a 1962 report to the Indian Planning Commission (IPC) in which he described India as long in labour and short in capital, calling for an “intermediate industrial technology” that harnessed India’s labour surplus. Schumacher had been developing the idea of intermediate technology for several years prior to the Planning Commission report. In 1955, following a stint as an economic advisor to the government of Burma, he published the short paper “Economics in a Buddhist Country,” his first known critique of the effects of western economics on developing countries (McRobie, George: 1981,:19). In addition to Buddhism, Schumacher also credited his ideas to Gandhi.

Initially, Schumacher’s ideas were rejected by both the Indian government and leading development economists. Spurred to action over concern the idea of intermediate technology would languish, Schumacher, George Mc-Robie, Mansur Hoda and Julia Porter brought together a group of approximately 20 people to form the Intermediate Technology Development Group (ITDG) in May of 1965. Later that year, a Schumacher article published in the Observer garnered significant attention and support for the group. In 1967, the group published the ‘Tools for Progress: A Guide to Small-scale Equipment for Rural Development’ and sold 7,000 copies. ITDG also formed panels of experts and practitioners around specific technological needs (such as building construction, energy and water) to develop intermediate technologies to address those needs (McRobie, George: 1981,:19). At a conference hosted by the ITDG in 1968 the

term “intermediate technology” was discarded in favour of the term “appropriate technology” used today. Intermediate technology had been criticized as suggesting the technology was inferior to advanced technology and not including the social and political factors included in the concept put forth by the proponents (<http://scholar.lib.vt.edu>). In 1973, Schumacher described the concept of appropriate technology to a mass audience in his influential work, “Small is Beautiful: Economics as if People Mattered”.

In this context, we should understand the concept of Victor Papanek’s ‘Design for Human Scale’.

Papanek: Design for Human Scale:

Victor Papanek wrote about similar concepts in the context of design of everyday products. His writing is full of examples of appropriate and inappropriate designs (without necessarily using those terms) and is an inspiring introduction to design. Papanek’s books include:

- Design for the Real World
- Design for Human Scale

We should also consider the contribution of Albertson and Faulkner.

Albertson and Faulkner: Appropriate Hard and Soft Technologies:

According to Dr. Maurice Albertson and Faulkner, appropriate hard technology is “engineering techniques, physical structures, and machinery that meet a need defined by a community, and utilize the material at hand or readily available. It can be built, operated and maintained by the local people with very limited outside assistance e.g., technical, material, or financial. It is usually related to an economic goal”. Some have explored the use of classroom projects for university-level physics students to research, develop and test appropriate hard technology (Buitenhuis

A. J., Zelenika I. and Pearce J. M.: 2010 pp.11-12).

Albertson and Faulkner consider “appropriate soft technology” as technology that deals with “the social structures, human interactive processes, and motivation techniques. It is the structure and process for social participation and action by individuals and groups in analyzing situations, making choices and engaging in choice-implementing behaviours that bring about change” (<http://dx.doi.org/10.1007/s10668-012-9337-9>).

The Water Decade: Village-Level Operation and Maintenance:

Water is the burning issue in our country even today after 60 years of independence. As India is a country of villages, we should think the problem of water in this case. Water pump is the offshoot of appropriate technology but in water decade, the condition was worst in India. There, we should see the key problem during water decade in India. Water pumps came to demonstrate the importance of appropriateness and context in the application of technology. During the International Drinking Water Decade (1981-1990), water wells with pumps were provided to villages in developing countries around the world, paid for primarily with foreign aid. This tended to be done in a top-down manner, with little attention to the local context. While claims are made for great strides in access to water, counter-claims are made that many of the water pump projects failed (Wikipedia: international Drinking Water).

A key problem was that the pumps were difficult to maintain at the village level - parts were not easily accessible or repairable, and or specialized skills were required that did not exist in the typical village. After the water decade, “village-level operation and maintenance” pumps, or VLOM pumps, were introduced. Such an

approach reduces the dependency of villages on governments and donors.

This lesson - the ability to maintain equipment locally - continues to be re-learned in many aid and development projects, decades on.

Paul Polak: The Death of Appropriate Technology Organisations:

More recently, Paul Polak stated that the flowering of the appropriate technology movement in decades past had no major impact on the poor, and many organizations devoted to appropriate technology have closed or scaled down.

He provocatively argues that the production of “appropriate technology” has died as the organisations producing appropriate technology did not emphasize on financial viability nor did they use using business models. In two blog posts on “The Death of Appropriate Technology” he states: The appropriate technology movement died because it was led by well-intentioned tinkerers instead of hard-nosed entrepreneurs designing for the market (http://en.wikipedia.org/wiki/Appropriate_technology).

He talks about technology for the poor, as distinct from the earlier appropriate technology movement which he argues did not take cost-effectiveness seriously, and therefore failed. However, initiatives such as Gunter Pauli’s Blue Economy project and products made by commercial companies (i.e. Tata Motors’ Tata Nano,) seem to show that there are still companies that do successfully marry low-cost design with keen business insight.

Appropedia: Appropriate Technology Goes Online:

Main article, Principles of appropriate technology. A new stage in appropriate technology has come with the introduction of the internet. The internet has facilitated the sharing of designs by AT

organizations. These designs were already open design, yet the sharing of the designs happened at too small a scale in the past. Designs of several devices or objects are now being shared across the internet using sites as appropedia, instructorless ... and reach people even outside the AT sector. In addition, kits and manuals sold by various organizations are now also being shared and help the poor in constructing complex, low-cost objects (<http://scholar.lib.vt.edu>).

China also implemented policies similar to appropriate technology during the reign of Mao Testing and the following cultural revolution. During the Cultural Revolution, development policies based on the idea of “walking on two legs” advocated the development of both large-scale factories and small-scale village industries (<http://scholar.lib.vt.edu>).

Conclusion:

In 21st century energy is one of the main inputs essential to the development of India. Energy technology is an important factor to prevent the degradation of the environment. So there is need to find alternatives to present path of the world's energy and environment.

Generally appropriate technology is proving sustainable development. It is small scale, labour intensive, energy efficient and most important thing is environmentally sound. In our country Mahatma Gandhi is the pioneer of this movement. His concept of ‘Self-Reliance’ or ‘Swadeshi’ is the heart of appropriate technology. He accepted the all rural development of man including spiritual which is very close to appropriate technology as a term appropriate technology was invented by E. F. Schumacher in his book, ‘Small is Beautiful’.

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कौटुंबिक हिंसाचार आणि महिला संरक्षण कायदा 2005

दिपाली तुकाराम सामंत

सहाय्यक प्राध्यापक,

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गोषवारा:

भारतीय समाजव्यवस्थेत स्त्रियांचे स्थान वेगवेगळ्या काळामध्ये वेगवेगळ्या पद्धतीचे आहे. पितृसत्ताक पद्धतीमुळे स्त्रियांची अवस्था अबलेसारखीच होती. आजही त्यामध्ये फार मोठा बदल झालेला आहे असे नाही. देश स्वतंत्र होऊन सत्तर वर्षे उलटून गेली तरी महिलांना वेगवेगळ्या अन्याय अत्याचारांना तोंड द्यावे लागते. आईच्या गर्भातच स्त्रीचा भ्रूण खुडण्यापासून या अन्यायाला सुरुवात होते, जन्माला येण्यापूर्वीपासून किंवा जन्माला आलीच तर जन्मल्यापासून मृत्यूपर्यंत वेगवेगळ्या टप्प्यावर महिलांना अनेक अत्याचार सहन करावे लागतात. असमानतेची वागणूक, हुंड्यासाठी छळ, सासरी होणारी घुसमट, समाजात वावरताना स्त्री म्हणून सतत असुरक्षितेची जाणीव तसेच जवळच्या अपत्याकडून होणाऱ्या बलात्कारासारख्या घृणास्पद कृत्यापासून ते कामाच्या ठिकाणी होणाऱ्या लैंगिक छळापर्यंत तिला या अन्यायाला तोंड द्यावे लागते. काही ठिकाणी तर कल्पनेपलीकडे भयंकर अशा स्वरूपाचे अत्याचार होताना दिसतात. स्वतःच्या कुटुंबात ती स्वतःला सुरक्षित समजत असते. त्याच कुटुंबामध्ये कित्येक वेळा कौटुंबिक हिंसाचाराला बळी पडते. घरच्या चार भिंतीच्याआड होणार हिंसाचार आजवर उपेक्षिलेलाच होता. कौटुंबिक हिंसाचाराचे दृश्य हे सर्वदूर पसरलेले पाहायला मिळते. परंतु लोकांच्या नजरेत भरून येण्याइतकी व्याप्ती नव्हती. त्यामुळे या सर्व बाबींचा विचार करून आंतरराष्ट्रीय पातळीवर स्त्री अत्याचार व कौटुंबिक हिंसाचार रोखण्यासाठी अनेक उपाय योजले गेले आहेत. भारतामध्ये देखील स्त्रीला कौटुंबिक हिंसाचारापासून सुटका मिळण्यासाठी कौटुंबिक हिंसाचार महिला संरक्षण कायदा 2005 साली करण्यात आला. हिंसामुक्त जीवन जगण्याचा स्त्रीला मानवी हक्क आहे त्यामुळे सर्व बाजूंनी स्त्रीचे शोषण थांबवण्यासाठी हा ठोस व निर्णायक कायदा अस्तित्वात आला आहे.

प्रस्तावना:

मानवी समाजातील पायाभूत नात म्हणजे स्त्री आणि पुरुष ही दोन रूप. प्रजोत्पादनासाठी स्त्री व पुरुष ही विषमलिंगी रूपे जरी निसर्गामध्ये निर्माण झाली असली तरी स्त्री कनिष्ठ व पुरुष श्रेष्ठ ही वास्तवता व मूल्य व्यवस्था मानवनिर्मित आहे. भारतीय समाजात स्त्रियांचे स्थान वेगवेगळ्या काळात वेगवेगळ्या स्वरूपाचे राहिले आहे. परंतु पितृसत्ताक पद्धतीच्या प्राबल्यामुळे बहुतांश काळात स्त्रीची अवस्था अबलेसारखीच होती. खरे तर आजच्या काळात ही

आपण 21 व्या शतकाच्या दुसऱ्या दशकात असलो तरी महिलांवरील अत्याचारांमध्ये वाढच होताना दिसते आहे. आईच्या गर्भातच स्त्रीचा भ्रूण खुडण्यापासून याला सुरुवात होते. जन्माला आल्यापासून ते मृत्यूपर्यंत स्त्री वेगवेगळ्या टप्प्यावर अनेक अत्याचार सहन करित असते. आधुनिक काळात जगण्यातील नीती मूल्यांच्या घसरणीमुळे आणि वाढत्या औद्योगिक विकासामुळे स्त्रीच्या अवहेलनेत वाढ झालेली आहे. याशिवाय ज्या कुटुंबात अथवा घरात जी स्वतःला सुरक्षित समजते त्याच तिच्या घरात किंवा कुटुंबात

कौटुंबिक हिंसाचाराला बळी पडत आहे. या सर्व बाबींचा विचार करता स्त्रियांच्या हक्कासाठी अनेक कायदे करण्यात आलेले आहेत. तसेच स्त्री अत्याचार व कौटुंबिक हिंसाचार रोखण्यासाठी एकूणच कौटुंबिक हिंसाचारापासून स्त्रीची सुटका होण्यासाठी कौटुंबिक हिंसाचार संरक्षण कायदा 2005 साली करण्यात आला आहे.

संशोधनाची उद्दिष्टे:

- 1) कौटुंबिक हिंसाचार म्हणजे नेमके काय ते अभ्यासणे.
- 2) कौटुंबिक हिंसाचारापासून स्त्रियांचे संरक्षण कायद्याची (2005) भूमिका अभ्यासणे.

संशोधन पद्धती:

प्रस्तुत शोध निबंध दुय्यम स्रोतावर आधारित असून विविध पुस्तके, मासिके इंटरनेटवरील लेख यांचा वापर करण्यात आलेला आहे.

आशयविश्लेषण:

कौटुंबिक हिंसाचार म्हणजे नेमके काय:

प्रथमतः कौटुंबिक हिंसाचार म्हणजे नेमके काय हे पाहणे आवश्यक आहे. कौटुंबिक हिंसाचार म्हणजे एकाच घरात राहणारा पुरुष नातेवाईक जर स्त्रीला मारहाण शिवीगाळ करत असेल, तिला हुंड्याच्या मागणीवरून धमकावीत असेल, घरातून हाकलत असेल, दारू वा इतर नशेमुळे मारहाण करत असेल, तिच्याकडून पैसे घेत असेल, घरातले सामान विकत असेल, तिला दररोज लागणाऱ्या गरजांपासून वंचित करत असेल, तर त्याला कौटुंबिक हिंसाचार किंवा छळ म्हणता येईल. त्याचबरोबर मौखिक किंवा भावनिक छळामध्ये महिलेचा अपमान, कमी लेखण्याची कृती, टाकून बोलणे, शिव्या शाप देणे अथवा मूल होत नाही म्हणून उपवास करणे किंवा मुलगा हवा म्हणून सातत्याने अपमानित करणे किंवा इजा पोहोचवण्याची वारंवार धमकी देणे या बाबींचाही

कौटुंबिक छळात समावेश होतो एकूणच कौटुंबिक हिंसाचार या कायद्याच्या प्रकरण दोन कलम तीन नुसार कौटुंबिक हिंसाचारान्याची व्याख्या अधिक विस्ताराने दिली गेली आहे.

कौटुंबिक हिंसा ही घरात घडते ज्याला आपण आपल्या सर्वांचे सुरक्षित स्थळ समजतो. कुटुंबातील हिंसा या विषयावर सर्वेक्षण अहवाल सादर करणाऱ्या एका प्रसिद्ध लेखकाचे असे म्हणणे आहे की स्त्री ही काळोख्या रात्री सामसूम रस्त्यावर अनोखी इसमा सोबत एक वेळ सुरक्षित राहिल परंतु घराच्या चार भिंतीआड आपल्याच घराच्या मंडळींमध्ये ती सुरक्षित असेल असे नाही. वाढत्या घरगुती हिंसाचाराचे हे एक अत्यंत ज्वलंत उदाहरण आहे. कौटुंबिक हिंसाचाराचे दृश्य हे सर्व दूर पसरलेले होते. पण लोकांच्या नजरेत भरून येण्याइतके व्याप्त नव्हते. त्यामुळे आज पर्यंत बरेच स्त्री अत्याचार विषयक कायदे निर्माण झाले परंतु घराच्या चार भिंती आड होणारा हिंसाचार आजवर उपेक्षलाच होता. ज्या महिला कौटुंबिक हिंसाचाराला बळी पडल्या आहेत त्यांना त्यांच्या अधिकाराचा वापर अधिक सहज शक्य होण्यासाठी व त्यांना लवकरात लवकर न्याय मिळवून देण्यासाठी कायदा तयार करण्यात आला आहे. या कायद्याचे नाव आहे कौटुंबिक हिंसाचारापासून स्त्रियांचे संरक्षण कायदा 2005.

कौटुंबिक हिंसाचारापासून स्त्रियांचे संरक्षण कायदा 2005:

स्त्रियावर होणाऱ्या निरनिराळ्या अत्याचारापासून व कौटुंबिक हिंसाचारापासून तिला संरक्षण व हक्क प्राप्त करून देण्यासाठी आजपर्यंत खाली प्रमाणे कायदे अस्तित्वात आहेत.

- 1) भारतीय दंड विधान कायदा 1860
- 2) हुंडा प्रतिबंधक कायदा 1961
- 3) सती प्रथा विरोधक कायदा 1987
- 4) स्त्रियांचे अश्लील प्रदर्शन विरोधी कायदा 1986

- 5) घटस्फोट कायदा 1869
- 6) कुटुंब न्यायालय कायदा 1984
- 7) मुस्लिम महिलांसाठी कायदा 1986
- 8) गर्भलिंग परीक्षण व गर्भपात विषय कायदा

अशा प्रकारच्या निरनिराळ्या कायद्या अंतर्गत स्त्रियांना मिळणारे हक्क किंवा संरक्षण आणखीन प्रभावीपणे लागू होण्यासाठी हा नवीन कौटुंबिक हिंसाचारापासून स्त्रियांचे संरक्षण कायदा 2005 साली करण्यात आला . महिलांचे संरक्षण करण्याच्या उद्देशाने संसदेने 2005 मध्ये अधिनियम मंजूर केले व 26 ऑक्टोबर 2006 पासून तसा कायदा संपूर्ण देशभर (जम्मू-काश्मीर वगळता) देशातील सर्व राज्यांना लागू झाला. या कायद्यामुळे महिलांना कौटुंबिक हिंसाचारापासून संरक्षण देण्यात आले.

कायद्याच्या ठळक बाबी :

- 1) या कायद्या अंतर्गत जी पिडीत स्त्री आहे त्या स्त्रीची व्याख्या खूप विस्तारित स्वरूपात मांडली आहे. उदाहरणार्थ 498 भारतीय दंड विधान या कलमाखालील पीडित स्त्री म्हणजेच लग्न झालेली स्त्री एवढाच होतो. येथेही लग्न झालेली स्त्री तर येते शिवाय अशा सर्व स्त्रिया ज्या कौटुंबिक संबंधात राहत आहेत किंवा कोणावर अवलंबून राहत आहेत. याशिवाय पिडीतामध्ये कुठलाही मनुष्य, स्त्री असो वा पुरुष लहान मुले, आई वडील, नोकर मंडळी किंवा कौटुंबिक संबंधात राहणारे कोणीही या कायद्याचा आश्रय घेऊ शकतात.
- 2) कोणत्याही पिडीत स्त्रीला राज्य सरकार नियुक्त संरक्षण अधिकारी, पोलीस अधिकारी, सेवा देणारी पंजीकृत संस्था यांच्याकडून सर्व प्रकारची मदत केली जाईल अशा प्रकारची तरतूद या कायद्याअंतर्गत झालेली आहे. पोलीस अधिकारी, संरक्षण अधिकारी सेवा देणारी संस्था यांचे कार्य आणि कर्तव्य सविस्तरपणे या कायद्यामध्ये दिले आहे. तसेच संरक्षण अधिकारी शक्यतो स्त्री असावी अशी सुद्धा तरतूद आहे.

- 3) सेवाभावी संस्था यांची नेमणूक या कायद्याअंतर्गत अत्याचारीत स्त्रीच्या मदतीसाठी करण्यात आली आहे. आज पर्यंत पडद्याआडून जी भूमिका ते करायचे ती यापुढे समोर येऊन करणार आहेत. या कायद्याच्या कलमानुसार ज्या व्यक्तीस कौटुंबिक हिंसाचार घडण्याची किंवा घडण्याच्या शक्यतेची माहिती द्यायची असेल तर तो ती माहिती संबंधित संरक्षण अधिकारी किंवा या संबंधित सेवा देणारी संस्था यांच्याकडे देऊ शकतो.

- 4) अत्याचारग्रस्त स्त्रीला लवकरात लवकर न्याय मिळावा या हेतूने तशा प्रकारची विशेष तरतूद या कायद्याअंतर्गत कलम 12 (5)नुसार करण्यात आलेली आहे

- 5) पीडित स्त्रीला तिच्या हक्क बजावणीसाठी वेगवेगळ्या कायद्या अंतर्गत निरनिराळे दावे करण्याची आता गरज राहणार नाही. एकापेक्षा जास्त साह्यांचे आदेश ती या एकमेव कायद्याखाली मागू शकते.

- 6) फक्त पीडित व्यक्तीच्या जबानीच्या आधारावरच गुन्हा नोंदविला जाऊ शकतो व न्यायालय गुन्हा घडल्याचा निष्कर्ष काढून शिक्षा ठोठावू शकते

या कायद्याची विशेष बाब म्हणजे या कायद्याच्या अंतर्गत पाच प्रकारचे संरक्षण तत्काळ देण्यात येते. त्यात शारीरिक, मानसिक, मुलांचा ताबा, आर्थिक नुकसान व रोजचा होणारा खर्च आदींचा समावेश आहे.

राज्य सरकारच्या उपायोजना :

पीडित महिलांना कौटुंबिक संरक्षण मिळावे यासाठी महाराष्ट्र शासनाने खालील प्रमाणे उपाय योजना केलेल्या आहेत.

- 1) कौटुंबिक हिंसाचाराला आळा बसावा आणि महिलांना संरक्षण मार्गदर्शन मिळावे यासाठी महिला व बालविकास विभागामार्फत जिल्हा महिला व बालविकास अधिकारी 35 तसेच बालविकास प्रकल्प अधिकारी 459 यांना

तात्पुरते संरक्षण अधिकारी म्हणून घोषित केले आहे.

- 2) सरकारने जिल्हास्तरावरील पोलीस ठाण्यामध्ये 39 समुपदेशन केंद्रे निर्माण केली आहेत. यामध्ये कुटुंबाला समुपदेशन करून कौटुंबिक कलह मिटवण्याचा प्रयत्न केला जातो.
- 3) जिल्हा परिषद व पंचायत समिती स्तरावर महिला आयोगाच्या सहमतीने ग्राम विकास विभागांतर्गत अंदाजे 300 समुपदेशन केंद्रे कार्यान्वित आहेत.
- 4) राज्यात महिला अत्याचाराच्या घटनांना आळा बसावा यासाठी 1091 हा टोल फ्री दूरध्वनी क्रमांक प्रत्येक पोलीस ठाण्यात सुरू करण्यात आला आहे. जेणेकरून पीडित महिला या टोल फ्री नंबर वर संपर्क साधू शकतात.

एकूणच महिलांच्या हक्कासाठी, शोषणाविरुद्ध, भेदभावविरुद्ध, स्त्रीभ्रूणहत्येविरुद्ध आजवर अनेक कायदे करण्यात आलेले आहेत. अलीकडेच पुरुषांच्या संपत्तीत महिलांना हक्क देण्याचा प्रस्ताव देखील मंजूर करण्यात आलेला आहे. नोकरीत आरक्षण, राजकीय आरक्षण, मुलींना मोफत शिक्षण, शिष्यवृत्ती असे अनेक उपाय व कायदे सरकारने केले आहेत. तरी देखील तिच्यावर होणारे अत्याचार हे दिवसेंदिवस वाढत चाललेले आहेत तिला गुलामाप्रमाणे वस्तूप्रमाणे वागणूक दिली जाते. खरे तर हे मानवी अधिकाराचे उल्लंघन आहे. कौटुंबिक हिंसाचार हा देखील मानवी अधिकाराचाच विषय आहे. महिलांना कौटुंबिक छळा पासून संरक्षण देणारा कायदा अस्तित्वात आहे. त्यामुळे तिचा आत्मसन्मान, समाजातील दर्जा नक्कीच सुधारू शकतो. परंतु

महिलांनी कौटुंबिक अत्याचार सहन न करता अत्याचार विरुद्ध निर्भयपणे पुढे यायला हवे तरच खऱ्या अर्थाने कायदा सफल होईल.

निष्कर्ष :

- 1) सर्व तळागाळातील स्त्रियांना देखील कायदेशीर हक्काची जाणीव होणे आवश्यक आहे.
- 2) स्त्री संरक्षण विषयक कायदे हे केवळ न्यायालयीन किंवा कागदोपत्रीच मर्यादित राहता कामा नये.
- 3) पीडित महिलांच्या कडे बघण्याचा पोलिसांचा दृष्टिकोन संवेदनशील हवा.
- 4) स्त्रियांच्या अत्याचाराला पायबंद घालण्यासाठी कायद्याबरोबरच कुटुंबातील व्यक्तींचे समुपदेशन करण्याची गरज आहे.
- 5) या कायद्याच्या अंमलबजावणीसाठी आवश्यक असणारी यंत्रणेने आपल्या कामांमध्ये दिरंगाई न करता पीडित महिलेला लवकरात लवकर न्याय कसा मिळेल ही भूमिका घेतली पाहिजे.
- 6) महिलांनी स्वतः आत्मनिर्भर बनणे आवश्यक आहे.

संदर्भ:

- 1) विधी लिखित : महाराष्ट्र राज्य महिला आयोगाची पुस्तक मालिका, साहिल पब्लिकेशन, आवृत्ती मे 2018.
- 2) 'मुराळी' अंक 55, मे 2013.
- 3) भारतीय संस्कृती कोश खंड दहा संपादक पंडित महादेव शास्त्री जोशी.
- 4) <https://socialwelfare.vikaspedia.in>



A role of Indian Classical music in the development of anxiety and self-esteem among musician and non-musician

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Abstract:

Psychological issues are very common among the people of every single community. These psychological glitches are leading people to mental health issues like anxiety. Human mental well-being is required to be enhanced appropriately for the improved health of the public. Music is one of the great psychotherapy that gives relief from anxiety. Instruments used in Indian classical carry rich cultural and spiritual importance, transcending simple musical use to offer deep psychological and emotional impacts. This study endeavor to examine the influence of music on the level of self-esteem and anxiety of young adults. Especially, the divergent levels of self-esteem and anxiety encountered by young adult musicians in comparison to non-musicians. In the present study, a sample of 100 young adults with age ranges of 15 to 30 was comprises. In which Fifty were Musician – who enrolled in Indian classical music education and 50 were Non-musician. The level of self-esteem and anxiety of participants was assessed by using Self-Esteem scale by Dhar and Dhar and State Trait Anxiety Inventory by Spielberger, et al. respectively. Reliability coefficient of Self-Esteem scale is .87 and validity is .93. The results reveled that, Influence of Indian classical music on self-esteem and anxiety was found significant, the level of self-esteem was found higher, whereas, the anxiety level found significantly lower among musicians than their non-musician peers. There was no significant difference found in the level of Self-esteem and anxiety in respect of sex, both men and women participants have the equal level of self-esteem and anxiety.

Keywords: Self-Esteem, Anxiety, Musician.

Introduction:

In everyday life Music is very important (Sloboda et al., 2009). It has high influence on our mental health (Mindlin et al., 2012). Our mood can change from negative to positive by listening motivational songs. Listening music has various positive effects for example, it can decrease anxiety level, blood pressure, etc. It can improve mood, memory, mental alertness, etc. (Rentfrow, P. J., 2012; Yehuda, N., 2011). The ancient Greeks thought that music had the capability to affect human beings and process their emotions. In this sense, there are numerous scientific studies that study and confirm the

potential positive use of music to treat illnesses, such as depression or more severe mental illnesses. The capability of music to support emotional health and mental growth has been recognized for a long time (Mindlin et al., 2012). Numerous research efforts have highlighted the positive impacts of music on various psychological areas, including tension alleviation, emotion management, and cognitive enhancement. However, there is a lack of studies exploring the specific effects of Indian classical music education on the self-esteem and anxiety levels of young adults, particularly in relation to the initial phases of adulthood.

Indian classical music has a rich and remarkable history that is closely connected to the country's cultural legacy. Instruments like the tabla, pakhavaj, harmonium, flute, sitar, and sarod carry rich cultural and spiritual importance, transcending simple musical use to offer deep psychological and emotional impacts. Indian classical music, a crucial aspect of the country's culture, represents a deep heritage featuring a wide array of musical instruments and works. Musical instruments that hold significant cultural importance, such as the tabla, pakhavaj, harmonium, flute, sitar, and sarod, can also have psychological and emotional effects. Many believe that the intricate patterns and tunes of Indian classical music have the ability to greatly impact emotional expression and general well-being, offering a potential avenue for psychological therapy and comprehensive health.

An in-depth understanding of the relationship between music education and mental health, particularly in relation to Indian classical music, is essential for the comprehensive addressing of the emotional needs of young adults. This research aims to shed light on the mental benefits of music education by exploring the possible healing effects of Indian classical music on anxiety and self-worth. Its results might also support the integration of culturally important musical traditions into comprehensive wellness initiatives and mental health programs aimed at young adults.

Numerous psychological and emotional changes take place during human development, particularly during the change to early adulthood. At this phase, people experience significant changes in their self-identity, interpersonal interactions, and emotional well-being. Self-esteem and anxiety, important psychological factors, greatly affect the experiences and viewpoints of individuals during this crucial phase of development. Because of its thoroughly documented impact on human

feelings and mental processes, music has been the subject of considerable psychological study. Studies have highlighted the healing benefits of music in its ability to enhance emotional health, reduce stress, and boost cognitive performance. In contrast, there is a lack of studies investigating the specific impacts of learning Indian classical musical instruments on the anxiety and self-esteem of young adults.

Self-esteem and anxiety are essential psychological concepts that significantly impact an individual's overall functioning and well-being. During the transition to early adulthood, people often face a heightened vulnerability to emotional turmoil and make considerable psychological adjustments. Numerous factors, including social interactions, personal experiences, and cultural influences, contribute to forming self-esteem and the manifestation of anxiety during this crucial period.

This study seeks to address a gap in the current literature by performing an in-depth comparative analysis of self-esteem and anxiety levels in early adult musicians and non-musicians, focusing specifically on Indian classical music instruments. The aim of this research study is to assess if young adults experience enhanced self-esteem and reduced anxiety through the study of Indian classical musical instruments and also to explore the possible therapeutic benefits of Indian classical music and its instruments in enhancing emotional well-being and resilience by investigating the psychological effects of music education. Furthermore, it also intended to make meaningful contributions to the fields of music psychology and developmental psychology by utilizing quantitative research techniques. This study aims to support the advancement and integration of Indian classical music education as a comprehensive method for enhancing psychological health in young

adults, by emphasizing the possible effects of music on emotional wellness.

Literature Review:

Sun Lian (2022) examined how music education influences students' academic and psychological outcomes, with an emphasis on the possible mediating roles of self-efficacy and self-esteem. The study conducted in China highlighted the positive effect that music education had on the academic performance and mental well-being of both graduate and undergraduate students. Sun's study highlighted music's ability to foster positive psychological effects in young adults, stressing the essential part of music education in improving cognitive growth and emotional health.

Rao (2021) investigated the psychological dimensions of music, particularly emphasizing the relationships between swaras (musical notes) and emotional states, like sadness and anxiety, in the context of Indian classical music.

Krishna Rao (2021) explored the relationship between Indian classical music and various psychological viewpoints throughout the lifespan. Rao highlighted the significant effect that Indian classical music, known for its distinctive elements like pitch and rhythm, can exert on emotional conditions like anxiety and mood management. The study underscored the healing possibilities of Indian classical music in enhancing psychological health by focusing on its ability to foster optimistic attitudes and reduce stress.

Jennie Dorris, Juleen Rodakowski, and Lauren Terhorst (2015) examined the relationship between seventh-grade students' involvement in music, their academic achievement, and self-esteem. The study, conducted as part of the Longitudinal Study of American Youth, revealed the positive associations between student self-esteem, academic achievement, and participation in

music. The study highlighted the intricate connection between music and mental health, emphasizing music's diverse ability to improve educational performance and foster self-esteem in young people. The findings indicated that music can provide greater opportunities for student engagement, which impacts the enhancement of self-esteem, particularly within groups vulnerable to low self-esteem.

Significance of the Study:

The objective of this study is to evaluate and compare the levels of anxiety and self-esteem among young adult musicians and non-musicians. The study will particularly focus on the effects of classical music education. Through a study into the possible relations between musical immersion and psychological health, this research endeavors to offer significant perspectives on the distinct impressions of Indian classical music instruction on the self-esteem and anxiety levels of this particular population. Additionally, this research endeavors to make a scholarly contribution to the extensive domain of mental health by providing recommendations grounded in empirical evidence that can inform the creation of educational initiatives and battered interventions aimed at nurturing psychological wellness in young adults.

Operational Definitions:

Musicians: young adult those who are actively engaged in Indian classical music education were considered as musicians.

Non-Musicians: Those adults who do not have a formal background in Indian classical music education were considered as non-musicians.

Objectives:

The primary objectives of this research are;

1. To assess the level of anxiety and self-esteem of young musicians and non-musician.
2. To find out the influence of Indian classical music education on the level of self-esteem of young adult musicians in comparison to their non-musician peers.
3. To explore the differences in anxiety levels between young musicians who are enrolled in Indian classical music education and those who are non-musicians.
4. To search variations in level of anxiety and self-esteem of both musician and non-musician adults with respect to their sex.

Hypothesis:

The following hypotheses were framed as per the research objectives;

1. Indian classical music education will have significant impact on the self-esteem level of young adults; the level of self-esteem of musicians will be higher in comparison to their non-musician peers.
2. There will be significant difference in the level of Self-esteem in respect of sex.
3. The anxiety level of young adult musicians will be significantly lower in comparison to their non-musician peers.
4. There will be significant difference in the level of anxiety in respect of sex.

Method:

Aim:

The main aim of this study is to examine the influence of music on the level of self-esteem and anxiety of young adults. Especially, the divergent levels of self-esteem and anxiety encountered by young adult musicians in comparison to non-musicians.

Sample:

A sample of the present study comprises 100 young adults. Fifty were Musician – who enrolled in Indian classical music education and 50 were Non-musician – who not enrolled in music education. All participants were selected by using purposive sampling technique and from different school from Kolhapur, Sangli, and Baramati city. Male female ratio kept 1:1. The age of the sample group ranges from 15 to 30 years with Mean age of 23 years.

Tools:

A) Self-Esteem scale: this scale is devised by Dhar and Dhar. Total six factors, i.e., positivity, openness, competence, humility, self-worth and learning orientation were assessed by this scale. The reliability coefficient of this test by Spearman-Brown formula is .87 and validity is .93. this scale consisted total 23 items with five alternatives, namely; Strongly disagree, disagree, not sure, agree and strongly agree.

B) State Trait Anxiety Inventory: this scale is devised by Spielberger, Gorsuch, and Lushene. This scale consisted total 40 items (state anxiety, 20 items and trait anxiety, 20 items) with four alternatives, namely, not at all, somewhat, moderately so and very much so. Both subscales contain positive and negative worded items.

Variables under Study:

1. Independent Variables:

- A) Musical Background (Indian Classical Musical background & Non-musical status)
- B) Sex (Male & Female)

2. Dependent Variables:

- A) Self-Esteem
- B) Anxiety

Design for Study:

Two-independent group design was used to analyze the obtained data.

Statistical Treatment of the data:

In the present study descriptive statistics namely; Mean, SD, Skewness and Kurtosis and inferential statistic i.e.

independent ‘t-test’ were used to analyze the obtained data.

Procedure:

Initially permission to conduct the study was taken from Authorities of respected schools. After brief introduction about study Anxiety and Self-esteem scales were administered to subjects. Before filling the answer sheets researcher established good rapport with them and assure them about keeping confidentiality of their identification and responses. And also assure them that this information would not be disclose anywhere, so they can give their responses comfortably and honestly. After that proper instructions were given to them

as per given in the manual. After response, test booklets and answer sheets were collected.

Interpretation of Results Discussion:

The current study investigated the influence of Indian classical music on self-esteem and anxiety levels among young adults and further to discover the sex differences in the anxiety and self-esteem level’. There were two variables which were treated as independent variables viz. Musical status and Sex. Each of them was varied at 2 levels. Therefore, two independent groups design was used to analyze obtained data in present study.

Table 1: Descriptive Statistics of Anxiety and Self-Esteem Measures (N = 100)

Variables	Mean	SD	Skewness	S.E. Skew	Kurtosis	S.E. Ku
Anxiety	33.99	10.83	-.004	.241	-.680	.478
Self-Esteem	88.49	15.98	-.394	.241	.397	.478

SD = Standard Deviation; S.E.= Standard Error; Skew= Skewness; Ku= Kurtosis

Table 1 Shows the Mean, SD, Kurtosis, Standard Error of Kurtosis, Skewness, and Standard error of Skewness values of Anxiety and Self-Esteem measures. At first glance, it is observed from table that the Mean values of Anxiety and Self-Esteem measures are larger than three times of their corresponding SD values. It is also observed that Skewness values are less than ‘one’ (01) and Kurtosis values are less than 2 (two). Which suggests distribution of Anxiety and Self-Esteem measure were normal or near normal. Hence, in further analysis researcher used parametric statistics like ‘Independent t-test’.

Influence of Indian Classical Music on Self-Esteem:

Table 2 shows the descriptive statistics and t value of Self-Esteem Measures of participants as per their sex and

musical background (status). It can be observed that group of musicians has the Mean score of 98.10 and 8.91 SD and non-musicians group has the Mean and SD scores are 78.88 and 15.75 respectively. It is also observed from the above table that the Musician and Non-musician have the Mean difference of 19.22 and this change in Mean scores is significantly greater. Among these two groups Musician group has higher score. Further, t-value [$t(98) = 7.51, p < 0.01$] indicates significant difference between these two groups. That means musicians have significantly higher level of self-esteem than those of non-musician. Thus, first hypothesis ‘*Indian classical music education will have significant impact on the self-esteem level of young adults; the level of self-esteem of musicians will be higher in comparison to their non-musician peers*’, is accepted.

Table No. 2: Mean, SD and ‘t-values’ of Self-Esteem by musical status and sex (N = 50)

Variables	Mean	SD	t	df	Sig.	95% C. I.	
						Lower	Upper
Musicians	98.10	8.91	7.51**	98	.000	14.14	24.30
Non-Musicians	78.88	15.74					
Boys	89.70	14.19	0.76	98	.452	-3.94	8.78
Girls	87.28	17.64					

***= significant at .01 level; C.I. = Confidence Interval

The significant positive effect of Indian classical music on self-esteem observed in this study can be explained by several psychological and social factors. Musical training, particularly in a complex genre like Indian classical music, demands dedication, discipline, and a strong sense of mastery. These qualities likely contribute to an increased sense of competence and self-efficacy (Hallam, 2010; Bandura, 1997). Studies have shown that individuals who engage in musical activities often experience an enhanced sense of control over their environment and a higher belief in their abilities, both of which are crucial for maintaining high self-esteem (MacDonald et al., 2012; Schunk & Pajares, 2009).

Moreover, the social rewards associated with performing music, such as receiving positive feedback from peers or audiences, may play a crucial role in boosting self-esteem (Lonsdale & North, 2011; Schuijjer, 2011). Musical performance, especially in public settings, allows musicians to gain social recognition and validation, which reinforces their self-worth. Additionally, Indian classical music places a strong emphasis on emotional expression, which could help musicians better understand and communicate their emotions, further contributing to their self-esteem (Juslin & Sloboda, 2010).

Table 2 also displays that group of Men (Mean=89.70 with 14.19 SD) and Women (Mean = 87.28 & SD = 17.64) have the Mean difference of 2.42 and t-value is .16 [t (98) = .16, p=.452]. which indicates no

significant difference between these two groups. That means this t-value is not enough to be significant at .05 level of significance. In other words, the self-esteem level of both men and women groups are the same. Thus, second hypothesis ‘**There will be significant difference in the level of Self-esteem in respect of sex**’, is rejected.

The lack of significant differences between men and women in self-esteem supports previous findings that gender does not necessarily play a decisive role in the psychological benefits derived from music (Spychiger, 2017). This suggests that the personal and social gains from engaging in music may be equally available to both sexes, potentially mitigating the influence of societal gender norms that typically affect self-esteem (Orth et al., 2010).

Influence of Indian Classical Music on Anxiety:

Table 3 shows the descriptive statistics and t value of Anxiety Measures of participants according to their sex and musical background (status). As per the data obtained in the table, it shows that group of musicians has the Mean score of 20.74 with 6.53 SD and non-musicians group has the Mean score of 47.24 with 8.99 SD. From the above table one finds that the Musician and Non-musician have the Mean difference was 26.05 and this change in Mean scores is significantly greater. Among these two groups Non-musician group has higher score and t-value indicates significant difference between these two groups i.e. t (98) = 12.81,

$p < 0.01$. This indicates that non-musicians have significantly greater anxiety level than those of musician. Thus, third hypothesis '**The anxiety level of young adult musicians will be significantly lower in comparison to their non-musician peers**', is accepted.

The results indicating lower anxiety levels among musicians are consistent with previous research on the calming and therapeutic effects of music (Pelletier, 2004; Koelsch et al., 2010). Indian classical music,

in particular, is often characterized by slow, meditative rhythms and melodies that can promote relaxation and reduce physiological markers of stress (Kraus & Chandrasekaran, 2010). Regular engagement with such music may provide musicians with a form of emotional regulation that allows them to manage stress and anxiety more effectively than their non-musician counterparts (Thoma et al., 2013; Linnemann et al., 2015).

Table 3: Mean, SD and 't-values' of Anxiety measures by musical status and sex (N = 50)

Variables	Mean	SD	t	df	Sig.	95% C. I.	
						Lower	Upper
Musicians	20.74	6.53	12.81**	98	.000	-30.60	-22.40
Non-Musicians	47.24	8.99					
Men	34.26	10.57	.16	98	.873	-6.17	7.25
Women	33.72	9.16					

**= significant at .01 level; C.I. = Confidence Interval

Several factors may contribute to the anxiety-reducing effects of Indian classical music. First, musical practice requires sustained attention and focus, which can lead to a flow state where individuals are fully immersed in the present moment, reducing feelings of anxiety (Csikszentmihalyi, 1990). Second, the structure and predictability of music can serve as a coping mechanism for managing uncertainty and stress (Saarikallio & Erkkilä, 2007). The repetitive and cyclical nature of ragas, a key feature of Indian classical music, may foster a sense of stability and control, which can alleviate anxiety (Kuhn, 2002; Juslin & Västfjäll, 2008).

Table also shows that group of Men has the Mean score of 34.26 with 10.57 SD and Women group has the Mean score of 33.72 with 9.16 SD. From the above table one finds that the Musician and Non-musician have the Mean difference was .54 and this change in Mean scores is seem to be not significantly greater. Further, t-value [$t(98) = .16, p = .873$] indicates no significant

difference between these two groups. That means the anxiety level of both men and women groups was the same level. Thus, fourth hypothesis '**There will be significant difference in the level of anxiety in respect of sex**', is rejected.

Interestingly, the lack of significant gender differences in anxiety is notable, as prior studies have often reported that women experience higher anxiety levels than men (McLean & Anderson, 2009). However, in the context of Indian classical music, both men and women seem to derive similar psychological benefits. Music may act as a universal form of emotional regulation, providing an outlet for stress relief and emotional expression regardless of gender (Papageorgi et al., 2010; Southgate & Roscigno, 2009). This finding suggests that musical engagement may neutralize some of the gender-related factors typically associated with anxiety, offering a valuable avenue for future research.

Conclusions:

Following conclusions were derived on the basis of interpretation of the obtained data and discussion.

1. Influence of Indian classical music on self-esteem was found significant, the level of self-esteem among musicians was higher than their non-musician peers.
2. There was no significant difference found in the level of Self-esteem in respect of sex, both men and women participants have the equal level of self-esteem.
3. Effect of Indian classical music on anxiety was found significant, The anxiety level of young adult musicians was significantly lower in comparison to their non-musician peers.
4. There will be significant difference in the level of anxiety in respect of sex, both men and women participants have the equal level of self-esteem.

Delimits:

The present study is delimited to:

1. The geographical area of study was restricted for Kolhapur, Sangli and Baramati city.
2. There are many variables that influence Self-Esteem and Anxiety but in the present study following variables sex and music were taken into account only.
3. A sample of 100 only taken for the present study.

Implications and Future Directions:

The findings of this study have important implications for both research and practice. First, they highlight the potential of Indian classical music as a tool for promoting psychological well-being, particularly in terms of enhancing self-esteem and reducing anxiety. Music therapy programs could incorporate Indian classical music as part of their interventions,

especially for individuals who struggle with anxiety or low self-esteem (Gold et al., 2009). Additionally, the results suggest that both men and women can benefit equally from musical engagement, offering a gender-neutral approach to mental health interventions.

Future research should explore the specific aspects of Indian classical music that contribute to these psychological benefits. For instance, the impact of different ragas or rhythmic patterns on anxiety and self-esteem could be examined in more detail (Ninaus et al., 2015). Longitudinal studies could also investigate the long-term effects of musical engagement on mental health outcomes, providing a more comprehensive understanding of how music influences psychological well-being over time (Rickard & McFerran, 2012). Furthermore, cross-cultural studies could determine whether these findings hold true in other musical traditions, potentially expanding the therapeutic applications of music across different cultural contexts (Zatorre & Salimpoor, 2013).

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चंदगड तालुक्याच्या शौर्याचे प्रतिक किल्ले महिपाळगड

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प्रस्तावना:

छत्रपती शिवाजी महाराजांच्या स्वराज्यातील चंदगड तालुक्यातील किल्ल्यांमध्ये पारगड, महिपाळगड, कलानिधीगड, गंधर्वगड, चंदनगड आदि. किल्ल्यांचा समावेश होतो. गिरीदुर्ग, वनदुर्ग, भुईकोट, जलदुर्ग म्हणजे सगरी किणा-यावरचे किल्ले, बेटांचे जंजिरे म्हणजे पाणकोट असे विविध प्रकारचे किल्ले असलेला अवघा महाराष्ट्र हाच किल्ल्यांचे एक संग्रहालय आहे. महाराष्ट्राचे आराध्य दैवत छत्रपती शिवाजी महाराजांच्या शौर्याची गाथा सांगत आजही हे किल्ले उभे आहेत. छत्रपतींनी उभे केलेले सर्वच गड-किल्ले लढाऊ आहेत. महाराष्ट्रात आहेत तसे आणि तितके जगात अन्यत्र कोठे असे मालुम दुर्ग नाहीत. डोंगर कडयावर व सागरी किणा-यावर किल्ले बांधणे व त्याची व्यवस्था ठेवणे ते सुसज्ज करणे ते अधिक बळकट करणे या गोष्टीकडे छत्रपतींनी काटेकोरपणे लक्ष दिले. चंदगड तालुक्यातील गड-किल्ल्यांचा उल्लेख सभासद बखरीमध्ये आलेला आहे. चंदगड तालुक्यातील सौंदर्याचा मेरुमणी असणारा गड म्हणजे महिपाळगड होय. निसर्गसौंदर्याने वेढलेला अगदी सोपी चढण असलेला किल्ला होय. हा अगदी वैशिष्ट्यपूर्ण रचनेचा आटोपशीर गिरीदुर्ग होय. चंदगडचे किल्ले शौर्य व सौंदर्य राखून आहेत. हे सर्व किल्ले निसर्ग सौंदर्य व आल्हाददायक वातावरणासाठी प्रसिद्ध आहेत. लष्करी दृष्टीकोनातून आजही या किल्ल्याला महत्त्वपूर्ण स्थान आहे.

संशोधनाची उद्दिष्टे:

१. महिपाळगडाचे लष्करी महत्त्व समजून घेणे.
२. किल्ले महिपाळगडाचे वेगळेपण समाजासमोर आणणे.
३. किल्ले पर्यटनाला चालना देणे.

गृहितके:

१. किल्ले संवर्धनाने पर्यटन विकासाला चालना मिळत आहे.

संशोधन पद्धती:

प्रस्तुत संशोधनासाठी ऐतिहासिक संशोधन पद्धतीचा वापर करण्यात आलेला आहे. यामध्ये महत्त्वपूर्ण अशा प्राथमिक व दुय्यम साधनांचा वापर करण्यात आलेला आहे. याबरोबरच वृत्तपत्रे, मासिके, वार्षिक अहवाल या साधनांचाही वापर करण्यात आलेला आहे.

आशय विश्लेषण:

छत्रपतींनी गड, कोट, दुर्गांच्या साहायाने स्वराज्य उभे केले. त्यासाठी त्यांनी नविन किल्ले बांधले व जुने दुरुस्त केले. छत्रपतींनी स्वराज्य स्थापनेत गड-किल्ल्यांना महत्त्व प्राप्त करून दिले. त्यांच्या या नीतीमुळे डोंगर द-यात वसलेल्या गड-किल्ल्यांना श्रेष्ठत्व प्राप्त झाले. महाराष्ट्र हा गड-किल्ल्यांचा देश

आहे. गड-किल्ल्यांच्या साहायाने वैभवशाली इतिहास घडला. सहयाद्रीच्या कुशीत वसलेले गड-किल्ले शौर्याचे व पराक्रमाचे साक्षीदार आहेत. सहयाद्रीतील डोंगर द-यावरील गड-किल्ले म्हणजे स्वराज्याची महान शिल्पे आहेत. छत्रपती शिवाजी महाराजांचे गड-किल्ले म्हणजे दिपस्तंभ आहेत. स्वराज्यातील प्रत्येक गड-किल्ल्यांवर छत्रपतींचे जीवापाड प्रेम होते. हे गड-किल्ले म्हणजे स्वराज्याचे वैभव होते. स्वराज्याच्या जडण-घडणीमध्ये गड-किल्ल्यांना विशेष महत्व होते. स्वराज्यातील प्रत्येक गड-किल्ल्यांवरील शासनव्यवस्था अगदी चोख होती. स्वराज्य स्थापनेमध्ये दुर्गाना अतिशय महत्वाचे स्थान आहे. छत्रपतींची अविद्यतीयता व स्वराज्यातील भक्कमता किल्ल्यावरून दिसून येते. छत्रपतींच्या वास्तव्याने पुनीत झालेले गड-किल्ले आपले प्रेरणास्थान आहेत. छत्रपतींच्या जीवनात गड, कोट, किल्ले, दुर्ग, गढया, जंजीरे यांना अनन्यसाधारण महत्व आहे.

पार्श्वभूमी:

चंदगड या नावाची उत्पत्ती चंदसेनाचे देवालय व त्याच्या शेजारी असणारी गढी यावरून चंदगडचा उल्लेख केला जातो. या भागावर मौर्य, कदंब, राष्ट्रकुट, यादव या घराण्यांनी आपली सत्ता निर्माण केली. राष्ट्रकुट राजवटीत चंदगडचे नाव चंदनगड हे होते. राष्ट्रकुटांच्या काळात चंदगड जिल्ह्याचे ठिकाण होते. विपुल चंदन आणि गढी सारखा उपभाग यामुळे या प्रदेशाचे नाव चंदगड झाले आहे. पोर्तुगिज कागदपत्रामध्ये या महिपाळगडाचा उल्लेख येतो. दक्षिणेकडील बाजूच्या तटबंदीच्या मजबूतीकरणासाठी करवीर छत्रपतींच्या कागदपत्रात या गडाचा उल्लेख आलेला आहे. सभासद बखरीमध्ये छत्रपती शिवाजी महाराजांनी बांधलेल्या १११ किल्ल्यांची यादी दिली आहे. यामध्ये महिपाळगडाचा उल्लेख आहे.

वैशिष्ट्यपूर्ण भौगोलिकता:

चंदगड तालुका हा कोल्हापूर जिल्ह्यातील पश्चिम घाटामध्ये असणारा दक्षिण टोकाकडील प्रदेश आहे. या तालुक्यात ऐतिहासिक वास्तू, नैसर्गिक

जैवविविधता व भरपूर पाऊस यामुळे या तालुक्याला वेगळे महत्व आहे. चंदगड तालुका हा कोल्हापूर जिल्ह्याच्या दक्षिणेला कोल्हापूर पासून १२५ कि. मी. अंतरावर आहे. चंदगड तालुक्यात १५७ गावे आहेत. तालुक्याचे एकूण क्षेत्रफळ ९२२.२१ चौ. कि. मी आहे. तालुक्याचा पश्चिम भाग हा डोंगर रांगांनी व द-याखो-यांनी व्यापलेला आहे. तर पूर्व भाग तुलानात्मक दृष्ट्या सपाट आहे. चंदगड तालुक्याच्या पश्चिम बाजूस सावंतवाडी, उत्तर बाजूस आजरा, गडहिंग्लज हे तालुके तर, पूर्व बाजूस कर्नाटक व दक्षिण बाजूस गोवा राज्याच्या हद्दी आहेत. तालुक्यात सरासरी २२३७ मि. मी व दक्षिण व पश्चिम भागात ६००० मि.मी. तर पूर्व भागात १००० मि.मी पर्यंत वार्षिक पाऊस पडतो. तालुक्यात वर्षभर हिरव्यागार घनदाट वनस्पती आढळतात. गोवेकर पोर्तुगिज व इंग्रज यांच्यावर लक्ष ठेवण्यासाठी चंदगड तालुक्यातील या गडांचा उपयोग होत असे. गिरीदुर्ग प्रकारातील महत्वपूर्ण किल्ला म्हणजे महिपाळगड होय. छत्रपतींच्या स्वराज्यामध्ये या किल्ल्याला महत्वाचे स्थान होते. हा किल्ल्या टेहेळणीसाठी महत्त्वपूर्ण होता. त्यासाठी व शत्रूवर धाक निर्माण करण्यासाठी या किल्ल्याचा वापर होत असे.

स्थान:

महाराष्ट्र आणि कर्नाटक या दोन राज्यांच्या सीमेवर वसलेला गड म्हणजे महिपाळगड होय. कोल्हापूरपासून हा गड १२५ कि.मी अंतरावरती आहे. चंदगडपासून ३० कि. मी अंतरावर तालुक्याचे शेवटचे टोक आहे. या गडावरून संपूर्ण बेळगाव शहराचे दर्शन घडते. गिरीदुर्ग प्रकारातील अतिशय सुंदर असा हा किला आहे. या गडावरून कलानिधीगड व गंधर्वगड व कर्नाटकातील राजहंसगड या किल्ल्यांचे दर्शन होते. बेळगावच्या ईशान्येस २१ कि. मी. अंतरावरती हा किल्ला आहे. कोल्हापूर जिल्ह्यातील अगदी सीमेवर वसलेला किल्ला म्हणून महिपाळगडाचा उल्लेख करावा लागतो. घनदाट सदाहरी जंगलात हा किल्ला उभा आहे. देवरवाडी गावापासूनच किल्ला नजरेस पडतो. महिपाल नावाच्या

राजाने हा किल्ला बांधल्याचे स्थानिक ग्रामस्थ सांगतात. किल्ल्याची समुद्रसपाटीपासुनची उंची ३२२० फुट एवढी आहे. बेळगावहुन महिपाळगड व देवरवाडीला बसची सोय आहे. या गडावरची हवा बारा महिने प्रसन्न असते. बेळगाव-वेंगुला महामार्गावर शिनोळी गावापासुन महिपाळगडावर जाणारा मार्ग आहे. संपूर्ण गड पाहण्यासाठी जवळ-जवळ दोन ते तीन तास लागतात.

इतिहास:

सभासद बखरीमध्ये छत्रपती शिवाजी महाराजांनी बांधलेल्या १११ किल्ल्यांची यादी दिली आहे. यामध्ये महिपाळगडाचा उल्लेख आहे. महिपाळगड हा किल्ला इ.स. १६८८ साली मुघल-मराठा संघर्षामध्ये मुघल सरदार हुसेन याने जिंकुन घेवून सुंदरसिंग याची किल्लेदार म्हणून नेमणूक केली. मराठ्यांनी इ.स. १७०० मध्ये हा किल्ला आपल्या ताब्यात घेतला. हा किल्ला वारणेच्या तहानंतर करवीर राज्यात समाविष्ट झाला. पुढे इ.स. १८०० दरम्यान पेशव्याचा सरदार चिंतामणराव पटवर्धन यांच्याकडे किल्ल्याचा ताबा होता.

लष्करी महत्व:

या गडाला लष्करी महत्व मोठे आहे. छत्रपती शिवाजी महाराजांच्या कालखंडामध्ये हा किल्ला लष्करीदृष्ट्या महत्वाचा होता. ब्रिटिश कालखंडामध्ये या किल्ल्यावरील जवानांसाठी लष्करामध्ये राखीव जागा ठेवलेल्या होत्या. यावरून या किल्ल्याचे लष्करी महत्व लक्षात येईल.

गडावरील वास्तू:

प्रवेशव्दार: डांबरी रस्त्याने गडावर पोहचल्यावर तटबंदी व प्रवेशव्दार दृष्टीस पडते. प्रवेशव्दार मजबूत असल्याचे तेथील मोठ-मोठ्या दगडी शीळावरून दिसुन येते. गावकरी त्याला गोळ देव म्हणतात.

अश्वरूढ स्मारक: किल्ल्याच्या प्रवेशव्दारातुन पुढे गेल्यावर छत्रपती शिवाजी महाराजांचे आश्वरूढ स्मारक आहे. हे स्मारक गडाच्या तटबंदीच्या

सुरुवातीलाच आहे. स्मारक अतिशय देखण असुन छत्रपतींच्या शौर्याची जानीव करून देते.

बालेकिल्ला व गणेश दरवाजा: छत्रपती शिवाजी महाराजांच्या स्मारकाच्या पुढे गेल्यावर लोकवस्तीमध्ये जाणा-या रस्त्याने पुढे गडाचा बालेकिल्ला आहे. गडाच्या अगदी उंचीवर बालेकिल्ला ही वास्तू आहे. बालेकिल्याचे प्रवेशव्दार इतिहासाची साक्ष देते. दरवाजाच्या दोन्ही बाजूला गडाची मजबूत तटबंदी आहे. याला गणेश दरवाजा असे म्हणतात. या दरवाजावर गणेश देवतेचे सुंदर शिल्प आहे.

विहिर व आंबाबाईचे मंदिर: बालेकिल्ल्याच्या दरवाजातून आत प्रवेश केल्यावर डाव्या बाजूस काताळात खोदलेली प्रचंड विहिर लागते. या विहिरीची लांबी ७० फूट आणि ४० फूट रुंदी आहे. विहिरीत उतरण्यासाठी खोदीव पाय-या आहेत. विहिरीची खोली भंयकर आहे. या विहिरीजवळच आंबाबाईचे मंदिर आहे. हे मंदिर छत्रपती शिवाजी महाराजांनी बांधल्याचे गडावरील नागरिक सांगतात. निसर्गसंदर्भाचे व ऐतिहासिक वास्तूचे दर्शन देणारा हा किल्ला निश्चितच एक आगळा-वेगळा असा आहे.

महादेव बुरूज व महादेव मंदिर: किल्ल्याच्या पूर्वेला बुरूज आहे. तो निशाण बुरूज होय. येथे ध्वजस्तंभ लावलेला आहे. ऐतिहासिक विहिरीच्या पुढच्या बाजूला निशाण बुरूज आहे. या बुरूजावर चढण्यासाठी पाय-या आहेत. बुरूजावर स्वराज्याचे निशाण फडकविलेले आहे. बुरूजाच्या शेजारी श्री. महादेवाचे मंदिर आहे. गडाच्या राखणीला खंदक आहे.

कोठार: गडाची तटबंदी मजबूत आहे. तटातून खाली पुढे गेल्यावर काही अंतरावर कोठारे आहेत. ती जांभ्या दगडात खोदून काढलेली आहेत. ही कोठारे आजही इतिहासाचे दर्शन घडवितात.

ऐतिहासिक भांडी: कोठारापासुन पुढे गेल्यावर आपणास दुसरे प्रवेशव्दार दिसते. दरवाजाचे बुरूज चांगल्या स्थितीत आहेत. गडाचे वैशिष्ट्य म्हणजे गडावर जागो-जागी ऐतिहासिक अशी पाणी भरून ठेवण्यासाठी वापरलेली दगडी भांडी दिसतात.

इतिहासकालीन गुफा: किल्ले महिपाळहगडाकडे जाताना वाटेवर डोंगरातील काताळात अनेक गुंफा आणि भुयारे दिसतात. या गुहेची लांबी जवळ-जवळ १७५ फुट आहे. यामध्ये लहाण- लहाण खोल्या आहेत.

लष्करी कावायती: भारतीय सैन्यदलाचा म्हणजेच मराठा लाईट इन्फंट्री बेळगाव येथील जवानांचा काताळाच्या वर असलेल्या डोंगर पठारावर नियमित युद्ध सराव सुरू असतो.

तिर्थक्षेत्र वैजनाथ: पंचक्रोशीतील तिर्थक्षेत्र वैजनाथाचे मंदिर महिपाळगडाच्या पायथ्याला आहे. हे मंदिर या परिसरातील लोकांचे श्रद्धा स्थान आहे. हे मंदिर ११ व्या शतकात बांधले गेले आहे. मंदिराच्या प्रवेशद्वाराजवळ एक शिलालेख आहे. मंदिराच्या गाभा-यात सुंदर असे शिवलिंग आहे. मंदिरासमोर सुंदर अशी नंदीची मूर्ती आहे. हे हेमाडपंथीय शैलीत बांधलेले असे मंदिर आहे. या मंदिराशेजारी आरोग्य भवानी मंदिर आहे. ही अष्टभूजा देवी आहे. हे ही मंदिर हेमाडपंथी शैलीत बांधलेले आहे. त्यातील खांब अत्यंत आकर्षक व मजबूत आहेत. मंदिराच्या मागच्या बाजूला पाण्याने भरलेले कुंड आहे. ते घडीव दगडानी बांधलेले आहे. तेथे जुने दत्त मंदिर आहे. गुरुचरित्रातील चौदाव्या अध्यायात या ठिकाणचा उल्लेख आला आहे. त्याला दक्षिणेचे महाक्षेत्र म्हटले आहे. मंदिर परिसराचे व्यवस्थापन कोल्हापूरच्या महालक्ष्मी देवस्थानामार्फत चालते.

सारांश:

महिपाळगड हा किल्ला लष्करी, ऐतिहासिक, पर्यटकीय, गियारोहक या दृष्टीने श्रेष्ठ आहे. इतिहासाच्या पानापानावर ज्या गड-किल्ल्यांनी शौर्याच्या गाथा मांडल्या ते गड-किल्ले आज जपले पाहिजेत. मावळ्यांच्या शौर्याने जे गड किल्ले अमर झाले. त्या गड-किल्ल्यांच्या संवर्धनाची गरज आहे. हे गड-किल्ले म्हणजे आपले वैभव आहे. किल्ले महिपाळगडाचा इतिहास आज सर्वांना प्रेरणादायी

आहे. छत्रपती शिवाजी महाराजांच्या स्वराज्यात महत्वपूर्ण भूमिका बजावणारा हा किल्ला आपल्याला स्फुर्ती देत आहे. अकाराने छोटा परंतु अतिशय सुंदर असणारा हा किल्ला लष्कराचा मानबिंदू आहे.

संदर्भ ग्रंथ:

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अवयवदान चळवळीमधील नर्मदा किडणी फौडेशनचे कार्य

प्रशांत प्रकाश कुचेकर

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अवयवदान म्हणजे काय?

प्रस्तावना :

मानवाची निर्मिती ही विविध अवयवांपासून झाली आहे. मानवी शरिराचा प्रत्येक अवयव हा अतिशय महत्वाचा आहे. प्राचीन काळापासून विविध मानव हा आजारी पडतो, त्यावर त्याने उपचारासाठी विविध प्रकारच्या अघोरी, आयुर्वेद, इ. चा उपयोग त्यांनी केला. पण जसजसा काळ बदलत गेला तसतसे विविध आजारांची संख्या दिवसेंदिवस वाढतच गेली. काही आजार हे लगेच बरे होणारे तर काही कोणताही उपचार करून न बरे होणारे होते. यामध्ये कित्येक लोकांचा मृत्यू झाला. १८ वे शतक जागतिक इतिहासामध्ये प्रबोधनाचा कालखंड म्हणून ओळखला जातो. यानंतर विविध शास्त्राचा मोठ्या प्रमाणात अभ्यास होत गेला, यामध्ये शरीर शास्त्राचासुद्धा मोठ्या प्रमाणात अभ्यास होऊ लागला. यामुळे मानवाच्या ज्ञानामध्ये भर पडू लागला. यातूनच शरिरातील अवयव खराब झाल्यावर त्याचे अवयव प्रत्यारोपण शस्त्रक्रिया केली पाहिजे, त्याही सुरुवात ही झाली, पण सर्वच रूग्णाना अवयव मिळणे आजही अशक्य आहे. यामुळे भारतात सरकारी व विविध खाजगी संस्था ह्या अवयवदान वाढावे यासाठी प्रयत्न करत आहेत. यामध्ये उल्लेखनीय कार्य हे मुंबईमधील असणारी नर्मदा किडणी फौडेशन ही करत आहे.

अवयवदान हे सर्वश्रेष्ठ दान असून ज्याव्दारे आपण व्यक्तीच्या मृत्यूनंतर आपले अवयवदान करून अनेक रूग्णांचे प्राण वाचवू शकतो. ज्या रूग्णांचे अवयव कायम स्वरूपी निकामी झाले आहेत अशा अनेक रूग्णांसाठी अवयवदान हाच एक आशेचा किरण आहे.

अवयवदानाचे प्रकार :

प्रत्यारोपण शस्त्रक्रियेत गरजू रूग्णाला अवयव बदल करून आणखी काही वर्ष आयुष्य जगण्याची संधी मिळू शकते. परंतु प्रत्यारोपण तेव्हाच शक्य होते जेव्हा कोणी तरी अवयवदान करतो. साधारणत

1 जीवितकालीन अवयवदान

2 मरणोत्तर अवयवदान

3. मेंदूमत अवस्थेत अवयवदान

अशा तीन प्रकारे अवयवदान करता येते. हे प्रकार आपण खालीलप्रमाणे समजून घेऊ.

अ. जीवितकालीन अवयवदान :

भारतात मानव अवयव प्रत्यारोपण कायदा १९९४ नुसार जिवंतपणीसुद्धा अवयवदान करता येणे सुरू झाले. असे जिवंतपणी अवयवदान पिडीत रूग्णाच्या जवळचे व रक्ताच्या नात्यातील उदा – भाऊ, बहीण, पालक आणि मुलगा, मुलगी करू शकतात. यात एखादी जवळची व्यक्ती त्याची एक किडणी गरजू

रूग्णाला दान करू शकते. परंतु त्यातही कायदा म्हणतो की, एका किडणीवर अवयवदात्याच्या शरीराचे कार्य व्यवस्थित चालणार असेल तरच ती व्यक्ती जीवितकालीन अवयवदानासाठी पात्र ठरविली जावी. स्वादूपिंडू, यकृताचा काही भाग काढून दान करता येतो.

मूत्रपिंडाच्या म्हणजेच किडणी संबंधात आजी आजोबा, आई वडील, भावंडे, मुले, नातवंडे आणि जोडीदारास कायदेशिररीत्या परवानगी दिली गेली आहे. मानव प्रत्यारोपण कायदा २०११ नुसार परोपकारी देणगी म्हणून अवयवदानास परवानगी आहे.

ब. पुलड देणगी:

कधी कधी घेणारा व देणारी यांच्यामध्ये रक्तगट जुळत नाही किंवा काही गोष्टी विसंगत असू शकतात. अशा परिस्थितीत त्यांना दुस-या अवयवदात्याकडून त्याच परिस्थितीत प्राप्त कर्त्याशी जोडी बनविणे शक्य होते. जेणेकरून प्रत्येक प्राप्कर्तास त्याचा फायदा होईल. ज्यामध्ये दोन जोडयांपेक्षा जास्त जोडप्यांमध्ये स्वॅपमध्ये सहभाग असतो. त्याला पुलड देणगी असे म्हणतात.

क. पेअर डोनेशन किंवा स्वॅप डोनेशन :

कधी कधी कुटूंबात किंवा नातेसंबंधात संभाव्य दाता असतो जो अवयवदान करण्यास इच्छूक असतो. परंतु रक्तगट जुळला नाही किंवा इतर निकषांमूळे, वैद्यकीय कारणांमूळे कुटूंबातील विशिष्ट प्राप्कर्तास अवयवदान करण्यास सुयोग्य नसतो. पुढे दुस-या कुटूंबातही अशीच परिस्थिती आहे. या दोन कुटूंबामध्ये पहिल्या कुटूंबातील दाता दुस-या कुटूंबातील याऊलट दुस-या कुटूंबातील दाता पहिल्या कुटूंबातील रूग्णाला अवयव दान देण्यासाठी वैद्यकीय निकषांच्या दृष्टीने फिट होऊ शकतो. अवयव प्रत्यारोपण कायदा २०११ सुधारित मध्ये असे अवयव प्रत्यारोपण करण्यास परवानगी आहे. त्यामूळे ही दोन्ही कुटूंबे एक जोडी बनवितात आणि वेगवेगळ्या कुटूंबातील या दोन्ही प्राप्कर्तासाठी अवयव प्रत्यारोपण शक्य करतात.

ड. नैसर्गिक मृत्यूनंतरचे अवयवदान व देहदान :

वृद्धपकाळाने किंवा हृदयविकाराच्या तीव्र आघाताने मृत्यू झाला असल्यास मृत्यूपत्र नजीकच्या डॉक्टरांकडून घेऊन ठेवावे. अशा व्यक्तीचे नेत्रदान व त्वचादान करून देहदानसुध्दा करता येते. नेत्रपेढी व त्वचापेढीला फोन केल्यास नेत्रपेढी व त्वचापेढीचे लोक मयत्याचा घरी येऊन पाच ते सहा तासांच्या आत दोन्ही डोळ्यांतील कॉर्निया व त्वचेचा काही भाग घेऊन जातात. मृतदेहाला नेत्रदान त्वचादानासाठी रूग्णालयात हलविण्याची गरज नाही. पैसे लागत नाही.

इ. मेंदूमृत (Brain Dead) अवस्थेत अवयवदान :

एखाद्या अपघातामूळे, उच्च रक्तदाबामूळे किंवा अन्य कारणामूळे मेंदूकडे जाणाऱ्या रक्तवाहिन्यांना दुखापत झाल्यामूळे मेंदूचे कार्य करणे थांबते व मानवी मेंदू डॉक्टरांच्या उपचारांना प्रतिसाद देणे बंद करतो. तेव्हा रूग्णालयातील तज्ञ डॉक्टरांची समिती रूग्णाच्या मेंदूची पुन्हा पुन्हा तपासणी करतात व तपासाअंती निर्णय देतात की, रूग्ण मेंदूमृत झाला आहे.

रूग्णालयात रूग्णाला मेंदूमृत घोषित करण्याआधी चार तज्ञ डॉक्टरांची समिती शासनाने नेमलेली असते. चारही डॉक्टर स्वतंत्रपणे रिपोर्ट देतात. एकाचा रिपोर्ट दुस-याला माहीत नसतो. चारही डॉक्टरांचा रिपोर्ट एकसारखा आला तरच रूग्णाला मेंदूमृत (Brain Dead) घोषित केले जाते.

● मेंदूमृत म्हणजे काय?

रूग्णाचा मेंदूमृत झालेला आहे, परंतु हृदय अद्याप बंद पडलेले नाही. कृत्रिम ऑक्सिजनचा पुरवठा सुरू ठेवला तर काही तासांपर्यंत हृदय कार्यशील राहू शकते. शरीरात विविध अवयव काही काळ उत्तम स्थितीत राहू शकतात.

● अवयव प्रत्यारोपणाचा इतिहास -

जागतिक इतिहासामध्ये मानवी अवयव प्रत्यारोपण शस्त्रक्रिया केल्या ते पुढीलप्रमाणे –

वर्ष	अवयव प्रत्यारोपण
१९०५	पहिले बुबूळ प्रत्यारोपण
१९५४	पहिले किडणी प्रत्यारोपण
१९६१	पहिले यकृत प्रत्यारोपण
१९६३	पहिले पुफूस प्रत्यारोपण
१९६६	पहिले मूत्रपिंड व स्वादूपिंड
१९६७	पहिले हृदय प्रत्यारोपण
१९९४	मानवी अवयव प्रत्यारोपण कायदा

अवयवनिहाय रुग्णांची प्रतीक्षा यादी पुढीलप्रमाणे:

दिनांक ३ ऑगस्ट २०२४ च्या दै. लोकमत वर्तमानपत्रामध्ये मुंबई या विभागामध्ये ८००० हजार रुग्ण मानवी अवयवांच्या प्रतीक्षेत आहेत तर सहा महिन्यांत ८० जणांकडून अवयवदान केले अशी ठळक बातमी आली होती. यामध्ये विविध अवयवांची गरज आहे ती पुढीलप्रमाणे -

अवयव	प्रतीक्षा यादीतील रुग्णांची संख्या
किडणी	६४८०
लिव्हर	१५३३
हृदय	१३३
पुफूस	५७
स्वादूपिंड	३४
छोटे आतडे	३

ग्रीन कॅरिडोर म्हणजे काय?

मानवी अवयव शरीरापासून बाजूला काढल्यास त्या अवयवांचे आयुष्य काही तासांचेच असते. तो अवयव ठराविक वेळेत दुस-या शरीरात प्रत्यारोपित करणे आवश्यक असते. म्हणून अवयव कमी वेळेत जास्त अंतरापर्यंत पोहोचवयाचा असल्यास दोन्ही ठिकाणामधील रस्त्यावर पोलिसांच्या मदतीने ग्रीन कॅरिडोर केला जातो. यामध्ये नेहमीच्या मार्गातील वाहनांची रहदारी इतर मार्गावर वळविली जाते. तर रिकामा केलेला मार्ग केवळ अवयव घेऊन येणाऱ्या रुग्णवाहीकेला आणि पोलिसांच्या गाडीला दिला जातो.

किडणी खराब होण्याची कारणे:

मानवाच्या शरीरातील किडणीचे कार्य अतिशय महत्वाचे आहे. प्रत्येक मानवाला जन्मत निसर्गत किडणी दोन आहेत. किडणी हा अवयव खराब होण्याचे कारण अनियंत्रित मधूमेह, रक्तदाब, डॉक्टरांचा सल्ला न घेता घेतले जाणारे वेदनाशामक गोळ्या खाणे इ. असे प्रमुख कारणे आहेत.

नर्मदा किडणी फौंडेशनची स्थापना :

१९९३ मध्ये नर्मदा किडणी फौंडेशनची स्थापना भारतातील प्रसिध्द डॉ. भरत शहा यांनी मुंबई येथे केली. या त्यांनी आपल्या आईचे नाव फौंडेशनला दिले. या मागे त्यांची आई ही प्रेरणा स्थान होती. त्यांची सामाजिक क्षेत्रात कार्य करावे, विविध गरजू लोकाना मदत करावी अशी इच्छा त्यांच्या आईची होती. १९८८ ला त्यांचा मृत्यू झाल्यानंतर काही वर्षातच त्यांची प्रेरणा व इच्छा पूर्ण करण्यासाठी नर्मदा किडणी फौंडेशनची स्थापना केली. मुंबई मधील केईम हॉस्पिटलच्या भारतातील नावाजलेल्या प्रसिध्द किडणीविकार तज्ञ डॉ. विद्या आचार्य यांचे डॉ. भरत शहा हे विद्यार्थी होत.

नर्मदा किडणी फौंडेशनचे उद्देश:

१९९३ साली स्थापना करण्यात आलेल्या या फौंडेशनचे उद्देश पुढील प्रमाणे -

१. लोकांना यांच्या किडनी ची काळजी घेण्यास आणि मूत्रपिंडाच्या आजारापासून बचाव करण्यास मदत करणे.
२. रुग्ण आणि त्यांचा परिवाराला होणाऱ्या किडणी बदलच्या आजाराचे माहिती व उपचार याबद्दल माहिती करून देणे.
३. किडणीच्या रुग्णाना मदत करण्यासाठी प्रोत्साहन देणे.
४. अवयव प्रत्यारोपण या शस्त्रक्रियेला समर्थन करणे.
५. मानवी अवयव दानाला समर्थन करणे.

इत्यादी उद्देश या फौंडेशनचे आहेत.

नर्मदा किडनी फाँडेशनचे गीत:

डॉ. भरत शहा यांचे चिरंजीव डॉ. मित शहा यांनी २०१२ मध्ये फाँडेशनचे गीत तयार केले, या गीतास संगीत डॉ. मोहीत गर्ग यांनी दिलेले आहे. या गीतातील ओळी पुढीप्रमाणे आहेत -

Today is the time, Today is the platform
There is no tomorrow to choose from
Today is the time. We are ready to donate
our organs

जरूरत अब, अंगो की हमको यहाँ
मरने के बाद, ले जाओगे तुम कहां
क्युं न दे इनको जिंदगी का नाम
बात पते की सुनलो हमारी
अंगदान करके जिंदगी बदलते है हम,
नर्मदा किडनी फाँडेशन.....
अंगो का जो करते है तुम दान
मृत्यु में दे दो जिवन दान
स्वर्ग मिलेगा है सत्य ये
आओ डोनर्स का दे हम साथ
रेसिपियन्ट्स के हाथोंमे हाथ
दिल जान से उनको सलाम
क्युं न दे इनको जिंदगी का नाम
बात पते की सुनलो हमारी,
अंगदान करके जिंदगी बदलते है हम
नर्मदा किडनी फाँडेशन

नर्मदा किडनी फाँडेशनचे कार्ये:

नर्मदा किडनी फाँडेशन मार्फत मुंबई, नवी मुंबई, दहाणू, वापी (गुजरात), कोकण महाड, पूणे, सुरत, कोल्हापूर, सांगली तसेच महाराष्ट्रातील विविध शहरात जाऊन शरिरातील अवयव किती महत्वाचे आहे? किडनी कोणतेही आजार किंवा खराब होऊ नये म्हणून याविषयी मार्गदर्शन व जनजागृती करण्याचे कार्य केले जाते. यामध्ये लहान, मोठे तरूण मंडळ, महिला मंडळ, सेवा निवृत्त कर्मचारी संघटना इ. या मंडळामध्ये संस्थेचे स्वयंसेवक जाऊन जनजागृती वाढविण्यासाठी सहभागी होतात. हे कार्य करत

असताना यामध्ये डॉ. प्रशांत रजपूत, डॉ. मिता शहा इत्यादी तसेच अवयव दान करणारा दाता आणि अवयव स्विकारणारे स्वयंसेवक यामध्ये विशेष नाव घेतले पाहिजे ते श्री. रजनी धूवाड आणि श्री. ज्ञानराज पाटकर गेली १४ वर्षे यामध्ये अतिशय हिरहरीने सहभाग घेतात व फाँडेशनला मदतही करतात. त्यांचासोबत हेमंत मोरे, काजल घोगरी, लवेश तेरियार हे पूर्णवेळ या फाँडेशन साठी काम करताता त्यांना त्याबद्दल योग्य तो मोबदला दिला जातो.

मुंबई, ठाणे व इतर शहरांमध्ये दरवर्षी विविध प्रकारचे मॅरथन चे आयोजन केले जाते. यामध्ये आंतरराष्ट्रीय टाटा मॅरथन, रोटरी क्लब, ज्यूपीटर मॅरथन, मुंबई मॅरथन, पिकथॉन इत्यादी सारख्या स्पर्धेमध्ये फाँडेशनचे स्वयंसेवक सहभाग घेतात, यामध्ये दाता व प्रत्यारोपण शस्त्रक्रिया झालेले व्यक्तींचा सुध्दा यामध्ये समावेश असतो. यांचा उद्देश एकच असतो जास्तीत जास्त लोकांपर्यंत अवयव दानाचे महत्व समजले पाहिजे.

किडनी तसेच इतर अवयव खराब झालेल्या रुग्णांची संख्या दिवसेंदिवस वाढत आहे. डॉ. भरत शहा, डॉ. प्रशांत रजपूत, डॉ. मिता शहा, डॉ. तापियावाला इत्यादी तज्ञ रुग्णांना वैयक्तिकस्तरावर मार्गदर्शन करतात. यामध्ये रुग्णांच्या विविध असणा-या समस्या समजावून घेतल्या जातात. अश्या रुग्णाना काय खावे, काय खाण्याचे टाळावे याविषयक मार्गदर्शन करण्याचे कार्य १९९३ पासून केले जाते.

अवयव दानाचा किती श्रेष्ठ आहे, एका व्यक्तीच्या केलेल्या अवयवदानामुळे ७ ते ८ जणांचे जीव वाचू शकतो हा संदेश सर्वसामान्य लोकांपर्यंत पोहोचविण्यासाठी २०१४ पासून शोर्ट फिल्म स्पर्धेचे आयोजन करण्यात येते. यामध्ये महाराष्ट्र व महाराष्ट्रां बाहेरील गट, संस्था व इतर सहभाग घेतात याचे यामध्ये ज्यांचे नंबर येतील त्यांना बक्षीस दिले जातात यावेळी प्रसिध्द लेखक याचे मार्गदर्शन मिळते, तसेच २१ वर्षांपासून डाएट स्पर्धेचे, २०२१ पासून कविता, स्लोगन, डाएट, पोस्टर तयार करण्याचा विविध स्पर्धेचे

आयोजन केले जातात. यामध्ये मोठ्या प्रमाणात महाविद्यालयाचे विद्यार्थी, व्यावसायिक, सरकारी नोकरदार, नागरिक, रूग्ण इ. सहभागी होतात. या संस्थेमार्फत प्रसिध्द केलेल्या शोर्ट फिल्म यामध्ये किरण, खोज, किडणी की कहाणी उसकी जूबानी, बूरा आदमी, बेफिक्रे..... सुन जरा, दि वेटिंग, सफर किडणी का, अ लेटर, जिते हे शान से....मुन्ना भाई इ. चा उपयोग करून अवयवदानाचा प्रचार व प्रसार करण्यासाठी केला जातो.

महाराष्ट्रांमध्ये किडणी विकार झालेल्या रूग्णांची संख्या अतिशय जास्त आहे, त्यांना दररोज विविध समस्यांना सामोरे जावे लागतात, अशावेळी ते फक्त आपल्या डॉक्टरांकडे विश्वासाने बघतात. अशावेळी कमीत कमी वेळेत जास्तीत जास्त रूग्णांपर्यंत पोहोचण्यासाठी आठवड्याच्या दर बुधवारी त्यांचासाठी दूपारी एक ते दीड तासाचे मार्गदर्शन केले जाते. कोरोना काळातही या ऑनलाईन पध्दतीचा फार मोठा फायदा झाला होता. यामध्ये लहानपासून ते वध्दापर्यंत या ऑनलाईन मार्गदर्शनला हजर राहतात. जर कोणाला हजर राहता आले नाही तर यूट्यूबवर यांचे सर्व रेकार्डिंग उपलब्ध आहेत.

भारतामध्ये अतिशय प्रसिध्द अशी National Transplant Game याचे आयोजन २००८ पासून मुंबईमध्ये केले जाते. या स्पर्धेचे सर्व व्यवस्था नर्मदा किडणी फौंडेशन चे डॉ. भरत शहा व इतर स्वयंसेवक बघतात. यामध्ये किडणी, लिवर, हृदय इत्यादी अवयव प्रत्यारोपण शस्त्रक्रिया झालेले रूग्ण तसेच अवयव दाते हे यामध्ये सहभाग घेतात. १०० मी चालणे, धावणे, क्रिकेट, कॅरम, बुध्दीबळ, टेबल टेनिस इत्यादी खेळांचे आयोजन केले जाते. यामध्ये राजस्थान, पंजाब, हरियाणा, दिल्ली इत्यादी राज्यातून अवयव दाते व अवयव प्राप्तकर्ता हे सहभागी होतात. जे यामध्ये नंबर काढतील त्यांना मेडल देऊन पुरस्कार दिला जातो. विशेषत यामध्ये ज्यानी ज्यानी सहभाग घेतलेला असतो. त्या सर्वांचा हॉटेलमध्ये राहण्याचा, येण्या जाण्याचा खर्च (विमान प्रवास सोडून) हा सर्वांना परत

दिला जातो. हे खेळ आयोजन करण्याचे उद्देश हा असतो कि, जे अवयव दाता व ज्यांची अवयव प्रत्यारोपण शस्त्रक्रिया झालेली आहे, यांची शारीरिक हालचाल, राहणीमान इ. सामान्य लोकांसारखेच आहेत, यामध्ये कोणी अंधू झालेला नाही तर पहिल्यापेक्षा जास्त वेगाने कार्य करत आहेत. जळगांव येथील किडणी प्रत्यारोपण शस्त्रक्रिया झालेले किशोर सूर्यवंशि किडणी स्पर्धेमध्ये यानी १०० मीटर धावणाऱ्या स्पर्धेत १ नंबर मिळविला आहे.

दरवर्षी जागतिक अवयवदान दिन विविध कार्यक्रम व मार्गदर्शन साजरा केला जातो. या जागतिक अवयव दिनानिमित्त मोठा कार्यक्रम घेतला जातो. हा दिन ३० वर्षांपासून साजरा केला जातो. या कार्यक्रमांमध्ये अवयव दाता व त्यांचा परिवारांचा सन्मान केला जातो. दादर येथील हॉलमध्ये मोठ्या उत्साहाने हा दिन साजरा केला जातो. आजपर्यंत या कार्यक्रमांला हिंदी, मराठी चित्रपटातील कलाकार सुनिल दत्त, संजय दत्त, शबाना आझमी, शंकर महादेवन, विनू विदू चोप्रा, महेश मांजरेकर, श्रेयस तळपदे, पल्लवी जोशी इत्यादींनी या दिनानिमित्त कार्यक्रमासाठी उपस्थित राहून अवयवदातांचे कौतूक ही केले होते. सिनेअभिनेत्री व समाजसेविका शबाना आझमी यानी आपल्या दिलेल्या मुलाखातीमध्ये म्हणतात की, "एक लडकी नौजवान, कृपा वो जिस तरह से मुस्कराते हुए यहां आई, इसलिए मुमकीन हो पाया सिर्फ भरत शहा ने उनको एक नई किडणी दी है, तो जब आप देखते हैं, यह काम जो बहुत आसानी से कर सकते हैं, उससे जिंदगी बच सकती है, जिंदगी सुधार सकती है, तो इसको मे तो अपना फर्ज समझती हूँ।" २०१२ मध्ये जागतिक अवयव दान निमित्त कार्यक्रमास प्रमुख पाहूणे म्हणून आलेल्या समाजसेविका मेघा पाटकर यानी दिलेल्या मुलाखती म्हणतात की, "यह इंसान को इंसान से जोड़ने का ओर सबसे बड़ा दानशूर दानधर्म का काम है।"

किडणी तसेच इतर अवयव प्रत्यारोपण झालेले रूग्णाना वेळेवर रक्त तपासनी करून घेणे

आवश्यक असते. सर्व रूग्णांची आर्थिक परिस्थिती चांगली असते असे नाही, अश्या काही रूग्णाना या फौंडेशन मार्फत औषध, रक्त तपासणी त्यांना सवलतीत मिळवून दिले जातात. या फौंडेशनचे मेट्रो पोलिस या लॅबशी रक्त तपासणी मध्ये १५ ते २५ टक्के सवलत दिली आहे. तर औषधामध्ये ३० ते ४० टक्के सवलत मिळवून दिली जात आहे.

निष्कर्ष :

समाजामध्ये विविध प्रकारच्या चळवळी कार्य करत आहेत. या चळवळीचा उद्देश हा समाजातील गरजूसाठी काहीना काही कार्य करणे ज्यामूळे त्याचा फायदा होऊन त्याची प्रगती होईल. २१ व्या शतकात ज्ञानाबरोबर मानवाच्या अवयवाला सुध्दा अतिशय महत्व प्राप्त झाले आहे. आज विज्ञानाने ऐवढे प्रगती केली आहे, ज्याचा परिणाम सर्व शाखांवर पडत आहे. दै. लोकमत ३ ऑगस्ट २०२४ च्या वर्तमानपत्रामध्ये मुंबई या विभागामध्ये ८००० रूग्ण मानवी अवयवांच्या प्रतिक्षेत तर सहा महिन्यांत फक्त ८० जणांकडून अवयवदान केले अशी ठळक बातमी आली होती. महाराष्ट्रामध्ये अनेक संस्था या अवयवदान चळवळ वाढविण्यासाठी विविध प्रकारे कार्य करत आहेत. पण नर्मदा किडणी फौंडेशनच करत असलेले कार्य अतिशय उल्लेखनीय असे आहे. आज या चळवळीचा प्रसार वेगाने होत असला तरी काही मर्यादा, परंपरा, अंधविश्वास याचा परिणाम यावर होत आहे. तरीसुध्दा यावर मात करतच ही फौंडेशनची दखल सामाजिक कार्यात ही आघाडी घेत आहे. जोपर्यंत डॉ. भरत शहा आणि त्यांचे सहकारी येणाऱ्या अनेक अडथळातून मार्ग काढत जनसामान्यपर्यंत

अवयवदान हे श्रेष्ठ दान आहे असा संदेश पोहोचवत आहेत.

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Impact of Advance Technology in Sports in India

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Abstract:

Technology is a huge thing within sport, it varies from mobile phones, televisions, sport equipments and more, there is no doubt that the importance of the use of technologies has increased over the years, and since then, sports have become a globally activity, so are the decision that can change the result of an event. With the implementation of technology, correct decisions have been made, giving to the right team the winner place. The use of technology has its pros and cons but almost every sport now days is supported by it allowing to fans, athletes and judges, a more enjoyable environment while watching, playing or deciding a sport event such as [Tennis](#) or [Swimming](#). With implantation of modern cameras for instant replay, new materials for racquets as well as automatic heating system for pools and sophisticated swimsuit new techniques and rules are being used in order to preserve the authenticity of the olden sport, where the athletes make the effort to win a medal or a position in the history.

Keywords: Technology, Equipments, Implementation, Environment, Authenticity etc.

Introduction:

The recent development in technology is encouraging the development of sports in various dimensions. From the players' aspect, we find a better place for practice and skill development. From the spectators' point of view, we see the perfect use of technology in sports. Back in the day, we use to have a view or two of the sports played. There were limited cameras that can even properly zoom on the sportspersons and athletes. We have no high-definition feed of the channels that offer a 360-degree view of the sport's actions right away. We have come a long way in the development of technology related to sports. The athletes are faster and stronger than the previous generations. The coaches and managers now use tactical software platforms to analyze the performance of the sportspersons. They even use sensors to measure the vital functions of players during exercise sessions and field

actions. Previously, trainers and coaches had to follow extensive paperwork to find out the performance of a player or a sports team. Imagine how many things a coach had to keep in his mind regarding individual players. These days, we can design charts and graphs and can even get detailed reports offering deeper insights into individual or team performance. The principle of sports training depends on the latest technology used. Players wear sensors and GPS to monitor their movements. The management team can track the actions of players. The latest technology can also track how an athlete is performing on the field. The best types of shoes and sports gear are designed after comprehensive research and development to offer a better ground for better performance.

Objectives of the Study:

1. To study the technology changes in sports.
2. To study role of technology in sports.

Methodology of the Study:

The present study has been descriptive; the data for this study were obtained from secondary sources. The secondary data has been collected from various references which already existed in published form; part of the paper is based on literature review the method comprising of collecting all the available papers relating to the theme and selecting relevant papers/books for the review purpose.

Technology changes in sport:

Technology has assisted players and coaches in the field of education, quick recovery of athlete injuries, and their performance. Even coaches are upgraded, as previously they use while chalkboards, and now they use tablets for enhancing the ability to show play-by-play information of various situations. Coaches hold the ability to undertake side-by-side athlete comparison and the same help in imparting better coaching. The use of high-definition digital equipment permits coaches to see the right view and explore the mistakes with the aid of the frame option. Even athletes are taking benefit of advanced or new technology. For instance, the New Nike strobe eyewear supports players to gain a competitive advantage. This device is an integrated model, which permits the players to enhance their visual skills and ability to view better.

Equipment is highly improved in various sports nowadays. In football, helmets are introduced for stopping subdural hematoma and skull fractures. The new 360, feature of the helmet is the flexible face mask, which supports absorbing the energy, which comes in front of the helmet. Technology has assisted in revolutionizing

the way, in which one can design apparel as well as equipment. From uniforms to shoes to helmets to gloves and pads, sports equipment is higher functional and high-tech; going to any sporting event has become a different experience. As now scoreboards have also gone high definition, recreational devices like hitting machines and batting cages have become quite popular, and even fans have the accessibility to use Wi-Fi connection.

Increase use of technology has offered a better and more convenient opportunity for all athletes to quickly elevate their performance and skills. The team now holds the ability to see and understand the videos and can learn different forms and techniques. These technologies help athletes as well as coaches in viewing the game motions. Similar technology can also be used in considering the opposing team. With technological improvement, coverage of sports is gone quite extensive, like never before. In the past, viewers had to choose a few channels to see the match; now there are a plethora of alternatives. A very platform, coverage is present, with a full replay of the match. In the past, missing any game implies that one has to wait for the morning when they can read the results in the newspaper. Now people can easily save, record or either replay the match footage.

Role of Technology in Sports:**Decision-making:**

Decisions taken by the umpire or referee can impact the results of the match. In particular cases, the direction of the game might get change with one decision. In the past few years, technology is increasingly used in various sports, which does not always help in the decision-making process. For instance, different external bodies like coaches, commentators, and the, which are in the position of scrutinizing decisions, usually access the latest technology like a replay or slow motion play from different

angles. In sports, the use of video technology is at the forefront of many discussions in the last few years. Few think it as negative than positive, as games are taking a long time due to the inclusion of video referrals, whereas else some believe that many game officials depend completely on technology and that they face challenges in making their decision. This belief held that there are improvements, which are still to be done, and the same can be just viewed as a benefit for enhancing the right decision making, and as the result of that, coaches, players, and fans don't move as hard it was done.

In the game of football, goal-line technology is increasingly implemented for the purpose of the track the position of the ball in connection with the goal line to remove the wrong decisions taken by the umpire. For example, FIFA had applied different goal lines technology like GoalRef, GoalControl, as well as Hawk-Eye which includes a high-speed video camera, and magnetic field-based technology. In the game of cricket, Hawk-Eye technology is used, which is a visual ball tracking software. This technology is employed in many Tests, Twenty20, and ODI matches since 2001. It also makes use of various smart replay technology for the purpose of recording camera feeds and for making them available in real-time, which helps the third umpire in taking the right decision in extreme situations like, disputed catches, no-balls, boundaries, and stumpings.

Ethical issues:

There are different ethical problems associated with the use of technology in sports, and there are many who debate about the place of technology in various sports. Different technologies like video replay and goal-line technology used for decisions are applied on the field and often impact sports and how the game is played. Advancement in technology has provided benefits to people having a disability. Changes related

to wheelchair prosthetics, and much more lead people with different disabilities to take part in sports and this can be considered as a significant achievement. The question which is often raised is how far the technology has gone. The highest ethical problem is linked with technology use in sports. It is important that technology should be utilized for enhancing the performance of games. It is true that audiences are interested in viewing improved performances; whereas else, athletes are interested in improving their performance. Performance improvement might go rare if the technology is not used in sports. Nevertheless, if the technology results in unfair or unethical competition, then its use should be limited. Another question raised is how the accessibility of technology has led to unfair competition. The ethical problems linked with technology use in sports cover-up access equity. It is true that obtaining technology is quite costly, mainly in the case of biomechanical analysis as well as physiological testing. Even though many types of equipment are quite expensive, and most of the competitors cannot afford to purchase technology, then, in that case, competition might go unfair, as there is inequity in technology accessibility. However, different sports competition includes clubs as well as athletes who can or cannot afford the use of technology. For example, major competitions like Champion League, A-League, etc. have a huge amount of money for accessing technology, and the same goes for leading individual sports like tennis and golf. In the case of international competitions, they fail to have a similar type of equity. In poor developing countries, individual athletes fail to afford advanced technologies, as compared to athletes coming from developed countries, mainly from countries in Australia, America, and England that place a high value on sports.

Conclusion:

There are other remarkable types of technologies used in sports and training. The training sessions are made more productive by measuring the physical aspects and output of players. The movements are tracked to analyze and make them better. These days, athletes and sportspersons use exclusive protective gear for better and safer performance. In fact, differently-abled athletes used prosthetics to perform and participate in national and international sports events. The importance of technology in sports is pretty much clear now. There are limitless possibilities for using different other technologies in different sports. From wearable to training tech gear, we observe how technology has been redefining sports exceptionally throughout the years.

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Effect of Different Environmental Conditions on Physiological Changes in Athlete

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Abstract:

Athletic performance is a combination of dedication, talent and relentless effort. For athletes aiming to reach their peak potential, it is very important to understanding the various factors that influence their performance. There are several factors which always make effect on athlete's performance. Diet, equipment, rest, physical factors, psychological factor, motivational factor, environmental factor etc. are some of them. When an athlete relocate, different environmental conditions is a major factor which makes influence on their physiological mechanisms. Athletes need to adapt to environmental conditions to maintain peak performance. Understanding how factors like temperature, humidity, and altitude and air quality interact with physiological mechanisms is crucial for optimizing training and competition outcomes. Different geographical condition not only affect the sports situation, but also interfere with the athletes' body mechanism and athletic ability. Altitude, climate, humidity, terrain, wind etc. are some of the environmental factors which can influence on athlete's physiological mechanisms. We always see that International Teams leave for their International Tours to various countries before some days ahead of their actual schedule. The main purpose of this is to go to the competition venue and get used to the environmental situations. Training in natural settings has many benefits. It has been proved that doing training in natural settings impact on athletes' health and performance.

Keywords: Environmental Conditions, Athlete, Physiology, Performance, Altitude, Climate etc.

Introduction:

We often see when Indian Cricket Team goes to Australia tour, the team go there a few days before starting the actual competition and play some practice matches with the local teams. There is no other reason behind this but the only reason is to adopt to the environmental conditions. Because athletes go to the venue of the competition in advance, they get an idea of actual environment and what they should do to adopt with that particular environment. By playing practice matches at new venue in unknown environment before the competition, the athletes also get an idea of how much that environment effect on their physiological mechanism. If physiological

mechanism of any athlete changes, an athlete can't give the best performance. There are many environmental factors affecting performance of athletes. Altitude, climate, humidity, terrain, wind etc. are some of them. Competing at high altitudes, where the oxygen levels are lower, can affect an athlete's performance. Poor air quality, caused by pollution can affect athlete's respiratory conditions. Strong winds can pose challenges for athletes, particularly in sports like cycling, running, or golf. We can find several examples where Environmental conditions become advantage for local athletes. Whereas there are many example where athlete from other countries or region who perform their career best by

participating away from their native places. Usain Bolt recorded 9.58 seconds his personal best timing in 100m running at Berlin far away from Jamaica.

Environmental changes can have a significant impact on an individual's physical and mental states. When an individual relocates to a new region, they may experience changes in their environment, climate, culture, and social networks. These changes can affect an individual's physical health, mental well-being and overall quality of life. In the context of sports, environment changes can have a significant impact on an athlete's physical and mental states. Skill, strength, endurance etc. are typically the determining factors which plays significant role in athlete performance. All types of sports require these qualities, but different sports may require a combination of specific factors more than others. These factors are vital throughout all types of sports. While it is true that all sports require a certain level of skill, it is also true that certain activities, such as shooting and board games, demand exceptional focus. On the other hand, sprinting and wrestling require strength, which is typically associated with having a muscular physique.

Physical factors which directly depends on physiological mechanism of an athlete. More importantly athlete's performance at any competition depends on physiological mechanism. Different Environmental conditions make direct and significant impact on athlete's performance. Geographical changes affect the physical and mental states of the athlete. After relocating, the changing environment restrict the physical activities of the athlete. Also, the change in environment affects the Physical Fitness components. Due to this, the athlete can't perform the expected movements and actions of body. This effects on sports performance. If an athlete does not perform as expected on playground, it does

not take long for the athlete to become mentally exhausted. This is why, no matter how great athlete is, when goes to play in another region, athlete's overall performance is affected. For example, when the Indian cricket team goes to play in Australia, the Indian athletes are not able to perform as expected. Also, when Australian athletes come to play in India, the performance of Australian athletes in India is not the same as they perform in Australia. Present study aimed to focus a light on the effect of environmental conditions on physiological changes of athlete. Let's see how different environmental factors such as Altitude, Climate, Humidity, Terrain etc. make effect on physiological changes of an athlete.

Objective:

1. To take an overview of how different environmental conditions make effect on physiological mechanism of an athlete.
2. To understand acclimatization or adaptation in certain environmental conditions.

Altitude:

Altitude has a significant impact on an athlete's performance due to the oxygen availability at higher or lower elevations. Sports like weightlifting, sprinting, or shot put rely more on anaerobic energy systems, which don't require much oxygen. Lower air resistance at high altitudes can actually improve sprinting and jumping performance (e.g., Mexico City Olympics 1968, where multiple sprint and jump records were broken). As altitude increases, the air pressure in the environment decreases, leading to a reduction in air density and a decrease in environmental oxygen. Reduced air density at higher altitudes can be advantageous in some sports, particularly those with a low aerobic component, such as short sprints. However, reduced air density also affects projectile motion in sports like

ball games, throwing, shooting and ski jumping. At higher altitudes, the air pressure is lower, so there is less oxygen in each breath. This reduces the amount of oxygen delivered to muscles, leading to quicker fatigue. To compensate for the lower oxygen levels, the body increases breathing rate and heart rate, making exercise feel harder. Endurance activities (like running, cycling and swimming) are significantly affected because they rely on oxygen for energy production. VO_2 max (maximum oxygen uptake) can drop by about 7-9% per 1,000 meters (3,280 feet) of elevation gain. Symptoms like headache, dizziness, nausea and loss of appetite can impair performance.

Therefore, acclimatization is essential. Endurance sports suffer at high altitude due to reduced oxygen availability. Anaerobic sports remain mostly unaffected or may even benefit. Acclimatization helps athletes adapt over time. Most people can acclimatize to high altitudes; the acclimatization process mainly consists of short-term hyperventilation and long-term compensation by increased oxygen uptake, transport, and use due to increased red blood cell mass, myoglobin, and mitochondria. Returning to sea level after altitude training can boost endurance performance. The body produces more red blood cells to improve oxygen transport to muscles. Hemoglobin, the protein in red blood cells that carries oxygen, increases to help compensate for lower oxygen availability. More capillaries develop to improve oxygen delivery and muscles become more efficient at using available oxygen.

Humidity:

Humidity refers to the amount of moisture in the air. **High humidity** can make exercise more difficult, while **low humidity** can cause dehydration and respiratory issues. Both extremes affect an athlete's **thermoregulation, endurance, hydration and overall performance**. When

humidity is high i.e. above 60%, sweat **doesn't evaporate efficiently** which make it harder for the body to cool down. The body struggles to release heat, causing overheating. Due to more humidity excess fluid is lost which results reducing blood volume and oxygen transport to muscles. The cardiovascular system works harder to maintain cooling, leading to early exhaustion. Heart rate increases and it results to fatigue. In games like running and cycling, football i.e. in endurance games, performance declines due to overheating and dehydration. In weightlifting and sprinting events recovery of the body slows down. Training in humid conditions for 7-14 days helps the body to adapt. Proper water intake and electrolytes can prevent cramps and maintain blood volume. Ice packs, cold water immersion and wearing lightweight clothing help regulate body temperature in humid condition.

In low humidity (below 30%) i.e. in dry conditions, sweat **evaporates too quickly** and body gets dehydrated rapidly. It can lead body to coughing, dry throat and breathing difficulties, especially in endurance sports. Essential minerals (sodium, potassium etc.) are lost through sweat which affect muscle functions of athlete. Dehydration can reduce stamina and increase heart rate. In **Winter Sports events** breathing difficulties due to dry air can lower oxygen uptake. So to adopt athlete body in certain condition, drink water after regular intervals. Hydrate athlete body before during and at the time of exercise. Use moisturizer and gel to prevent chapping and cracking skin in dry condition.

Temperature:

Temperature has a significant impact on the performance of athletes. High temperature can cause various heat illnesses such as heat cramps and heatstroke, while very low temperatures may lead to hypothermia. In cross country skiing

world cup, races are cancelled or postponed if the temperature in a major portion of the course is -25°C or lower. Hot climatic condition or high temperature increases body temperature. It make the body work harder to cool down, increasing sweating and dehydration. Dehydration leads to a decrease in blood volume, making it harder to deliver oxygen to muscles. Heat exhaustion and heatstroke can occur if hydration and cooling strategies are inadequate. Muscle fatigue and cramping happen faster in hot conditions. To acclimatize at high temperature drink electrolyte-rich fluids and water. Train athlete in heat for 7-14 days to adapt at the place of competition. Athlete can follow following things to reduce high temperature by using Ice packs, cooling vests or cold water immersion.

Low temperature can cause muscle stiffness. Cold muscles are less flexible, increasing the risk of strains and injuries. It reduce oxygen uptake of athlete. The body prioritizes warming vital organs over muscle oxygenation which reduces endurance level of body. The body burns more calories to stay warm which leads to quicker fatigue. It means athlete's body demand high energy at low temperature. On the other side because of less sweat, dehydration risk of body is lower than in hot climates. Also cold environment can reduce inflammation and helps muscle recovery. To acclimatize at low temperature, athlete should prevents excessive heat loss by using proper layered clothing. Longer warming-up prepare muscle and joints for free and flexible movements. Cold weather can cause loss of fluid in the body through respiration. So it's important to follow proper hydration strategy.

Terrain:

Terrain significantly impacts the physiology of an athlete by altering how their body responds to physical demands.

The type of terrain influences muscle activation, cardiovascular output, metabolic rate and biomechanical efficiency. **Flat Terrain (Road, Track, Treadmill etc.)** means less strain on stabilizer muscles due to even surfaces. Steady and predictable heart rate and oxygen consumption, leading to efficient energy use. On **hilly or inclined Terrain** the heart rate increases significantly on inclines, as the body demands more oxygen to fuel muscles. At **grass, soft ground (Fields, Trails etc.)** slight elevated heart rate due to the challenge of maintaining pace on softer, more unstable surfaces. Increased energy expenditure compared to flat roads due to the need to adjust stride and maintain stability. Terrain like **Sand (Beaches, Dunes)** increases heart rate because of the increase in energy required to move through shifting, unstable ground. This can result in higher aerobic and anaerobic conditioning over time. On **rocky or uneven terrain (Mountains, Trails etc.)** the heart rate will fluctuate depending on the incline and difficulty of the terrain. Steep climbs elevate the heart rate, while descents may cause a temporary drop, but the cardiovascular system is constantly challenged. In cold conditions like snow or ice like terrain, the body has to work harder to maintain heat, which increases cardiovascular strain. The heart rate may be elevated due to shivering or working against environmental resistance (like running through deep snow or icy conditions).

The only way to acclimatize at different terrain is to spend more than two week at the venue of competition. Adaptation timeline may differ as terrain. It can be seen that changes in muscle activation and balance can be seen after a few weeks of consistent training on different surfaces. Tendon and ligament strength may take longer period to fully develop. The nervous system adapts by improving the ability to sense changes in body position, which enhances coordination and balance on

different terrain. The body adapts to a wide range of physical demands, improving overall endurance and strength. The body becomes better at managing different forms of fatigue, whether from high-intensity uphill climbs or the repetitive motion of uneven ground.

Conclusion:

Environmental conditions significantly impact the physiological responses of athletes, influencing their performance, endurance and overall well-being. Factors such as temperature, humidity, altitude, air quality, and weather conditions play a crucial role in determining how the body regulates heat, oxygen intake, hydration levels and muscle efficiency.

Athletes experience physiological adaptations in response to these environmental challenges. To maximize athletic potential, it is crucial to implement training strategies tailored to specific environmental conditions. Proper acclimatization, hydration management and recovery practices help athletes maintain peak physiological function, reducing the risk of fatigue, heat stress, or altitude sickness. By understanding and adapting to environmental factors, athletes can optimize their performance and maintain overall health in different environmental conditions

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Role of Open Access E- Resources in Libraries: With Special Reference to Changing Environment

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Abstract:

The 21st century is known as a knowledge society. In the 21st century, new trends in technology are being developed. This has led to a huge change in the social scenario. Significant changes have occurred in social, economic, educational, and political views.

ICT has changed the nature of academic libraries. A variety of terms such as hybrid, digital, and virtual library are used to refer to the modern academic library. The pace of change brought about by new information technologies has a key impact on the way people live. In today's world, electronically formatted, open-access resources have become very popular. Today, academic libraries are increasingly using e-resources. Open Access literature is digital, free of charge, and free of most copyright and licensing restrictions. The benefits of open access appear to be mutually beneficial to all participants in the scholarly communication process.

This paper is a literature review on the role and use of open-access e-resources in academic libraries.

Keywords: *Open Access, e-journal, e-book, consortia, digital libraries, etc.*

Introduction:

The development of information and communication technology (ICT), the mode of access to scholarly information has changed from print to electronic. The concept of e-journals consortia emerged as a subscription model to journals during the time due to the high cost of access to e journals. In parallel with this technological development the amount of research itself has increased exponentially, coupled with the desire for wider dissemination of research result. From this situation, open access has emerged as a business model for scholarly journals as an alternative to subscription and has attracted considerable attention in recent years.

Open Access movement is a worldwide phenomenon to mitigate challenges faced by the global libraries and

research institutions related to 'serials crisis' - a spiraling effect of constant increase in subscription cost of many scholarly journals and exponential hike of online access fees of journals in 1990s that led to cancellation or reduction of subscriptions of many ever priced serials due to budgetary limits. Open Access initiatives have tried to provide initially Gratis Open Access and later Libre Open Access to scholarly literature. The first ever formal Open Access repository launched was the arXiv.org in 1991 which helped researchers in self-archiving of their electronic preprints of scientific papers in the fields of physics, mathematics, computer science, quantitative biology, quantitative finance and statistics. Many stakeholders came forward in building institutions and resources for shaping up the global open

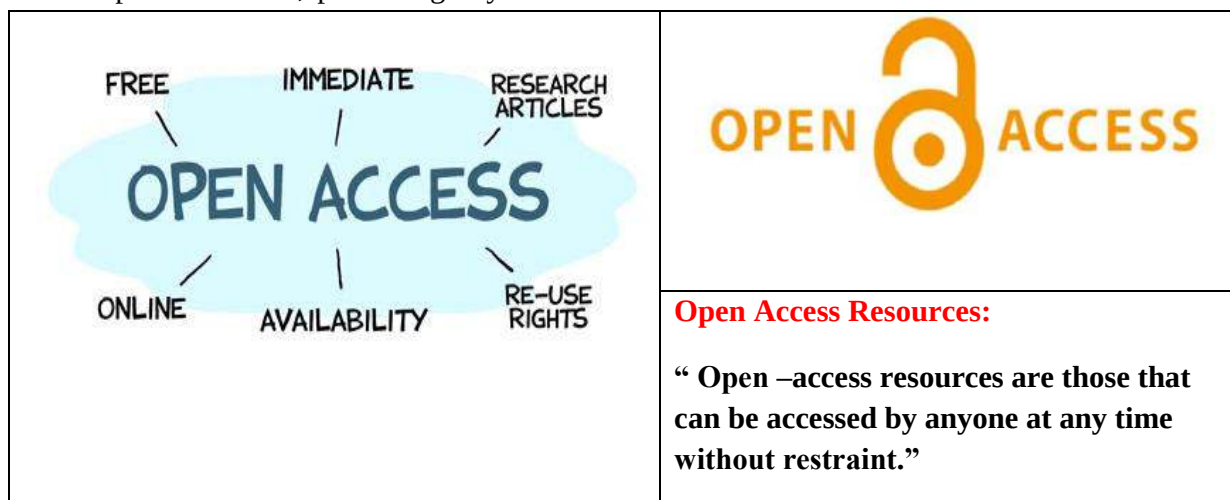
access movements. Some of the institutions emerged during this decade are namely, Public Library of Science (PLOS), BioMed Central (BMC) - publishers of peer-reviewed Open Access journals, the Scholarly Publishing and Academic Resources Coalition (SPARC), and Open Access Scholarly Publishers Association (OASPA). Most importantly, the Budapest, Berlin and Bethesda (BBB) Open Access declarations or statements got signed by the scholarly communities, particularly by the funding agencies, research councils, learned societies, institutions, universities, and scientists for the Open Access dissemination of public funded research.

What is Open Access?

According to BOAI the concept of Open Access refers to "[the] free availability on the public internet, permitting any users

to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself" (BOAI, 2002).

The Bethesda Statement (2003) defines open access, where "The author(s) and copyright holder(s) grant(s) to all users a free, irrevocable, worldwide, perpetual right of access to, and a license to copy, use, distribute, transmit and display the work publicly and to make and distribute derivative works, in any digital medium for any responsible purpose, subject to proper attribution of authorship as well as the right to make small numbers of printed copies for their personal use".



Characteristics of Open Access E-Resources

- It is free availability of scholarly publication.
- It is free of copyright and licensing restrictions Materials are available online or on the internet.
- Material is full text. Material can be accessed by anybody from anywhere without any discrimination.
- Open Access contents can be in any format from texts and data to software,

audio, video, and multi-media, scholarly articles and their preprints.

- You can access digital information 24/7
- Anywhere, any time...
- No need to visit the library
- Information can be cut or copied & pasted form one document to another every easily
- Digital information may be free or cheaper than print equivalents.
- Digital information can be sent in multiple copies simultaneously over

information's networks in fractions of a minute or even of a second.

➤ Saved the space of Library.

Open Access E-Resources:

There are some popular Open Access Resources websites-

Sr. No	Name	Doman
	E-Books :	
1	DOAB: Directory of Books 7135 Books available	http://doabooks.org
2	PDF drive	http://pdfdrive.net
3	ebooks@Adelaide	https://ebooks.adelaide.edu.au
4	OAPEN	http://www.oapen.org/home
5	Open Library	https://openlibrary.org
6	In Tech open Books	www.intechopen.com/books
7	Rare Book	www.rarebookroom.org
8	The Universal Digital Library Million Book Collection	www.ulib.org/index.html
9	Read Print	www.readprint.com
10	National Digital library of India (19,845,301 books)	https://ndl.iitkgp.ac.in/
11	Bhandarkar Oriental Research (BORI) 1001 Rare Digital Books	http://borilib.com/repository
	E-Journals :	
1	DOAJ-Directory of open access Journals	http://doaj.org
2	Open access Directory	http://oad.simmons.edu/oadewiki/main_page
3	Open DOAR	https://opendoar.org
4	ROAR	http://roarmap.eprints.org
5	ROAD	https://road.issn.org
6	Peer J	www.peerj.com
7	Med know Journals	www.medknow.com
8	Indian Society for Education & Environment	www.iseeadyar.org/index.html
9	Biomed Central (STM)	https://www.biomedcentral.com/journals
10	Springer Open	https://www.springeropen.com/
11	Science & Education Publishing (SciEP)	http://www.sciepub.com/portal/Home
	Theses & Dissertation :	
1	ShodhGanga - UGC & INFLIBNET, India	http://shodhganga.inflibnet.ac.in
2	NDTLD	http://www.ndltd.org
3	Open Access Theses & Dissertation : OATD	https://oatd.org
4	Open Directory Project Free Dissertation	http://dmoz.org/search?q=free+dissertation
5	Open Thesis.org	http://www.openthesis.org
6	PQDT OPEN : Pro Quest Digital Theses	http://www.pqdtopen.proquest.com
7	Mahatma Gandhi University online Theses Library	http://www.mgutheses.in

Benefit of Open Access E resources:

There are number of benefit of electronic resources such.

1. Saves costs of students.
2. Grants access to more quality choices.
3. Help to teaching and learning process.
4. Provides peace of mind for all users.
5. Provides quality guarantee.
6. Allows remote access.
7. It can be used by many users simultaneously.
8. Provides timely access to documents.
9. Supports searching Capabilities.
10. Accommodates unique features such as links to related items.
11. Eliminates printing and postage cost.
12. It can easily merge with altering services.
13. It does not require physical Processing.

Special Features of E-Resources:

E-resources have some distant features which differentiate them from traditional resources. E-resources on the Internet are further distinct by the nature of the information on the net itself. The features of 21st century information and media are_

1. High compact storage.
2. Ease of reproduction, multiplication and manipulation and transmutation;
3. Contents can be very easily detaches from its media or container,
4. Hypertext and multimedia;
5. Ease of migration of contents from one medium to another,
6. Ease of transmission, communication and storage;
7. Seamless integration of print and electronic resources;
8. Sophisticated and multipronged searches through keywords, free text, Boolean operators, lass numbers and natural languages processing.

ICT base E-resources and changing environment in Libraries:

Information and communication technology has become essential part of 21st century's libraries. ICT has made drastic change in the field of libraries, the libraries has transformed from traditional libraries to digital libraries or hybrid libraries. Therefore the librarians must create technological environment to make sense of a multiplicity of digital collections and resources. They must identify strategies to provide access to wide range of networks & information resources. For this purpose they need new skills to manage and create many information sources and services. The competencies & skills form the basis for the continued survival and growth of professional in the new information technology age. So in the fast changing environment, the library professional must possess multi skills, multi-tasking abilities and competent in specialized area of work.

Conclusion:

Open access supported by information technology has become a public movement globally and this movement has provided new challenges as well as opportunities for the librarians. The libraries are implementing ICT based library services and librarians managing digital library and hybrid library, institutional repositories publishing maintaining open access E-journals, E-books and developing web portal. Open access provides a new paradigm for libraries and librarians. It provides opportunities for library professionals to deliver qualitative and quantitative content in to the users.

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जयप्रकाश कर्दम की कविताओं में जातीयता : एक अध्ययन

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प्राचीन काल से ही वर्णव्यवस्था के द्वारा भारतीय समाजव्यवस्था में जातीयता के बीज बोए गए, जिसका आज विषवृक्ष बना हुआ है। ग्राम्य परिवेश में तो जातिव्यवस्था को अत्याधिक महत्त्व देते हुए उसे सुरक्षित एवं बरकरार रखने की जद्दोजहद दिखाई देती है। जाति का जो पौधा अंकुरित हुआ था इसी कारण हुआछूत के नीति-नियम भी कड़े हो गए हैं। आजादी को प्राप्त करने के लिए कंधे से कंधा मिलाकर, जात-पाँत को भूलकर अत्याचारी अंग्रेज सरकार के खिलाफ भारतीय समाज ने अहिंसात्मक नीति से लड़कर एक नई मिसाल विश्व के सामने रखी थी परंतु वहीं भारतीय समाज बाद में जातीय भेदाभेद की समस्या से क्षतिग्रस्त हो गया दिखाई देता है। हर कोई व्यक्ति अपनी जाति के प्रति एकनिष्ठ रहने का प्रयास करता है। यदि कोई भी मनुष्य अपनी जाति के नियमों का उल्लंघन कर ले तो उसे करता से बहिष्कृत किया जाता है। अर्थात् आजादी के बाद देश जातीयता में बँटा हुआ दिखाई देता है।

जाति प्रेम तथा जातीय नफरत ने स्वतंत्र भारत देश के बंधुता भाव पर प्रश्नचिन्ह लगाया हुआ दिखाई देता है। जातीयता के कारण ही देश खंडित होकर देश की एवं समाज की अवनति हो रही है। जातीय श्रेष्ठता-कनिष्ठता के कारण मानव मन भी खंडित होता जा रहा है। जाति प्रेम एवं जातीय अभिमान ने समाज में एक संकुचित वृत्ति का निर्माण हुआ है जिससे अखंड देश

की एकता खंडित हो रही है। इसी संदर्भ में डॉ. मुक्ता नायडू कहती हैं, "मानव में भेद करके असंख्य समस्याओं को जन्म देनेवाली वर्णाश्रम व्यवस्था और उसका पालन वास्तव में भारतीय समाज के लिए दुर्भाग्य की वस्तु रही है।" इससे स्पष्ट होता है कि वर्णाश्रम व्यवस्था के कारण ही समाज में जातीय भेदाभेद का निर्माण हुआ है।

लोग अपनी जाति और धर्म की जी जान से बढकर रक्षा करते रहे हैं। एक जाति के लोग अन्य जाति के लोगों से रिश्ता नहीं करते क्योंकि जाति संकट की भावना मन में पाली जाती है। जाति के दायरे में लोग इतने सीमित हो गये हैं कि इसके खिलाफ उठाया हुआ कोई भी कदम किसी को भी उस जाति एवं समाज से बहिष्कृत कर सकता है। जातीयता का मूल हमारी समाजव्यवस्था में मिलता है। जातीयता को मिटाने के लिए अनेक समाजसुधारकों ने सदियों से कारगर कदम उठाए हैं, जिसमें म.फुले, शाहू महाराज तथा डॉ. आम्बेडकर आदि पुरोधा हैं। जयप्रकाश कर्दम जी ने अपने कविताओं में जातीयता की समस्या पर किस प्रकार प्रकाश डाला है, इस पर हम यहाँ सोचेंगे -

जयप्रकाश कर्दम जी के 'गूंगा नहीं था मैं' इस कविता संग्रह में जातीयता की समस्या का चित्रण इस प्रकार से हुआ है। 'वर्णवाद का पहाड़' कविता में जातीयता पर प्रकाश डालते हुए कवि लिखता है-

"तुम्हारे लोटे में
पानी भरने को भी
हम लालायित रहते
किंतु तुमने पानी पीने के
अपने पीतल के लोटे को
हमारा हाथ कभी नहीं लगने दिया।" ²

उपर्युक्त पंक्तियों में कवि बताता है कि जातीयता की मानसिकता से गुरु भी परे नहीं है। इसी सोच के कारण गुरु अपने दलित शिष्यों से काम करवाते हैं लेकिन अपने पीने का पानी केवल सवर्ण छात्रों से भरवाते। उनके पीतल के लोटे को दलित छात्रों को कभी भी हाथ तक लगाने नहीं देते। इससे स्पष्ट होता है, गुरु जो सब को ज्ञान देता है वे भी जातीयता को मानते हैं तथा इसी मानसिकता को लेकर चलते हैं। कवि ने इसी मानसिकता का चित्रण किया है।

आलोच्य कविता संग्रह के 'बेमानी है आजादी' कविता में जातीयता के दर्शन इस प्रकार से हुआ हैं -

"नहीं बैठ सकता जो आज भी
सवर्णों के सामने खाट पर
नहीं कर सकता मुँह उठाकर बात
साठ साल का बूढ़ा भी
दूध- मुँह बच्चों तक को
मिमियाकर कहता है 'बाप'।" ³

यहाँ स्पष्ट होता है कि दलित व्यक्ति चाहे बड़ा हो या बूढ़ा वह हमेशा दीन बनकर ही रहता है। सवर्णों के सामने वह बैठ नहीं सकता तथा साठ साल का बूढ़ा व्यक्ति सवर्ण वर्ग के छोटे से छोटे बालक को बाप कहकर पुकारता है। समाज की यही मानसिकता रही है कि दलित हमेशा से सवर्णों से दबा रहें। उनके सामने अपनी गर्दन झुकाए रहे।

'अस्वीकृति' कविता में जातीयता का वर्णन इस प्रकार से किया है-

"तेरे साथ शादी भी कर ले लेकिन
जातीयता के
जहर के चलते
वह शादी भी
बेमानी ही रहेगी
उसके घर में तुझे
वह स्थान
कभी नहीं मिल जाएगा
जो किसी ब्राह्मणी को मिलता।" ⁴

ब्राह्मण व्यक्ति भले ही दलित स्त्री से शादी कर ले लेकिन उसके घर में उस स्त्री को केवल जाति की नज़र से ही देखा जाता है। उस घर में जो स्थान ब्राह्मण स्त्री को मिलता वह स्थान शादी के बाद भी दलित स्त्री को नहीं मिल सकता। समाज में आज भी व्यक्ति की पहचान जाति से ही होती है, यह वास्तविकता है। जिसका चित्रण कवि ने किया है।

'ओ नए साल' कविता में जातीयता की ओर इस प्रकार प्रकाश डाला है-

"दलित नेता द्वारा अनावरण की गयी
किसी सवर्ण की प्रतिमा को
दूध और गंगाजल से धोकर
शुद्ध करने का
पाखंड न रचाया जाए।" ⁵

यहाँ स्पष्ट होता है कि दलित व्यक्ति चाहे वे उच्चपदस्थ अधिकारी हो या नेता हो। समाज का उसकी ओर देखने का दृष्टिकोण एक ही है वो है जातीय नेता कोण। इसी मानसिकता के कारण दलित नेताओं के साथ भी हुआछूत दिखाई देती है। किसी दलित नेता द्वारा की गयी मूर्ति को दूध और गंगाजल से शुद्ध किया जाता है। केवल दलित होने के कारण लोगों का उनके साथ इस प्रकार का बर्ताव रहता है।

'तिनका तिनका आग' कविता संग्रह में जातीयता की समस्या पर कर्दम जी ने प्रकाश डाला है। 'भारत' कविता में जातीयता का चित्रण इस प्रकार से हुआ है -

"अपनी सत्ता साम्राज्य को
सुरक्षित रखने के लिए
मिट्टाएँगे वे मुझे ही
जिंदा रखेंगे वे वर्ण और जाति
वर्ण भेद और सांप्रदायिकता।"⁶

समाज में अपनी सत्ता को बुलंद करने के लिए जाति का सहारा लेकर लोगों को बाँटा जाता है। जाति के आधार पर भेद करके अपनी सत्ता को सुरक्षित रखा जाता है। इसी कारण समाज में जातिओं की ओर भी मजबूत किया जा रहा है। जातियों के रद होने के कारण समाज में जालीयता दिखाई देती है। इसे प्रभावी ढंग से कवि ने अभिव्यक्त करने का प्रयास किया है।

'बौने कविता में जातीयता के दर्शन इस प्रकार होते हैं-

'घोषित किया गया अस्पृश्य
ताकि मैं तुम्हारे साथ
घुल-मिल ना सकूँ
पुकारा गया मुझे हरिजन
ताकि सदैव
दीनता से बना रहूँ।"⁷

दलितों को अस्पृश्य, हरिजन आदि नाम दिए गये हैं। अस्पृश्य कहने से सामान्य सवर्ण लोगों के साथ घुल-मिल नहीं सकता और हमेशा सवर्णों के सामने वह दीन बन कर रहें। ऐसी व्यवस्था बनाई गयी है। उन्हें किसी भी प्रकार से पनपने का मौका नहीं दिया गया।

'भारतीय चिंतन की गाड़ी' कविता में जातीयता के वास्तव को लेकर कवि लिखता है कि -

"लोकतंत्र की धुरी पर चलने वाली
भारतीय चिंतन की यह गाड़ी
इक्कीसवीं सदी में भी
जाति के स्टेशन से
बचकर निकलती है।"⁸

उपर्युक्त पक्तियों में कवि कहता है, हमारे देश में लोकतंत्र है। लोकतंत्र में सभी लोग समान हैं। फिर भी हम जाति की संकिर्ण मानसिकता से बाहर नहीं निकले। स्वतंत्रता के पश्चात् भी समाज में व्यक्ति की पहचान उसके जाति से की जाती है। इक्कीसवीं सदी में भी जाति को अहमियत दी जा रही है। इस दकियानुने सोच को कवि ने प्रभावी ढंग से अभिव्यक्त किया है।

जयप्रकाश कर्दम जी के 'बस्तियों से बाहर' कविता संग्रह में जातीयता का चित्रण इस प्रकार से करते हैं। 'देवभूमि' कविता में जातीयता को चित्रित करते हुए कवि लिखता है कि -

"जाति की गति आदमी से तेज होती है
जहाँ भी जाता है आदमी
उससे पहले पहुँच जाती है उसकी जाति
और रहती है अस्तित्व में
आदमी के न रहने पर भी
उसके नाम के साथ।"¹⁰

इससे स्पष्ट है कि आदमी की कोई भी पहचान नहीं होती। उसकी असली पहचान उसके जाति से होती है। आदमी का अस्तित्व न होने के बावजूद भी जाति का अस्तित्व रहता ही है। समाज में स्थित जातीय व्यवस्था को कवि ने दर्शाया है।

'बस्तियों से बाहर' कविता में जातीय व्यवस्था के स्वरूप को इस प्रकार से चित्रित किया गया है-

"बंद कर मेरी रौशनी के सुराख
वे उजालों की सैर करते हैं
वसुधैवों को एक कुटुंब बताने वाले

जाति वर्णों में बँटे फिरते हैं।" ¹¹

कारण आज भी दलितों के साथ छुआछूत बरती जाती है। इसमें यह भूला दिया जाता है कि दलित भी इंसान है।

उपर्युक्त पंक्तियों में कवि कहता है कि दलित वर्ग के विकसित होने के सभी मार्ग बंद कर दिये गये हैं, सवर्ण वर्ग खुद विकास की गंगा में हाथ धोता हुआ दिखाई देता है। विश्व में भारतीय संस्कृति को महान संस्कृति माना जाता है तथा हम सारे विश्व को एक परिवार मानते हैं लेकिन हमारे ही देश में हम लोग अलग-अलग जातियों में बिखरे हुए हैं।

निष्कर्ष :

आज भी समाज में दलित वर्ग को हीन दृष्टि से देखा जाता है। उसका स्पर्श होना अपवित्र समझा जाता है। 21वीं शती में भी दलित वर्ग को तुच्छ माना जाता है। जातियों का गहरा प्रभाव लोगों के ऊपर होने के

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Cosmic Patterns created by Celestial Bodies: Fixed Stars Algol, Aldebaran, Procyon, Sirius, Merak

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Abstract:

Present research focuses on fixed stars in space, forming patterns that influence human destinies. I have selected five fixed stars and observed their effects using primary and secondary progressions from an astrological perspective. Ascendant points are often considered influential on a native's physical, mental, and biological characteristics. Midheaven points show a greater influence of external forces on a native's destiny. Astrologically, these fixed stars have similar effects on a native's life. The research illuminates the physical, mental, biological, and social effects of these fixed stars, supported by secondary progressions, a fundamental astrological method. The Midheaven point is a crucial indicator of career, while the Ascendant point relates to inclinations, appearance, and existence. Specific stars conjunct, trine, or opposite these two vital points cause significant life changing movements. Research expresses the patterns of Algol, Procyon, Aldebaran, Pollux, Sirius, Merak.

Keywords: ASC Ascended MC Midheaven IC Immu Coeli DSC Descendant SP Secondary ProgressionSp(C) Secondary Progression ConverseSextile 60° distance between two bodiesTrine 120° distance between two bodiesConjunct 0° distance between two bodiesOpposition 180° distance between two bodies

Introduction:

There has always been discussion on larger consortium regarding Shastra and science. Shastra is based on logical propositions, long established by Aristotle's methodologies of syllogism. Many options converge to find the same pattern in order to reach a logical conclusion. However, since the formation of a single idea, it may have limitations in some contexts. For example, we discuss the law of supply and demand in economics; although we have formed a theory, when demand is larger, supply diminishes. But this theory has limitations; sometimes demand and supply are high in the market for a certain product, and we say this is Shastra, which is why it may sometimes be incorrect in certain contexts because it has a logical basis. The same happens in biology, geology, physics,

anthropology, psychology, and economics, because these are mainstreams of Shastra; they form one idea from various propositions which may not hold true in certain contexts. Science is based on equations and formulas which yield certain results when applied to a problem. Unlike Shastriya conclusions, there are possibilities that we all arrive at certain answers. I am interested in celestial bodies that fall under the astronomy and astrological fields and their effects on society, especially human beings. As astrology is also one of the Shastra and I am going to throw light on the celestial bodies i.e. fixed stars and their effects on cosmic movements. I would like to present it to the new generation so that, instead of viewing these celestial bodies from a traditional perspective, they can view them with a new perspective. I am sure this

research will yield many surprising results that will be beneficial for everyone on the Earth. In astrology, fixed stars are celestial bodies that, unlike planets, appear stationary in the sky. It is my sincere attempt to present before the astrological impact of selected fixed stars in the present research.

Method:

They are believed to have subtle yet significant influences on individuals' personalities and life paths, especially when they align with key points in a birth chart. I have made use of Secondary Progression method in astrology to detect the aspects of fixed stars at certain degrees with Ascendant and Midheaven points and their effects on human lives. These stars I have chosen for present research are Aldebaran, Algol, Procyon, Sirius, and Merak respectively. Let's see the steps to understand their astrological existence and analysis as follows. Moon is Secondary Progression works like an anchoring factor for promising the events to happen. I have made use of Converse method also to count the angular movements of Moon with other planets and ASC and MC major points in the present research paper.

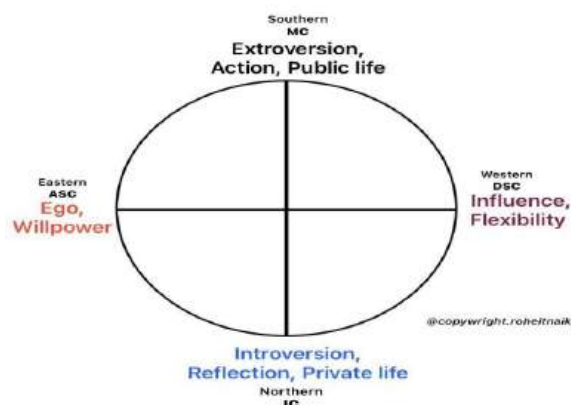
Literature:

The Cycle of the Year: Traditional Predictive Astrology by Charles Obert, Introductions to Traditional Astrology by Abu Mashar and Al Qabisi, Astrological Prediction Techniques: Profecion, Secondary Progression, Primary Direction by Oner Doser, Vocational Astrology by Judith Hill. The books mentioned have been fruitful while analysing native's life in astrological point of views.

Cyclical Motion of Life:

Life, being cyclical, connects everything 360-degree manner. The first phase is self-identity, the second is self-realization, the third is engagement, and the

fourth is action or karmic or due work. First-second are about personal growth and third-fourth steps about external interferences.



Fixed Stars and their Influence: Sampling:

1: ALDEBARAN (Mars):

Gemini 9°47'-10°30'

Orb 2°40'

1:1 Wolfgang Amadeus Mozart:

Tuesday, January 27, 1756, 8:00 PM

Salzburg (Austria)

Fire element is dominant in the IC natal chart and endows with intuition, introversion, self-reflection, inner energy, courage, self-confidence (fire), and enthusiasm. MC point rest at Aldebaran a planet of public honour, extraordinary energy and capacity for work, whereby the native gains prestige and appreciation.

- The first tour, begun on December 13, 1769, and lasting 15 months, took them to all the main musical centres, but as usual they paused at any town where a concert could be given or a nobleman might want to hear Mozart play.
- 1769 Feb 1769, Moon of the Secondary Progression transited in conjunct with MC and as Aldebaran. It started all the way journey to his limelight in music. Gemini is also considered to be the sign of ancient arts i.e. Shastriya knowledge.
- **Don Giovanni:** Premiered in 1787 Giovanni at the National Theatre in

Prague on October 29, 1787. Moon of SP ascending in Libra at 13°11' sextile natal Moon in Sagittarius (IC).

- **Cosi fan tutte:** Premiered in 1790 26 January 1790 SP moon in DSC conjunction with MC Lord again pushing factor in career.

These are two major phases as MC, IC, & DSC I have mentioned and all of them put high remark in his career as well as spelled mantras in the world.

1:2 Vijay Laxmikanth:

Tuesday, March 5, 1974, 6:19 PM

Kolhapur (India, Maharashtra)

Aldebaran <1°30' MC

The native is a renowned professor in one of the reputed university in India. Moon in fire ascendant and Midheaven lord Mercury conjunct with Jupiter in 6th house of service and Moon aspecting 120° with Saturn in 10th house. Gemini at MC conjunct with Aldebaran already bestows him with Shastriya or ancient interest and as a result he is a professor of history subject.

He got the job as a Professor of History in 28 February 2005 the time when SP (converse) Moon was transiting in conjunct with MC and did fantastic service till now. He received promotion as a principal in July, 2024 as the SP Moon 3° distant to the MC point and SP (converse) Moon ascended in first house of native.

1:3 Bella Hadid:

October 9, 1996, 04:19 AM

Washington, D.C., Washington, D.C.

Aldebaran >2°11' MC

Hadid began her modelling career at the age of 16. Her Venus and Moon in Virgo ascendant shows inclination towards the fashion. She was signed to IMG Models in August 2014. It was the time her SP Moon transited in Taurus sign of Venus, fashion and SP (converse) emerged in IC conjunct with Jupiter.

It was the time she made her New York Fashion Week debut the following month. Main part MC lord Mercury being in

Libra cusp ascendant shows 120° with Uranus (conjunct Neptune i.e. television, fashion) in fifth house which indicates Uranus embodies television, disruptive business, ground breaking content which usually goes in fashion industry.

December 2016, when SP (converse) Moon was conjunct with IC point and as a result she was awarded Model of the Year in New York. She will be at top of her career September 2026 onwards as her SP (converse) Moon will transit into second quadrant in Karka zodiac sign.

Aldebaran has favoured her with all the fame, name, honour and wealth as its lord aspects positively in the house of name, fame, and accolades of 5th house.

2: Algol (Saturn, Mars, Jupiter):

Taurus 26°10'-52'

Orb 2°10'

Commanding, violent, accident, fire, disruption, horror death, terror for traditional religious practices, transformative etc

2:1 Donald Trump:

Friday, June 14, 1946 10:54 AM

New York, City

Mr. Donald Trump is a best example of how Algol is affecting in his chart in both good and bad way. Algol as a planet of misfortune, violence it has good traits as well glorious, mighty and commanding nature; fame, busy with many activities, bountiful resources, well known or fear in cities and regions.

MC Lord Venus auspicious in Karka zodiac sign and showing very good aspects to MC (120°) and IC (60°). It promises the native of highly effective as these two points in native's charts are very much important. Its aspect has made Donald Trump the most commanding and glorious person.

20 January 2017, Trump became the President of America. SP (converse) Moon was conjunct (23°57') MC point and as lord is auspiciously sitting in Karka rashi and

aspecting good at IC and MC it resulted him for becoming president.

2:2 Hazratullah Hassan:

Monday, Dec 18, 1978, 03:56 PM

Nasik, India (Maharashtra)

Native has Algol in ASC as the lord Venus 90° aspecting to MC as well as IC point. He is a administrator in international school. Algol has given him the sign of being in commanding position. But the bad aspect at MC & IC have deprived him in subordinate treatment. Well qualified due the trine fifth lord Mercury with Jupiter.

Native was good at career peak in April 2020 as the SP Moon as conjunct with MC point and decent position and growth in salary. But now as in Janury 2025 SP (converse) Moon started transiting opposite to ASC point which is not considered good. He has been alledged for making big fraud in the school and jas been detailed for 7 lakh rupees of compensation. Algol has affected 180° on the very precise time period and it has created this violence.

2:3 Lucy Hale:

Wednesday, June 14, 1989, 11:03 AM

Memphis (TN) (United States)

Televisin actress and singer ended up with a lot of relationships. She though known for her acting career in many serials and shows her affairs are in highlight as altogether. Reason lies behind the lord of MC point where Algol is conjunct, the Venus is conjunct with Chiron in Karka rashi in eleventh house. Sad part is the Lord of MC Venus is aspected 180° from fifth house malefic planets like Mars, Uranus, and Neptune etc. The vertex point is also triggered to Venus in opposition.

Algol also triggers addition of any acute content. Lucy Hale was addicted severely in the year 2010 when her SP (converse) was transiting opposite (180°) to the MC lord Venus from the fifth house. The reason was being abandoned in relationships.

2:4 Gitanjali Sabnis:

Tuesday, Janury 26, 1982 7:50 PM

Ahmadnagar, India (Maharashtra)

Algol <1°38' MC

Native gets burn, meets with an accidents often by different reasons. As in January 2018 MC lord Venus was transiting in sixth house SP (converse) and conjunct with transiting MC point precisely on 29th Jan, 2018. She got burned in house with fatal mistakes. SP(converse) Moon Quincux to MC (Algol) in Diwali festival October 2023 she got burned her hand and head because of the fire cracks. Algol causes fire and injury to neck and causes headache like migraine as well.

3: PROCYON (Mars, Mercury):

Kark 25°47- 26°29

Orb 2°40'

Artful, crafty, dissembling, lust, dissipation, waste and ruin, quarrels, loss in trade or by servants, hand skills.

3:1 Vincent Van Dogh:

Wednesday, March 30, 1853, 11:00 AM

Zundert (Netherlands)

Procyon >3°40' MC

Dutch Post-Impressionist painter renowned for his highly expressive and vibrant artworks, characterized by bold colours and thick brushstrokes, often depicting landscapes and portraits with intense emotional depth.

Kark in ASC is often considered for art, hand craft, aesthetics, colours, warmth of medical services. Procyon has Mars and Mercurial features that denotes full of energy and artistic talent of Mercury. ASC lord Moon is conjunct with MC Lord Jupiter in Sagittarius itself.

Van Dogh joined the Hague branch of the firm Goupil & Cie. in July 1869 when SP Moon started transiting closer to Procyon star. It was 10° away from Procyon and showed trine and sextile SP (converse) with Neptune planet of aesthetics, mystic and

metaphysical arts. Van Dogh decided to become full time artist and do painting stuff in December 1879. It was the time when SP and SP (converse) Moon 5° conjunct with ASC lord Moon in third quadrant of 6th house.

Pollux is the another fixed star which carries crafty skills, manual skills, subtle nature of handling, audacious which was more closer with his ASC point and as a result it also forced in him this delicacy of acquire artistic skills.

3:2 Dhruv Powar:

Wednesday, 28 April, 1982 11:30 AM

Kolhapur, India (Maharashtra)

Procyon >0°42' ASC

Subject is in government high position as a director of secondary school office. He has really great drafting skills which is manual as Procyon denotes. He is stubborn and violent in nature sometimes and commands everybody comes across to him. ASC lord being in 12th house aspecting quincunx with Uranus in fifth house which has hampered relationship with partner. August 2008, got married, SP (converse) ASC lord Moon trine with fifth house

4: SIRIUS:

Karka 14°04-46'

Fame, introvert, psychotic, suppressed, burst in anger etc.

4:1 Manisha Raje:

Saturday, 6 November, 1982 4:30 AM

Sangli, India (Maharashtra)

Sirius >0°35' MC

Natal Moon precisely conjunct with MC as a result the native is very silent in disposition but burst in aggression once suppressed feeling. Sirius doesn't allow native to express thoughts much easily and thus all the suppressed emotions burst as a bomb once. She is very devoted to whatever takes the in charge of which is a again peculiarity of Sirius. Good in nature and

discipline but has issues keeping up with the relations.

March 2010, already married by then she had a lot of psychological conflicts with husband as SP (converse) conjunct with MC point and 180° aspecting Mars lord of seventh house of partner in August, 2010. It resulted in her the inclination towards the spiritual practices and started visiting satsang and bhajan concerts of Shri Shri Ravishankar of Art of Living.

August, 2023 the time when SP (Converse) conjunct with IC point which means 180° opposite to MC point and her mother died of sudden death. SP Moon transit was conjunct with 8th lord Venus along with Mars, Neptune and South Node close to IC point.

The native's natal Moon is not bad as in its own house that's why she has never gone through some tough psychological stagnation.

4:2 Elon Musk:

Monday, June 28, 1971 7:30 AM

Pretoria, South Africa

Sirius >0°11' ASC

Musk being the most successful businessman he is being discussed and shown on the television as very shy and introvert in nature. But his devotion to technology as ASC lord in third house of media, technology and manufacturing house of Mercury proves he is successful businessman.

Alrischa at MC gives native good fortune, unexpected gain, creativeness etc. and the lord of MC (Mars) promises of the gain being conjunct with vertex point in 8th house.

March 2002, he started SpaceX Company and in just 6 months when SP (converse) transited in conjunct with Sirius he came in limelight of fame and name. No wonder why Musk's Sirius didn't behaved in negative way because his MC promises of sudden gain and success and plus his ASC

lord shares exchange yogas with third house. Moon in Virgo and Mercury in Karka MC conjunct.

November 2020, Fortune Magazine declared him the Business Person of the Year when exactly MC lord aspected trine to MC from fourth house.

April 2022, the time he was bidding over the twitter's ownership and finally took control over it in October 2022. It was the time when MC lord was close to MC point during October it started aspecting Jupiter, Neptune in fifth (fame in media, awards, accolades) house in trine of SP.

4:3 Sanjay Malvankar:

Tuesday, 13 August, 1996 10:10 AM
Chiplun, India (Maharashtra)
Sirius <0°10' MC

Native is very quiet and introvert as MC conjunct precisely with Sirius and lord ASC Venus close to MC 90° with Saturn, South Node in sixth house of mental state of mind. It again makes native introvert and has devotion to the work related art, graphic designs. Lord of MC Moon is in good aspect to Saturn, Neptune that indicates he is workaholic when it comes down to sixth house. It pushes him to be more satisfied in the creative art related works. Sirius is creative and as it led him to graphic field.

August 2018, lord of MC in SP (converse) close with ASC point in 12th house was opposite to natal Saturn, South Node and he was facing chronic disease lungs infection and pneumonia. He was having great time in his career during November 2021 to April 2022 as MC lord conjunct and trine with sixth house of mental state of mind and services.

5: Merak (Venue, Mercury):

Leo 19°26'-20°04'
Orb 2°10'

Command, domination, deceitful, destroys what built, creative ability, pragmatic in nature etc.

5:1 Manoj Tughalak:

Saturday, 6 November, 1993 11:53 PM

Sikandrabad, India (Telangana)

Merak >3°25' Leo

Native does nothing much except the illegal businesses. MC lord is badly affected at IC point conjunct with Retrograde Mercury a lord of 11th and 2nd houses. Socially he has bluffed many of friends in financial scam as lord of ASC is totally opposite to MC point. May 2020, he came to big trouble when SP(converse) Moon was transiting in conjunct with Merak at MC aspecting Quincux to Uranus, Neptune in sixth house of mental and legal trouble.

November 2020, transiting ASC angle was conjunct with natal MC and opposite 180° to the Lord of MC Sun it defamed and effaced his image and he ran away from the native place. Merak as a commanding and deceitful it has resulted in his life very much clearly as we check the SP (converse) progression.

5:2 Christopher Reeve (Superman):

Thursday, 25 September, 1952 03:12 AM
New York, USA
Merak <0°18' ASC

Perhaps the world knows him with the movie and television character Superman. He had a paralysis to neck when fell down from horse riding and got remarkable recovery. He was adventurous like the nature of Merak and this vibrant nature was affected greatly by conjunct Pluto with ASC point as Jupiter is known for veins and nervous system it is conjunct with MC distant at 10° in natal chart and badly afflicted by 90° from ASC Pluto, South Node and Lilith

Merak's conjunct with Pluto in first house led him be vigilant and caused the accident. He passed away at 52 after a lot of turmoil.

December 1978, the first movie Superman got released when SP Moon was conjunct with MC lord in fourth house and ASC transit lord Sun was conjunct with natal MC lord Venus in third house of social media, television etc.

5:3 Mohammad Ali:

Saturday, 17 January, 1942 6:35 PM

Louisville KY, USA

Merak <0°54' ASC

Ali has been a boxer and international player as ASC has made and impact of dashing personality. He has played and made name of country for being unbeatable player for almost a decade. Muhammad Ali was one of the greatest boxers of all time. He was known for his amazing speed and footwork in the ring, and for his outspoken personality outside of it. Ali was a three-time World Heavyweight Champion, and his fights were some of the biggest events in sports history. He was also a very important figure in the Civil Rights Movement, and used his fame to speak out against racism and injustice

Muhammad Ali, then known as Cassius Clay, won the gold medal in light heavyweight boxing at the 1960 Summer Olympics in Rome, Italy on September 5, 1960. It was the time when SP(converse) was transiting in the 10th house and 19° close to MC point. Transit MC point was conjunct with ASC Lord Sun in the sixth house of service and mental peace as a fruit from his service or job.

Mohammad Ali was later detected of having classic Parkinson's disease left-arm rest tremor became noticeable after his retirement from boxing, with his diagnosis officially coming in 1984; many doctors believe the disease was likely caused by the repeated head trauma he sustained during his boxing career. Jupiter is known for the veins and muscles which is retrograde in debilitation Gemini in 10th house close to MC point and August 1984 transiting MC point was conjunct with Mercury in sixth house. Mercury triggers hand, shoulder, back, fingers etc. It promised the incident through SP(converse) method on the natal chart.

Research Findings:

1. Alderbaran in good aspect with ASC and MC gives native artistic talent, intuition, introversion, self-reflection, inner energy, courage, self-confidence (fire), and enthusiasm.
2. Algol is commanding, violent, accident, fire, disruption, horror death, terror for traditional religious practices, transformative. Its bad and good aspects to any other angle or planets affects bad results so far.
3. Procyon consists of Mars and Mercury effects and results in artfulness, crafty, dissembling, lust, dissipation, waste and ruin, quarrels, loss in trade or by servants, hand skills.
4. Sirius affects the native as introvert, psychotic, suppressed, burst in anger and fame as well if only aspected good.
5. Merak is command, dominant, deceitful, destroys what built, creative ability, pragmatic in nature etc.

Conclusion:

My observations and analysis demonstrate that celestial bodies, especially fixed stars, have remarkably affected human lives. I have attempted to prove the effects of fixed stars on human lives from medical, physical, biological, and social perspectives. My research may help predict future events based on the laws of probability and possibility. I have striven for a scientific perspective so that patterns of celestial bodies may help predict future events and allow people to take precautions. I have only explored the effects of fixed stars using ancient methods like secondary progression. As more refined astrological methods exist, formulated by Ptolemy, Regiomontanus, and those involving Egyptian called Primary Directions, Zodiac Arc Directions, Solar and Lunar Returns, and Profecions. It will be more surprising for us to bring out the analysis by the said methods because these have astronomical base instead of symbolic

as we have been following traditionally. Primary Direction needs more time and diligence to calculate the planetary positions and thus I thought it would take more time to engage in the activity that's why in present research I preferred only Secondary Progression method. Present research will enlighten new research scholars from astrophysics, astrology and geography students.

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Literary Translation Problems and Features of the Literary Text

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Abstract:

This article is devoted to the problem of translating literary text. The article analyzes the opinions of foreign scientists, who define each translation, including the artistic one, as a recreation of a work created in one language by means of another language. This raises the question of the accuracy, completeness and adequacy of literary translation.

Keywords: Communication, Functional Style, Literary Direction, Foreign Language Culture

Introduction:

Language, as you know, is the most important means of human communication, with the help of which people exchange thoughts and achieve mutual understanding. Communication between people using language is carried out in two ways: orally and in writing. If the communicators speak one language, then communication takes place directly, however, when people speak different languages, direct communication becomes impossible. In this case, translation comes to the rescue, which many researchers define as a means of conveying one language of thoughts expressed in another language. Translation, therefore, is an important auxiliary means that ensures the performance of the language of its communicative function in cases where people express their thoughts in different languages. Translation plays an important role in the exchange of thoughts between different peoples and serves to spread the treasures of world culture. No wonder A.S. Pushkin called the translators "the post horses of civilization." What does translate mean? At first glance, everything is simple. What was said in the source text must be expressed in words of another language, while constructing grammatically correct

sentences. But there is an old anecdote about a seminarian who needed to translate the sentence "Spiritus quidem promptus est, caro autem infirma" from Latin.

The seminarian translated this gospel saying "The spirit is cheerful, the flesh is weak": "The alcohol is good, but the meat is rotten". And this translation is correct in the sense that each of the words can be translated this way, and the sentence turned out to be well-formed. Only, of course, it does not convey the meaning of the original text. The more complex and multifaceted the meaning of the source text, the more difficult it is to translate. The art style is perhaps the most comprehensive described of the functional styles. At the same time, it is hardly possible to conclude from this that it is the most studied. This is due to the fact that the artistic style is the most mobile, creatively developed of all styles. The artistic style does not know any obstacles on the way of its movement to the new, previously unknown. Moreover, the novelty and uncommonness of expression becomes a condition for successful communication within the framework of this functional style. Despite the limited range of topics covered in literary texts (a person's life, his inner world), the means that are used to

reveal them are unlimitedly diverse. At the same time, every true artist of the word does not strive to merge with his colleagues in the pen, but, on the contrary, to stand out, to say something in a new way, to draw attention to the readership.

Perhaps the most striking distinguishing feature of a literary text is the extremely active use of tropes and figures of speech. This property of the texts of the artistic functional style was noticed in antiquity. Until now, we use the terminology of the aesthetics of Antiquity when we name one or another of these artistic techniques. Speaking about the representativeness of the translation of a literary text, it should be noted that the number of its criteria here increases markedly. The translator must meet more requirements in order to create a text that fully represents the original in a foreign language culture. Among such criteria, of course, one should name the preservation of as many tropes and figures of speech as possible as an important component of the artistic stylistics of a particular work. The translation should signal the era of the original creation. There are cases when a translator needs not only knowledge, but also special skills. The writer often plays with words, and this game can be difficult to recreate. Here's an English joke built on a pun. A man comes to the funeral and asks: I'm late? And in response he hears: Not you, sir. She is. The English word late means both 'late' and 'deceased'. The hero asks: Am I late? And they answer him: No, the deceased is not you, sir, but she. How to be? The game doesn't work in Russian. But the translator got out of the situation: Is it over? "Not for you, sir. For her.

Such traps lie in wait for the translator at every turn. It is especially difficult to convey the speech appearance of the characters. It's good when an old-fashioned gentleman or an eccentric girl speaks it's easy to imagine how they would

speak Russian. It is much more difficult to convey the speech of an Irdand peasant in Russian or Odessa jargon in English. Here, losses are inevitable, and the bright coloration inevitably has to be muted. It is not for nothing that the folklore, dialectal and jargon elements of the language are recognized by many as completely untranslatable. Particular difficulties arise when the source and target languages are of different cultures. For example, the works of Arab authors are replete with quotes from the Koran and allusions to its plots. The Arabic reader will recognize them as easily as the educated European would recognize references to the Bible or ancient myths. In translation, these quotes remain incomprehensible to the European reader. Literary traditions also differ: for a European, the comparison of a beautiful woman with a camel seems ridiculous, but in Arabic poetry it is quite common. Different cultures are more complex than different languages.

The linguistic principle of translation, first of all, presupposes the reconstruction of the formal structure of the original. However, the proclamation of the linguistic principle as the main one can lead to excessive following in the translation of the original text to a literal, linguistically accurate, but artistically weak translation, which in itself would be one of the varieties of formalism, when alien linguistic forms are accurately translated, stylization occurs according to the laws of a foreign language.

In cases where the syntactic structure of the translated sentence can be expressed in translation by similar means, the literal translation can be considered as the final version of the translation without further literary processing. However, the coincidence of syntactic means in the two languages is relatively rare; most often, with a literal translation, one or another violation of the syntactic norms of the Russian language occurs. In such cases, we are faced

with a well-known gap between content and form: the author's thought is clear, but the form of its expression is alien to the Russian language. Literally accurate translation does not always reproduce the emotional effect of the original; therefore, literal accuracy and artistry are in constant conflict with each other. There is no doubt that translation is based on linguistic material, that literary translation cannot exist outside the translation of words and phrases, and the translation process itself must also be based on knowledge of the laws of both languages and on understanding the laws of their relationship. Compliance with language laws is mandatory for both the original and the translation. But literary translation is by no means a search for only linguistic correlations.

The translation technique does not recognize the modernization of the text, based on a simple logic of equality of impressions: the perception of the work by the modern reader of the original should be similar to the modern reader of the translation. This is not a philologically accurate copy of the target language at the time the original was written. A modern translation gives the reader information that the text is not up-to-date, and, using special techniques, tries to show how ancient it is. "Each era," wrote K. Chukovsky, "has its own style, and it is unacceptable that in a story dating back to the thirties of the last century, there were such typical words of the decadent nineties as moods, experiences, searches, superman... solemn verse addressed to Psyche, the inappropriate word sister ... Calling Psyche a sister is like calling Prometheus a brother, and Juno a mother." Those translation dominants, which we have already named, can serve as evidence of the antiquity of the text. Specificity of syntactic structures features of tropes all of this has a specific connection to the er

But these features convey time only indirectly, because, first of all, they are associated with the features of the literary traditions of that time, the literary direction and genre. Time is directly reflected in the linguistic historical features of the text: lexical, morphological and syntactic archaisms. They are used by translators to create archaic stylization. Stylization is not a complete assimilation of the target language, the language of a bygone era, but only marking the text with the help of archaisms. Translators, like writers, need a varied life experience, a tireless supply of impressions. The language of the writer-translator, like the language of the original writer, is made up of observations of the language of the native people and of observations of the native literary language in its historical development. Only those translators can count on success that starts working with the consciousness that the language will overcome any difficulties, that there are no barriers for it. National flavor is achieved by accurate reproduction of his portrait painting, the entire set of everyday features, way of life, interior decoration, work environment, customs, recreation of the landscape of a given country or region in all its character, resurrection of folk beliefs and rituals. Every writer, if only he is a true artist, has his own vision of the world, and, consequently, his own means of representation. The individuality of the translator is also manifested in what authors and what works he chooses to recreate in his native language. For a translator, the ideal is merging with the author. But merging requires searching, invention, and resourcefulness, getting used to, empathy, visual acuity, smell, and hearing. Revealing the creative individuality, but in such a way that it does not overshadow the originality of the author.

Conclusion:

- Translation, vital for intercultural communication, is a complex art requiring more than word-for-word equivalence.
- It necessitates conveying meaning, style, and emotional impact, especially challenging in literary works with intricate language.
- Successful literary translation demands deep understanding of both languages and cultures.

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The Academic Life of Students in Chetan Bhagat's Five Point Someone and Abhijit Bhadury's Mediocre But Arrogant

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Abstract:

In India, there are 28 states and 8 union territories. The students do admit themselves in the various educational institutes like IIT, IIM, Medical Colleges, Law Colleges, Universities and Colleges. The word 'campus' means the grounds and buildings of a school, college or university. The campus of these institutes occupies the premises of these concerned institutes. According to Chris Baldick campus novel is "a novel, usually comic or satirical, in which the action is set within enclosed world of university (or similar set of learning) and highlights the follies of academic life". The phrase 'campus novel' came into Oxford Dictionary in 1968. The campus novels do occupy the geographical premises of a school, college or university. The campus novel is also called as an academic life. The majority of action takes place in the campus premises of the educational institutes. It consists of classrooms, hostels, canteen, laboratory, library, etc. There is a unique life of professors, lecturers, students and non-teaching staff, which is narrated in a campus novel. The academic life of students includes education, friendship, love life, career anxiety, campus politics, hostel life, etc. Chetan Bhagat and Abhijit Bhaduri are the important campus novelists of 21st century. Both of them depict the academic life of students on the campuses of IIT Delhi and Management Institute of Jamshedpur respectively. The present research paper concentrates on the academic life of students in Chetan Bhagat's Five Point Someone: What Not to Do at IIT (2004) and Abhijit Bhaduri's Mediocre But Arrogant (2012).

Keywords: *Campus Novel, Academic Life, Education, Friendship, Love Life, Career Anxiety, Hostel Life*

Introduction:

A campus novel is a sub-genre of novel where the main action is set in and around the campus of a college or university. It is also called an academic novel. It is an interesting genre that has gained the worldwide readership. The campuses spread throughout the world provide the rich productive raw material for this genre.

A campus novel, also known as academic novel, is a novel; its main action is set in and around the campus of a university and colleges. Majority of action

takes place in the campus premises of any university or college. It consists of classrooms, hostels, canteen, laboratory, library, etc. There is a unique life of professors, lecturers, students and non-teaching staff, which is narrated in a campus novel. The genre in its current form dates back to the early 1950s. *The Groves of Academe* by Mary McCarthy, published in 1952, is often quoted as the earliest example of an academic novel. Randall Jarell's *Pictures from an Institution* (1954), Vladimir Nabokov's *Pnin*, (1955) are the examples of academic novels. In Indian

context the first academic novel is *The Long Long Days* (1960) by P.M. Nityanandan. Other examples of Indian campus novels are *The Farewell Party* by M. V. Rama in (1971) and K. M. Trisanku's *Onion Peel* (1973), etc.

The academic life of students includes education, friendship, love life, career anxiety, campus politics, hostel life, etc. The present research paper concentrates on Chetan Bhagat's *Five Point Someone: What Not to Do at IIT* (2004) and Abhijit Bhaduri's *Mediocre But Arrogant* (2012).

The present research paper is an honest attempt to evaluate the academic life of students in the selected Indian English novels with reference to the works of Chetan Bhagat and Abhijit Bhaduri.

The Academic Life of Students in Chetan Bhagat's *Five Point Someone: What Not to Do at IIT* (2004) and Abhijit Bhaduri's *Mediocre But Arrogant* (2012):

Chetan Bhagat's *Five Point Someone: What Not to Do at IIT* (2004):

Chetan Bhagat is well-known Indian author, columnist, screenwriter and motivational speaker. He has completed his engineering and MBA from IIT Delhi and IIM Ahmedabad respectively. He was an investment banker at Goldman Sachs in Hong Kong but left this job after few years to pursue his passion in writing. He has penned five novels and three nonfiction books. The Time Magazine honored him including in the list of world's hundred most influential people in 2010. He is the most prominent campus novelist in twenty first century. *One Night @ Call Center* (2005),

The 3 Mistakes of My Life (2008), *2 States: The Story of my Marriage* (2009), *Revolution 2020* (2011), *Half Girlfriend* (2014), *One Indian Girl* (2016), *The Girl in Room 105* (2018), *One Arranged Murder* (2020), *400 Days* (2021), *What Young India Wants* (2012), *Making India Awesome* (2015), *India Positive* (2019) are his important books.

Five Point Someone: What Not to Do at IIT was published in 2004. The novel is the trend setting novel of the 21st century. The campus of IIT Delhi is described in the novel. It narrates the story of three friends, Hari Kumar, Alok Gupta and Ryan Oberoi who find it difficult to improve their grades. Issues such as ragging, grading system, malpractices, pressures and tensions of academic life, students-teachers relationship, hostel life, careerism, are depicted in the novel. The film '3 Idiots' directed by Rajkumar Hirani which was released in 2009 is based on this novel.

Abhijit Bhaduri's *Mediocre But Arrogant* (2012):

Abhijit Bhaduri is an author, columnist and management consultant. He worked as a Chief Learning Officer for the Wipro Group. At present he works as a Human Resources professional in the U.S.A. He is also a successful cartoonist. He penned the books that is *Married But Available* (2008), *Don't Hire the Best* (2012), *The Digital Tsunami* (2016).

Mediocre But Arrogant was published in 2005. It is set at the Management Institute of Jamshedpur. It is the second book of the 'MBA' series which includes *Mediocre But Arrogant* and *Married But Available*. The novel is about the life of the protagonist, Abbey and his successful attempts in obtaining a job in HR.

It can be included under the bildungsroman category of campus novel.

career anxiety, campus politics and hostel life are focused in both of these novels.

Conclusion:

Chetan Bhagat's *Five Point Someone: What Not to Do at IIT* (2004) and Abhijit Bhaduri's *Mediocre But Arrogant* (2012) depict the academic life of students at the campuses of IIT Delhi and Management Institute of Jamshedpur respectively. The themes like education, friendship, love life,

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Contents and Discontents of Globalization Through Prism of Political Economy

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Abstract:

Globalization has evolved into a multifaceted phenomenon over time and it involves a complex dynamics and interplay of multiple factors and stakeholders such as states, non-state actors, MNCs/ TNCs, etc. This paper attempts to explore various contours of this dynamics and assess the ramifications of this overarching phenomenon through the lens of political economy. Globalization has evolved through different phases under influence of domestic and international developments since 1st century B.C. to its present version 'Globalization 4.0'. The liberal internationalist school views globalization as an instrument of economic growth, free flow of information and ideas, technological advancement, democratization and prosperity to nations. On contrary, Marxist and critical schools have criticized capitalist model of globalization for causing inequitable growth, marginalisation of disadvantaged groups, degradation of environment and cultural homogenisation. The paper argues that policymakers need to address these inherent contradictions of this inevitable and irreversible process of globalization through policy measures that would ensure fair, inclusive and sustainable growth and development through domestic interventions coupled with international co-operation and multilateralism. Globalization has potential to become a positive force to realise people's aspirations of bringing peace and prosperity to all, if it's harnessed conscientiously.

Keywords: Globalization, Political economy, Liberalism, Marxism, Growth and Development, Inequality

Introduction:

Globalization has evolved over decades to be a massive transformative force that has significantly reshaped all the dimensions of human life, especially the political- economic life.

The liberal school of thought has presented globalization as a natural culmination of politico-economic evolution and as an instrument for economic growth & prosperity. Its proponents argue that globalization has delivered the world rapid growth, technological advancements, cultural integration and free flow of information. However, the critics expose the dark side of globalisation, which is inequitable growth, regional disparities,

cultural conflicts, environmental degradation, growth in consumerism and retreat of the welfare state.

This paper attempts to explore various contours and complexities of globalisation through the lens of political economy. After discussing the contents and discontents of globalisation, it tries to navigate through the contradictions and paradoxes of globalisation. The process of globalization being irreversible and inevitable, policymakers need to adopt systemic corrective measures to allay fears surrounding globalization and to reap maximum benefit out of it for shared prosperity and peace.

Evolution of Globalization and its Theoretical Underpinnings:

‘Globalization’, although became a buzzword in the 21st century, its roots can be traced back to the silk roads in the 1st century BC. The connotation of the word ‘Globalization’ has evolved over centuries and today it is largely viewed as the growing interdependence and integration among the nations, markets, cultures and populations brought about by the various factors like cross-border trade, free flow of information and technology, foreign investment and movement of people.

The process of globalization that kick-started with silk roads and spice routes, gained a momentum in the 15th century with onset of the ‘Age of discovery’. However, economists like John Keynes believed that globalization in its true spirit commenced only with the first industrial revolution in the late 18th century. The evolution of globalization can be understood with the three waves of globalization. The first wave was fuelled by the industrial revolution in Europe, especially the Great Britain and the colonial rule ensured the free flow of goods from European markets to the third world in return of drain of wealth from the colonies (Dadabhai Naoroji).

The second wave of globalization began with the post WW-II economic order i.e. Bretton Woods system. This was based on the liberal internationalism theory with core principles of free trade, liberal democracy, open market, human rights and rule of law. The third wave of globalization began with the fall of the iron curtain i.e. the end of the cold war and beginning of the American hegemony. The phenomenon of globalization became truly global in this phase with virtually all the countries across the world joining WTO and unprecedented technological revolution taking place.

Today the world is witnessing Globalization 4.0, which is marked with digital revolution, rise of AI, growth of giant MNCs/TNCs, development of social media and e-commerce. Thus, the evolution of

globalization has been a gradual but steady, perpetual and increasingly pervasive phenomenon in the history of humanity.

Various schools of thoughts have attempted to decrypt the complexities of globalization through various theories, some of which have been discussed here briefly.

The liberal school of thought advocated globalization as it believed that the open market forces backed with the rule of law based liberal democratic world would promote perpetual peace and bring prosperity to all. Neoliberalism went a step ahead and called for further retreat of the state and more autonomy to the market (Friedrich Hayek, 1960).

The Marxist school of thought, although it's not against the globalization in principle, but it vehemently criticized the liberal internationalist model of globalization for it being a capitalist exploitative model writ large. The core-periphery model (John Friedmann, 1966) and the world-systems theory (Immanuel Wallerstein, 1974) exposed as to how this western-capitalist model of globalization led to the drain of wealth from the global south to the global north.

The Political Economy Approach of Globalization:

Adam Smith, the father of modern political economy, defined political economy as ‘science of statesmen willing to bring prosperity to the nation’ in his renowned book ‘The Wealth of Nations’. Being a classic liberal scholar, he was a staunch supporter of laissez faire state and he heavily criticized mercantilism. Later on, this hypothesis of Adam Smith was met with critique offered by the Marxist scholars like Friedrich Engels, who suggested that such policies would only widen the gap between the ‘haves’ and ‘have-nots’.

The political economy approach studies the phenomenon of globalization vis-à-vis role of MNCs/ TNCs, international institutions and states. The milieu of global economy has transformed with the rise of

MNCs/ TNCs, which emerged in early 2000's as a result of open market and free trade policies. Advancement in communication technology, transportation sector and free flow of capital in information further accelerated this process. The architecture of international financial governance primarily consists of the pillars of WTO, IMF and World Bank. Backed by the US hegemony, these financial institutions operate on the principles of liberal internationalism with primary objective of promoting free trade, dispute resolution through co-operation, SAPs, development assistance and soft loans along with the global financial stability. The regional FTAs further boosted the market integration and interdependence with emergence of global supply chains.

The role of state in globalization vis-à-vis the impact of globalization on nature of state has been a topic of contention and debate among the scholars. There has been visible shift in this dynamics since 1990's when there was erosion of the state sovereignty and retreat of the state in light of neoliberal policies to 2000's when there was re-emergence of the state and state-led globalization on account of developments post 9/11 terror attacks, 2001 and global financial crisis, 2008.

Contents of Globalization: Achievements and Opportunities:

Rapid Economic Growth:

Arguably the greatest accomplishment of globalization would be the unprecedented rate at which economic growth has taken place in the decades following the third wave of globalization especially. The 'Borderless World' (Kenichi Ohamae, 1990) has led to the 'globalized economy' with seamless flow of goods and services, people and investment. The biggest winner of globalization i.e. China witnessed remarkable economic growth making it a global manufacturing hub. The fruits of economic growth and development percolated down leading to upliftment of crores of population from poverty especially

in the emerging economies like India and China. Further, Bretton Woods twins contributed to the development assistance to the LDCs and boosted the global financial stability.

Enhanced International Co-operation:

The increasing economic interdependence and interconnectedness due to global supply chains has forced the nations to develop mechanism for co-operation and peaceful resolution of conflicts/ disputes and thus the role of UN and its agencies has become prominent. This has further strengthened the global governance regime and promoted a rule based international order. Numerous agreements and treaties like NPT, Paris climate accord, The Earth Summit, COVAX initiative, etc. ranging from defence and healthcare to human rights and climate change are testimony to this increased co-operation underlining need for synergised efforts.

Socio-cultural Integration and Cosmopolitanism:

Although globalization is primarily a politico-economic concept, cultural integration is an offshoot of borderless world thanks to the free flow of information, growth of social media and movement of people across the borders. The socio-cultural integration has led to the birth of 'global village' (Marshall McLuhan, 1964). Cultural exchanges, interconnectedness and hybrid identities have fostered the accommodative and cosmopolitan culture across the world.

Discontents of Globalization: Failures and Challenges:

Inequitable Growth and Development:

Although globalization delivered the economic growth at rapid pace, this growth is marked by stark inequality at international & intranational levels. The Marxist & Critical school scholars have pointed out as to how the wealth flowed from the global South to global North through a neo-colonial model of exploitation (Immanuel

Wallerstein, 1974). Further, within the Western nations, globalization benefitted the plutocrats the most further widening the 1-99 percent gap making the rich richer & poor poorer. The invisible hand has failed in many economies and 'global governance without global government' has led to undemocratic paternalism & further marginalization of the Africa especially Sub-Saharan region (Joseph Stiglitz, 2002).

Retreat of Welfare State:

The liberal internationalist model of globalization was based on the core principle of laissez faire with belief that benefits of economic growth would percolate down across all the strata of society. Neoliberalism further advocated for retreat of the state, which ultimately rendered a Welfare State into mere Police State, however this had a disproportionately adverse impact on the marginalized communities. Further the idea of free and open market, growth of MNCs/ TNCs and global governance has led to erosion of state sovereignty.

Socio-cultural Homogenisation and Westernization:

The model of globalization backed by the American hegemony inevitably had western footprints, making it de-facto instrument of Westernization and leading to erosion of indigenous cultures, traditions, dialects and identities. The inevitable ramifications of this have been the clash of civilizations (Samuel P. Huntington, 1996), cultural imperialism and loss of cultural diversity.

Climate Change and Environmental Degradation:

The capitalist model of globalization is based on consumerism that has worsened the crisis of 'limited resources, unlimited wants'. The increased greenhouse gas emissions, deforestation, exploitation of natural resources, pollution, etc. have led to global warming, climate change, ozone layer depletion, extreme weather events, desertification, etc. The disproportionately affected nations due to environmental degradation are basically the

underdeveloped/ developing countries and small island nations due to their limited adaptability & resiliency, greater vulnerability to extreme events and economic dependency on climate-sensitive sectors like agriculture/ fisheries. Lack of consensus about common but differentiated responsibility and enforcement/ finance mechanism has constrained the effectivity of global climate action.

Crisis of Globalization: Rise of Nationalism and Populism:

There is trend of growing resistance to the globalization with rise in nationalism, populism, protectionism at state level and xenophobia, anti-immigrant protests, son of the soil movements, ethnic conflicts, traditionalism at socio-political level. The anti-globalisation sentiment is on rise in not only the 'loser' countries but also the 'winner' countries of globalization (Pratap Bhanu Mehta, 2016) which is evident from the developments like rise of Trumpism and conservative parties like AfD, National Rally in Europe, which casts doubt on the future of experiment of globalization.

The Way Ahead: Addressing the Contradictions of Globalization:

Irrespective of differences of ideologies, there has been near consensus among the scholars about the irreversible and inevitable nature of globalization (Kofi Annan, 1999). Hence, there's need of synergised global efforts to harness the potential of globalization while mitigating the fear about it.

Firstly, to bridge the gap between global South and global North and to ensure equity across generations, policies promoting inclusive growth and development need to be adopted. Even the developed countries have high inequality (The Elephant Chart by Christoph Lakner and Branko Milanovic, 2013), hence affirmative action and wealth redistribution measures coupled with social security and labour welfare programs are necessary so

that the benefits of globalization are enjoyed by the marginalized communities as well.

The global governance regime is dominated by the P5 alienating interests of other countries, hence there's need of reforms to ensure democratization of the international institutions. The new international order needs to be more representative, multilateral, equitable, co-operative, accountable, democratic, rules-based, multi-polar and balanced.

Further, the pressing challenge of environmental degradation and climate change can only be tackled through global efforts and it requires sustainable development strategies. The countries have to agree upon common but differentiated responsibility principle and accordingly effectuate finance mechanism for transition to green technologies.

There's need to rethink and reinvent the role of state as well as non-state actors in light of ever evolving nature of globalization.

Conclusion:

The phenomenon of globalization has evolved in terms of its nature, magnitude and ramifications over decades and Globalization 4.0 has become a Pandora's Box today. Exploration of globalisation through prism of political economy reveals the complex facets of globalisation as it's a double-edged sword having both the challenges as well as opportunities.

The liberal internationalist model of globalization has proved to be successful in delivering rapid economic growth, promotion of democracy and human rights, boosting international co-operation, propagation of ideas, free flow of information etc. however, it's also marred by inequitable growth, regional disparities, deprivation of marginalized communities, environmental degradation, clash of cultures, cultural homogenisation and fragmentation,

democratic deficit in international governance regime, etc.

Acknowledging these challenges, reformative policy measures need to be undertaken by the states and leaders so as to realise the full potential of globalization. Democratization of institutions of global governance, strengthening multilateral institutions to foster international cooperation, inclusive growth models, sustainable development policies along with international collaborative efforts, engaging local communities in initiatives, leveraging technology responsibly to foster innovation and immigration/ refugee policies based on humanitarian values are need of the hour. The rise in anti-globalisation sentiments even in the western world implies that the future of globalisation ultimately hinges on whether it can become an instrument for fair and equitable development of all the stakeholders while balancing their interests and allaying their fears. If harnessed successfully, globalization can become a positive force to realise everyone's aspirations bringing peace and prosperity to all.

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Studies on Popular Games in the Kolhapur Geographical Region

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Abstract:

Kolhapur, a city located in the south-western part of Maharashtra, India, has a rich cultural heritage. One of the key aspects of this heritage is its traditional and modern games, which have been passed down through generations. This research paper aims to explore the popular games in the Kolhapur geographical region, analysing both traditional and contemporary games. The paper will examine the historical context, cultural significance, and the current trends in these games, with a particular focus on how the younger population has been influenced by both local traditions and global trends in gaming.

Introduction:

Kolhapur is renowned for its distinct blend of history, culture, and traditions. The city and its surrounding regions have long had a strong connection to physical activities and games, which are integral to community bonding and cultural identity. While traditional games have long been a significant part of life in Kolhapur, the influence of modern games is also evident, particularly in the younger generation. This paper explores both these aspects of Kolhapur's gaming culture.

Historical and Cultural Significance of Games in Kolhapur:

The geographical region of Kolhapur has a rich history, influenced by the Chhatrapati rulers, and is home to a vibrant local culture. In rural and urban areas alike, games and sports play a crucial role in the social fabric of the region. Traditional games often have roots in ancient rituals, festivals, and the daily activities of rural life.

Bhandari's (2018) study on traditional games in Maharashtra highlights the deep sociocultural significance of these

games in the region. Some traditional games are symbolic of the region's agrarian lifestyle, while others have martial or royal influences. These games served as more than just entertainment; they were vital for maintaining physical fitness and community spirit.

Traditional Games in Kolhapur:

Kabaddi: A dynamic team sport with ancient Indian roots, thrives in regions like Kolhapur, demanding both agility and strategic coordination among players.

Vitti Dandu (Seven Stones): This traditional game is very popular in Kolhapur. It is similar to the game of "Seven Stones" (Lagori) found across India. It involves teams trying to knock down a stack of seven stones with a ball, while the opposing team attempts to protect the stack and retaliate.

Kusti (Wrestling): Kolhapur is known for its wrestling tradition, which traces back to the times of the Maratha Empire. Kulkarni (2017) traces the history and development of wrestling in Kolhapur, shedding light on its cultural importance in the region. Wrestling

academies known as 'Akharas' are prominent, and the sport continues to hold great cultural importance in the region. Khashaba Jadhav is the first Olympic Medalist.

Kho-Kho: This fast-paced team sport has its roots in ancient India and is still widely played in Kolhapur. It requires quick reflexes and strategic teamwork. According to Gokhale (2020), Kho-Kho remains a vital part of India's indigenous sports heritage, reflecting the country's rich athletic traditions.

The Role of Festivals in Promoting Games in Kolhapur, several traditional games are associated with religious and cultural festivals. For example, Gokulashtami sees competitive events such as Dahi Handi (human pyramid formation), and Makar Sankranti often involves kite flying competitions, both of which are sources of immense community engagement.

Modern Gaming Trends in Kolhapur:

With the rapid advancement of technology and the globalization of culture, the younger generation in Kolhapur is increasingly turning to modern games. Video games, mobile gaming, and online sports are rapidly gaining popularity. These digital platforms not only serve as a source of entertainment but also play a role in shaping the social interactions of the youth in Kolhapur.

Shooting: This game is popular among Kolhapur's youth. With the increasing availability of range have also begun to emerge, further promoting gaming culture in the region. So many players have got medals at National and International level as well as Olympic like Rahi Sarnobat, Tejaswini Sawant, Anushka Patil and Swapnil Kusale.

Football: Kolhapur is gradually becoming a hub for local competitions, as more young people develop an interest in competitive gaming. The region has seen local

tournaments for games such as Shahu Maharaj Chashak, KSA Championship, Mahapaur Chashak etc. The major clubs to mention are, Shivaji Tarun Mandal, Phulewadi Football Krida mandal, Patakadil Talim Mandal, Khandoba Talim Mandal. It has produced international players like Akshay Jadhav.

Impact of Traditional Games vs. Modern Games:

There is an ongoing transition from traditional physical games to more sedentary digital activities, driven largely by urbanization and technological advancements. However, the preservation of traditional games is seen as crucial by local community leaders, who argue that physical games promote health and teamwork.

Physical Health and Well-Being: Traditional games like Kusti and Kho-Kho encourage physical activity, which is essential for maintaining a healthy lifestyle. With the rise of digital games, the physical aspects of gaming in Kolhapur have diminished, leading to concerns over health issues like obesity and sedentary behavior.

Cultural Heritage and Social Engagement: The communal nature of traditional games in Kolhapur fosters social interaction, preserving local traditions and values. However, modern gaming, particularly online multiplayer games, has shifted social engagement to virtual spaces, sometimes at the expense of face-to-face interactions.

Challenges and Opportunities for Preservation of Traditional Games:

As modern gaming continues to gain traction, traditional games in Kolhapur face the threat of fading away. Efforts need to be made to preserve these games while integrating them into the modern lifestyle.

Challenges:

1. Decreasing participation in traditional games, particularly among urban youth.
2. Lack of infrastructure and funding for the promotion of traditional sports.

Opportunities:

1. Revitalizing traditional games through schools and community programs.
2. Merging traditional and modern games by creating digital versions of physical games like Kho-Kho or Kusti.

Conclusion:

The gaming culture in Kolhapur, like much of India, is at a crossroads between preserving its rich traditional heritage and embracing modern, global trends. Traditional games like Vitti Dandu, Kusti, and Kho-Kho are still highly valued for their cultural and health benefits. However, digital games and e-sports are gaining significant traction among the youth. Efforts should be made to strike a balance between the two,

ensuring that traditional games continue to thrive while embracing the opportunities offered by modern technology.

Future research should focus on understanding how these different types of games—both traditional and digital—can be harmoniously integrated into educational and social structures, fostering an inclusive, healthy, and culturally rich gaming environment in Kolhapur.

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वैश्वीकरण के परिप्रेक्ष्य में हिंदी कविता का मूल्यांकन (पर्यावरणीय समस्या के विशेष सन्दर्भ में)

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सार :

आज तेजी के साथ विश्व बदल रहा है। यह बदलाव विविध क्षेत्रों में हो रहा है। घर- परिवार की समस्या से लेकर, वसुंधरा की पर्यावरणीय समस्या तक के घेरे में मनुष्य एवं मनुष्य का जीवन घिर गया है। ये सभी समस्याएँ जटिल समस्याएँ हैं। इन समस्याओं की चपेट में पूरा मानव समाज घिरता ही जा रहा है। साहित्य समाज के लिए आईने के समान होता है। मनुष्य जीवन को दिशा निर्देश देने का कार्य साहित्य द्वारा किया जाता है। कविता, कहानी, उपन्यास, नाटक, फिल्म एवं टेलीफिल्म आदि साहित्य विधाओं में इन समस्याओं को दिखाया जाता है। इन समस्याओं को समझ कर समाज के लोगों की आंतरिक पीड़ा जागृत होकर आंतरिक चेतना भी जागृत हो जाती है। साहित्य में इसी परिवर्तन के लिए साहित्यकार यथार्थ सामाजिक चित्रण करता है। हर समय के साहित्य में अपने समय की समस्याओं एवं चुनौतियों का चित्रण किया जाता है। उत्तरशती की हिंदी कविताओं में भी समसामयिक समस्याओं का चित्रण हुवा है। इन समस्याओं में मुख्यतः पर्यावरणीय समस्या पर अधिक कविताएँ लिखी गयी है।

प्रस्तावना :

वर्तमान काल में जो समसामयिक समस्याएँ हैं, उनमें प्रमुख है- पर्यावरणीय समस्या। आए दिन हम देखते हैं की विश्व तेजी से बदल रहा है। आज के युग को बाजारवादी युग भी कहा जाता है। वैश्वीकरण के परिप्रेक्ष्य को हिंदी में भूमंडलीकरण की संज्ञा भी दी जाती है। भूमंडलीकरण का अर्थ है – संपूर्ण विश्व का एकीकरण। वैश्विक एकीकरण के लिए हर संभव प्रयास किए जा रहे हैं। सबका साथ सबका विकास करने की यह प्रक्रिया एक और तो मजबूत होती जा रही है, दूसरी ओर इस प्रक्रिया में भौतिक विकास को प्राथमिकता दी जा रही है। भौतिक विकास की इस प्रक्रिया में कहीं न कहीं मानव पर्यावरण को भूलता जा रहा है। पर्यावरण के प्रति उसका ध्यान नहीं है। इस कारण उसके विनाश से उपजी जो भयानक स्थितियाँ

हैं, उन स्थितियों के कारण मनुष्य का जीवन जटिल बनता जा रहा है। आधुनिक हिंदी कविताओं में इन जटिलताओं का चित्रण किया गया है। ये कविताएँ पर्यावरणीय समस्याओं पर आधारित है और मानव जीवन को प्रकृति के साथ रहने का निमंत्रण देती है।

वर्ण्य विषय :

इतिहास देखेंगे तो ज्ञात होगा की मानव जीवन हमेशा से ही प्रकृति के साथ रहकर खुशहाल बना है। प्रकृति से साथ रहकर ही उसे शांति एवं इत्मीनान मिलता रहा है। आज भी आदिवासी और वनवासी लोग प्रकृति के सानिध्य में ही अपना जीवन बसर करते हैं और खुशहाली के साथ जीवन जीते हैं। प्रकृति के विरुद्ध जाकर जीवन जीना मनुष्य की हानी का सबब बनता है। राष्ट्रपिता महात्मा गाँधी ने कहा

था-"प्रकृति के पास सबकी जरूरतें पूरी करने लायक संसाधन है, पर किसी एक व्यक्ति के भी लोभ को पूरा करने लायक नहीं"¹ अर्थ बड़ा साफ़ और स्पष्ट है की प्रकृति का खजाना बहुत बड़ा है। प्रकृति संपूर्ण सृष्टि का पालन पोषण कर सकती है। इसके विपरीत मनुष्य का पेट भी बड़ा है। अर्थात मनुष्य इतना स्वार्थी है की प्रकृति पर वह अतिक्रमण कर रहा है और यही उसके विनाश का मुख्य कारण है।

अनेक उदाहरणों के माध्यम से यह समझाया जा सकता है की प्रकृति के खिलाफ चलने पर प्रकृति का रौद्र रूप देखने को मिलता है। भूचाल या जलजला का आना, त्सुनामी का आना, पहाड़ों का धस जाना, जंगलों में आग लग जाना, नदियों को बाढ़ आना, ग्लोबलाइजेशन के इस दौर में धूप बढ़ जाना इसके कारण बर्फ का पिघलना, अचानक से पहाड़ी इलाकों में गाँव का धस जाना ये सारी प्राकृतिक आपदाएं प्रकृति के खिलाफ विचरण करने का नतीजा है। जीते जागते वर्तमान काल के उदाहरणों को देखा जाए तो देख सकते हैं की हाल ही में अमेरिका के शहर लोस एंजिल्स में लगी आग, कुछ वर्षों पहले सांगली, कोल्हापुर के इलाकों में आया हुवा बाढ़, मालीन गाव पर आई मुसीबत, गुजरात में त्सुनामी आदि अनेक उदाहरण गिनाए जा सकते हैं। इसके पीछे की मुख्य वजह है-पर्यावरण पर अतिक्रमण।

हिंदी कविता में पर्यावरण की समस्याओं पर आधारित चित्रण हुआ है। ऐसी अनेक कविताएँ हैं, जिनमे ये विचार प्रस्तुत है। यंहा केवल कतिपय कविताओं के उदाहरणों के माध्यम से यह अवगत कराने का प्रयास किया गया है की प्रकृति पर किए गए अत्याचार से उपजी समस्याएँ कौन कौन सी है। डॉ संगीता सक्सेना की कविता 'पगडंडीयाँ पाखण्ड की' की ये निम्न पंक्तियाँ देखिये-

"सृष्टि का आरम्भ था,
आदि थे तुम, आदि थे हम,
जंगल को हथेली पर उगाये

मौसमों के कनटोप लगाए
कल हम साथ थे
बावजूद जाहिलता के
मनुष्य थे हम"²

अर्थ बड़ा गंभीर है। सृष्टि के आरम्भ से मनुष्य और प्रकृति का सहजीवन बढ़ा सुन्दर था। प्रकृति की गोद में ही मनुष्य फला और फूला। धीरे-धीरे समय बीतता गया और मनुष्य प्रकृति के विरोध में जाकर अपना जीवन बसर करने लगा। इस आपा-धापी में वह भूल ही गया प्रकृति उसकी मा थी। एक समय था की भलेही मनुष्य अशिक्षित था किंतु प्रकृति के साथ था। अब प्रकृति साथ नहीं है।

जहिर कुरेशी द्वारा लिखित गजल 'शहर' में शहरी जीवन किस तरह तेजी से बदल रहा है इस बात का वर्णन किया है। प्रकृति से कटता मनुष्य प्रगती के नाम पर किस तरह भटक रहा है, का चित्रण इस गजल में देखने को मिलता है।

"अपना है और अपनों से अनजान है शहर
सच पूछिए तो चेहरों की पहचान है शहर,
रिश्तों के आईने जहाँ टूटे हैं बार-बार,
स्वार्थों की बेरहम चट्टान है शहर"³

आप शहरों में जाकर देखिये, आपको स्वार्थ के अलावा कुछ दिखाई नहीं देगा। शहर बनते जा रहे हैं परिणाम स्वरूप जंगल कटते जा रहे है। ये बदलाव इतना तेजी हो रहा है की सुबह का अपने घर का नकशा शाम में बदल जाता है। शहर में बूढ़े इंसानों को अपना घर पहचानना भी मुश्किल हो जाता है।

कवी ने लिखा है –
"क्या हैं जंगल के उपकार,
मिटटी पानी और मयार
सबके जीने के अधिकार।"⁴

उपरोक्त काव्य पंक्तियों का अर्थ स्पष्ट यह है की हर एक को जीने का अधिकार है। सभी प्राणी और पशुओं की जद्दो जेहद जीवन जीने की रहीं है। अतः जीवन जीने के लिए जंगलों का नाश करना गलत बात

है। हिंदी प्रसिद्ध कवी एवं गजलकार गिरिराज शरण अग्रवाल ने अपनी गजल में लिखा है-

"हर नया मौसम नई संभावना ले आयेगा,
जो भी झोंका आयेगा, तजा हवा ले आयेगा।"⁵

उपरोक्त गजल का शेर अर्थ की दृष्टि से बड़े मायने रखता है। इसमें पर्यावरणीय समस्या का समाधान प्रस्तुत किया गया है। इसमें आशा व्यक्त की गयी है की मनुष्य के समझ यह बात जरूर आएगी की आखिर हमारा सानिध्य प्रकृति से है और हमेशा रहेगा।

निष्कर्ष :

उपरोक्त विवेचन के आधार पर कह सकते हैं की वैश्वीकरण के इस दौर में जो अनगिनत समस्याएँ हैं, उनमें एक मुख्य समस्या पर्यावरणीय क्षति की समस्या है। यह समस्या मानव निर्मित समस्या है। इस

चुनौती का समाधान भी मनुष्य ही कर सकता है। उसके लिए उसे इस समस्या से उपजी कठिनाइयों को पहचानकर उसके समाधान के लिए प्रयास करने चाहिए। आधुनिक हिंदी कविता में समसामयिक चेतना दिखाई देती है।

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Geographical Indication (GI) Tagged Agricultural Products in Maharashtra: Regional & Temporal Analysis

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Abstract:

A geographical indication (GI) is a sign used on products that have a specific geographical origin and possess qualities or a reputation that are due to that origin. Geographical Indication Protection is granted to a group of manufacturers, who belong to a particular location, where the good was first originated. It has positive effect on agricultural products in several ways including increased income, increased consumer trust and better marketing etc. Geographical indication is a major tool for rural development. India had 643 registered GI products and out of 643 products, 199 products lie in the agriculture sector. The Contribution of Maharashtra in GI is mainly in agricultural products. As of 2024, Maharashtra had 52 registered GI products and out of 52, 36 products lie in the agriculture sector. Most of the GI tagged agricultural products in Maharashtra observed in the region of Western Maharashtra (Pune division) and Konkan.

Keywords: *Geographical Indication, GI Tag, Intellectual Property Right, Region*

Introduction:

Geographical Indication is different from other IPRs like Patent, Trademarks and designs. Geographical Indication Protection is granted to a group of manufacturers, who belong to a particular location, where the good was first originated. There are many determinants of GI products such as place of origin, climate, topography, human work of a particular geographical location). As per Section 2(1)(e) of the Geographical Indications of Goods (Registration and Protection) Act, 1999, “a geographical indication refers to an indication capable of identifying goods, including natural goods, agricultural goods, or manufactured goods, as manufactured or originating in a country’s territory, or a locality or region within that territory, where a specific

quality, reputation, or any other attribute of such good is particularly a characteristic to its geographical origin. In the case of manufactured goods, one of the activities corresponding to the processing, production, or preparation of goods, should take place in the territory, region, or locality”. Indian GI Act came into force with effect from 15 September 2003 (Moudgil, 2021).

Geographical indication is a major tool for rural development. It protects the Intellectual Property rights associated with agricultural products originating in specific geographical region. It helps in creating relationship between the agricultural products and the area to which it belongs. The unique agricultural products of rural communities associated with GI needs for rural development. GI tag provides legal

protection to the product and also prevents unauthorized use of GI tag products by others. GI tag helps consumers to get quality product. There are three types of geographical indication like protected designation of origin, protected geographical indication and traditional specialties guaranteed (Jasani, Mayani.2023). GI tagged product has certain status which is not only famous for its characteristics but it also becomes globally acceptable.

India had 643 registered GI products and out of 643 products, 199 products lie in the agriculture sector. States such as Karnataka, West Bengal, Tamil Nadu, Kerala, and Maharashtra (to name just a few) have put India on the „GI map“ with major agricultural product. The Contribution of Maharashtra in GI is mainly in agricultural products. As of 2024, Maharashtra had 52 registered GI products and out of 52, 36 products lie in the agriculture sector.

Objective:

To analyses regional and temporal variation in Geographical Indication (GI) tagged agricultural products in Maharashtra

Database and Methodology:

The present research work is totally based on secondary source of information. It has been collected from government website and publication etc.

Temporal & Regional Variations in Geographical Indication (GI) tagged agricultural products in Maharashtra:

Maharashtra which is located in the western peninsular region of India, has a wide range of geographical and cultural diversity which helps to produce number of GI tagged products in agricultural, handicrafts and food stuff etc. The Contribution of Maharashtra in GI is mainly in agricultural products. As of 2024, Maharashtra had 35 registered GI products and out of 35, 27 products lie in the agriculture sector.

Though, the GI registration process in India started in 2004-05, first agricultural products was registered in 2010-11 in Maharashtra. In 2010-11, 02 agricultural products namely Strawberry from Mahabaleshwar of Satara District and Grapes from Nashik District got GI tagged first time in history of Maharashtra. In 2013-14, again 02 agricultural products namely Jaggery-Kolhapur and Orange-Nagpur got GI tag.

Maharashtra: GI Tagged Products in Agricultural Sector (2004-2024)

Sr. No.	Year	Number of Registration in Agricultural Products	Product Name with District	Region/ Administrative Division
1	2010-2011	02	Strawberry-Mahabaleshwar- Satara	Pune Division
			Grape-Nashik	Nashik Division
2	2013-2014	02	Jaggery-Kolhapur	Pune Division
			Orange-Nagpur	Nagpur Division
3	2015-2016	07	Ajara Ghansal Rice-Kolhapur	Pune Division
			Mangalwedha Jowar-Solapur	Pune Division
			Kokum- Sindhudurg & Ratnagiri	Konkan Division
			Waghya Ghevada-Satara	Pune Division
			Navapur Tur Dal-Nandurbar	Nashik Division
			Vengurla Cashew-Sindhudurg	Konkan Division
			Lasalgaon Onion-Nashik	Nashik Division
4	2016-2017	12	Sangli Raisins-Sangli	Pune Division
			Beed Custard Apple-Beed	Aurangabad Division
			Jalna Sweet Orange-Jalna	Aurangabad Division
			Waigaon Turmeric-Wardha	Nagpur Division
			Purandar Fig-Pune	Pune Division
			Jalgaon Bharit Brinjal- Jalgaon	Nashik Division
			Solapur Pomegranate- Solapur	Pune Division
			Bhiwapur Chilli-Nagpur	Nagpur Division
			Ambemohar Rice-Pune	Pune Division
			Dahanu Gholvad Chikoo-Palghar	Konkan Division
			Jalgaon Banana- Jalgaon	Nashik Division
			Marathwada Kesar Mango- Marathwada	Aurangabad Division
5	2018-2019	02	Alphonso-Konkan	Konkan Division
			Sangli Turmeric-Sangli	Pune Division
6	2022-2023	01	Alibag White Onion-Raigad	Konkan Division
7	2023-2024 (Till 31 st December 2024)	10	Bhandara Chinoor Rice-Bhandara	Nagpur Division
			Vasmat Haldi (Turmeric)-Hingoli	Aurangabad Division
			Nandurbar Amchur- Nandurbar	Nashik Division
			Nandurbar Mirchi -Nandurbar	Nashik Division
			Panchincholi Tamarind-Latur	Aurangabad Division
			Borsuri Tur Dal-Latur	Aurangabad Division
			Kasti Coriander-Latur	Aurangabad Division
			Badlapur Jamun-Thane	Konkan Division
			Bahadoli Jamun-Palghar	Konkan Division
			Dagdi Jowar of Jalna-Jalna	Aurangabad Division
	Total	36		

Source: compiled by researcher

In the year 2015-16 total 07 agricultural products got GI tag. They were namely Ajara Ghansal Rice-Kolhapur, Mangalwedha Jowar-Solapur, Kokum-Sindhudurg & Ratnagiri, Waghya Ghevada-Satara, Navapur Tur Dal-Nandurbar, Vengurla Cashew-Sindhudurg and Lasalgaon Onion-Nashik. Year 2016-17 was historical and memorable year for Maharashtra because in this year total 12 agricultural products were registered under GI tag. They were namely Sangli Raisins-Sangli, Beed Custard Apple-Beed, Jalna Sweet Orange-Jalna, Waigaon Turmeric-Wardha, Purandar Fig-Pune, Jalgaon Bharit Brinjal- Jalgaon, Solapur Pomegranate-Solapur, Bhiwapur Chilli-Nagpur, Ambemohar Rice-Pune, Dahanu Gholvad Chikoo-Palghar, Jalgaon Banana- Jalgaon, and Marathwada Kesar Mango-Marathwada. In the year 2018-19 02 agricultural products namely Alphonso-Konkan and Sangli Turmeric- Sangli got GI tag. In the year 2022-23 only one agricultural product got GI tag, that was Alibag White Onion-Raigad. Recently in the year 2023-24 total 10 GI tag were registered in agricultural products.

Maharashtra: Region (Administrative Division) wise GI Tagged Products in Agricultural Sector (2004-2024)

Sr. No	Region / Administrative Division	Number of Registration in Agricultural Products
1	Konkan Division	07
2	Nashik Division	07
3	Pune Division	10
4	Aurangabad Division	08
5	Amravati Division	00
6	Nagpur Division	04
	Total	36

Source: compiled by researcher

Pune division which is generally termed as Western Maharashtra has registered highest number of GI tag in

Maharashtra. Total 10 GI tags in agricultural sector have been registered in this division. It is due to its favourable geographical condition, fertile soil, irrigation facilities, favourable climate etc. this region has registered highest number of GI tag in agricultural products in Maharashtra. Pune is followed by Aurangabad division (Marathwada region) with 08 GI tags. Konkan and Nashik division both have registered 07 GI tags in agricultural products respectively. Both these regions have special geographical condition which is suitable for specific crops like Kokum, Alphonso Mango, Banana, and Cashew etc. Due to adverse geographical condition for agriculture Nagpur and Amravati division (Vidarbha Region) have less number of GI tag in agriculture products. Nagpur division has 04 GI tags only. Amravati which is part of vidarbha region doesn't have any single GI tag in agriculture products.

Conclusion:

There are many determinants of GI products such as place of origin, climate, topography and human work of a particular geographical location etc. GI tag has positive effect on agricultural products in several ways including increased income, increased consumer trust and better marketing etc. It is helpful for economic growth in the region, better employment opportunities in the region and for overall rural development. Maharashtra has good potential for getting GI tag in agricultural products. However, Out of 643 GI registrations in India, only 52 GI registrations are found in Maharashtra State and Out of 52, only 36 registrations are found in agricultural products. It clearly indicates that, comparatively people of Maharashtra are not so aware of the GI tag Registration process. Pune division has registered highest number of GI tag in Maharashtra. It is due to its favourable

geographical condition, fertile soil, irrigation facilities, favourable climate etc. On the other hand, Due to adverse geographical condition for agriculture Nagpur and Amravati division (Vidarbha Region) have less number of GI tags in agriculture products.

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Evaluation Recent Technology Use in Business Management in Indian Economy

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Abstract:

Technology is the use of scientific knowledge to solve problems, improve lives, and achieve goals. It includes tools, techniques, and processes that can be simple or complex. "Traditional technology" and "modern technology" these are the two types of technology. Businesses can be for-profit entities or non-profit organizations. But in current situation technology has been essential for progress of every business in all fields that means In development of every country in business development technology is must for all developments. According to demand and supply, most important for aspect demand supply high speed accivment in productivity because fulfill of need is also important. So technology is must for it. Lot of various technology are available and use in business, that creates high speed productivity and high quantity in production. Today, all management in business is not complete without technology. Technology solves various problems and also achieves goals.

Keywords: *Technical Developments, Business Management, Traditional technology.*

Introduction:

Economics is considered the broader study of how resources are allocated and utilized within a society, while business is a specific application of economic principles within a company or organization, meaning businesses operate within the larger economic landscape and use economic theories to make decisions about production, pricing, and resource allocation to maximize profit and achieve their goals; essentially, economics provides the foundational framework for business operations. Business and economics have more in common. Both involve the study of markets, finance, economic analysis, management, and strategy.

A business is defined as an organization or enterprising entity engaged in commercial, industrial, or professional activities. Businesses can be for-profit

entities or non-profit organizations. Business types range from limited liability companies to sole proprietorships, corporations, and partnerships. Technology is the use of scientific knowledge to solve problems, improve lives, and achieve goals. It includes tools, techniques, and processes that can be simple or complex. Technology has had a significant impact on businesses, increasing efficiency, improving communication, and expanding market reach.

Objectives:

1. To Study the relation between business and technology.
2. To study the various recent type of technology in management according to business.

Research Methodology:

1. Every research is necessary a specific methodology so for the present research has used specific methodology. For the collection of the data, the researcher has used the secondary source.
2. The study is descriptive in nature. Secondary data required for the study are collected from books, journal and other government website, periodicals and reports.

In technology two main types that is traditional technology and Modern technology. "Traditional technology" refers to tools, techniques, and systems that have been used for a long time within a particular culture or society, often relying on readily available materials and manual labour, typically considered basic compared to modern technological advancements; examples include hand tools, simple farming methods, and traditional weaving techniques." refers to tools, techniques, and systems that have been used for a long time within a particular culture or society, often relying on readily available materials and manual labour, typically considered basic compared to modern technological advancements; examples include hand tools, simple farming methods, and traditional weaving techniques. in "Traditional technology" no related to science also it was related to provide from historical movements and human being. that time no lot of needs and demands of goods because population was less and not improvement in technology. According to this situation that time, creation was depends on traditional and not depends on physical technic.

"modern technology" refers to tools, techniques, and systems that have been used for a long time but base on physical technic within a particular culture or society, often relying on research and study of technology available materials not manual labour,

typically considered basic compared to traditional technological advancements; examples include Machine, computers, various apparatus in all fields and it depends on research also study's." refers to tools, techniques, and systems that have been used for a long time within a particular research. Examples include computers, machines, transport vehicles, Mobile, various apps techniques. In "modern technology" is related to science also it is related to provide from research and study to every subject in current situation lot of needs and demands of goods because population is high and improvement in technology. According to this situation now creation is depends on modern and depends on physical technic.

The beginning of technology in business can be traced back to the mid-19th century with the invention of the telegraph. The telegraph allowed for communication between two stations through electric signals.

In recent many technologies are used in business management, including cloud computing, customer relationship management (CRM), data analytics, and machine learning.

The beginning of cloud computing technologies in business studies can be traced back to the late 1990s and early 2000s, with the emergence of Software as a Service (SaaS) models like Sales force. which marked a significant shift towards businesses utilizing internet-based solutions for operational efficiency; companies like Amazon and Google were pioneers in developing cloud infrastructure during this period, laying the groundwork for widespread adoption of cloud computing.

Cloud computing has many positive impacts on businesses, including cost savings, scalability, and improved collaboration.

Key Applications of Cloud Computing in India:

E-commerce: Cloud platforms support the high traffic volumes of online marketplaces like Flipkart and Amazon India, ensuring smooth operations during peak sales periods.

Digital Government Services: Government initiatives like "Digital India" utilize cloud technology to deliver citizen services like online document verification, service delivery, and citizen engagement platforms.

Data Analytics and Insights: Businesses leverage cloud-based analytics tools to process large volumes of data, gain valuable insights, and make informed decisions.

Software Development: Cloud-based development environments allow developers to quickly build, test, and deploy applications with scalability and flexibility.

Education Technology: Online learning platforms rely on cloud infrastructure to provide access to educational content and tools for students across geographical locations.

Healthcare: Cloud-based systems facilitate patient record management, telemedicine consultations, and healthcare data analysis.

Financial Services: Banks and financial institutions use cloud technology for secure data storage, fraud detection, and customer relationship management.

Media and Entertainment: Streaming services utilize cloud infrastructure to deliver video content on-demand to users.

In India, businesses use Customer Relationship Management (CRM) systems to effectively manage interactions with customers across sales, marketing, and customer service, allowing them to track customer data, automate processes, personalize communication, and ultimately improve customer retention and sales growth, with popular options including Salesforce, Zoho CRM, HubSpot, and Freshsales.

The history of customer relationship management (CRM) can be traced back to

the 1970s, when businesses began to use customer surveys and spreadsheets to categorize customers. The term "CRM" was coined in 1995, and the concept became popular in the 1990s.

Types of Technology used in Business:

Artificial Intelligence (AI): AI systems can learn and adapt, which can help businesses gain a competitive edge.

Customer Relationship Management (CRM): CRM systems help businesses understand consumer behavior and increase sales opportunities

Cybersecurity: Cybersecurity protects a business's sensitive data, customer information, and assets from cyber threats

Accounting Technology: Accounting technology can make accounting more efficient and reduce the risk of human error

Internet of Things (IoT): IoT can provide data-driven insights, improve customer experiences, and optimize supply chains

Project Management Software: Project management software can help teams communicate and share information, and make workflows more efficient

Automation: Automation software can help businesses handle tasks more efficiently

Control Systems: Control systems, such as inventory control systems, can help businesses track inventory levels

Communications: Communications technology, such as email, voice, document sharing, and social media messaging, can help businesses communicate more efficiently

"Machine learning in business" refers to the application of algorithms that allow computers to learn from data, without explicit programming, to make predictions and decisions within a business context, enabling improved operations, customer insights, and strategic planning, with its roots tracing back to the 1950s when the concept of "machine learning" was first defined by Arthur Samuel, an IBM

researcher, who developed a checkers-playing program that could learn from its own experiences and improve over time; essentially, allowing computers to "learn" by analyzing large datasets and adapting their behavior based on the patterns they identify, rather than following strict, pre-defined rules.

Key applications of machine learning in India:

Healthcare: Analyzing medical images for disease detection, predicting patient outcomes, personalized treatment plans, and facilitating telemedicine with ML-powered diagnostics.

Finance: Fraud detection in transactions, credit risk assessment, algorithmic trading, and customer behavior analysis to personalize financial products.

E-commerce: Personalized product recommendations, dynamic pricing based on demand, optimizing inventory management, and chatbots for customer service.

Transportation: Traffic prediction, route optimization, demand forecasting for ride-hailing services, and anomaly detection in vehicle maintenance.

Agriculture: Crop yield prediction, pest detection, soil analysis, optimal irrigation management, and weather-based crop recommendations.

Education: Personalized learning platforms, intelligent tutoring systems, automated grading, and student performance analysis.

Top 10 Management Tools For All Businesses:

1. Project Management Tools:

Project management software is a great option if you're juggling multiple tasks at a time. Such tools can automatically generate and send reminders for upcoming tasks and events, keeping everyone updated on everything on the project agenda including details such as the time, the place, and the budget of the event. Trello is our top

favorite in this category. This user-friendly tool improves team collaboration and efficiency by providing boards, lists, and cards. Asana and Basecamp are other examples of project management tools you may also want to look at.

2. CRM software:

Customer relationship management is an important business tool. The deal-driven CRM tool Pipedrive features an intuitive interface and call and email synchronization. Other viable options in this category are PipelineCRM and Salesforce.

3. Workplace communication software:

As your business grows, you need modern digital communication tools to enable your team to stay in touch through chatting and file sharing. Microsoft Teams is a great platform that connects coworkers. Along with its primary real-time video conversations, it offers data and screen sharing functionalities and allows great customization. Google Meet and Zoom are video conferencing solutions that also come with a promising range of functionalities.

4. HR Software:

As a business owner managing fewer employees, you may be considering an HR solution as a redundant investment. SnapHRM offers basic HR features that allow you to manage your team, such as an employee database, payroll management, attendance tracking, and days-off management. You can also create job postings and share them on dedicated platforms to reach more prospective candidates. SnapHRM is free for businesses with less than five employees, which makes it particularly relevant to all companies. Other examples of HR software suited for all businesses are Freshteam and Eddy.

5. Workforce management:

You can rely on such tools to handle your team's future workload planning and shift scheduling depending on their capacity. Skedulo is an example of an application that offers a clean, real-time interface to

facilitate managing complex schedules. Among the all business workforce management options that are worth considering are Planday and When I Work.

6. Work reporting tools:

A reporting tool provides information on work done or time spent on a particular task by an employee. It allows you to determine your team's productivity and efficiency. toggle, for example, has a tracking feature and provides valuable insights into your workforce performance.



You can also take a look at ClicData and GROW that offer reporting and analytics for all businesses.

1. Cashflow software:

Cashflow management software is designed to help businesses manage the flow of incoming and outgoing funds. It helps you keep a positive cash flow and provides data-based future cashflow forecasts. CashAnalytics automates administrative tasks and optimizes cash and liquidity forecasting. Pulse and Float are two of the other suitable alternatives for all business cashflow management tools.

2. Invoicing software:

Invoicing tools produce billing for services and products and provide historical insights into your finances. Such solutions usually come with customizable templates that simplify invoice generation. Other options you can consider are Aynax and Blinksale, which offer easy and customizable invoicing.

3. Document management tools:

They're designed to store, manage, and track electronic documents securely and allow also for collaboration. Google Drive is an excellent choice for all businesses. It provides 15GB of free cloud storage and streamlines file sharing and collaboration. Other attractive alternatives are Dropbox and SmartVault offering seamless cloud-based document storage and sharing.

4. Calendar:

Implementing calendar software can result in optimizing your time. Appointy automates appointment booking, improves staff scheduling, and enhances client management. Alternatives you can also look at are Calendar and Teamup.

According to this use of technology 90% of all SMBs make use of digital communications tools. 37% of businesses and organizations employ AI. 90% of prominent companies invest in AI. 85% of small business owners are finding success by utilizing technology in their businesses.

Conclusion:

There has been a lot of research in the field of technology over the ages. Today's market is not complete without technology. Every new invention is based on research and that research gives a new technology to the market and the industry as well. Today's recent technology improve the business and help to management in business. So there study and impact are important to study.

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राजकारणाचे गुन्हेगारीकरण

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प्रस्तावना :

राजकारणाचे गुन्हेगारीकरण आणि गुन्हेगारीचे राजकीयीकरण हा अलीकडील काळात ट्रेंड बनून गेला आहे. राजकारणातील गुन्हेगारी हा नेहमीच चर्चेचा व चिंतेचा विषय ठरत आला आहे. निवडणुकीवेळी उमेदवारी देतांना अनेक उमेदवारांवर गंभीर गुन्ह्यांची नोंद असते. हे उमेदवार लोकशाहीचे न जुमानता निवडणुकीत निवडून देखील येतात. गुन्हेगारी पार्श्वभूमी असणारे अनेक लोक गैरमागाने, गुंडागर्दी करून, धाक दाखवून पैसा गोळा करतात आणि त्याच पैशांच्या जोरावर पुढे राजकारणात येतात. राजकारणात आल्यावरही यांची गुंडागर्दी सुरूच राहते. पैसा कमावणे आणि त्याच्या जोरावर पुन्हा गुंडागर्दी करणे, हा यांचा जणू व्यवसाय झाला आहे. राजकारणाचे गुन्हेगारीकरण रोखण्याच्या दिशेने सर्वोच्च न्यायालयाने राजकीय पक्षांना एक महत्त्वपूर्ण आदेश दिला आहे. उमेदवाराची निवड निश्चित झाल्यानंतर ४८ तासांच्या आत त्यांचे गुन्हेगारी रेकॉर्ड जाहीर करण्याचे निर्देश सर्वोच्च न्यायालयाने दिले आहेत. सर्वोच्च न्यायालयाने राजकीय पक्षांच्या गुन्हेगारी नोंदींवरील मार्गदर्शक तत्वे आणखी कठोर केली आहेत आणि पूर्वीच्या निकालात सुधारणा केली आहे. सर्वोच्च न्यायालयाच्या आदेशानुसार, जर एखाद्या उमेदवारावर फौजदारी खटला दाखल झाला असेल किंवा तो कोणत्याही प्रकरणात आरोपी असेल, तर राजकीय पक्षांना

उमेदवाराचे नाव जाहीर केल्याच्या ४८ तासांच्या आत ही माहिती सार्वजनिक करावी लागेल. असे असले तरी भारतीय राजकारणात राजकीय गुन्हेगारीकरण वाढत आहे.

उद्देश :

१. भारतातील राजकीय राजकारणातील गुन्हेगारीकरणाचा अभ्यास करणे.
२. भारतात राजकीय गुन्हेगारीकरण थांबवण्यासाठी प्रयत्नांचा अभ्यास करणे.

विषयप्रवेश :

राजकारणात जसजशी वाहुबलींची गर्दी वाढत गेली आणि राजकारणी आणि गुन्हेगारांचे ऋणानुबंध वाढत गेले, तेव्हापासून म्हणजे १९८० च्या दशकापासून देशात राजकारणाच्या गुन्हेगारीकरणाची चर्चा सुरू झाली. ही चर्चा प्रामुख्याने राजकारणी आणि गुन्हेगारांच्या परस्पर हितसंबंधापर्यंत होती. पण, काळाच्या ओघात प्रत्यक्ष गुन्हेगारच राजकीय आखाड्यात उतरून बाजी मारू लागल्यावर त्याबाबतच्या चिंता अधिक वाढीस लागल्या. आजकाल तर बहुतांश राज्यांच्या शासनामध्ये बाहुबली ठाण मांडून बसलेले दिसतात. १९९० च्या दशकात राजकारणाच्या गुन्हेगारीचा फारच गवगवा होऊ लागल्यानंतर १९९३ साली भारताचे गृहसचिव एन.

एन. वीरा यांच्या अध्यक्षतेखाली या विषयाचा अभ्यास करण्यासाठी एक समिती नेमली गेली. या समितीने आपला अहवाल केंद्र शासनाकडे दिलेला आहे. पण, आजपर्यंत हा अहवाल जनतेसाठी खुला करण्यात आलेला नाही.

या अहवालातील केवळ १२ पाने जनतेसाठी खुली करण्यात आली. या बारा पानांनीच राजकारणाच्या गुन्हेगारीकरणाचा आरसा दाखवला आहे. त्यामुळे गेल्या जवळपास ३० वर्षांत आजपर्यंत केंद्रात सत्तेवर आलेल्या कोणत्याच सरकारने हा अहवाल जाहीर करण्याचे धाडस दाखविलेले नाही. कारण हा अहवाल जाहीर झाला, तर बहुतांश राजकीय पक्षांचे आणि त्यांच्या बहुतांश राजकीय नेत्यांचे मुखवटे फाटून चिंध्या होण्याची सर्व संबंधितांना भीती वाटत असावी.

वास्तविक पाहता राजकारणाच्या गुन्हेगारीकरणाची प्रक्रिया थांबविण्याची जबाबदारीसर्वच राजकीय पक्षांची आहे. पण, त्यांच्याकडून अशा सदाचाराची अपेक्षा बाळगणे सद्यस्थितीत आततायी ठरेल. कारण आजकाल राजकारणात मॅन, मनी आणि मसल पॉवरची चलती असलेली दिसते. साम, दाम, दंड आणि भेद यापैकी कोणत्याही मागनि निवडून येण्याची क्षमता या एकाच निकषावर आधारित राहून आजकाल बहुतांश राजकीय पक्षांचे उमेदवार निश्चित केले जातात.

त्यामुळे मतदारांनाही उडदामाजी काळे-गोरे या न्यायाने समोर असलेल्यापैकी एकाची निवड करणे क्रमप्राप्त होते आणि कालचा गुंड, मवाली हा रातोरात त्या त्या मतदारसंघाचा आणि मतदारांचाही भाग्यविधाता होऊन जातो. गेल्या काही वर्षांत देशभरातील गुन्हेगारी पार्श्वभूमीच्या लोकप्रतिनिधींची यादी डोळ्याखालून घातल्यास आणि त्यांची पार्श्वभूमी तपासल्यास मतदारांनी काय काय पात्रतेचे लोक आपल्या डोक्यावर बसवून घेतलेत याचा प्रत्यय आल्याशिवाय राहणार नाही.

आजकाल कोणत्याही पक्षाला निवडणुका जिंकण्यासाठी बाहुबल आणि बाहुबलींची आवश्यकता भासतेच. त्यामुळे या बाबतीत राजकीय पक्षांकडून काही ठोस पावले उचलली जातील, अशी भाबडी आशा बाळगण्यात काहीही अर्थ नाही. त्यामुळे सर्वसामान्य मतदार आणि राजकारणाच्या गुन्हेगारीबद्दल चिंता व्यक्त करणारे बुद्धिमंत या दोघांवर ही जबाबदारी येऊन पडते. बुद्धिवादी वर्गाने नुसतेच चिंतन किंवा चिंतन न करता आणि या सगळ्या प्रक्रिपासून अलिप्त न राहता प्रत्यक्ष निवडणूक प्रक्रियेत आपला सहभाग नोंदविण्याची गरज आहे. त्याचप्रमाणे सर्वसामान्य मतदारांनीही ऐन निवडणुकीत कोणत्याही क्षणिक आमिषाला बळी न पडता मतदान करण्याची आवश्यकता आहे. त्यासाठी जोडीने व्यापक समाजप्रबोधन होण्याची आवश्यकता आहे.

असोसिएशन ऑफ डेमोक्रेटिक रिफॉर्म (एडीआर) या स्वयंसेवी संस्थेने प्रकाशित केलेल्या अहवालानुसार, देशातील लोकसभेच्या ५४३ खासदारांपैकी १७९ खासदारांवर गुन्हे दाखल आहेत. म्हणजेच ३३ टक्के खासदार हे गुन्हेगारी पार्श्वभूमीचे आहेत. त्यातही ११४ खासदारांवर (२१ टक्के) गंभीर स्वरूपाचे गुन्हे दाखल आहेत. तर, पर्यायाने बुद्धिजीवी वर्गातील नेते म्हणून गणल्या जाणाऱ्या राज्यसभेतही यापेक्षा वेगळी परिस्थिती नाही. राज्यसभेतही ५१ खासदारांवर गुन्हे दाखल असून, त्यापैकी २० खासदारांवरील गुन्हे हे गंभीर स्वरूपाचे आहेत. गुन्हे दाखल असलेल्या खासदारांचे पक्षनिहाय वर्गीकरण केल्यास असे दिसून येते की, लोकसभा आणि राज्यसभेतल भाजपच्या ३३९ पैकी १०७ खासदारांवर (३२ टक्के) विविध स्वरूपांचे गुन्हे दाखल आहेत. तर, काँग्रेसच्या ९७ पैकी १५ खासदारांवर गुन्हे दाखल आहेत. शिवसेनेच्या २१ पैकी १८ खासदारांवर गुन्हे दाखल असून, त्यापैकी १० खासदारांवरील गुन्हे हे गंभीर स्वरूपाचे आहेत. राष्ट्रवादी काँग्रेसच्या ११ पैकी ८ खासदारांवर गुन्हे दाखल आहेत. महाराष्ट्रात २०१४मध्ये झालेल्या विधानसभा निवडणुकीत विजयी

झालेल्या २८८ आमदारांपैकी १६० आमदारांवर म्हणजेच निम्म्याहून अधिक आमदारांवर गुन्हे दाखल आहेत. त्यापैकी १११ जणांवरील गुन्हे हे गंभीर स्वरूपाचे आहेत. देशभरातील भाजपच्या १४५१ आमदारांपैकी ४५१ आमदारांवर गुन्हे दाखल असून, त्यापैकी २९५ जणांवरील गुन्हे गंभीर स्वरूपाचे आहेत. काँग्रेसच्या ७७३ आमदारांपैकी २०३ आमदारांवर गुन्हे दाखल असून, त्यापैकी १३४ आमदारांवरील गुन्हे गंभीर स्वरूपाचे आहेत. या गुन्ह्यांमध्ये खून, महिलांवरील अत्याचार, अपहरण, द्वेषमूलक भाषणे आदी गुन्ह्यांचा समावेश आहे. या आकडेवारीवरून एक गोष्ट स्पष्ट होते, ती म्हणजे गुन्हे दाखल असलेले नेते हे केवळ विशिष्ट पक्षांपुरते मर्यादित नाहीत. राजकारणाचे गुन्हेगारीकरण करण्यास राष्ट्रीय, प्रादेशिक अशा सर्वच पक्षांनी आणि राष्ट्रीय ते स्थानिक नेत्यांनी आपापल्या परीने 'हातभार' लावला आहे.

राजकीय पक्षांच्या या बोटचेपी भूमिकेमुळेच राजकारणातील गुन्हेगारांचे गौरवीकरण होताना दिसत आहे. उदा. समाजातील गुन्हेगारी संपविण्याचा, भ्रष्टाचार संपविण्याचा उल्लेख राजकीय पक्षांच्या जाहीरनाम्यात ठळकपणे मांडला जातो. ते केवळ जाहीरनाम्यापुरतेच राहते, प्रत्यक्षात येत नाही. एखाद्या पक्षाकडून विरोधी पक्षातल्या नेत्याच्या भ्रष्टाचाराबद्दल, गुन्हेगारी पार्श्वभूमीबद्दल तावातावाने बोलले जाते. परंतु, तोच नेता पक्षात येण्यास इच्छुक असेल किंवा तो यावा ही पक्षाची गरज असेल, तर त्याच्यासाठी 'रेड कार्पेट' अंथरले जाते. मग, त्या कार्पेटखाली त्याच्यावरील आरोपही विरून जातात, ही वस्तुस्थिती आहे. एखाद्या गुन्हेगाराचा राजकीय पक्षातील प्रवेश हा 'सुधारण्याचा मार्ग' समजले जाते. 'आम्ही काही साधू संत नाहीत, राजकारणात हे करावेच लागते,' अशा शब्दांत पाठराखण केली जाते. पुन्हा हेच गुन्हेगारी नेते 'समांतर सरकार' चालवताना दिसतात. मतदारांचा पाठिंबा मिळवताना दिसतात. केवळ निवडणुकीत मोठ्या फरकाने विजयी होतात. त्यासाठी, 'मनी पॉवर, मसल पॉवर'चा वापर करतात. राजकीय पक्षांकडूनही अशा

बाहुबली नेत्याच्या बाजूने वातावरण तयार केले जाते. त्याला आधार म्हणून 'रॉबिन हूड' अशी प्रतिमा निर्माण केली जाते. असे नेते अधिकाऱ्यांवर दबदबा राखून असल्याने जनता आपल्या समस्या घेऊन अशा बाहुबलींकडे जाते आणि काम झाल्यामुळे त्याचा उदोउदो करणे पसंत करते.

तसेच एकीकडे राजकीय गुन्हेगारीवरून गळे काढत असताना मतदारही अशा उमेदवारांनाच निवडून देणे पसंत करत असताना दिसतात. अन्यथा, राजकीय पक्षांनी निवडणूक लढविण्याची संधी दिली, तरी त्या उमेदवाराला आपला लोकप्रतिनिधी बनण्याची संधी घ्यायची की नाही, हा निर्णय घ्यायची मतदारांना संधी आहे. परंतु, तसे होताना दिसत नाही. त्यामागे अनेक कारणे आहेत. काहीवेळा त्या उमेदवारावरील आरोपांबाबत मतदारांना काही देणेघेणे नसते. अनेक मतदार हे एखाद्या राजकीय पक्षांचे पारंपरिक मतदार म्हणून ओळखले जातात. त्यासाठी त्यांना उमेदवार कोण आहे, याच्याशी काही देणेघेणे नसते. तो आपल्या पक्षाच्या चिन्हावर उभा आहे आणि आपल्या पक्षाच्या चिन्हासमोरील बटण दाबणे हे आपले 'कर्तव्य' आहे, असेच वाटते. तो आपल्या पक्षाच्या चिन्हावर उभा आहे आणि आपल्या पक्षाच्या चिन्हापुढील बटण दाबणे हे कर्तव्य वाटते. इतकेच नव्हे, तर आपल्या जातीचा, समाजाचा नेता हा कितीही मोठा गुन्हेगार असला, तरी तो जामिनावर सुटला म्हणून त्याची भव्य मिरवणूक काढली जाते.

राजकारणाचे गुन्हेगारीकरण रोखण्यासाठी प्रयत्न :

सुप्रीम कोर्टात आपल्या उमेदवारांवर दाखल गुन्हेगारांची माहिती जाहीर न करणाऱ्या राजकीय पक्षांविरुद्धात कारवाईची मागणी करणारी याचिका दाखल करण्यात आली आहे. कोर्टाचा अवमान केल्याप्रकरणी ही कारवाई करण्याची मागणी करण्यात आली असून सुनावणीदरम्यान सुप्रीम कोर्टाने महत्वपूर्ण आदेश दिला आहे. यात न्यायाधीश आरएफ नरीमन आणि न्यायाधीश बीआर गवई यांनी १३ फेब्रुवारी

२०२० च्या निकालात काही बदल केले. सर्वोच्च न्यायालयाने फेब्रुवारी महिन्यात बिहार विधानसभा निवडणुकीशी संबंधित आदेश दिला होता. उमेदवारांची निवड झाल्यानंतर ४८ तासांच्या आत किंवा उमेदवारी अर्ज दाखल करण्याच्या दोन आठवडे आधी स्वतःबदलची सविस्तर माहिती जाहीर करावी, असे आदेशात म्हटले होते. सुप्रीम कोर्टाने गेल्या महिन्यात गुन्हेगारांना राजकारणात येण्यापासून रोखण्यासाठी आणि निवडणुकीला उभे राहण्यापासून रोखण्यासाठी विधिमंडळ काहीही करण्याची शक्यता नाही असे म्हटले होते. २०२० च्या आदेशात बिहार विधानसभा निवडणुकीच्या पार्श्वभूमीवर सुप्रीम कोर्टाने उमेदवारांनी निवड झाल्यानंतर ४८ तासात किंवा किमान उमेदवारी अर्ज भरण्याच्या दोन आठवडे आधी ही माहिती अपलोड करावी असा आदेश दिला होता. निवड झाल्यानंतर ७२ तासांच्या आत अनुपालन अहवाल निवडणूक आयोगाला सादर करावा लागणार आहे. मुळात राजकारणातील गुन्हेगारी हा खूप पूर्वीपासून चिंतेचा विषय ठरत आला आहे. लोकसभा निवडणुकीच्या पार्श्वभूमीवर ‘महाराष्ट्र इलेक्शन वॉच’ आणि ‘असोसिएशन फॉर डेमोक्रेटिक रिफॉर्म’ (एडीआर) या संस्थेने उमेदवारांच्या आर्थिक, शैक्षणिक तसेच गुन्हेगारी पार्श्वभूमीचे त्यांच्या प्रतिज्ञापत्राच्या आधारे विश्लेषण केले होते. त्यावेळी बहुसंख्य उमेदवारांची पार्श्वभूमी गुन्हेगारी स्वरूपाची असून खून, खुनाचा प्रयत्न, अपहरण, महिला अत्याचार यासारख्या गंभीर गुन्ह्यांची त्यांच्या नावावर नोंद असल्याचे आकडेवारीवरून समोर आले होते. राजकारणाचे गुन्हेगारीकरण रोखण्यासाठी अनेक आयोग नेमले गेले, अनेक उपाय सुचविण्यात आले, काही प्रयोगही करण्यात आले. टी. एन. शेषन यांच्यासारखा निवडणूक आयुक्तही या देशाला लाभला. पण, गुन्हेगारीकरण रोखण्याच्या आघाडीवर सकारात्मक परिणाम अजूनही दिसून आलेला नाही.

कायद्यात आवश्यक ते बदल केले पाहिजेत:

संसद, राज्यांच्या विधानसभा आणि स्थानिक स्वराज्य संस्थांमध्ये गुन्हेगारांची संख्या प्रचंड वाढली आहे. ही बाब निश्चितपणे चिंताजनक आहे. २०१८ साली सुप्रीम कोर्टाने निवडणूक लढण्यास इच्छुक असलेल्या उमेदवारांना असा निर्देश दिला होता की, त्यांच्यावर असलेल्या गुन्हेगारी स्वरूपाच्या सर्व प्रकरणांची माहिती उमेदवारी अर्ज भरतानाच निवडणूक आयोगाला दिली पाहिजे आणि प्रिंट-इलेक्ट्रॉनिक मीडियातून त्याचा प्रचारप्रसारही केला पाहिजे. सुप्रीम कोर्टाने तर संसदेला अशी सूचना केली होती की, गुन्हेगारांनी संसदेत प्रवेश करू नये यासाठी कायदा करावा. पण, ना उमेदवारांनी कोर्टाचे ऐकले ना संसदेने. आता संसदही काही करत नसेल, निवडणूक लढवणारे काही करत नसतील तर मतदार म्हणून आमची काही जबाबदारी आहे की नाही, याचा विचार आम्ही सगळ्यांनी करायला हवा. आजच्या परिस्थितीत कोणताही सामान्य माणूस एखाद्या राष्ट्रीय पक्षाची उमेदवारी मिळवू शकत नाही. आणि यदाकदाचित कुणाला मिळाली तर त्यामागे अनेक राजकीय गणितं असतात. लोकसभा आणि विधानसभा निवडणुकीत कोट्यवधी रुपये उमेदवारांकडून खर्च केले जातात, नगरपालिकासह सर्वच स्थानिक स्वराज्य संस्थांच्या निवडणुकीतही पाण्यासारखा पैसा उधळला जातो. सत्ता, गुन्हेगार आणि पैसा ही तिकडी भारतीय लोकशाहीवर हावी झाल्याचे दुर्दैवी चित्र सध्या पाहायला मिळत आहे. काही बोटार मोजण्याइतपत अपवाद सोडल्यास नेत्यांसाठी राजकारण हा धंदा झाला आहे, ते त्यांच्यासाठी गुंतवणुकीचे क्षेत्र ठरले आहे. पैशांमधून सत्ता आणि सत्तेतून पैसा हे त्यांचे चक्र असते. यामुळेच देशातील भ्रष्टाचारासह अनेक समस्यांचा जन्म होतो. जर ही समस्या मुळापासून उखडून फेकायची असेतल तर सर्वात आधी गुन्हेगारांना राजकारणातून हाकलले पाहिजे. राजकारण गुन्हेगारीमुक्त केले पाहिजे. आता न्यायालयाने जो निर्णय दिला आहे. त्याचा मुळ उद्देश असा आहे की,

उमेदवारांनी त्यांची गुन्हेगारी पृष्ठभूमी जाहीर केली तर लोक त्यांना मतदान करणार नाहीत आणि त्यामुळे गुन्हेगार संसद, विधानसभा, स्थानिक स्वराज्य संस्थांमध्ये शिरणार नाहीत, अशी सुप्रीम कोर्टाची भावना आहे. ती भावना आपण लक्षात घेतली पाहिजे. मात्र हे आपल्याशिवाय शक्य होणार नाही. सर्वसामान्य मतदारांनी मतदान करतांना गुन्हेगारी प्रवृत्तीच्या लोकांना मत न देता योग्य उमेदवाराची निवड केली पाहिजे. दुसरीकडे जे लोक गुन्हेगारी पार्श्वभूमीचे आहेत, त्यांना निवडणूक लढण्यास अपात्र ठरविणारा कायदा झाला तर गुन्हेगारांचा शिरकाव तसाच कमी होईल. संसदेनेही कायद्यात आवश्यक ते बदल केले पाहिजेत.

समारोप:

अशा या राजकीय प्रवृत्तीचे रुपांतर राजकीय संस्कृतीत होण्यासाठी सर्वोच्च न्यायालयाच्या सूचनेनुसार राजकीय पक्ष आणि राजकीय पक्षांचे उमेदवार यांनाच कायदा करण्यासाठी पुढाकार घ्यावा लागणार आहे. कारण, सध्या गुन्हा सिद्ध होऊन शिक्षा होत नाही, तोपर्यंत निवडणूक लढविण्यास बंदी आणता येत नाही. राजकीय गुन्हेगारी रोखण्यासाठी सध्याचा कायदा कमकुवत ठरत आहे. त्याचाच फायदा राजकीय गुन्हेगार घेताना दिसतात. शिवाय, आपल्या न्यायव्यवस्थेवरील भार पाहता, अशा प्रकारचे गुन्हे सिद्ध होईपर्यंत एखाद्या गुन्हेगाराचा विजयी होऊन कार्यकाळही संपतो. शिवाय, अशा मोठ्या गुन्हांमध्ये भीतीपोटी अनेक साक्षीदार साक्षच द्यायला येत नाहीत. या कोर्टातून त्या कोर्टात हे प्रकरण लटकत राहते. म्हणून

या गुन्हेगारी प्रवृत्तीला चालना देता येणार नाही. केवळ निवडून येणे हा निकष लावून अशा उमेदवारांना पाठिशी घालण्याची भूमिका राजकीय पक्षांनी घेतली, तर गुन्हेगारी थांबणार नाही, तर अधिक बोकाळणार आहे. त्यासाठी कठोर कायदा करण्याची आणि त्याची अंमलबजावणी करण्याची गरज आहे. ती इच्छाशक्ती राजकीय पक्षांनाच दाखवावी लागणार आहे. कारण, असे गुन्हेगार निर्माण करण्यात आपणच हातभार लावला आहे, हे राजकीय पक्षांनी व राजकीय नेत्यांनी लक्षात घेण्याची वेळ आली आहे.

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Physical Carrying Capacity and Tourism Development of “KAAS PATHAR”

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Abstract:

Tourism plays a vital role in changing and developing tourist places. For Sustainable Ecotourism, the concept of carrying capacity in tourism needs to be applied. This concept of carrying capacity gives a inclusive importance in the development of tourism in physical, social or economic aspects. This concept is applied, in a tourist destination by the stake holders in tourism, namely tourists, locals and tour operators may be great advantages of tourist center for Sustainable development. The main objective of present research paper is to analyze the physical carrying capacity of “Kaas pathar” for the Sustainable development.

Keywords: Carrying capacity, Sustainable tourism, Sustainable development, Ecotourism.

Introduction:

Tourism sector plays an important role in economic development of countries as well as local area. Tourism help for conservation of Natural, archaeological and historic sites and prevent decline or vanishing of these sites. The tourism sector also has significant backward linkages and creates multiple effects which extend to manufacturing sector in the form of demand for souvenirs, handicrafts and mementos, as also to the agriculture sector which supplies food products for tourists.

Now days for the Sustainable tourism Carrying capacity concept applied tourism industry. Carrying capacity is widely applied in tourism and recreation studies since the 1960s, although some authors trace its emergence to as far back as 1930. while it can be viewed as an important concept in the ultimate emergence of sustainable tourism conversation,

Measurements of carrying capacity were first used as a way of deciding optimum stocking rates in agriculture. measurements of carrying capacity have been utilised in fields such as ecology, biology and population studies. In livestock studies, carrying capacity was defined as the maximum number of grazing animals that could make use of a defined area and this natural-resource based tradition of carrying capacity has informed many studies in tourism.

Tourism industry emerged in the academy and policy communities. Sustainable tourism, which actively seeks to draw links between the local and the global measurements of carrying capacity concentrate on local factors when evaluating the limits to tourism development.

The United World Tourism Organization defines carrying capacity as ‘the maximum number of people that may

visit a tourist purpose at the same time, with out causing damage of the physical, economic, socio-cultural environment and an unacceptable decrease in the quality if visitors' satisfaction'.

There is one simple measure of carrying capacity that can be evenly and equally applied to all destinations and attractions because they are not homogeneous in their morphology and structure. In fact, it is most commonly split into at least four elements, and sometimes more. Getz splits carrying capacity into six categories, physical, economic, perceptual, social, ecological and political.

- Physical carrying capacity of a tourist resource is the maximum use of the resource that can take place by tourists, before the resource begins to be unacceptably degraded.
- Economic carrying capacity of a tourist resource is the maximum use of the resource that can take place by tourists before leading to an unacceptable level of economic dependency on tourism in the area of the resource.
- Perceptual carrying capacity is a measurement of tourist's perceived level of carrying capacity in a tourist resource, beyond which tourists perceive there source as over-crowded.
- Social carrying capacity refers to the maximum use of a tourist resource that can take place, without causing unacceptable levels of local negative feeling towards tourism.
- The ecological carrying capacity of a tourist resource is the maximum use level that can take place without causing unacceptable damage to the natural environment of the resource.
- Political carrying capacity refers to the maximum use that can take place of a tourist resource without causing political instability, for

example, conflicts overland-rights or control of the incomes from tourism.

The implementation of measures of carrying capacity in the management of a tourism destination can involve visitor management techniques such as improving signage and managing tourism flows on a site, as well as using reservation and booking systems. It can also be implemented at more strategic levels through policy and regulations that relate to tourism development. In this study calculating physical carrying capacity of kaas pathar.

Objectives:

1. To analyze the geographical setup of study region.
2. To analyze the physical carrying capacity of study region.
3. To analyze the economical growth of study region.

Significance of Research Work:

Present research work focus on the Sustainable ecotourism development of kaas plateau. This work useful for managing the tourism sector for growth of tourist center kaas pathar. This work helpful to analysis of positive effect on study region.

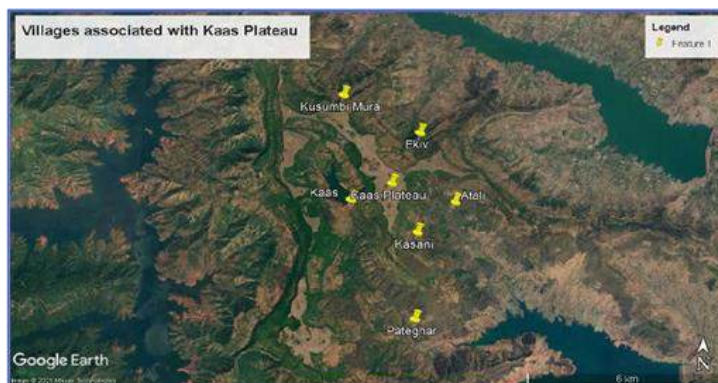
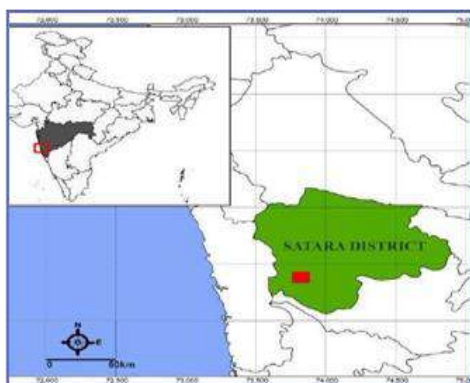
Study Region:

Kaas Plateau is also known as the local name **kaas pathar**. The study region Geographically located at 17°43' - 17°45'N and 73°47' - 73°56'E, in the Satara district of Maharashtra, it is situated at an altitude of 1200 metres and is 10 sq. km in area. Located in the Satara district of Maharashtra .Kaas Plateau (or *Kaas Pathar*, as it's locally known) is part of Western Ghats, hotspot for Biodiversity Heritage. In 2012, World Heritage Committee meeting in Saint Petersburg in Russia inscribed the Kaas Plateau as UNESCO World Natural Heritage Site

among 39 other serial sites. The plateau, where the grasslands lie on the volcanic soil layer of few centimeters which turns into a

'plateau of flowers' during monsoon season, particularly from *August to early October*.

STUDY REGION - Kaas Plateau



Geographical setup of Study Region:

The region of Western Ghats in India was inscribed as the 39 serial WNHSS by the UNESCO in July 2012. These 39 sites of Western Ghats are spread over the area of 7953.15 km² and four Indian states. As part of the Sahyadri range of mountains' northern sub-cluster, the state of Maharashtra inhabits Koyna Wildlife Sanctuary, Chandoli National Park, Radhanagari Wildlife Sanctuary and Kaas plateau all in circle of about 200 kms. The area of 1972.85 hectares of the "Kaas plateau" is inscribed as the WNHSS-World Natural Heritage Site for its unique, endemic ecosystem and for its outstanding universal values that included rich biodiversity. The plateau is situated at the height of approximately 1213 meters above sea level. The volume of rainfall during June to October, called as monsoon season, at Kaas is about 2500 to 3000 m.m. These weather conditions nurture more than 850 species of flora during the flowering season. The plateau is home for around 350 flowering plants that include species listed as rare, endemic and threatened by Botanical Survey of India and International Union for Conservation of Nature (IUCN). Along with these flowering plants, many species of medicinal values and some large

and small species that are new to science have been discovered at the plateau. The heritage site of Kaas is approximately 25 km away from Satara, the nearest town and district place. The plateau of Kaas inhabits rich natural heritage of highly specialized edaphic plant groups with about 350 flowering plant species and exceptional aesthetic beauty. The outstanding universal value of Kaas is its flowers and their naturally attractive aesthetics. Most of these ephemeral communities of rock-out crops are insect pollinated and they mass bloom to attract pollinators. They have a very short growing season.

Methodology and Data Collection:

The Present study work based on the secondary source data, secondary data obtain from district censuses, socio-economic abstract of satara district (2011), Annual publish Report, Research papers, and collected data are processed and represented by essential methods, physical carrying capacity technique use in this research work.

Methods of Carrying Capacity Assessment:

The greatest number of visitors that can really correlate with a certain space

within a specific time period is known as physical carrying capacity (PCC). The PCC may be calculated using the formula below:

$$PCC = S/sp \times NV$$

$$NV = HV/tV$$

HV = Open hours

tV = required time to walk every trial.

Where:

S = available area for public use.

sp = area required per user (m^2)

RF – Rotation Factor (the number of allowable daily visits)

Carrying capacity estimation for kaas pleateau

Physical carrying capacity. $PCC = S/sp \times NV$

The available area for visitor use is 10.00 km^2

Area required per user = 40 m^2

Open period of the Protected Area = 9 hours.

Average time of one visit = 9 hours

Rotation factor : Open period / Average time of one visit

kaas pleateau remains open for whole day (9 hours) for day visitors, and average time of visit is 9 hrs. This means theoretically, a person could make 1 visits in one day.

Thus,

$$PCC = S/sp \times NV$$

$$(NV = HV/tV)$$

HV = Open hours.

tV = required time to walk every trial.

$$1 \text{ km}^2 = 1000000 \text{ m}^2$$

$$= 10.00 \text{ km}^2 \times 1000000 \text{ m}^2 / 40 \text{ m}^2 \times 9/9$$

$$= 10000000 \text{ m}^2 / 40 \text{ m}^2 \times 1$$

$$= 2,50,000 \text{ tourist per day.}$$

Thus pcc of kaas pleateau is 2,50,000 tourist per day.

From the estimation it was found that physical carrying capacity of “Kaas pleateau” is 2,50,000 visitors can visit per day, which means In a calendar $2,50,000 \times 70 = 1,75,00,000$ tourists can visit kaas pleateau year In flowering period August to early October.

Tourism Development of Kaas Pleateau:

The area of 10.00 km^2 of the “Kaas plateau” is inscribed as the WNHS-World Natural Heritage Site for its unique, endemic ecosystem and for its outstanding universal values that included rich biodiversity. In 2012, Kaas Plateau emerged as a National Heritage. From that it can be seen that there has been a drastic change in the tourism business of Kaas Plateau. Every year the number of tourists visiting Kaas Plateau is increasing and the revenue of Kaas Plateau is also increasing. As a result, the tourism industry has been greatly boosted and employment opportunities have been provided to the surrounding rural areas. The plans show that the government aims to take the Kaas Plateau towards sustainable development through various schemes. This will increase the per capita income of the local people and lead to the development of the region and preserve this resource for future generations. Statistics till date show an increase in the number of tourists visiting the Kaas Plateau every year as well as an increase in revenue.

Financial Statement of Kaas Plateau:

Kaas Plateau is gaining popularity among tourists as a hub for eco-tourism. Every year the number of tourists visiting Kaas Plateau is increasing. Therefore, Kaas Plateau is trying to become an economic development engine of eco-tourism center. In 2012 world heritage committee meeting inscribed cast plateau as a UNESCO World National Heritage site.

Since 2012, Kaas Plateau has started to be known as a tourism area in the country and abroad. In 2012, 91 thousand 167 tourists visited Kaas Plateau and the revenue of Kaas Plateau was 11 lakh 72 thousand 564. The number of tourists visiting in 2013 has increased over the previous year and the revenue of the previous year has also increased. In 2013,

128414 tourists visited and collected a revenue of 18 lakh 53 thousand 10. In 2014, the number of tourists decreased slightly from the previous year and the revenue was 14 lakh 36 thousand 960. Revenue generated by 99280 tourist visited to the kaas plateau. 2015 total number of visitor is 125923 and revenue generated 13 lakh 16 thousand 730.

The highest amount of revenue was generated in 2016 the total amount of INR

1,17, 81,130 was generated as a result of 5 to 10% in increase in the parking and entry fees.

Reflection of this decision on the tourist arrival seen in 2017 less in number cause of increasing the parking and entry fees. In 2017 total 88,456 tourist visited INR 9700000 Revenue generated. 2018, 2019, Tourist visited to kaas pathar that was 90,482, 85,046 respectively. Revenue was 1,05,53,779 in 2018, 1,00,82,240 in 2019.

Number of Visitors and Annual Revenue

Sr. No	Year	No. of tourist visited	Revenue
1	2012	91167	11,72,564
2	2013	128414	18,53,010
3	2014	99280	14,36,960
4	2015	125923	13,16,730
5	2016	73,523	1,17,00,456
6	2017	88,456	97,00,000
7	2018	90482	1,05,53,779
8	2019	85046	1,00,82,240

(Source- TERRE year book 2012- 2017)



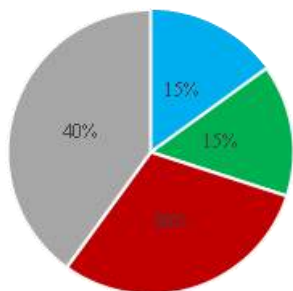
The ticketing system for visiting the plateau has witnessed a few reforms over the last five years, which reflected into the number of visitors and revenue generation. Unlike 2016, the system of multiple tickets for various activities such as fees for camera, guide, parking, local commute etc. was

brought under single entry ticket of 100 INR in 2017. This helped in avoiding discrepancies in accounting records and generated equal revenue as compared to last year.

Revenue Utilization:

The revenue generated from the Kaas Plateau tourism business is utilized for the development of the tourism hub. These funds are used for the development

of surrounding rural settlements. Kusumbi Mura, Ekiv, Kaasani, Pategnar are the villages beneficiary villages in kaas plateau tourist centre.

Revenue Utilization

Infrastructure and Maintenance

Conservation Activities

Community Employment During the Flowering Season

Development in Member Villages (Yet To Be Distributed)

In 2017, approximately 60% (approximately 50,00,000 INR) of the total revenue (approximately 97,00,000 INR) was spent on infrastructure development, conservation purposes and employment in

the community. The remaining amount of funds is going to be distributed amongst the member villages for development initiatives

Revenue Generation during the Year 2019:

	No. of Visitors	Revenue INR
Online Registration	33,838	33,83,800
Offline Registration	51,208	51,20,500
Students	3,566	71,320
Senior Citizens	8,946	-
Fines Collected	2	1,500
Sale from Tea	-	41,700
Guide Fee	-	59,000
Parisar Darshan	-	54,400
Offseason Tourist	5,295	1,05,900
Bus Fee	-	12,44,120
Total Revenue	-	10,082,240

(Source- TERRE year book 2019-20)

(T.E.R.R.E – Technology, Education, Research & Rehabilitation for The Environment)

Conclusion:

The research presented a practical attempt at measuring kaas tourist potential in order to achieve this objective. With the use of calculations physical and real carrying capacity of kaas was estimated. The physical carry capacity of the study was high in study region of kaas plateau.

In the present research paper the physical karean capacity of Kaas Plateau has been calculated and it is seen to play an important role in the potential development of Kaas Plateau. In the future, the number of tourists visiting Kaas Plateau will see a huge increase. For sustainable development of resources, as well as for economic advancement, the concept of sustainable development should be applied by

searching for potential resources and using them properly, planning is necessary for continuous and sustainable development of resources of Kaas Plateau.

Kaas Plateau has great potential for growth of tourism business. Kaas Plateau became a major tourism revenue generating center in Maharashtra in the form of tourism center in future. This will enable socio-economic development of surrounding rural settlements.

Suggestion:

1. Online advertising method should be adopted about Kaas tourist destination.
2. All the convenient services should be provided to all the tourists like local, country, foreign.
3. Sustainable development should be planned for the Kaas Plateau with a view to developing it as an environmental tourism destination.
4. Surrounding Environmental sites of Kaas Plateau should be identified and included in Kaas Plateau.

5. Local community should be made more aware about the linkages between conservation activities, their sustainable living and the need for practical financial management.

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Impact of Technology in Business Management

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Abstract:

Business uses various technologies to operate more efficiency respond quickly to changing market demands and stay complete. It's well known how technology can automate routine tasks, streamline process and provide quality services. Undo, business that do not embrace technology risk falling behind their competitors & missing on technology on growth opportunities. That's why technology management is so crucial today's fast paced technological landscape. However, it can present numerous challenge Organizations /Business, such as staying up to date for emerging technologies, managing budgets, and integrating new system & process. weak technology management may lead to inefficiencies, higher costs, slower innovation. Increased security risks & unalignment between investment & business goals.

Introduction:

Business: we often use three terms viz. business. Commerce. & trade. Trade means buying & selling of goods of services commerce is trade plus supporting Services necessary to carryout trade. These services include banking, logistics including transportation, ware housing & handling materials, insurance. communications and option & Future. Business is commerce plus manufacturing Thus business is broader than trade & commerce.

Trade = Buying & selling of goods & services for a profit. commerce Trade + supporting services to trade. Commerce + manufacturing / rendering services
Business = Business is an economic activity carried out by individuals & lor organisation on a continuous basis that involves one or more of activities like buying of goods services manufacturing of goods or rendering services for a profit & with a purpose of satisfying a particular need of the society. Business activities are carried out by different types of business organisations.

Management: Management is a universal process in all organized social & economic activities, wherever there is human activity there is management. Management is a vital aspect of the economics life of man. Which is an organized group activity. A central directing & controlling agency is indispensable for a business concern. The productive resources - material, labour. capital etc are entrusted to the organizing skill, administrative ability & enterprising Initiative of the management. Thus, management provides leadership too business enterprise. In the global business, there are products as a product seller and consumers as product purchases. These two people are interdependent the business does not exist or successful it there is no one between them producers require consumes to purchase products to sell, so consumers require producers to satisfy their needs, they go to the market place. These have occurred hundreds or even thousands of years Since the starting of business when technology not yet improved When technology improved,

affects the development business system. Currently technology is advancing vary fast so that it is difficult to avoid its development. The advancement of technology not only assist people's life to became better every day but also support the used to be expensive & take global business. Things that are used to be and expensive and take long-time. Now days con takes a short period to complete a work that would involve ten people now days can involve one person. The process of technology brings a significant impact on different aspects of life. Specifically in the business sector the new concepts currently are E- business (e-commerce) or electronic business. The performance of e- commerce gives new prospects of challenges to business professionals & organisations. Globally changes in the way of conducting are trending, & these changes business are mainly in meeting the required information & comprehensive network systems to assist faster & more flexible accessibility of services. Internet based computer technology has increasingly developed into the most effective form of handheld computers & tablet pcs. High population mobility needs the world of commerce to enable to offer goods & services instantly by consumer demand. In order to overcome challenges, most business organizations are now using the media internet to connect producers & consumer (sellers and buyers) doing transactions. The transition through the internet is well known as e-business, e-commerce. The business model Facilities the exchange of information business transaction that are paperless via electronic fund transfer, E-mail, Electronic bulletin boards, electronic data and other network-based technologies. The e-business supported by three main factors such as,

1. Increasingly of competition to the global economy regional trade agreement and growing consumer power.

2. Social and Environmental factors such as change in workforce characteristics govt. deregulations, awareness and demands of for ethical practices, knowledge of corporate social responsibility and political changes.
3. Technological Factors such as the short lifespan of products & technology life cycles, innovations that occur almost every time. Information-overloaded. & reduced risk of technology casts of performance.

Technology has revolutionized business as we know it of companies across numerous industries are looking to harness it to improve their workforce, build brand recognition & bolster the bottom line areas in which technology has transformed businesses include accounting, data collections, sales and digital promotion. Let's take look at some specific ways which technology has influenced business.

1) Globalization: Technology has enabled business to attain greater reach. Now more than ever, its easier for companies to do business across the world. Emails, text, instant messaging, websites & applications, have made global communication quicker of more effective than ever.

2) Collaboration & Access: Businesses have advanced internal communication Lite a bit as well, making it possible for employees many companies to work! From home throughout the corona-virus pandemic communication networks enable managers to access & share data with in their department well as throughout their organization. Business have on advanced collaboration tools to complete work occurred in Person.

3) Storage: The thought of organizing & storing paperwork is most employees cringe. Fortunately, much data is d electronically now, making it easier for retrieval when the information is needed. More organizations

use cloud storage to supplement their Facilities, which is made possible by cloud storage. Users can remotely upload & review content, store & retrieve data as needed. This is a much more convenient way for organizations to access information's. Now instead of purchasing internal servers, hard drives of thumb drives, you can access information almost anywhere.

4) Cybersecurity: Every organization has informed information they want to be protected from competitors, hackers & others trying to damage the company. Which is cybersecurity being a major priority for businesses. Why Virtual storage systems or cloud computing systems make information accessible for all within an organization & cybersecurity protects this information's. Cybersecurity professionals are continually working to update systems to keep the information safe from unwanted intrusion.

5) Support: Technology makes it possible for business to support external customer service efforts as well as help individuals within the organization. There are hundreds of platforms that streamline the workflow but also facilitate the work process. Getting Feedback is also easier since communication is also more straightforward. For example- The remote work boom during covid-19 has demonstrated that not only can employees work remotely, but that technology support is capable of dealing with just about any technical issues that may arise.

6) Mobile Technology: Mobile technology. Thanks to mobile technology, it has truly become easier to take your work anywhere. If you don't have a laptop or pad your disposal. It is using phone to complete your work. Mobile technology picked up momentum owing to its convenience, efficiency and speed. You can have your" work with you in your back pocket. The trend of Bring Your Device is on the rise at many organizations, where employees can bring technology by that they use at home: some of the benefits include

- Improvement in productivity.
- Boost in employee satisfaction.
- Lower enterprise costs.
- A perk that could attract prospective employees.

Technology has driven a lot of advanced processes in many businesses. As technology becomes even more advanced, its role with businesses will continue to grow.

Positive & Negative impacts of Technology on Business Management:

The constant evolution of technology has revolutionized the way businesses operate in the Modern world. Technology has brought about significant changes from communication to automation that have impacted businesses we will explore. positively & negatively. In this paper we will explore technology's positive and negative impacts on business management.

1) Improved efficiency: One of the most significant positive impacts of technology on modern business is improved efficiency. With the help of technology, business can automate various processes, such as inventory management, order processing and customer service, leading to impressed efficiency and reduced costs. For instance, enterprise can use automated software to manage Inventory. Eliminating manual counting & reducing errors.

2) Enhanced Communication: Technology has also made it easier for business to communicate with customers, employees. & partners. Businesses can now use email, chat, video. conferencing & other digital platforms to communicates with Stakeholders. This has not only improved Communication but also reduced the cost of communication, especially for businesses with a global reach.

3) Global Reach: Technology has enabled businesses to expand their reach globally, allowing them to access new markets &

customers. For instant, businesses can now use e-commerce platforms to sell their products to customers in different parts of the world. Technology has also made it easier for companies to enter new markets by providing information about local markets & customer performance.

4) Improved Customer Experience: Technology has significantly improved the customer experience, making it easier for business to attract and retain customers. With the help of technology. business can collect customer data such as purchase history & preferences, which they can use to personalize the customer experience. For instance, business can use data to recommended products & services to customers. increasing the likelihood of a sale.

5) Improved collaboration: Technology has also improved collaboration among employees making it easier for them to work together on projects. With the help of collaboration software, employees can work on projects in real-time, share Files, and communicate with each other. This has improved productivity and reduced the time it takes to complete project.

Negative impacts of Technology on Business Management:

Technology has also brought about security risks that businesses must address. With the use of digital platforms, businesses can now store & share sensitive Information online, making them vulnerable to cyberattacks. This can lead to the loss of customer data. Financial losses. & damage to the business reputation.

1) Cybersecurity Risks: As businesses rely more on technology, they become vulnerable to cyber threats and data breaches. Hackers and malicious actors continuously develop sophisticated methods to exploit vulnerabilities in systems, putting sensitive business and customer data at risk. Companies must invest in robust

cybersecurity measures to protect themselves and their stakeholders.

2) Workforce Disruption: Technological advancements, such as automation and artificial intelligence, have the potential to disrupt the workforce. Certain jobs may become obsolete or be replaced by machines, leading to job displacement and the need for up skilling and reskilling of employees. Businesses must navigate these changes responsibly to ensure a smooth transition for their workforce.

3) Dependency on Technology: While technology offers numerous benefits, businesses can become overly dependent on it. System failures, technical glitches, or power outages can bring operations to a halt, causing significant disruptions and financial losses. It is crucial for businesses to have contingency plans and backup systems in place to mitigate these risks.

4) Privacy Concerns: The digital age has raised concerns about data privacy and the ethical use of personal information. Customers are increasingly aware of their rights and expect businesses to handle their data responsibly. Companies must comply with privacy regulations and implement transparent data practices to maintain trust and protect their reputation.

5) Cost of Implementation and Maintenance: Adopting and maintaining technology infrastructure can be costly for businesses, especially for small and medium-sized enterprises (SMEs). Investments in hardware, software, training, and ongoing maintenance can strain budgets. It is important for businesses to carefully evaluate the return on investment and prioritize technology investments that align with their strategic goals.

Conclusion:

In conclusion, the impact of technology on business has been transformative and far-reaching. From revolutionizing communication to enabling

automation, data analysis, and global market reach, technology has become an indispensable tool for businesses to thrive in today's competitive landscape. However, businesses must also be vigilant about cybersecurity challenges and ensure the protection of valuable data. Embracing the impact of technology on business and leveraging its potential will continue to be vital for companies seeking success and

growth in the dynamic business. To get your business automated get expert consultancy.

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A Study of Urban Growth in Malkapur Town of Karad Tehsil: A Geographical Analysis

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Abstract:

Urban growth denotes the increase in the population of a specific town or city. Through the study of the urban growth, we can easily comprehend the development trajectory of a city. This understanding can facilitate the identification of developmental opportunities and the implementation of relevant projects. The primary objective of the research paper is to conduct a temporal analysis of urban growth within the Malkapur city of Karad tehsil. Numerous factors contribute to the escalating population of Malkapur, including the 24*7 water supply and the strategic positioning of the national highway traversing the town. notably, Malkapur was elevated from a gram panchayat to Nagar panchayat in 2008. renowned as a three-star town. Malkapur has witnessed a more rapid pace of development compared to both the state of Maharashtra and the nation as whole.

Keywords: Urban Growth, Malkapur Town, Development, Temporal Analysis, Population.

Introduction:

The population is growing rapidly as people migrate from rural to urban areas in search of employment and to meet daily needs. This migration leads to the expansion of urban areas, a process known as urbanization. Since independence, the population has increased significantly, making the study of urban growth a key aspect of urban geography.

Urban studies are essential to understand ongoing development and identify the needs required to fulfil the demands of a growing population. Urbanization involves analysing factors such as urban growth and decadal population trends, which are critical for planning and development.

Several factors directly or indirectly contribute to urban growth, including:

1. Suitable Climate
2. Reliable Water Supply
3. Economic Activities

4. Availability of Land

5. Accessibility

These factors play a vital role in the development and expansion of urban areas.

Objectives:

1. To analyse the urban growth of Malkapur town in Karad tehsil.
2. To examine the population dynamics of Malkapur town.
3. To study the population trends over time.

Methodology:

This study is primarily based on secondary data obtained from the Census of India and the District Census Handbook. The data spans the period from 1961 to 2011. Percentages have been used for data analysis, and graphs and tables have been incorporated wherever applicable to present the information effectively.

Study Area:

Malkapur is a prominent town located near Karad city and is well-known within the Karad tehsil of Satara district. While Karad is a densely populated city and tehsil, Malkapur also has a significant population. The town is rich in historical significance, with the famous Agashive Caves dating back to the Gautam Buddha era. The nearby mountain hill resembles the Sanskrit symbol 'Om,' adding to its cultural importance.

Malkapur benefits from highly fertile black soil, abundant water resources from the Krushna and Koyna rivers, moderate to high rainfall, and a favourable climate, all of which contribute to its rapid population growth.

The town is also a hub for medical facilities, hosting numerous hospitals, industries, and educational institutions, attracting migrants from nearby rural areas. As of the latest count, Malkapur has a population of 31,671, with 16,352 males and 15,319 females, resulting in a sex ratio of 937 females per 1,000 males. The town is divided into 17 wards.

Malkapur is further distinguished by its 24/7 filtered water supply and its strategic location, with a national highway passing through the middle of the town. Its rapid growth can also be attributed to repeated flooding in Karad city and limited space for development in the Karad region, prompting many people to settle in Malkapur.

Table No.1: Growth of population of Malkapur town

Sr.No.	Year	Population	Decadal variation	Growth of population in percentage
1	1961	2081	-	-
2	1971	3758	+1677	44.62
3	1981	3774	+16	0.42
4	1991	5976	+2202	36.84
5	2001	22392	+16419	73.32
6	2011	31671	+9276	29.28

Table 1 highlights the urban growth of Malkapur town. In 1961, Malkapur was a village governed by a gram panchayat. Between 1961 and 1991, the population grew steadily, reaching 22,392 by 1991.

A significant surge in population occurred in 2001, with an impressive 73% increase.

This rapid growth was largely attributed to migration caused by natural calamities like floods, as people moved to Malkapur seeking safety and stability. In 2008, the town was officially upgraded to a municipal council, marking a key milestone in its urban development.

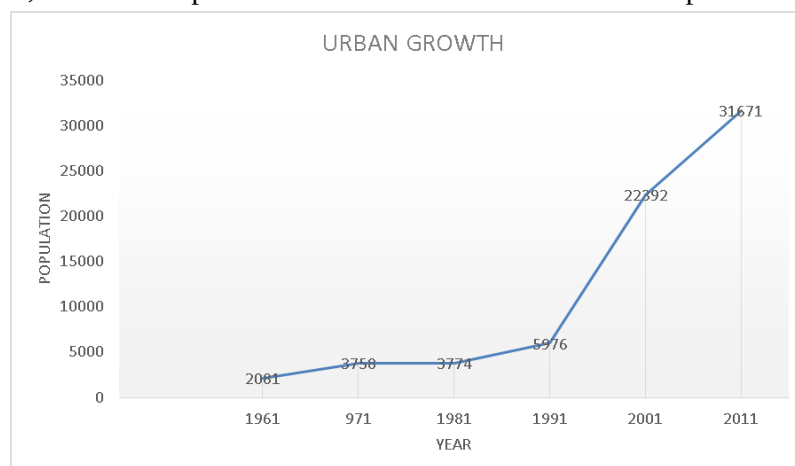


Table No.2: Work Participation

Category	Person	MALE	FEMALE
TOTAL WORKER	10887	8344	2543
A) MAIN WORKER	10181	7951	2230
1)Cultivator	736	621	115
2)Agriculture labourer	540	257	283
3)House hold industry workers	283	194	89
4)Other workers	8622	6879	1743
B) Marginal workers	706	393	313
1)Cultivators	21	14	7
2)agriculture labourers	86	37	49
3)household industries workers	51	30	21
4)other workers	548	312	236
C)NON-Workers	20784	8008	12776

Source: district census handbook, Satara.2011

Table 2 highlights the work participation in Malkapur town as per the 2011 Census. A total of 10,887 individuals are engaged in various economic activities, classified into two categories:1. Main Workers 2. Marginal Workers. In contrast,

the non-worker group, which includes individuals who do not earn money directly, such as children, homemakers, people with disabilities, senior citizens, and college students, is significantly larger, with a total of 20,784 individuals.

Table No. 3: Literacy

Sr. No.	Total	Percentage	male	Percentage of male	Female	Percentage
Literate	24762	78.18	13350	81.64	11412	74.49
Illiterate	6909	21.81	3002	18.35	3907	25.50
TOTAL	31671	100	16352	100	15319	100

Source: district census handbook, Satara.2011

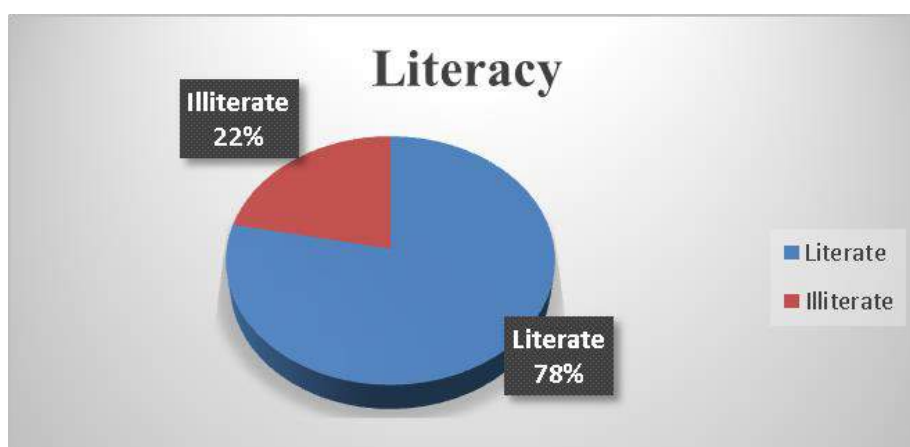


Table 3 presents the total literacy rate in Malkapur town as per the 2011 Census. The overall average literacy rate, combining both males and females, is 78.18%. Among the literate population, 13,350 are males, with a literacy rate of 81.64%, and 11,412 are females, with a literacy rate of 74.49%. On the other hand, 21.81% of the total population is illiterate. This includes 3,002 illiterate males and 3,907 illiterate females.

Discussion:

Malkapur town has experienced significant growth compared to Karad, Satara, and other parts of Maharashtra. Several factors have contributed to this development:

1. Fertile Soil and Favourable Climate: Malkapur benefits from fertile soil and a favourable climate, making it an attractive location for agriculture and related activities.

2. Transportation and Accessibility: The town has a well-developed transportation network, including dense road and rail connectivity, ensuring smooth accessibility, and boosting economic activities.

3. Migration from Karad: Repeated natural calamities, especially floods, in Karad city have led many residents to relocate to Malkapur, further increasing its population and infrastructure.

4. Advanced Medical Services: Malkapur offers excellent medical facilities, with institutions like the Krushna Medical Institute providing high-quality healthcare at affordable rates for middle-class families. The town also hosts numerous multi-specialty hospitals equipped with advanced medical instruments.

5. 24/7 Water Supply: The Malkapur Municipal Council ensures a continuous

supply of clean water, enhancing the quality of life for residents.

These factors collectively contribute to Malkapur's rapid growth and increasing prominence in the region

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यवतमाळ जिल्ह्यातील तूर पिकाचे बदलते स्वरूप : एक भौगोलिक अध्ययन

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सारांश:

जसे सोयाबीन हे खरीप हंगामातील महत्वाचे पीक आहे, त्याचप्रमाणे महाराष्ट्र राज्यही तुरीच्या उत्पादनात महत्वाची भूमिका बजावते. उत्पादनातून आर्थिक फायद्याबरोबरच तूर डाळ हे विविध मार्गांनीही महत्वाचे आहे. त्यात कार्बोहायड्रेट्स, लोह, कॅल्शियम असते आणि पचन सुधारते, म्हणून ते रुग्णांना देखील दिले जाते.

या डाळीचा वापर दैनंदिन जीवनात इतर डाळींपेक्षा जास्त केला जातो. याशिवाय ही डाळी भाजीसाठीही वापरली जाते. तसेच तुरीच्या झाडाचा उपयोग स्टेम इंधन, झोपड्या आणि टोपल्या तयार करण्यासाठी केला जातो. राज्यात १० लाख हेक्टरपेक्षा जास्त क्षेत्रावर तूर लागवड केली जाते.

प्रस्तुत संशोधन निबंधात यवतमाळ जिल्ह्यातील तूर या पिकाचे क्षेत्र आणि उत्पादन यातील बदलाचे अध्ययन केलेले आहे.

बीजसज्ञा: तूर, बदल, क्षेत्र, उत्पादन, उत्पादकता.

प्रस्तावना:

तूर हे द्विदल धान्य आहे. हे भारतीय आहारातील महत्वाचे धान्य आहे. स्वयंपाक करताना हा अत्यंत वापरला जाणारा घटक आहे. बहुतेक लोकांना हे खायला आवडते. तूर डाळीचा मुख्य उपयोग म्हणजे वरण बनविण्यासाठी होतो.

तूर उत्पादनामध्ये महाराष्ट्र राज्याची भूमिका महत्वाची आहे. भारतातील शाकाहारी आहारातील प्रथिनांचा मुख्य स्रोत असलेल्या तूर डाळीचे उत्पादन हे महाराष्ट्र राज्यात होते. मराठवाड्यातील लातूर आणि हिंगोली जिल्हे आणि विदर्भातील अकोला व यवतमाळ जिल्ह्यात याचे उत्पादन घेतले जाते. राष्ट्रीय उत्पादनाच्या जवळपास २८% उत्पादन हे महाराष्ट्र राज्यात होते.

अभ्यासाची उद्दिष्टे :

प्रस्तुत अभ्यासाचे मुख्य उद्दिष्टे पुढीलप्रमाणे आहे.

१. यवतमाळ जिल्ह्यातील तूर पिकाचे क्षेत्र अभ्यासणे
२. यवतमाळ जिल्ह्यातील तूर पिकाचे उत्पादन व उत्पादकता निर्देशांक अभ्यासणे
३. यवतमाळ जिल्ह्यातील तूर लागवड क्षेत्रात आणि उत्पादनात झालेल्या बदलाचे अध्ययन करणे

माहिती स्रोत व अभ्यास पद्धती:

प्रस्तुत संशोधन निबंधाचे लिखाण हे द्वितीयक स्रोताद्वारे प्राप्त माहितीवर पूर्ण केलेले आहे. आवश्यक असलेली माहिती ही ऋतू व पीक अहवाल, यवतमाळ

जिल्हा, सामाजिक-आर्थिक समालोचन संबंधीत संकेतस्थळावरून संकलित केलेली आहे.

तूर पिकाचा उत्पादकता निर्देशक हा मोहम्मद शफी यांनी सांगितलेल्या सूत्रानुसार काढलेला आहे. उत्पादकता निर्देशांक आणि पीक क्षेत्र बदल व उत्पादकता बदल हे पुढील सूत्राद्वारे काढलेले आहे.

सूत्र:

$$CP = Y/Y_n \div T/T_n$$

CP – पीक उत्पादकता निर्देशांक

Y – एका तालुक्यातील तूर पिकाचे उत्पादन

Y_n – संपूर्ण जिल्ह्यातील तूर पिकाचे उत्पादन

T – एका तालुक्यातील तूर पिकाचे लागवड क्षेत्र

T_n – संपूर्ण जिल्ह्यातील तूर पिकाचे लागवड क्षेत्र

बदल = सध्याच्या काळातील मूल्य – मागील काळातील मूल्य

सांख्यिकीकरण द्वारे प्राप्त झालेली माहिती ही सारणी मध्ये दर्शविलेली आहे. तसेच पीक क्षेत्र व उत्पादकता ही नकाशांमध्ये दर्शविलेली असून बदल हा आलेखाद्वारे दर्शविलेला आहे. प्रस्तुत संशोधन हे २००१-०२ आणि २०२१-२२ याकाळातील माहितीवर आधारित आहे.

अभ्यास क्षेत्र :

यवतमाळ जिल्ह्याचे एकूण क्षेत्रफळ १३५८४ चौ.किमी. आहेत जे महाराष्ट्र राज्याच्या एकूण क्षेत्रफळाच्या ४.४०% आहे. यवतमाळ जिल्ह्याचा क्षेत्रफळाच्या बाबतीत राज्यात सहावा क्रमांक लागतो. जिल्ह्याचा अक्षवृत्तीय विस्तार १९°२६' ते २०°४२' उत्तर व रेखावृत्तीय विस्तार हा ७७°१८' पूर्व ते ७९°०९' पूर्व रेखावृत्त या दरम्यान आहे.

२०११ च्या जनगणनेनुसार यवतमाळ जिल्ह्याची एकूण लोकसंख्या २७७२३४८ असून त्यापैकी १४१९९६५ पुरुष आणि १३५२३८३ महिला आहेत. लिंग गुणोत्तर ९५२ आहे.

तूर पिकाचे क्षेत्र:

यवतमाळ जिल्ह्यात तूर पिकाचे क्षेत्र हे गेल्या २० वर्षांत बदलेले आहे. जिल्ह्यातील या पिकाचे क्षेत्र आणि एकूण लागवड क्षेत्राशी असलेले प्रमाण हे सारणी क्रमांक १ मध्ये दर्शविलेले आहे.

तूर पिकाचे क्षेत्र (२००१-२००२):

यवतमाळ जिल्ह्यात २००१-०२ याकाळात एकूण १२७२९२ हेक्टर एवढे क्षेत्र हे लागवडीखाली होते. जिल्ह्यातील एकूण लागवड क्षेत्राशी हे प्रमाण १३.८०% होते.

वर्ष २००१-०२ मध्ये बाभूळगाव (२०.०३%) आणि वणी (२०.०९%) या दोन तालुक्यातील ११ हजार हेक्टर पेक्षा अधिक लागवड क्षेत्र हे तूर पिकाचे होते तर एकूण लागवडीपैकी सुमारे २० ते २१% क्षेत्र हे तूर पिकाचे होते.

दारव्हा (१७.८७%), राळेगाव (१६.८५%) आणि पुसद (१५.३%) या तालुक्यातील दहा हजार हेक्टर पेक्षा अधिक क्षेत्र तूर पिकाचे असून एकूण लागवड क्षेत्रात हे प्रमाण १५ ते १८% दरम्यान होते.

इतर तालुक्यातील क्षेत्र हे एकूण लागवडीखालील क्षेत्राच्या ७ ते १५% दरम्यान होते. दिग्रस (९.७३%) आणि झरीजामणी (७.३७%) तालुक्यातील ४ हजार पेक्षा कमी क्षेत्र हे तूर पिकाचे असून जिल्ह्यात इतर तालुक्यांच्या तुलनेत हे प्रमाण सर्वात निम्न होते.

तूर पिकाचे क्षेत्र (२०२१-२०२२):

अभ्यास क्षेत्रात २०२१-२२ याकाळात तूर पिकाचे एकूण लागवडीचे क्षेत्र हे १२०१४७ हेक्टर असून मागील २० वर्षांच्या तुलनेत त्यात घट झालेली आहे. तसेच एकूण लागवड क्षेत्रात त्याचे प्रमाण कमी झालेले आहे. याकाळात जिल्ह्यातील एकूण लागवडीखालील क्षेत्रात तूर पिकाचे प्रमाण हे ११.१२% असल्याचे आढळते. ज्या प्रमाणात इतर पीक क्षेत्र वाढले त्यातुलनेत तूर लागवड वाढली नाही.

याकाळात प्रामुख्याने कापूस व सोयाबीन या पिकांचा जिल्ह्यात प्रभाव अधिक असलेले आढळतो.

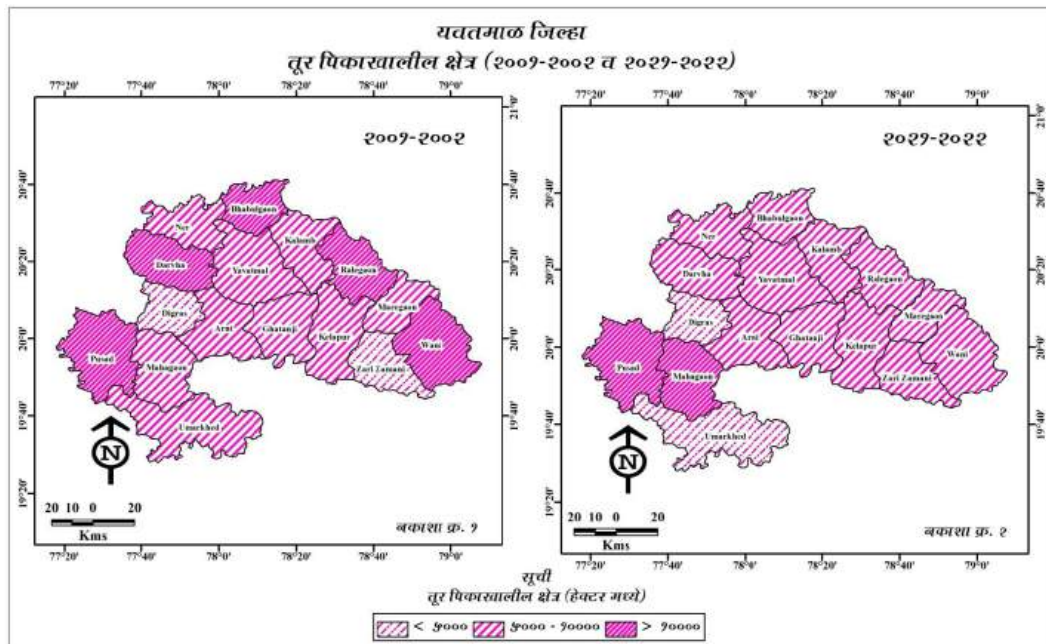
सारणी क्रमांक १: यवतमाळ जिल्हा – तूर पिकाचे क्षेत्र (२००१-२००२ आणि २०२१-२०२२)

तालुके	२००१-२००२		२०२१-२२	
	तूर पीक क्षेत्र (हेक्टर)	एकूण लागवड क्षेत्राशी प्रमाण (%)	तूर पीक क्षेत्र (हेक्टर)	एकूण लागवड क्षेत्राशी प्रमाण (%)
नेर	६५३९	१२.७९	८१०१	१३.५१
बाभूळगाव	११२२९	२०.२३	५८४२	१०.८१
कळंब	५१४७	८.४६	९५००	१४.८४
यवतमाळ	७६३२	१०.०१	८६३०	१२.६६
दारव्हा	१०८६८	१७.८७	८१०६	१०.०६
दिग्रस	३६९२	९.७३	४२९४	९.२५
पुसद	१०००५	१५.३३	११७००	१२.३६
उमरखेड	६७४५	१३.६०	४८१७	५.१६
महागाव	६१४८	१०.०२	१०३००	११.२५
आणी	६४९०	१३.१४	८४७३	१३.३१
घाटंजी	९४१०	१३.०८	८०७९	११.८६
केळापूर	८२४१	१४.५०	६४६३	१०.१३
राळेगाव	१०३९४	१६.८५	७६४०	११.७९
मारेगाव	७३३७	१६.२३	६२५०	१२.३५
झरीझामणी	३६८६	७.३७	५६५२	११.६५
वणी	१३७२९	२०.०९	६३००	९.१६
एकूण जिल्हा	१२७२९२	१३.८०	१२०१४७	११.१२

स्रोत – ऋतू व पीक अहवाल, यवतमाळ जिल्हा आणि जिल्हा कृषी कार्यालय

वर्ष २०२१-२२ याकाळात पुसद (१२.३६%) आणि महागाव (११.२५%) या तालुक्यात तूर पिकाचे क्षेत्र हे १० हजार हेक्टर पेक्षा अधिक आहे. दोन्ही तालुक्यातील या पिकाच्या क्षेत्रात वाढ झालेली

आहे. तूर लागवड क्षेत्र हे पुसद मध्ये वाढले असले तरी एकूण लागवडीच्या तुलनेत पुसद चे क्षेत्र २००१-०२ पेक्षा कमी झाले आहे तर महागाव मध्ये हे प्रमाण थोडे वाढलेले आहे.



यवतमाळ जिल्ह्यातील इतर तालुक्यात तूरपिकाचे क्षेत्र हे १० हजार हेक्टर पेक्षा कमी आहे. उमरखेड (५.१६%) आणि दिग्रस (९.२५%) या दोन तालुक्यात ५ हजार हेक्टर पेक्षा कमी लागवड क्षेत्र हे तूर पिकाखाली असून जिल्ह्यात हे प्रमाण सर्वात कमी आहे. एकूण लागवडीखालील क्षेत्राच्या प्रमाणात विचार केला तर कळंब तालुक्यात १४.८४% क्षेत्र हे तूर पिकाचे असून जिल्ह्यात हे प्रमाण सर्वाधिक आहे.

तूर पिकाचे उत्पादन व उत्पादकता (२०२१-२०२२):

यवतमाळ जिल्ह्यात तूर पिकाचे क्षेत्र हे गेल्या २० वर्षात कमी झाले असले तरी त्याच्या उत्पादनात वाढ झालेली आहे. परंतु ही वाढ सर्व तालुक्यात सारखी नसून त्यात तफावत आहे. सारणी क्रमांक २ मध्ये जिल्ह्यातील तूर पिकाचे उत्पादन आणि उत्पादकता निर्देशांक तालुकानिहाय दर्शविलेला आहे.

तूर पिकाचे उत्पादन व उत्पादकता (२००१-२००२):

यवतमाळ जिल्ह्यात वर्ष २००१-०२ मध्ये तूर पिकाचे एकूण उत्पादन हे ६७०१६ मेट्रिक टन झाले

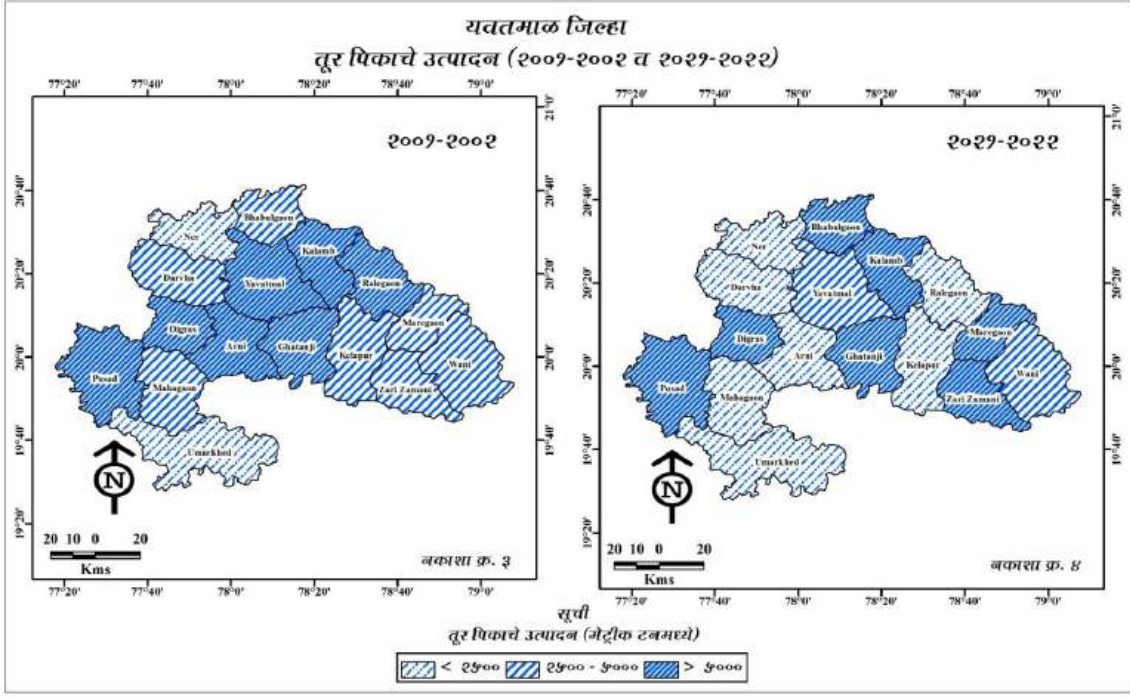
होते. यवतमाळ (७२८६ मेट्रिक टन) आणि कळंब (७१४९ मेट्रिक टन) या दोन तालुक्यात हे उत्पादन ७ हजार मेट्रिक टन पेक्षा अधिक होते. तर उत्पादकता निर्देशांकानुसार सर्वाधिक उत्पादकता ही दिग्रस (२.७४) आणि कळंब (२.६४) या दोन तालुक्यात होती. दिग्रस तालुक्यात यवतमाळ पेक्षा तूर पिकाचे उत्पादन कमी असले तरी एकूण तूर लागवड क्षेत्राच्या तुलनेत दर हेक्टरी उत्पादकता अधिक होती. त्यामुळेच उत्पादकता निर्देशांक हा दिग्रस मध्ये उच्च आढळतो. तर कळंब मध्ये उत्पादन व उत्पादकता दोन्ही अधिक होती.

घाटंजी (५५३४ मेट्रिक टन), राळेगाव (५४१३ मेट्रिक टन), दिग्रस (मेट्रिक टन), पुसद (मेट्रिक टन) आणि आर्णी (मेट्रिक टन)) या तालुक्यांमध्ये ५ हजार मेट्रिक टन पेक्षा अधिक उत्पादन तूर पिकाचे झाले होते. तर यवतमाळ, आर्णी, झरीजामणी, घाटंजी, महागाव आणि पुसद तालुक्यातील उत्पादकता निर्देशांक हा १ ते २ दरम्यान होता.

सारणी क्रमांक २: यवतमाळ जिल्हा – तूर पिकाचे क्षेत्र (२००१-२००२ आणि २०२१-२०२२)

तालुके	२००१-२००२		२०२१-२२	
	उत्पादन (मेट्रिक टन)	उत्पादकता निर्देशांक	उत्पादन (मेट्रिक टन)	उत्पादकता निर्देशांक
नेर	२३५८	०.६८	२४४३	०.४८
बाभूळगाव	३१५२	०.५३	५७४९	१.५८
कळंब	७१४९	२.६४	८२०१	१.३८
यवतमाळ	७२८६	१.८१	३२०६	०.६०
दारव्हा	४३४५	०.७६	१३०	०.०३
दिग्रस	५३२१	२.७४	५६८५	२.१२
पुसद	५२७९	१.००	१०१४७	१.३९
उमरखेड	३८३	०.११	२०३६	०.६८
महागाव	३३७३	१.०४	२२२६	०.३५
आर्णी	५००६	१.४७	२४२१	०.४६
घाटंजी	५५३४	१.१२	१२९५३	२.५७
केळापूर	३९६४	०.९१	१७५३	०.४३
राळेगाव	५४१३	०.९९	२०२५	०.४२
मारेगाव	२९०६	०.७५	५२७१	१.३५
झरीजामणी	२५०८	१.२९	७२७२	२.०६
वणी	३०३९	०.४२	३४१७	०.८७
एकूण जिल्हा	६७०१६	-	७४९३४	-

स्रोत – ऋतू व पीक अहवाल, यवतमाळ जिल्हा आणि जिल्हा कृषी कार्यालय उत्पादकता निर्देशांक संशोधकाने काढला.



जिल्ह्यातील इतर तालुक्यातील तूर पिकाचे उत्पादन हे ५ हजार मेट्रिक टन पेक्षा कमी झाले होते. तर उत्पादकता निर्देशांक १ पेक्षा कमी होता. उमरखेड तालुक्यात सरावत कमी ३८३ मेट्रिक टन एवढे उत्पादन असून दर हेक्टरी उत्पादकता देखील कमी आहे.

तूर पिकाचे उत्पादन व उत्पादकता (२०११-२०२२):

याकाळात तूर पिकाचे जिल्ह्यातील एकूण उत्पादन हे ७४३९४ मेट्रिक टन झाले असून त्यात २००१-०२ च्या तुलनेत थोडी वाढ झालेली आहे.

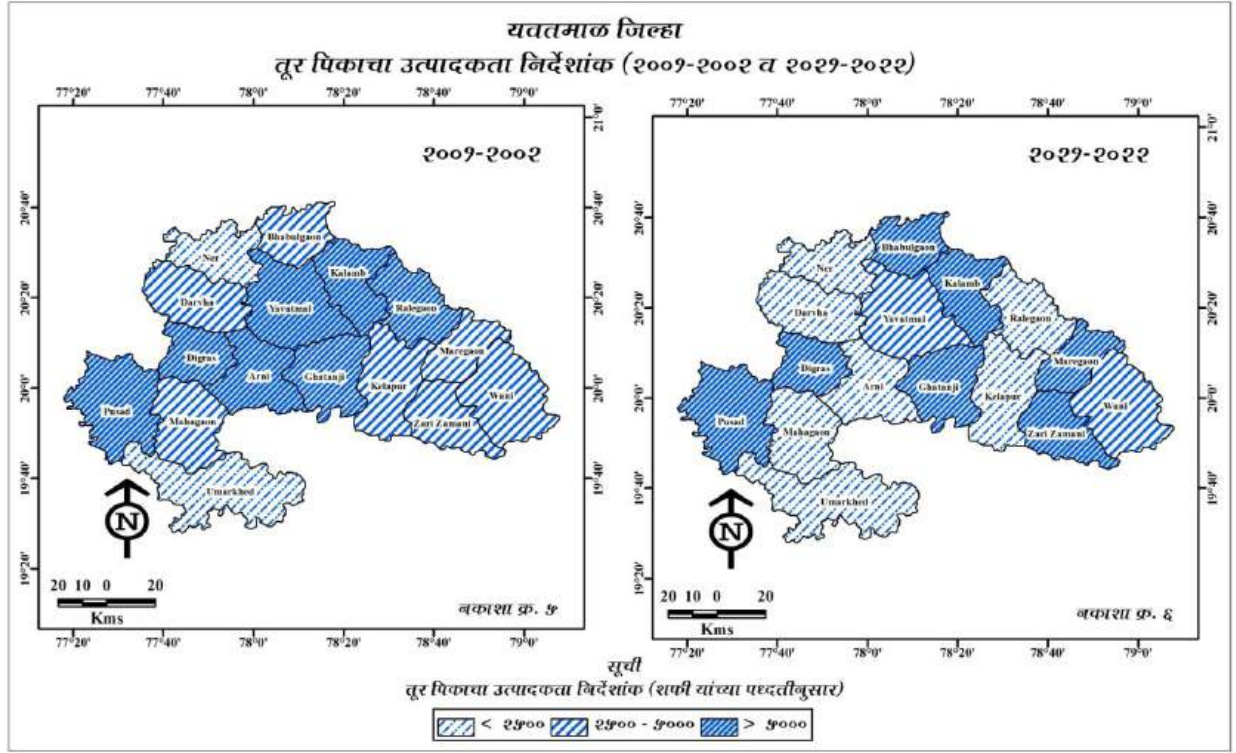
याकाळात घाटंजी (१२९५३ मेट्रिक टन) आणि पुसद (१०१४७ मेट्रिक टन) या दोन तालुक्यात १० हजार मेट्रिक टन पेक्षा अधिक उत्पादन असून जिल्ह्यात हे उच्च होते. या दोन्ही तालुक्यात गेल्या वीस वर्षात सुमारे दुप्पटीने तूर पिकाचे उत्पादन वाढलेले आढळून येते. तर उत्पादकता निर्देशांक हा घाटंजी (२.५७), दिग्रस (२.१२) आणि झरीजामणी (२.०६) या तीन तालुक्यात २ पेक्षा अधिक होता. पुसद मध्ये उत्पादन अधिक असले तरी एकूण लागवड क्षेत्राच्या तुलनेत उत्पादन हे कमी होते. तर दिग्रस आणि झरीजामणी मध्ये उत्पादन कमी असले तरी लागवडीच्या तुलनेत उत्पादन समाधानकर्क होते.

त्यामुळेच दिग्रस आणि झरीजामणी मध्ये उत्पादकता निर्देशांक उच्च तर पुसद मध्ये तो यांच्यापेक्षा कमी आढळतो.

जिल्ह्यात कळंब (८२०१ मेट्रिक टन), झरीजामणी (७२७२ मेट्रिक टन), बाभूळगाव (५७४९ मेट्रिक टन), दिग्रस (५६८५ मेट्रिक टन) आणि मारेगाव (५२७१ मेट्रिक टन) या तालुक्यांमध्ये तूर पिकाचे उत्पादन हे ५ हजार मेट्रिक टन पेक्षा अधिक आहे. तसेच मागील वीस वर्षांपेक्षा त्यात वाढ झालेली आहे.

इतर तालुक्यातील तूर पिकाचे उत्पादन हे ४ हजार हेक्टर पेक्षा कमी असून दारव्हा तालुक्यात केवळ १३० मेट्रिक टन उत्पादन आढळते. तसेच त्यात बरीच घट झालेली निदर्शनास येते.

बाभूळगाव (१.५८), पुसद (१.३९), कळंब (१.३८), आणि मारेगाव (१.३५) या चार तालुक्यात उत्पादकता निर्देशांक हा १ ते २ दरम्यान आहे. तर इतर तालुक्यात हा निर्देशांक १ पेक्षा कमी आहे. दारव्हा मध्ये (०.०३) उत्पादन व उत्पादकता निर्देशांक दोन्ही कमी आहे, म्हणजेच या तालुक्यात तूर पिकाचे क्षेत्र असले तरी त्याचे योग्य नियोजन व देखभाल नसल्याने उत्पादकता कमी झालेली आहे.



तूर पिकाच्या लागवड क्षेत्रातील व उत्पादनातील बदल:

जिल्ह्यातील एकूण तूर लागवड क्षेत्र आणि झालेले एकूण उत्पादन याचा विचार केला तर जिल्ह्यात २० वर्षात उत्पादनात धनात्मक बदल तर पीक लागवड

क्षेत्रात ऋणात्मक बदल झालेले आहेत. सारणी क्रमांक ३ मध्ये जिल्ह्यातील तूर पीक क्षेत्र आणि त्याचे मेट्रिक टन मधील उत्पादन यातील झालेल्या बदलाचे तालुकानिहाय वितरण दर्शविलेले आहे.

सारणी क्रमांक ३: यवतमाळ जिल्हा – तूर पीक क्षेत्र आणि उत्पादनातील बदल (२००१-०२ ते २०२१-२२)

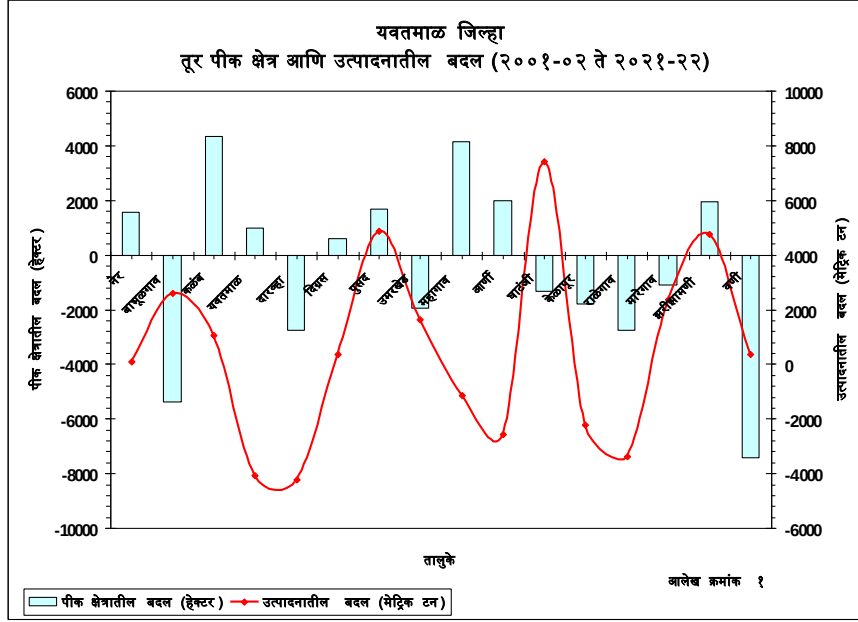
तालुके	पीक क्षेत्रातील बदल (हेक्टर)	उत्पादनातील बदल (मेट्रिक टन)
नेर	१५६२	८५
बाभूळगाव	-५३८७	२५९७
कळंब	४३५३	१०५२
यवतमाळ	९९८	-४०८०
दारव्हा	-२७६२	-४२१५
दिग्रस	६०२	३६४
पुसद	१६९५	४८६८
उमरखेड	-१९२८	१६५३
महागाव	४१५२	-११४७
आणी	१९८३	-२५८५
घाटंजी	-१३३१	७४१९
केळापूर	-१७७८	-२२११
राळेगाव	-२७५४	-३३८८
मारेगाव	-१०८७	२३६५
झरीझामणी	१९६६	४७६४
वणी	-७४२९	३७८
एकूण जिल्हा	-७१४५	७९१८

स्रोत – संशोधक

तूर पीक क्षेत्रातील बदल (२००१-०२ ते २०२१-२२):

यवतमाळ जिल्ह्यात मागील वीस वर्षात सुमारे ७१४५ हेक्टर तूर पिकाचे क्षेत्र कमी झालेले आहे. वणी तालुक्यात हे क्षेत्र सर्वात अधिक प्रमाणात घटलेले असून या तालुक्यातील सुमारे ७४२९ हेक्टर क्षेत्र घटलेले आहे. तसेच बाभूळगाव, दारव्हा, राळेगाव, उमरखेड, केळापूर, घाटंजी, मारेगाव या तालुक्यांमध्ये तूर पिकाचे क्षेत्र कमी झालेले आहे.

इतर तालुक्यात म्हणजेच दिग्रस, यवतमाळ, नेर, पुसद, झरीजामणी, आणी, महागाव आणि कळंब या तालुक्यांमध्ये पीक क्षेत्रात धनात्मक बदल झालेला आहे. महागाव (४१५२ हेक्टर) आणि कळंब (४३५३ हेक्टर) या दोन तालुक्यांमध्ये तूर पिकाचे ४ हजार हेक्टर पेक्षा अधिक क्षेत्र वाढलेले आहे. या तालुक्यात तूर पिकांसोबत इतर आंतरपिके देखील घेतली जातात.

**तूर पीक उत्पादनातील बदल (२००१-०२ ते २०२१-२२):**

यवतमाळ जिल्ह्यात मागील वीस वर्षात तूर पिकाचे सुमारे ७९१८ मेट्रिक टन उत्पादन वाढलेले आहे. परंतु सर्वच तालुक्यात उत्पादनात वाढ झालेली नसून काही तालुक्यात घट देखील झालेली आहे.

जिल्ह्यात दारव्हा, यवतमाळ, राळेगाव, वणी, आणी, केळापूर, आणि महागाव या तालुक्यांमध्ये उत्पादन घटलेले आहे. दारव्हा मध्ये सर्वाधिक ४२१५ मेट्रिक टन उत्पादन कमी झालेले आहे. यवतमाळ तर पीक क्षेत्र वाढले असून देखील उत्पादन घटलेले आहे. इतर तालुक्यातील पीक क्षेत्र घटल्याने उत्पादन कमी झाले आहे.

जिल्ह्यातील इतर तालुक्याचे उत्पादन वाढलेले आहे. यामध्ये घाटंजी मध्ये ७४१९ मेट्रिक टन

उत्पादन वाढले असून हे जिल्ह्यात सर्वाधिक आहे. घाटंजी मधील पीक क्षेत्र कमी होऊन देखील उत्पादन वाढल्याने दर हेक्टरी उत्पादकता वाढलेली आहे. जिल्ह्यात वणी, उमरखेड, मारेगाव, बाभूळगाव, आणि घाटंजी या तालुक्यात तूर पिकाचे क्षेत्र कमी झाले असले तरी उत्पादकता वाढलेली आढळते. या पिकासाठी या तालुक्यात बहुतांश ठिकाणी सिंचनाचा उपयोग होतो.

निष्कर्ष आणि उपाययोजना:

यवतमाळ जिल्ह्यात तूर पिकाचे क्षेत्र हे २००१-०२ च्या तुलनेत २०२१-२२ मध्ये काही प्रमाणत घटलेले आहे. तर उत्पादन मात्र वाढलेले आहे. परंतु उत्पादनातील वाढ ही सर्वोच्च सारखी न सून विशिष्ट भागातच ही वाढ झालेली आहे. तसेच

जिल्ह्यातील या पिकाच्या वाढीसाठी आवश्यक असलेल्या घटकांचा म्हणजेच सिंचन, खते व इतर व्यवस्थापनाचा प्रभाव पिकाच्या विकासावर झालेला आहे.

यवतमाळ सारख्या तालुक्यात तूर पिकाचे क्षेत्रव अर्धून देखील उत्पादन कमी झालेले आहे. तर दारव्हा मध्ये उत्पादन सर्वाधिक कमी झालेले आहे. या भागात तूर पिकाचे योग्य नियोजन होत नसून त्याच्या वाढीकडे विशेष लक्ष दिले जात नाही.

जिल्ह्यात तूर पिकाचे क्षेत्र वाढावे यासाठी पुढील सूचनांचे पालन करणे आवश्यक आहे.

- १ तूर पिकासाठी मध्यम ते भारी, चांगला निचरा होणारी जमीन योग्य आहे. पाणी साचलेल्या जमिनीत तूर चांगली वाढत नाही. त्यामुळे अशा ठिकाणी लागवड करू नये.
- २ हे पीक मध्यम ते भारी जमिनीत वाढत असल्याने जमिनीची खोलवर नांगरट करून जमिनीचा मुरड घालावा. पिकांचे अवशेष आणि कचरा काढून टाकल्यानंतर कुळव्याची उभी व आडवी फिरवावी जेणेकरून जमीन भुसभुशीत पेरणीसाठी योग्य होईल.
- ३ तुरीच्या लागवडीसाठी विपुला, फुले राजेश्वरी, ICPL-८७, AKT-८८११, BSMR-८५३, BSMR-७३६, BDN-७११ आणि BDN-७१६ या जातींची निवड करावी.
- ४ तुरीची पेरणी वेळेवर करावी. पहिल्या पावसानंतर शेत चांगले तयार करावे. कचरा काढून काडी स्वच्छ करा. पेरणी जूनच्या दुसऱ्या पंधरवड्यात करावी. पेरणीला उशीर झाल्याने उत्पादनात घट होते.
- ५ पेरणीपूर्वी शेवटची नांगरणी करताना १०-१५ गाड्या चांगले कुजलेले शेणखत प्रति हेक्टरी द्यावे. तसेच या पिकास २५ किलो नत्र व ५० किलो स्फुरद पेरणीच्या वेळी द्यावे.
- ६ पीक फुलोऱ्यात असताना आणि शेंगा दाणे भरत असताना या संवेदनशील अवस्थेत तीन थर पाणी दिल्यास उत्पादनात वाढ होईल.

७ तूर पीक मुख्यतः आंतरपीक म्हणून घेतले जाते. तूर + बाजरी (१:२), तूर + सूर्यफूल (१:२), तूर + सोयाबीन (१:३), तूर + ज्वारी (१:२ किंवा १:४), तूर + कापूस (१:६/१:८), तूर + भुईमूग, तूर + हरभरा (१:३), तूर + उडीद (१:३) या दोन्ही पिकांचे चांगले उत्पादन मिळते.

तूर पिकाचे दैनंदिन आहारात विशेष महत्व आहे. तसेच तूर डाळीला भाव चांगला आहे. त्यामुळे या पिकाचे उत्पादन वाढल्यास त्याचा आर्थिक फायदा शेतकऱ्यांना आणि पर्यायाने स्थानिक अर्थव्यवस्थेला होतो. वरील उपाययोजनांचा अवलंब केल्यास तूर पिकाची दर हेक्टरी उत्पादकता वाढेल आणि जिल्ह्याच्या कृषी विकासास देखील चालना मिळेल.

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- २) हिंगणे डॉ ए. (२०२३), “तूर घ्या आता तिन्ही हंगामात”, इथे मराठीचिथे नागरी, अथर्व प्रकाशन, कोल्हापूर.
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Socio Economic Status of Rural Population An Income Level Analysis of Ruvale Village in Patan Tahsil

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Introduction:

The current situation of the society in developing nations is rapidly moving from poor economy to develop economy with the development of social condition. But these changes are not equal to all places. Basically rural areas are very less developed as compared to urban areas in terms of social, cultural and economic aspects. Lifestyle of an individual's are widely depended on their economic status. Hence, social position of the person is dominated by his/her income. No society or region can be developed with the exception of any part remaining lag behind. Proper socio-economic development can control the healthy and balanced growth of a region. Now a day, increasing educational level and perception of education has been changing the socio-economic status among the rural population. Socio-economic characteristics are the important tools to the measures of human development. It is a measure of an individual's or family's or group of people's economic and social position based on education, income, health, and occupation . Socio-economic is the most important determinant of the livelihoods as it influences levels of knowledge, skill and income conditions which mean for their living. Peoples' way of living is differ from one income group to another as their consumption power is also differ among income groups of population. According to

Dutton and Levine (1989), socio-economic status is "a composite measure that typically incorporates economic status, measured by income; social status, measured by education; and work status, measured by occupation". Rathod & Ningshen (2012), noted that Socio-economic status is an economic and sociological combined total measure of a person's work experience and of family's economic and social position relative to others, based on income, education, and occupation . Krieger et al. (1997) define socio- economic position as 'an aggregate concept that includes both resource-based and prestige- based measures, as linked to both childhood and adult social class position'. Socio-economic status refers to the position of individuals, families, households, or other aggregates on one or more dimensions of stratification. These dimensions include income, education, prestige, wealth, or other aspects of standing that member of society deem salient. Socio- economic status is often considered a personal demographic variable; however, Socio- economic status can also reflect aspects of an individual's broader environment. As a result, it can be measured at the individual level or the area level.

Objectives:

The main objectives of the study are as follows:

1. To study the demographic conditions by level of income of sample population in the study area.
2. To analyse the level of education among different income groups of population.
3. To investigate the housing situation by level of income of the sample population in the study unit.
4. To examine the overall socio-economic status by level of income of peoples in the study area.

Data Base and Methodology:

The present study is based on primary survey by which a sample of 80 households have been taken randomly for the analysis of socio-economic status of different income groups of population from the Ruvale Village of Satara district, Maharashtra. The relevant data were collected from demographic, social and economic aspects. All the collected data were converted into relative number such as percentage to observe the overall situation and divided all the sample population in five income groups on the basis of monthly per capita income to examine the socioeconomic status of different income groups of population in the study area.

The Study Area:

Ruvale village is located at the south-west part in Patan Tahasil at the latitudinal and longitudinal figures of 17°24'47"N and 73°88'94"E respectively. This is one of the most remote village in the

satara district. It is located 95 km away from the district headquarter Satara. The village falls under the Patan tahasil according to 2011 census, Ruvale has 320 households and 1180 total population [7]. The road connectivity of the village is very bad but there is no market in the village, only few small shops are located in the village. The economy of the village is predominately agriculture based.

Discussion:

The total population of 80 sample households is 484, among them, males occupied by 52.9% and rest of 47.1% is by females. In the study area, sex ratio is very low, only 891 females per 1000 males observed. Table 1 depicts that among total 80 households, majority of them (42.50%) belongs to very low per capita income (below Rs. 500), which contributes 44.8% of total population, followed by 38.75% households belongs to per capita income of Rs. 501 – 1000 and share 39.1% of total sample population, 10% of total sample households belongs to Rs. 1001 – 1500 per capita income and compose of 8.47% of total population and only 5% households of total sample households come under the per capita income of Rs. 2000 and above, and constitute 4.34% of total population and 3.75% of total sample households lies under per capita income of Rs. 1500 – 2000, which is 3.31% of total population. The number of population is gradually decreasing with the increasing of per capita income of the population.

Table 1: Population Distribution by Level of Per Capita Income

Per Capita Income (Rs.)		Households		Total Population		Male	Female	
No.	%	No.	%	No.		%	No.	%
<500	34	42.50	217	44.8	113	44.14	104	45.61
501-1000	31	38.75	189	39.1	102	39.84	87	38.16
1001-1500	8	10.00	41	8.47	24	9.38	17	7.46
1501-2000	3	3.75	16	3.31	6	2.34	10	4.39
>2000	4	5.00	21	4.34	11	4.3	10	4.39
Total	80	100	484	100	256	100	228	100

Source: Field survey, 2022

Education is one of the most important helpful components of the people for enhance lifestyle by increasing per capita income. Table 2 reveals that 59.56 % of the total population of less than Rs. 500 per capita income are literate, followed by 66.47% of Rs. 501-1000 per capita income, 82.05% of Rs. 1001-1500 per capita income,

85.71% of Rs. 1501 – 2000 per capita income and 100% literate peoples are found under Rs. 2000 and above per capita income. Because of low level of literacy, scope of the work participation in non agriculture sector would be reduced and people cannot exit from primary activities, in which returns are very low

Table 2: Literacy rate by Level of Per Capita Income

Per Capita Income (Rs.)	Literate	Illiterate
<500	59.56	40.44
501-1000	66.47	33.53
1001-1500	82.05	17.95
1501-2000	85.71	14.29
>2000	100.00	0.00

Source: Field survey, 2022

Lifestyle of an individual's is purely dependent on the level of education. Marlin *et al.*, (2008) noted that low literacy levels have negative impacts on individuals (such as children, youth, adults and seniors), health and well being, community participation, training, labour force, employment, productivity, and economic development [8]. Table 3 and figure 1 reflect that in below Rs. 500 income group, maximum literate persons are pre secondary educated (41.28%), followed by primary level (33.94), secondary level (19.27%), higher secondary level (4.59%), and graduate level (0.94%) of education. In Rs. 501-1000 per capita income the share of literate persons are as follows: 35.65% are primary educated, 34.78% are pre secondary, 20% are secondary educated,

5.22% are higher secondary educated, and 4.34% are graduates. Between in Rs. 1001-1500 income group, most of literate peoples are pre secondary educated (34.38%), followed by primary level (21.88%) and secondary level (21.88%), graduate level (15.63%) and higher secondary level (6.25%) of education. Between Rs. 1501-2000 income group literate peoples are distributed by primary (25%), pre secondary (25%) and higher secondary (25%), followed by secondary level (16.67%) and graduate level (8.33%) of education. And Rs. 2000 and above income groups' literate persons are constitute by secondary level education is 28.57%, higher secondary is 23.81%, pre secondary is 19.05%, post graduate is 14.29%, graduate level is 9.52% and primary level is 4.76%

Table 3: Levels of Education by Level of Per Capita Income

Level of Education							
Primary	Pre Secondary	Secondary	Higher Secondary	Graduate		Post Graduate	Others
<500	33.94	41.28	19.27	4.59	0.92	0.00	0.00
501-1000	35.65	34.78	20.00	5.22	4.35	0.00	0.00
1001-1500	21.88	34.38	21.88	6.25	15.63	0.00	0.00
1501-2000	25.00	25.00	16.67	25.00	8.33	0.00	0.00
>2000	4.76	19.05	28.57	23.81	9.52	14.29	0.00

Source: Field survey, 2022

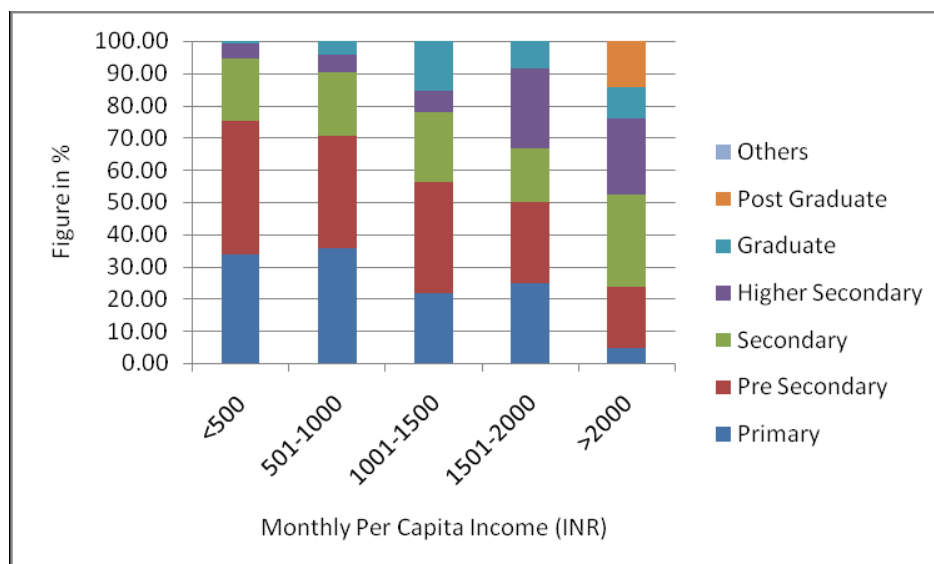


Figure 1: Educational attainment by level of per capita income of population in the study area, 2012

The occupation of an individual refers to his trade, profession, type of work etc. The occupational structure of a society is the product of a number of intimately related factors [9]. Occupation is a major factor to determine the economic status of an individual, as different type of occupation reflects different incomes. In the study area all people are actively engaged in cultivation. In spite of it, many of them are also engaged in other occupations like, business, service, etc. (Table-4). Among below Rs. 500 income group of people are engaged day labourer (47.06%) in agricultural fields, brick kilns, rice mills, etc. Between Rs. 501-1000 income populations are engaged as day labourer (25.80%),

business (25.80%) and other activities (6.45%). Among Rs. 1001-1500 income population's major occupation is business (62.5%) viz. Peddler of rice and jute, shopkeeper, etc., followed by service (12.5%) and other occupation (25%). Between Rs. 1501-2000 income populations are engaged in business (33.33%) and service (33.33%). And Rs. 2000 and above income populations are actively engaged in service sector (100%). They are mainly associated with teaching profession or clerical service and army police. As they all are educated, can link with tertiary sector, which reflects them a better social and economic position in the study area.

Table 4: Occupational Composition by Level of Per Capita Income

Occupation	Per Capita Income (Rs.)				
	<500	501-1000	1001-1500	1501-2000	>2000
Cultivators	100.00	100.00	100.00	100.00	100.00
Day Labourer	47.06	25.80	0.00	0.00	0.00
Business	0.00	25.80	62.50	33.33	0.00
Service	0.00	0.00	12.50	33.33	100.00
Other	11.74	6.45	25.00	0.00	0.00

Source: Field survey, 2022

In rural areas, different types of house are found viz. pucca house, kutcha house and mixed type house. Types of houses distribution is solely determined by the income of an individual's or family.

Among below Rs. 500 income groups of people, kutcha type (97.06%) of houses is mostly found in the study area, followed by mixed type house (3.03%) and no pucca house is found in that income group of

peoples (Table 5), because of low income. Among income groups of Rs. 501-1000, kutcha type of houses are mostly found (83.87%), followed by mixed type houses (12.9%) and pucca houses (3.23%). Among Rs. 1001-1500 income group of peoples, distribution of kutcha and mixed type houses are equal (50% each). Among Rs. 1501-2000 income group, 100% people have

kutcha house, as they pay out their surplus earnings on education for their children. 100% pucca house are found in the Rs. 2000 and above income group of people, as they are 100% literate which reflects them to more earning by engaged in different non-agricultural activities. Among all sample household, only this group of people's enjoy a little better lifestyle.

Table 5: Type of houses by Level of Per Capita Income

Types of House	Per Capita Income (Rs.)				
	<500	501-1000	1001-1500	1501-2000	>2000
Pucca House	0.00	3.23	0.00	0.00	100.00
Kutcha House	97.06	83.87	50.00	100.00	0.00
Mixed House	3.03	12.90	50.00	0.00	0.00

Source: Field survey, 2022

Lack of proper sanitation is the major concern in India basically in rural areas of the country. Proper sanitation is most important for a healthy life. But lack of finance and awareness of rural population, very small people are getting facilitated of latrine. In the study area, uses of latrine are very few (Table 6). Among below Rs. 500 per capita incomes population, very few have pit latrine (5.88%) and remaining 94.14% population are used open space for their sanitation. Between Rs. 501-1000

incomes population, availability of flush latrine (3.23%) is very low, pit latrine (25.80%) and nearly 71% population have no latrine facility. Between Rs. 1001-1500 incomes group of people have flush latrine (12.5%), pit latrine (50%) and 37.50% have no latrine facility in their houses. Between Rs. 1501-2000 incomes people have pit latrine (33.33%) and remaining 66.67% have no latrine facility. And Rs. 2000 and above incomes population, all have flush latrine (100%).

Type of Latrines used	Per Capita Income (Rs.)				
	<500	501-1000	1001-1500	1501-2000	>2000
Flush Latrine	0.00	3.23	12.50	0.00	100.00
Pit Latrine	5.88	25.80	50.00	33.33	0.00
No Latrine	94.12	70.97	37.50	66.67	0.00

Source: Field survey, 2022

Many villages in India still did not getting the facility of electricity. In the study area, some people are getting facility of electricity and some are still in dark. Maximum percentage of households (75%) is electrified among Rs. 2000 and above

incomes population, followed by 66.67% among Rs. 1501-2000 incomes population, 50% among Rs. 1001-1500 incomes population, 48.39% among Rs. 501-1000 incomes population and 23.53% among below Rs. 500 incomes population (Table 7).

Table 7: Availability of Electricity by Level of Per Capita Income

Electrified Houses	Per Capita Income (Rs.)				
	<500	501-1000	1001-1500	1501-2000	>2000
Electricity	23.53	48.39	50.00	66.67	75.00
No Electricity	76.47	51.61	50.00	33.33	25.00

Source: Field survey, 2022

As saving is surplus earning, the lower income (below Rs. 500) population cannot save their earning because management of three times meals and cloths is challengeable task within this income. A small portion (5.88%) of population try to save a little bit and a small portion (32.35) of

population run insurance for marriage of their girls. But comparatively higher incomes (Rs. 1501-2000 and 2000 and above) population saves their earning for future needs and runs insurance for secure of life (Table 8).

Table 8: Savings by Level of Per Capita Income

Saving Status	Per Capita Income (Rs.)				
	<500	501-1000	1001-1500	1501-2000	>2000
Savings	5.88	12.90	50.00	100.00	100.00
Insurance	32.35	61.29	50.00	100.00	100.00

Source: Field survey, 2022

Conclusion:

The above analysis plainly indicates that overall socio-economic status of population in the village is not good. 44.8% of total sample population's monthly income is below Rs. 500 and only 4.34%'s is above Rs. 2000. The lower income groups of people mainly engaged in agricultural fields other places as day labour. Most of them are still not getting many facilities like electricity, safe drinking water, proper sanitation etc., where comparatively higher income peoples are getting some of these facilities. Although comparatively higher income population enjoy a little better life but lower income population's socio-economic situation is very risky due to mainly low level of literacy and low income resulting create many social issues.

Suggestion:

Following are the few suggestions for the improvement of socio-economic condition of population of the village:

- To provide primary health care services and creates awareness about health among the villagers.
- To provide electricity services to the all people of village.
- Job oriented programmes should be implemented in the village level.

- To introduce various employment programmes for the youth population to reduce the migration of unemployment.
- To provide small loans to the villagers to run various small household industrial activities.
- To introduce subsidies programmes for various activities, especially, agriculture, social services .
- To introduce various schemes for poor peoples of the village.

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Health Status of Women In Sangli District (Maharashtra): A Geographical Study

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Abstract:

The present paper deals with the accessibility of health care facilities to the people in general and to the women in particular in study region. In this paper highlighted the public health care policy in brief. In order to assess the access of health care facility the indices such as, female population per primary health care centre, female population per sub centre, public doctor population ratio, private doctor population ratio and distance of medical facilities etc. The present study based on the primary data. It has been also attempted to study the quality of public health care facility, government policy of public health care system and spatial distribution of these health care facilities in Sangli district.

Keywords: Women Health, Female Population, Primary Health Center

Introduction:

Access to health care facilities is one of the matters of great concern in India. The region disparities as well as imbalance in health care facilities especially public health care facilities are clearly observed in India. Some observation has been made in a health survey conducted in some rural areas of Maharashtra. The survey found, “Differential treatment is given to sick male and female children, in the sense that female are given free traditional treatment or do not receive any treatment, while treatment from qualified medical doctors is sought for male children” and in such scenario, if the public health centers are not available in nearby vicinity, the possibility of taking female child to medical practitioner reduces even further.

In this paper highlighted the public health care policy in brief. In order to assess the access of health care facility the indices

such as, female population per primary health care centre, female population per sub centre, public doctor population ratio, private doctor population ratio and distance of medical facilities etc. are taken into account for rigorous study. More precisely chapter has also focused on the manpower and infrastructure in public health care which has covered the tahsil wise number of ASHA and Nurses in Sangli district. In addition chapter has also focused on the service quality of health care facilities of private as well as public hospitals in the context of rural and urban area. The main focus of the present chapter is the health status of women in Sangli district. Hence firstly, the food habits and food stuff consumption pattern of women among the tahsils has been analyzed comprehensively. It has been also attempted to study the quality of public health care facility, government policy of public health care

system and spatial distribution of these health care facilities in Sangli district.

Objectives:

Now as per as the objectives of the present research is concern, to access the health care facilities by women and health status of women.

Choice of the Region:

In view of this the study region selected for present investigation is the Health status of women in Sangli District of Maharashtra state as a geography unit. Sangli District is having most favourable location in Maharashtra state. Sangli District is located into western part of Maharashtra between 16⁰45' to 17⁰ 33'N latitude and 73⁰42' E to 75⁰41' E longitude. District covers an area of 8572 Km² and it has population of 2820575 as per 2011 census.

Database and Methodology:

The present study based on the primary data of women health and necessary statistical tools such as percentile and graphs were applied for data processing purpose.

Results and Discussion:

Access to Health Care Facilities by Women:

Accessibility of the health care facilities to the remote places, downturn strata of the society and hilly area is always matter of concern in India. Especially, government health care services are not accessible to the rural mass due to various

like poor road connectivity, long distance, non-availability of doctors, poor medical infrastructure and bad perception of the peoples regarding public health care system.

Under this backdrop researcher is intended to study the regional disparities in the accessibility of the health care services in the context of rural -urban and public-private health care facilities. The accessibility of the health care facilities is measures through female population per primary health care centre, female population per sub centre, public doctor population ratio, private doctor population ratio and distance between respondent native places to health care centre.

Female Population per Primary Health Care:

The accessibility of health care facilities can be better understood with ratio of women population to primary health care center. It gives an idea about the population pressure on per primary health care centre. It also shows tahsil wise burden of population of the primary health care centers. In fact, the service quality of the primary health care centre is depends on the number of population served under the PHCs. More the population burden on PHC less will be the service quality and vice versa. Hence it has been attempted to study the average population per PHC in concern tahsil that has been calculated by using following formula.

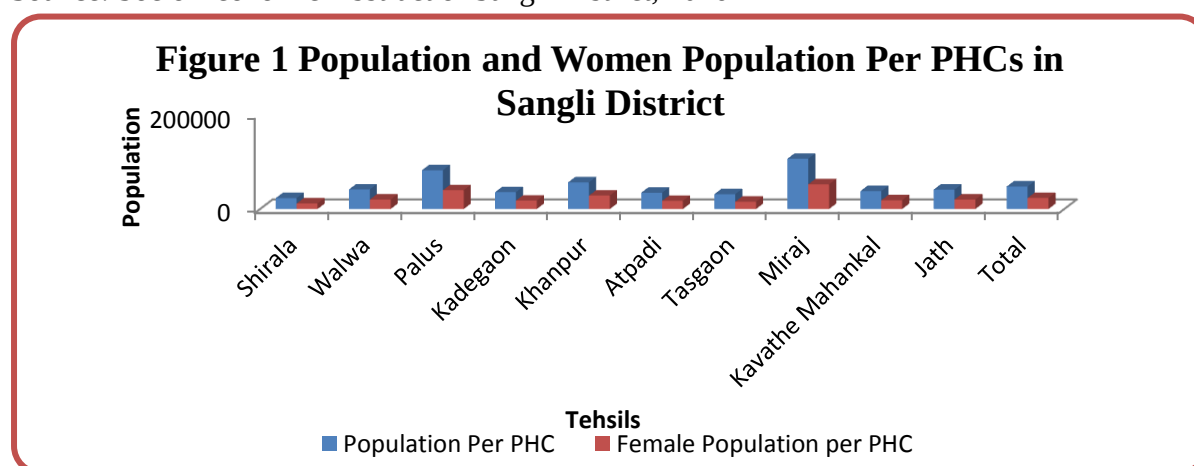
$$\text{Total population pressure per PHCs} = \frac{\text{Total population of the tehsil}}{\text{total number of PHCs in tehsil}}$$

$$\text{Women population pressure per PHCs} = \frac{\text{Total Women population of the tehsil}}{\text{total number of PHCs in tehsil}}$$

Table 1: Women Population per Primary Health Care

Sr. No	Tahsils	Population	No of PHC	Population per PHC	Women Population per PHC
1	Shirala	162911	7	23273	11725
2	Walwa	456002	11	41455	20077
3	Palus	164909	2	82455	39806
4	Kadegaon	143019	4	35755	17813
5	Khanapur	170214	3	56738	28530
6	Atpadi	138455	4	34614	17261
7	Tasgaon	251401	8	31425	15407
8	Miraj	854581	8	106823	52496
9	Kavatthe mahankal	152327	4	38082	18678
10	Jat	328324	8	41041	20009
Total		2822143	59	47833	23499

Source: Socio-Economic Abstract of Sangli District, 2016-17



The table 1. and fig. 1. shows population pressure per PHC and women population pressure per PHCs in Sangli district. It has been seen from the data that there are total 59 primary health care centers (PHCs) in Sangli district.

The maximum women population per PHCs has been observed to 52496 in Miraj tahsil and it has followed by Palus tahsil i.e 39806. It means that high women population pressure on PHCs has been observed in Miraj and Palus tahsil. Likewise, maximum total population per PHCs has been observed to 106823 in Miraj tahsil and it has followed by Palus tahsil i.e 41455. It means that high total population pressure on PHCs has been observed in Miraj and Palus tahsil.

The minimum population per PHCs has been observed in Shirala tahsil i.e 23273 and it has followed by Tasgaon i.e 31425. Moreover, the minimum women population per PHCs has been observed in Shirala tahsil i.e 11725 and it has followed by Tasgaon i.e 15407.

As per the government norms 2012, there should be 1 sub centre for per 5000 population in plain area and for per 3000 population in hilly and tribal area. There should be 1 primary health care centre for per 30000 populations in plain area and for per 20000 populations in hilly and tribal area. In addition, there should be 1 community health care centre for per 1, 20,000 population in plain area and for per 80,000 populations in hilly and tribal area.

The PHCs 35 are located in four tahsil namely Walwa, Tasgaon, Miraj and Jat. It means nearly 59 percent PHCs are concentrated in only these four tahsil. If we considered plain area norms then there should be 23 community Health Centers, 94 PHCs and 564 sub centers in the district. But the reality is different there are only 59 primary health care centers, 320 sub centers, and 3 community health care centers in the district. This gap indicates the low accessibility of public health care system in Sangli district.

Female Population per Sub Centre:

The sub centers are mainly working at grass root level. There are total 320 sub centers in Sangli district. Nearly 15.94 percent of the total sub centers are located in the Walwa tahsil followed by Shirala and Jat

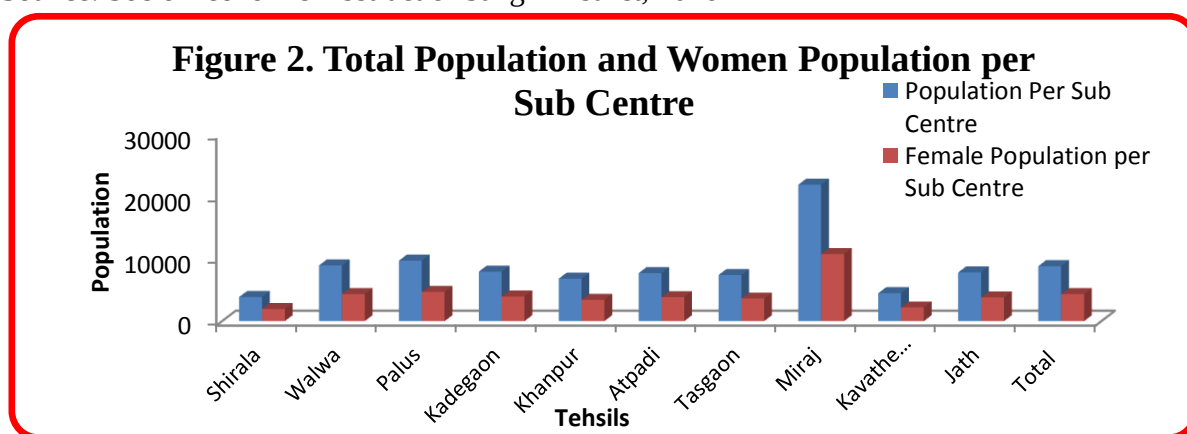
by 13.13 percent. On the contrary the lowest percentage (i.e. 5.31 %) is observed in Palus followed by Atpadi (5.63%) and Kadegaon (5.63 %).

The table 2. Indicates the total population and women population per sub centre served in Sangli district. It has been seen from the data that the maximum women population per sub centre has been observed to 10768 in Miraj tahsil and it has followed by Palus tahsil i.e 4683. It means that high women population pressure on sub centre has been observed in Miraj and Palus tahsil. Likewise, maximum total population per sub centre has been observed to 21912 in Miraj tahsil and it has followed by Palus tahsil i.e 9701. It means that high total population pressure on sub centre has been observed in Miraj and Palus tahsil.

Table 2. Women Population per Sub Centre

Sr.No	Taluka	Population	No of Sub-centers	Population per Sub Centre	Women Population per Sub Centre
1	Shirala	162911	42	3879	1954
2	Walwa	456002	51	8941	4330
3	Palus	164909	17	9701	4683
4	Kadegaon	143019	18	7946	3958
5	Khanapur	170214	25	6809	3424
6	Atpadi	138455	18	7692	3836
7	Tasgaon	251401	34	7394	3625
8	Miraj	854581	39	21912	10768
9	Kavathe Mahankal	152327	34	4480	2197
10	Jat	328324	42	7817	3811
Total		2822143	320	8819	4333

Source: Socio-Economic Abstract of Sangli District, 2016-17



The minimum population per sub center has been observed in Shirala tahsil i.e 3879 and it has followed by Kavathemahankal i.e 4480. Moreover, the minimum women population per sub center has been observed in Shirala tahsil i.e 1954 and Kavathemahankal i.e 2197.

In short, Shirala and Kavathemahankal tahsil are having low population as well as women population pressure and on the contrary the Miraj and Palus tahsil are having high population as well as women pressure. It indicates not only the population pressure but also the burden on medical infrastructure and hampers to the quality of service to them. Even the minimum pressure is also significantly more in both PHCs as well as sub centers as per the government norms.

Public Doctor Population Ratio:

Doctors those are serve in government sector is known as public doctor. The national density of doctors was 79.7 per lakh population, of nurses and midwives 61.3 per lakh, and of dentists just 2.4 per lakh. There were 12, 25, 381 health workers in urban areas and 8,44,159 in rural areas, an urban-rural ratio of 1.45. Of all health workers, 59.2% were in urban areas,

where 27.8% of the population resides, and 40.8% were in rural areas, where 72.2% of the population resides. The ratio of urban density to rural density for doctors was 3.8, for nurses and midwives 4.0, and for dentists 9.9.

The doctor-population ratio of the some of the countries are: Australia 3.374:1000, Brazil 1.852:1000, China 1.49:1000, France 3.227:1000, Germany 4.125:1000, Russia 3.306:1000, the USA 2.554:1000, Afghanistan 0.304:1000, Bangladesh 0.389:1000, Pakistan 0.806:1000. Whereas it is just 0.62 : 1000 in India

Under this overall backdrop, researcher has attempted to study the public doctor population ratio as well as private doctor population ratio in Sangli district.

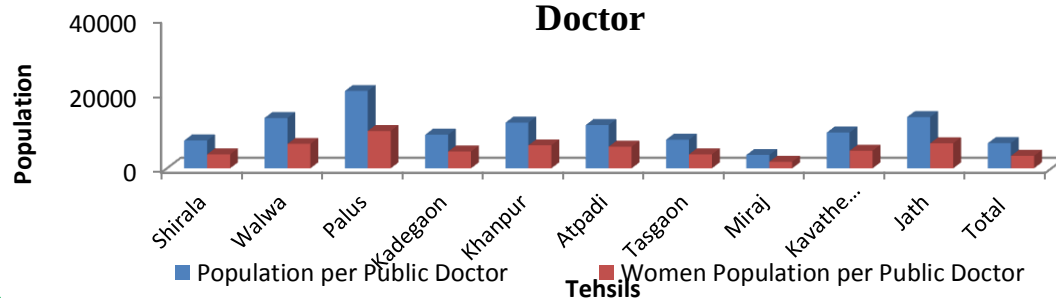
The table 3 and fig. 3 indicates tahsil wise average population and women population served by per one public doctor in Sangli district. There are total 420 public doctors operating in 10 tahsils of Sangli district. The maximum i.e 241 (more than 50 per cent) is working in Miraj tahsil. It implies greater degree of disparities in the spatial distribution number of public doctors in study region.

Table 3: Population and Women Population per Public Doctor

Sr.No	Tahsils	Public Doctor	Population per Public Doctor	Women Population per Public Doctor
1	Shirala	22	7405	3731
2	Walwa	34	13412	6495
3	Palus	8	20614	9951
4	Kadegaon	16	8939	4453
5	Khanapur	14	12158	6114
6	Atpadi	12	11538	5754
7	Tasgaon	33	7618	3735
8	Miraj	241	3546	1743
9	Kavathe Mahankal	16	9520	4670
10	Jat	24	13680	6670
Total		420	6719	3301

Source: Socio-economic abstract of Sangli district ,2016-17

Figure 3. Population and Women Population per Public Doctor



The data reveals the fact that maximum average population i.e 20614 is being served by one doctor in Palus tahsil. The maximum average women population i.e 9951 is being served by one doctor in Palus tahsil.

Minimum average population i.e 3546 is being served by one doctor in Miraj tahsil. The minimum average women population i.e 1743 is being served by one doctor in Miraj tahsil. In short, it can be stated that the public doctors are mainly working in Miraj tahsil and other tahsils are suffering from the chronic shortage of public doctors.

Private Doctor Population Ratio:

Along with the public doctors there are private doctors who serve people in rural as well as urban area. In fact, it is a private doctor and private hospital where middle class and upper middle class families prefer to visit rather than public hospital. Hence it is also necessary to get an idea about the population and women population per private doctor in study region.

It has been evidence from the data presented in table 4. and fig. 4. that there are total 1785 private doctors practicing in Sangli district, out of which 834 (46.72 per cent of the total district private doctors) are practicing in Miraj tahsil alone. No doubt, the Miraj city is emerging as a medical hub in Sangli district but 46 per cent doctor's agglomeration in one place of the district is

not appreciable in geographical point of view. It indicates sharp disparities in the medical accessibility in Sangli district. The 1344 (75.29 per cent) out of 1785 private doctors are just practicing in five tahsils namely Miraj, Jat, Tasgaon, Walwa and Shirala. In other words only 25 per cent of the total private doctors are practicing in remaining five tahsils (or 50 per cent of the tahsils). It also indicates acute disparities in health care access in Sangli district. In other words there is imbalance in availability of private doctors in Sangli district.

It has been seen from the table 4. and fig. 4. that high population i.e 2985 and high women population i.e 1455 per private doctor is being served in Jat tahsil. It has followed by Walwa tahsil i.e 2682 population per private doctor and 1299 women population per private doctor.

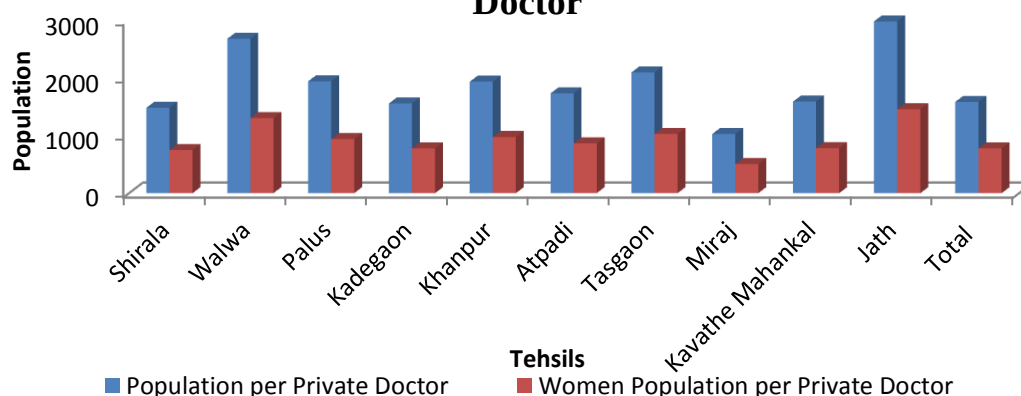
Low population i.e 1025 and low women population i.e 504 per private doctor is being served in Miraj tahsil. It has followed by Shirala tahsil i.e 1481 population per private doctor and 746 women population per private doctor. At district aggregate level 1581 people is being served by one private doctor in Sangli district. Likewise, one private doctor served 777 women in Sangli district.

In short, there is low accessibility of health care facilities except Miraj tahsil in Sangli district in terms of number of public and private doctors.

Table 4: Population and Women Population per Private Doctor

Sr.No	Tahsils	Private Doctor	Population per Private Doctor	Women Population per Private Doctor
1	Shirala	110	1481	746
2	Walwa	170	2682	1299
3	Palus	85	1940	937
4	Kadegaon	92	1555	774
5	Khanapur	88	1934	973
6	Atpadi	80	1731	863
7	Tasgaon	120	2095	1027
8	Miraj	834	1025	504
9	Kavathe Mahankal	96	1587	778
10	Jat	110	2985	1455
	Total	1785	1581	777

Source: Socio-economic abstract of Sangli district, 2016-17

Figure 4. Population and Women Population per Private Doctor

Distance of Medical Facilities:

The distance between residential place to health care facilities are also matter in spatial variations in access to health care facilities. The near the health care facilities from residential place indicates good accessibility and vice versa. In fact, distance is matter at the time of medical emergency. The table 5. indicates distance between residential places to medical facilities. Here the term medical facilities includes any of the facilities such as medical, hospital, clinic, PHCs, Sub – centre etc. It has been evidence from the data that 75 per cent respondents of Shirala tahsil are having medical facilities near the premises of residential place.

The 5 per cent respondents of Shirala tahsil were said that medical facility is made available at less than 1 Km. The 10 per cent respondents said that medical facility is made available at 1 to 2 Km. The 5 per cent respondents said that 2 to 5 km is the distance between their residential place to medical facilities and remaining 5 per cent respondent women were reported that there is more than 5 Km distance between health care facility and their residential place.

The 63.6 per cent respondents of Walwa tahsil are having medical facilities near the premises of residential place.

Table 5: Distances of Medical Facilities from Native Place of Respondents (In Percentage)

Sr.No	Tahsils	Percentage of Respondents				
		Near the Premises of Native Place	Less than 1 km	Up to 1 to 2 Km	2 to 5 Km	More than 5 Km
1	Shirala	75	5	10	5	5
2	Walwa	63.6	0	4.5	9.1	22.7
3	Palus	18.8	68.8	6.3	0	6.3
4	Kadegaon	00	26.7	13.2	0	60.0
5	Khanapur	6.3	87.7	0	6.3	6.3
6	Atpadi	42.9	21.4	28.6	0	7.1
7	Tasgaon	58.3	8.3	25.0	8.3	0
8	Miraj	66.7	20.0	11.1	2.2	0
9	Kavathe Mahankal	62.5	12.5	25.0	0	0
10	Jat	46.2	0	0	30.8	23.1
Total		44.03	25.04	12.37	6.17	13.05

Source: Field Work, 2016

The only 18.8 per cent respondents of Palus tahsil are having medical facilities near the premises of residential place.

The remaining 60.0 per cent women respondent were reported that there is more than 5 Km distance between health care facility and their residential place in Kadegaon.

The 6.3 per cent respondents of Khanapur tahsil are having medical facilities near the premises of residential place.

The 42.9 per cent respondents of Atpadi tahsil are having medical facilities near the premises of residential place

The 58.3 per cent respondents of Tasgaon tahsil are having medical facilities near the premises of residential place. The 8.3 per cent respondents said that medical facility is made available at less than 1 Km. The 25 per cent respondents said that 1to 2 km is the distance between their residential place to medical facilities and remaining 8.3 per cent respondent women were reported that there is 2 to 5 Km distance between

health care facility and their residential place in Tasgaon.

The 66.7 per cent respondents of Miraj tahsil are having medical facilities near the premises of residential place. The 20 per cent respondents said that medical facility is made available at less than 1 Km. The 11.1 per cent respondents said that 1to 2 km is the distance between their residential place to medical facilities and remaining 2.2 per cent respondent women were reported that there is 2 to 5 Km distance between health care facility and their residential place in Miraj.

The 62.5 per cent respondents of Kavathe Mahankal tahsil are having medical facilities near the premises of residential place. The 12.5 per cent respondents said that medical facility is made available at less than 1 Km. the 25 per cent respondents said that 1to 2 km is the distance between their residential place to medical facilities.

The 46.2 per cent respondents of Jat tahsil are having medical facilities near the premises of residential place. The 30.8 per

cent respondents said that medical facility is made available at 2 to 5 Km. The remaining 23.1 per cent respondent women were reported that there is more than 5 Km distance between health care facility and their residential place in Jat tahsil.

Another reason behind service quality gap between private and public hospitals is the control over medical resources and decision making power. In private hospital sole decision were taken by owner of the hospital and in public hospitals government takes decision. The control over resources is partial in public hospital and it is full control in private hospitals.

Health Status of Women:

To study the health status of women in geographical perspective is one of the core objectives of the present research task. It has been widely discussed with the help of different components such as food habits and food Stuff consumption pattern, timely meal, breakfast habits, frequency of illness, nature and extent of water born diseases, other diseases, awareness about health, negligence of health issues and respondents opinion about their health status.

Conclusion:

The present research has mainly focused on the accessibility of health care facilities to the people in general and women population of Sangli district in particular. It has been clear from the analysis that most of the medical facilities are concentrated in Miraj tahsil and other tahsils are being neglected. There is totally uneven spatial

distribution of various medical facilities in Sangli district. The urban – rural health access gap is widening in Sangli district. The health status of women in Sangli district is matter of great concern, so far as deficit food stuff consumption is concern. Moreover, spatial distribution of health status is also significantly differs in Sangli district.

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Impact of Agricultural Development on Water Degradation in Walwa Tahsil

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Abstract:

Water is the most important substance on the earth plant. The survival of all plants and animals depends upon the water if there was no water there would be no life on Earth. Cooking meals washing clothes and cleaning household utensils such as billies saucepans, crockery, and cutlery are household usages of water related to the kitchen bathing keeping houses and communities clean, recreation; such as swimming pools keeping plants alive in gardens and parks, Water is also essential for the healthy growth of farm crops and farm stock and is used to manufacture many products. As per the basic needs of humans, people need water to drink which must be hygienic. This means that the water must be free from germs and chemicals and be pure unhygienic. (Not cloudy). Water that is safe for drinking is called **potable water**. Disease-causing germs and chemicals are found in drinking water supplies. When this happens, the water becomes polluted or contaminated and when people drink it or come in contact it attacks the immune system of the human body. Most of diseases are spread from the water. Water that is not safe to drink is said to be non-potable. Throughout history, there have been many occasions when hundreds of thousands of people have died because disease-causing germs have been spread through a by a polluted water supply. It happens less frequently now, one of the reasons behind this is, that people in many countries, prefer to be sure about drinking water supplies and it must be portable. Water supplies are routinely checked if such sources are not safe all the action taken to make sure that drinking water is potable is called **water treatment**.

Sangli district is known as a developed district. There are 10 tahsil and 728 villages in this district. Because of its geology, the district comes in tahsil in the western part of it i.e. Shirala walwa, Palus, Miraj talukas use of water resources situated positive; but the effect of this agricultural development has been degradation, so the present topic concerns the impact of agricultural development on the environment. According to the Census of India (2011), 69 % of the population is engaged in agriculture. India is a country with (2001) 70% population living in villages and having agriculture as the major earning source. Lots of the farmers are reeling from poverty since ages. The successive government has cared to increase productivity. The new techniques thus invented and should be introduced for the poor farming community in our country to enhance production and also bring down the skyrocketing prices of agricultural products. But here is a problem occurs; that is the impact of Agricultural development on Water, degradation.

Keywords: Water the Destruction of Ecosystems; Habitat Destruction; Pollution, Crop Rotation, Water Use, Water Logging, Irrigation, and Water Pollution.

Introduction:

‘Agriculture’ in Agricultural Geography implies the subject matter, and ‘geography’ gives the way of viewing or investigating the subject matter. Etymologically, Agricultural geography deals with “The science or art of cultivating

soil, growing and harvesting of crops, domestication of animals and raising of livestock is known as Agriculture” (Majid Husain, 2008) pp17, Agricultural development in terms of the expansion of agricultural land through major land use changes, increase in agricultural productivity

and net agricultural production. Through the application of modern scientific techniques and advanced technology, increased production; and use of agrochemicals, expansion of irrigation facilities and irrigated area, development of high yielding varieties of seeds in order to meet the food requirement of ever-increasing population of the country these factors helped to solve the food problem of India but it has also created hazardous environmental problems of serious concern. Though the place of agricultural development has to be maintained if we do not want to let the teeming millions die of hunger. Meanwhile, environmental degradation should not be allowed to continue due to agricultural development because it would also cause irreparable loss of human society. (Savindar Singh, 2008, pp 56)

Recently environmental degradation is a burning issue in developing countries. According to Tata Energy Research Institute (1998), environmental degradation covers water, soil, forest and air. Among these, soil Salinization is an important determinant of environmental degradation in India. About 187.8 million hectares (approximately 57%) out of 328.27 million hectares of land areas have been degraded in the country. Among these 10.1 million hectares suffers from soil salinity problem. It occurs mainly due to two factors viz. physical and chemical. The physical factors affect the fertility of the topsoil through wind and water, whereas the chemical factors affect the nutrients of the soil due to deforestation, poor cultivation practices and intensive/repeated irrigation, excess chemical fertilizers, pesticides. According to National Remote Sensing Agency (NRSA), there are eight important types of land degradation. As stated by the NRSA, the eight types of land degradation are Gully land i.e. ravenous, upland with or without scrubs, waterlogged means, dry land and swampy land, salinity and alkalinity land, shifting cultivation areas, degraded

pastures and grazing lands, degraded land under plantation crops, mining and industrial wastelands.

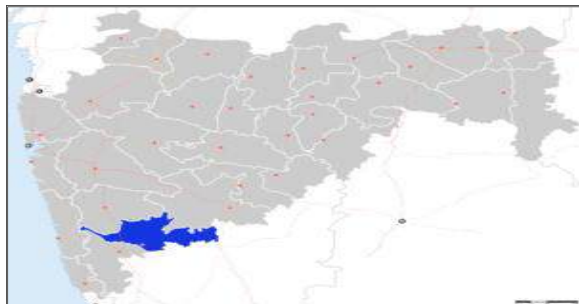
To define the concept of environmental degradation is a poser task. The World Bank's (1992) World Development Report cites deforestation, land degradation, water shortage and contamination, air pollution, and the loss of biodiversity as some of the many environmental problems. We face today in both developed and developing countries. However, unlike poverty which can be defined, at the minimum, based on human nutritional requirements, environmental degradation comprises a large degree of subjectivity on the part of the agents involved or who own the resources. Different societies placed varied ecosystems and different values on environmental resources. Make the definition of environmental degradation difficult and complex. A common solution is to use the physical characteristics of the system as a threshold level beyond which degradation is assumed to take place. There are scarce attempts to know the ecosystem and detailed importance of the ecosystem; were before these physical thresholds can be determined. To minimize conflicts in the analysis, we shall use a combination of ecological thresholds and revealed preferences appropriate as indicators of environmental degradation.

Objective:

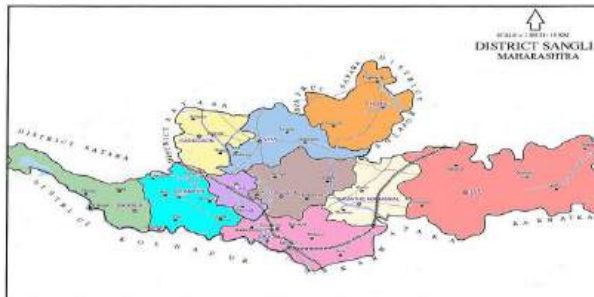
- 1) To study the study area's geographical setting and socio-economic setup.
- 2) To study the impact of agricultural development on Water in Walwa Tahsil.
- 3) To suggest appropriate measures for control of water degradation.

Study Area:

The Selected area for the present investigation is the Sangli district of Maharashtra state containing 10 tahsils in Sangli district such as Miraj, Tasgaon, Kavathe-Mahankal, Jat, Khanapur (Vita), Palus, Atpadi, Walwa, Kadegaon, Shirala.



Sangli is one of the southern Districts of Maharashtra lying between 16°43' and 17°38' north latitude and 73°41' and 75°41' east longitude and has an area of 8,572 Sq. Km (2.78% of State) and a population of 28,22,143, (2.51% of State) (2011).

**Database and Methodology:**

The present study is based on Primary data. Primary data regarding environmental quality, status, etc. will be collected by conducting the intensive fieldwork. The Stratify random sampling technique will be used to select the samples. The sample of Bases of Irrigated 10 Tahsils and non-irrigated 10 Thasil, the 10 tahsils considered based on agricultural development. The secondary data will be counted from related books, published and unpublished reports, journals, newspapers, government reports, District census Handbook, District Statistical Abstract, socio-economic reviews, etc.

Methodology:

The Stratify random sampling technique will be used to select the samples. The sample of Bases of Irrigated Village- from 10 Tahsils-20 Villages Sample selected of the soil and water testing and non-Irrigated Village- 10 Thasil

Composite Index of Development: -

1. Net sown area to Total Geographical area
2. Percentage of Cultivate area to net Sown area
3. Percentage of the net irrigated area to net sown area.

4. The number of tractors available per 100 hectares of cultivated area.
5. The number of electrical pumps available per 100 hectares.
6. Chemical Fertilizer consumption per 100 hectares. Of the net sown area.
7. The number of livestock per 100 hectares. of the net sown area
8. The productivity of 100 hectares. Of the net sown area.
9. Percentage of irrigated wells. Per 100 hectares.
10. Percentage of Literacy to the Total Geographical Area.

The method adopted to determine the levels of development involves two stages. First, the determination of a level of each Revenue circle in terms of discrete variables and second the integration of values obtained to give a complete index of development taking all indices into account. The coefficient of development of each Revenue circle in terms of single variables is expressed as follows:

$$CD_i = \frac{P_i}{PI}$$

Where,

CD_i = the coefficient of development for variable 'i', P_i = percentage of variable 'i', PI = mean percentage of variable 'i' in the whole region

$$CID = \frac{CDi1 + CDi2 + CDi3 + \dots + CDiN}{N}$$

Where,

CID = Composite index of development

N = Number of variables.

i= Variable

Levels of Agricultural Development:

1. Higher Level of Development:

The above 10 composite indexes of development have occurred only in walwa, Palus, kadegaon and Miraj tahsil; farming is generally carried out with a commercial and intensive attitude and by adopting new technology. It helps for the development of agriculture. These Tahsils have more irrigated facilities such as river, canal, well, and tube well irrigation; a large area is under availability of irrigation sources and high development is due to the highly fertile soil, climate condition, water supply, and concentration of the agro-based industries in this tahsil.

2. Moderate Level of Development:

These are fall in this category with Shirala, Tasgaon, Jat, and Khanapur composite index of development respectively in Shirala, Tasgaon, Jat and Khanapur has less area in terms of net sown area but rich in underground water and canal irrigation and artificial water supply. In Shirala, Tasgaon the progress of the

development is witnessed and In Jat and Khanapur few areas are irrigated but not for a Narger area covered in irrigation. Few pockets where agricultural development takes place.

3. Lower Levels of Development:

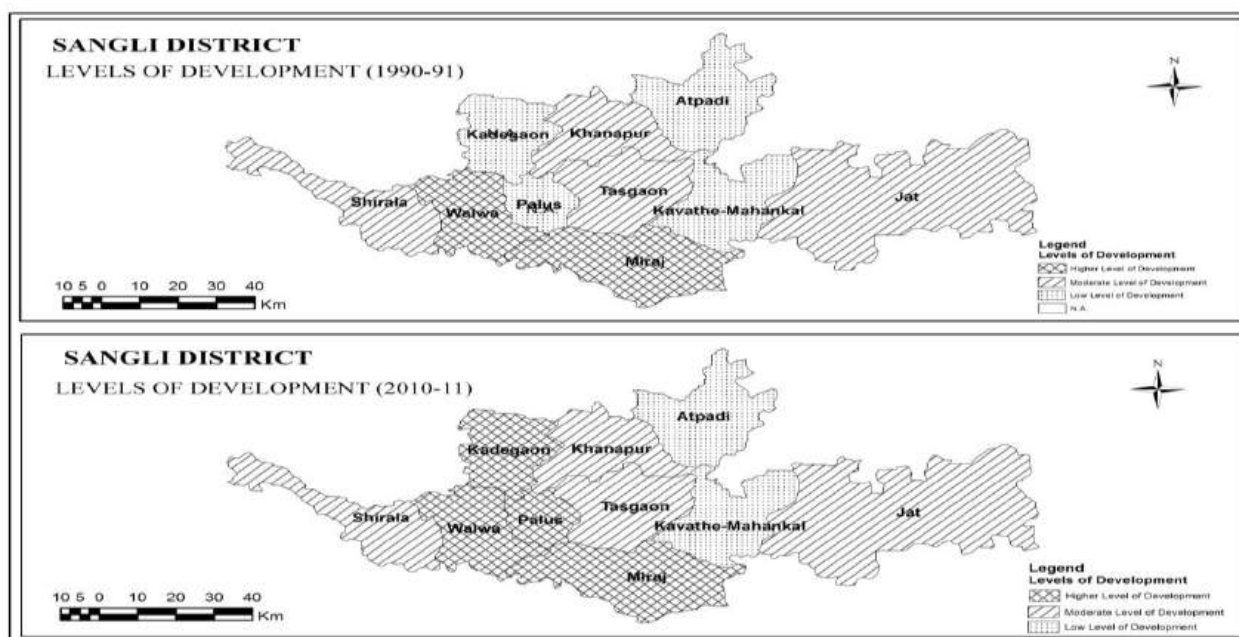
In this category two Thasil have been reported nearly Kavathemhankal and Atpadi; it happened due to rugged topography, fewer irrigation facilities coarse soil, and less use of new form technology and use of fertilizers in these tahsils. Also, have poorer irrigation facilities thereby the requirements of other inputs in agricultural practices were less in factors within this tahsil may attain faster development when water is made available by ongoing irrigation projects in this tahsil so the development growth rate is increasing in this study region.

A calculated composite index of ten tahsils out of which Shirala, Tasgaon, Khanapur, Jat, Atpadi, and Kavathemhankal tahsil has shown progress in agriculture when few effective factors play a major role in the development such as deep, black soil, intensive cultivation and assent water supply and sugar, dairy farming and other small-scale and larger-scale factories. Kavathemhankal, Jat, Atpadi, and Khana agricultural development growth due to using agricultural implements are poor in this in this tahsil of the study region.

Composite Index of Development and levels of Development

Sr. No.	2020-21			2023-24		
	Tahsil	CID	Level of Development	Tahsil	CID	Level of Development
1	Walwa	14.44	Higher Level of Development	Walwa	16.94	Higher Level of Development
2	Miraj	11.05	Higher Level of Development	Palus	12.99	Higher Level of Development
3	Tasgaon	9.88	Moderately High Level of Development	Kadegaon	11.97	Higher Level of Development
4	Khanapur	8.74	Moderately High Level of Development	Miraj	10.03	Higher Level of Development
5	Shirala	8.17	Moderately High Level of Development	Jat	9.34	Moderately High Level of Development
6	Jat	8.18	Moderately High Level of Development	Shirala	9.24	Moderately High Level of Development
7	Kavathe Mahankal	7.43	Lower Level of Development	Tasgaon	8.67	Moderately High Level of Development
8	Atpadi	7.25	Lower Level of Development	Khanapur	8.77	Moderately High Level of Development
9	Kadegaon	-	-	Kavathe Mahankal	6.21	Lower Level of Development
10	Palus	-	-	Atpadi	6.33	Lower Level of Development

(Source: - Calculate by Researcher) Below 8 low lower Level, Above 8 Moderately High, Above 10 Higher Level

Levels of Agricultural Development (2020-21 to 2023-24)**CLUSTER ANALYSIS OF THE YEAR 2020-21 and 2023-24**

Ten tahsils of the study area are Grouped into ten clusters for the hierarchical

cluster analysis of 2001-01, and ascending order of hierarchy is preferred.

Cluster Analysis based on Agricultural Development of 2020-21

Ten Parameters for nnnnnnnnnnnnnnn of Level

Sr. No.	Tahsil	% NSA to TGA	% of cultivate d area to NSA.	% of Irrigated Land to NSA	No. of Tractors per 100 hectare of NSA	Use Of Chemical Fertilizers hectare of NSA	No. of Livestock per 100 hectare of NSA	% of Productivi ty to NSA	% of Well irrigation	% electrical pumps available	% of Literacy
1	Walwa	85.08	86.39	20.98	35.21	28	210.27	11.96	9.79	19.78	65.2
2	Kadegaon	-	-	-	-	-	0	-	-	-	-
3	Khanapur	36.7	30.62	7.93	14.55	11.48	61	7.94	22.47	9.53	55.2
4	Palus	-	-	-	-	-	0	-	-	-	-
5	Tasgaon	86.48	55.92	9.66	14.45	29.39	90.84	6.75	10.78	15.1	62.3
6	Miraj	87.06	90.21	11.99	11.88	21.14	230.23	7.01	21.77	17.41	64.5
7	Kavathe Mahnkhal	32.21	20.5	8.83	4.83	13.49	102.71	5.94	14.37	3.59	60.6
8	Jat	41.87	32.23	3.84	7.84	22.86	366.33	7.78	15.08	5.87	51.4
9	Atpadi	42.18	29.52	2.03	5.17	11.5	147.133	7.96	4.1	7.85	54.7
10	Shirala	74.22	45	2.29	6.06	22.17	83.69	10.98	3.65	3.89	52.9

(Source: - Calculate by Researcher)

Cluster Analysis on the basis of Agricultural Development of 2023-24

Ten Parameters for identification of Level

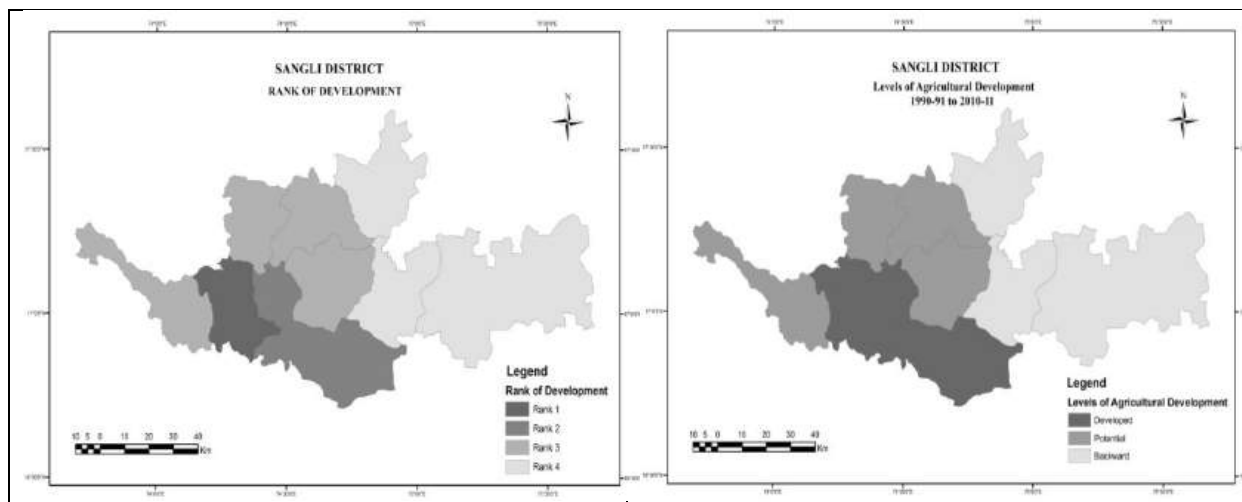
Sr. No.	Tahsil	% NSA to TGA	% of cultivated area to NSA.	% of Irrigated Land to NSA	No. of Tractors per 100 hectare of NSA	No. of Livestock per hectare of NSA	Use Of Chemical Fertilizers hectare of NSA	% of Producti vity to NSA	% of irrigated Well	% of electrical pumps available	% of Literacy
1	Walwa	87.67	98.12	36.41	22.78	265.57	51.05	13.61	9.73	19.48	85.2
2	Kadegaon	92.05	32.5	10.9	7.04	80.63	27.23	6.78	2.67	6.65	81
3	Khanapur	91.68	31.36	4.39	9.57	90.15	18.03	9.42	12.53	8.1	82.2
4	Palus	77.3	89.25	1938	8.98	63.5	34.04	6.84	3.91	5.34	86.1
5	Tasgaon	75.9	43.11	18.05	13.26	137.79	34.04	7.69	14.01	12.87	83.3
6	Miraj	94.91	90.49	26.84	15.58	245.36	51.05	7.44	16.34	15.47	84.5
7	Kavathe Mahnkhal	63.03	66.7	5.33	5.83	132.14	18.23	8.51	12.85	8.76	78.6
8	Jat	89.8	39.69	3.55	7.8	302.52	23.23	9.59	18.86	16.08	70.4
9	Atpadi	83.46	38.39	1.79	6.22	154.8	21.23	10.96	6.43	7.15	72.7
10	Shirala	86.11	39.11	3.39	6.93	79.14	30.01	12.13	5.17	3.09	78.9

(Source: - Calculate by Researcher)

Temporal Variation between the Ten Parameters of Hierarchical Clusters 2020-21 to 2023-24

Rank No	Tahsil	% NSA to TGA	% of the cultivate d area to NSA.	% of Irrigated Land to NSA	No. of Tractors per 100 hectares of NSA	No. of Livestock per 100 hectares of NSA	Use Of Chemical Fertilizers hectare of NSA	% of Producti vity to NSA	%of irrigated Well	% of electrical pumps available	% of Literacy
1	Walwa	2.59	11.73	15.43	12.43	44.7	23.05	1.35	1.06	3.3	20
2	Miraj	7.85	0.28	14.85	3.7	14.77	29.91	0.43	-5.43	-1.94	20
	Palus	77.3	89.25	12.38	8.98	63.5	34.04	6.84	3.91	5.34	86.1
	Shirala	11.89	-5.89	1.1	0.87	-4.55	7.84	1.15	1.52	-0.8	26
3	Kadegaon	92.05	32.5	10.9	7.04	80.63	27.23	6.78	2.67	6.65	81
	Tasgaon	-10.58	-12.81	8.39	-1.19	46.95	4.65	0.94	3.23	-2.23	21
	Khanapur	54.98	0.74	-3.54	-4.98	29.15	6.55	1.48	-9.94	-1.43	27
4	Jat	47.93	7.46	-0.29	-0.04	-63.81	0.37	1.81	3.78	10.21	19
	Kavathe mahankal	30.82	46.2	-3.5	1	29.43	4.74	2.57	-1.52	5.17	18
	Atpadi	41.28	8.87	-0.24	1.05	7.667	9.73	3	2.33	-0.7	18

(Source: - Calculate by Researcher)



Causes of Water Degradation in Sangli District:

Water pollution caused by fertilizers and pesticides used in agriculture often dispersed over large areas is a great threat to fresh groundwater ecosystems. The highest nitrate concentration in groundwater is the leaching of the residual nitrate due to the excessive as well as intensive use of chemical fertilizers in farms and fields. Even indiscriminate disposal of human and animal waste on land is another reason of it. In India, agriculture area is more, the fertilizers and pesticides are continuously used get mixed into water and pollute the surface water and groundwater. The part of this percolates into the ground and pollutes the

groundwater directly. Nitrate concentration is above the permissible level of Ph in 11 states in India. DDT, BHC, Carbonate, Endosulfan, etc. are the most common pesticides used in India. But, the vulnerability of groundwater to pesticide and fertilizer pollution is governed by soil texture, the pattern of fertilizer and pesticide use, their degradation products, and total organic matter in the soil. Use of Fertilizers, Use of Pesticides, Cropping Pattern, Improper Crop Rotation, Water Use, Water Logging, Irrigation, Growth of Agricultural Industries, Manure spreading, Tillage/plugging

Changes in Groundwater Quality from 2000-01 Irrigated Villages

Water Parameter(10500:1991) (Bureau of Indian standard)																					
Sr. No.	Tahsil	Sample Village	No. of Sample(Well/ Tube well)	pH (7-8.5)	EC(<1)	TDS (500mg/lit)	Hardness (200mg/l)	Chloride(200mg/lit)	BOD (30mg/lit)	DO (4mg/lit)	NO3-N (45mg/lit)	COD (250mg/lit)	Sulphates (200 mg/lit)	Copper (0.05 ppm)	Ferous (1-0.05mg/lit)	Zinc (5 ppm)	Cadmium (0.01 ppm)	mercury (0.01ppm)	lead (0.1 ppm)	Alkalinity (200 mg/lit)	iron (0.3 to 1.0 mg/lit)
2	WALAWA	Junekhed(W)	1	7.5	1	469	179	155	27	3.9	39	211	127	0.01	0.07	2.8	0.01	0.01	0.01	176	0.1
		Borgaon(B)	1	7.6	0.8	459	189	170	28	3.8	39	221	156	0.02	0.08	2.9	0.01	0.01	0.02	150	0.9

(Source:- Water testing Department Sangli)

Changes in Groundwater Quality from 2010-11 Irrigated Villages

Water Parameter(10500:1991) (Bureau of Indian standard)																					
Sr.No.	Tahsil	Sample Village	No. of Sample(Well/ Tube well)	pH (7-8.5)	EC(<1)	TDS (500mg/lit)	Hardness (200mg/l)	Chloride(200mg/lit)	BOD (30mg/lit)	DO (4mg/lit)	NO ₃ -N (45mg/lit)	COD (250mg/lit)	Sulphates (200 mg/lit)	Copper (0.05 ppm)	Ferous (1-0.05mg/lit)	Zinc (5 ppm)	Cadmium (0.01 ppm)	mercury (0.01ppm)	lead (0.1 ppm)	Alkalinity (200 mg/lit)	iron (0.3 to 1.0 mg/lit)
2	WALAWA	Junekhed(W)	1	8.20	1.1	496	179	195	20	2.2	41	233	189	0.02	1.04	3.3	0.0	0.01	0.05	194	0.08
		Borgaon(B)	1	8.10	1	489	189	190	21	3.1	40	228	195	0.02	1.05	4.0	0.0	0.01	0.10	190	0.09

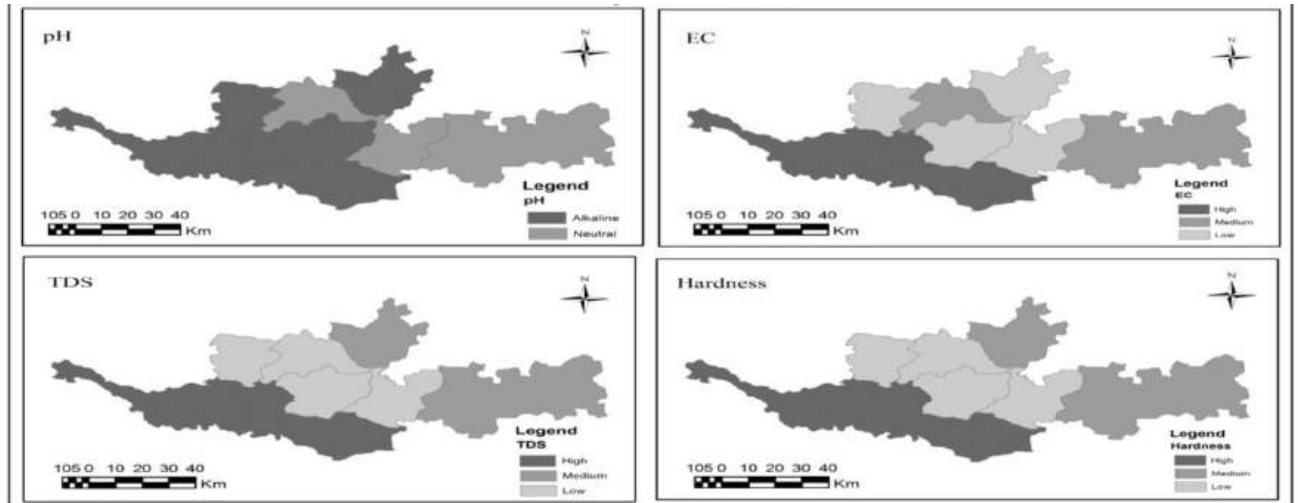
(Source:- Water testing Department Sangli)

Changes in Groundwater Quality from 2023-24 Irrigated Villages

Water Parameter(10500:1991) (Bureau of Indian standard)																					
Sr. No.	Tahsil	Sample Village	No. of Sample (Well / Tube well)	pH (7-8.5)	EC(<1)	TDS (500mg/lit)	Hardness (200mg/l)	Chloride(200mg g/lit)	BOD (30mg/lit)	DO (4mg/lit)	NO3-N (45mg/lit)	COD (250mg/lit)	Sulphates (200 mg/lit)	Copper (0.05 ppm)	Ferrous (1-0.05mg/lit)	Zinc (5 ppm)	Cadmium (0.01 ppm)	mercury (0.01ppm)	lead (0.1 ppm)	Alkalinity (200 mg/lit)	Iron (0.3 to 1.0 mg/lit)
2	WALAWA	Junekhed(W)	1	8.7	1.6	503	207	186	16	1.9	43	250	193	0.03	1.50	5.1	0.04	0.03	0.40	210	1.1
		Borgaon(B)	1	8.5	1.6	501	203	179	22	2.7	42	252	197	0.05	1.70	5.2	0.02	0.04	0.20	213	1

(Source:-Field Visit)

Groundwater Quality Irrigated Villages

**Conclusion:**

The study of the levels of agricultural development reveals that the Most Backward, Backward, Developing, Developed, and More Developed level of agricultural development is confined to areas with assured water supply. The dominance of Wheat, Jawar, and sugarcane farming, social awareness among the farmers, the Cooperative movement, and the role of sugar industries have played a significant role in the development of the agricultural level

After analyzing the underground water, it is yet to be seen that, in the village of Irrigated Villages Tahsil, during the period from 2001 to 2023-24 the result of agricultural development has shown that during the period the average quantity pH is respectively as 8.06 in 7. 21 pH 7. 55 pH 8. 06 This means that pH - has increased 7.5 respectively within the same period, TDS is (367.1, 411. 25, 454) Hardness is (157, 168. 60, 186.9) and growing respectively. The

change in all the above 18 parameters means that the changes in the quantity of underground water are due to the additional factors used in agriculture. Electrical conductivity (<0.77, <0.99, <1.62), chlorides respectively (15 9, 181.55, 166) .4) has decreased the number of accounts of BOD is (24.45, 20.05, 17.7) decreased, respectively (3.3, 2.85, 2.11) because of the use of extra fertilizer. NO₃ respectively (32.95, 40.00, 42) whereas the alkalinity also has been changed ratio is (151.6, 174.05, 184.55) respectively, in the irrigated tahsil, changes are found in underground water samples of the village.

All these changes are found in the selected villages from the irrigated tahsil, and the effects on water changed the ecological elements of agriculture, which are affected by malpractices in the agriculture sector. with these in 18 parameters appear to be changed in the water flow is changed, due to the irrigation scheme. This water was used for farming in diffusion but now the

adverse effect of this development seen on the farm is now visible from above analysis. Therefore, farming has grown due to the modernization of the farming but it had a negative impact on the environmental development is seen today; Water, walwa tahsil there is need to forget that care of these factors. And it is understood from the fact that agriculture is affecting variable like soil, water and vegetation life sources on earth. Water is one of the most essential natural resources, to sustain life on earth planet, but the scarcity of it is a worldwide issue within last few decades and still, it is experienced critically now also. Its demands, rapid increase in population and expanding the economy of the country. Variations in climatic characteristics both in space and time are responsible for uneven distribution of precipitation in India. It is posing a challenge to the existing water resources and those who are responsible for the management of water resources. Hydrological studies are required to be taken up for assessment of water resources under

changing climatic scenarios. For safe drinking water, it is essential to generate reliable and accurate information about water quality. To sustain life on earth in all its totality, water should be carefully managed in its natural habitats.

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Educational Status of Nabhik Community in Kolhapur District

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Abstract:

This study reviews the educational status of the Nabhik community in the OBC category of Kolhapur district. Indian society is diverse in terms of caste, religion, language and region. During the post-independence period, sincere and concerted efforts were made for the economic and educational development of the backward classes. But due to the absence of caste-wise census, it was not possible to understand the current social and economic status of the caste in a particular category. The policy makers did not pay much attention to this. Due to this, the educational study of the Nabhik community shows that there has been a leakage from education and this has directly affected their overall educational status. It also clarifies the educational status of women in this community and explores gender equality because it is also very important for the development of the country that both sexes participate in the welfare. The Nabhik caste is one of the major castes in Kolhapur district. The literacy level of the Nabhik community is low compared to the total literacy rate in Kolhapur district.

Keywords: Nabhik, Literate, Illiterate Education level etc.

Introduction:

Education is a human right. It is the mirror of our modern society and is essential for human liberation and social development (Sharma, 2003). It is an undeniable fact that education is the key to economic growth, social justice and equality, scientific progress, national integration and cultural preservation and India's continued rise, progress and leadership on the global stage. Education plays a vital role in social change, initially at the individual level, as it contributes to changing attitudes and perceptions and subsequently to occupational mobility, but at the broader level, education has a significant impact on social transformation and social change and development. Indian society is diverse in terms of caste, religion, language and region. The level of literacy rate in India is

constantly improving. Backward social communities like SC, ST and OBC are deprived of the mainstream. Castes in OBC society in India are at the lowest position in socio-economic development. Low school participation and high dropout rates were found among the OBC population. This level of caste reflects the level of literacy and therefore, the level of literacy is not an economic problem rather than a social problem.

The caste structure in India is a typical ethnic pattern of caste. It has its origins in ancient times and has been transformed by many rulers who have gained privileges in the primitive, pre-modern period of India. Caste structure is comprised of two different concepts, Varna and Jata, which are evident from different stages of analysis of this structure. Nabhik is

a caste in India that was early and people usually worked as barbers. They are known as a middle upper caste, but in the past they were considered inferior due to their custom. However, now it is reflected as a middle upper caste and hence they are also known as Other Backward Castes in some parts of the world today due to their previous beliefs. Depending on the region, this community is known by many names such as Navi, Nhavi, Nabhik, Varik, Napit, Mhali, Waland, Hadapada, Hajjam, Navisen, Lingayat Nhavi etc. The Nabhik community is one of the major communities in Kolhapur district. The Nabhik are a section of society that depends on traditional occupations and agriculture for their livelihood. The main occupation of traditional economic activities. Some of them settled in villages and cities. In modern India, due to the large-scale occupational change, other occupations and professions are being adopted. The literacy rate among the Nabhik is low. Many children drop out of school after a few years so that their parents can earn a living. Nabhik women have a secondary status compared to men.

In this context, the present study examines the educational status of the Nabhik community in Kolhapur district.

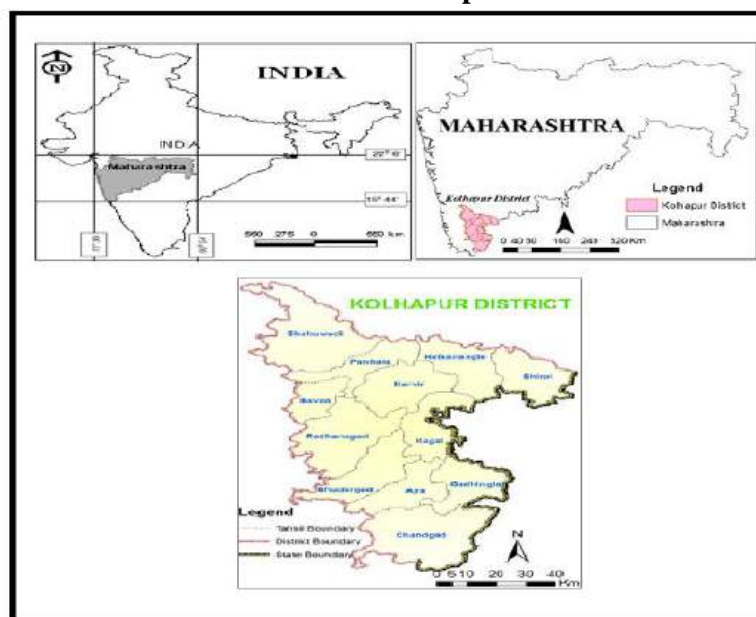
Objective:

The main objective of the study to examine the Educational status of Nabhik other backward class population in Kolhapur district

Study Region:

Kolhapur district is located in the extreme southern part of the state of Maharashtra. It lies between 15°43'N to 17°17'N latitude and 73°40'E to 74°42' longitude. It is bounded by Sangli district to the north, Karnataka state to the east and south, and Ratnagiri and Sindhudurg districts to the west. The natural boundaries are the Sahyadri range in the west and the Warna River in the north. As per 2011 census, the district has an area of 7,685.00 sq km and a population of 38, 76,001. The area of the district is 2.50 percent of the total area of the state, while the population of the district is 3.45 percent of the total population of the state. The population density is 504 persons per sq km. The district ranks 20th in terms of area, 9th in terms of population and 5th in terms of density among the 35 districts of the state. The district headquarters is at Kolhapur with a population of 5, 49,236 as per 2011 census.

Location Map



Database and Methodology:

The present research work is based on primary data. It is collected through a well-designed questionnaire schedule. It collects data at the grassroots level and attempts to answer the research problem. Stratified sampling technique has been used to assess the educational status of the study area. A total of 840 samples have been collected from rural as well as urban areas across 12 tehsils.

Secondary data sources have also been used. Data related to Kolhapur has been obtained from various sources like Census of India Report, District Census Handbook, District Socio-Economic Survey and District Official Website. Social, economic, demographic and geographical

factors influence the educational status at various levels to find and study the reasons responsible for uneven development. This study will be useful in formulating specific policies for the socially and economically backward sections.

Educational Status of Nabhik Community in Kolhapur District:

Even after independence, many weaker sections of Indian society were deprived of education. They gradually started getting education after the mid-1980s. The disparity in the level of illiteracy is still noticeable in the Nabhik community of Kolhapur district. Poverty, illiteracy and unemployment are the fundamental problems of the Nabhik community.

Table1: Tehsil wise literate and illiterate Scenario of the Nabhik Community in Kolhapur District.

Area	Education					
	Literate		Illiterate		Total	
	No. of Respondents	%	No. of Respondents	%	No. of Respondents	%
Rural	464	71.1	189	28.9	653	100
Urban	162	86.6	25	13.4	187	100
Total	626	74.5	214	25.5	840	100
Shahuwadi	50	71.4	20	28.6	70	100
Panhala	54	77.1	16	22.9	70	100
Hatkanangale	56	80.0	14	20.0	70	100
Shirol	55	78.6	15	21.4	70	100
Karvir	57	81.4	13	18.6	70	100
Gagnbavda	48	68.6	22	31.4	70	100
Radhanagari	51	72.9	19	27.1	70	100
Kagal	53	75.7	17	24.3	70	100
Bhudargad	52	74.3	18	25.7	70	100
Ajara	50	71.4	20	28.6	70	100
Gadhinglaj	51	72.9	19	27.1	70	100
Chandgad	49	70.0	21	30.0	70	100
Total	626	74.5	214	25.5	840	100

Source: Primary Data, 2024.

Table 1 shows that in Kolhapur district, tehsil wise literate and illiterate people of Nabhik community responded. It is seen that in Kolhapur district, 74.5 percent literate people and 25.5 percent illiterate people responded. In terms of percentage

obtained, the literacy rate was highest (81.4 percent) in Karveer tehsil, followed by Hatkanangle (80.0 percent), Shirol (78.6 percent), Panhala (77.1 percent), Kagal (75.7 percent), Bhudargad (74.3 percent) and Ajra, Shahuwadi (71.4 percent) and the lowest

literacy rate was recorded in Gaganbawda (68.6 percent).

Therefore, 25.5 percent illiterate people were recorded in Kolhapur district. Gaganbawda (30.0 percent) and Chandgad

(31.4 percent) talukas have the highest number of illiterates, while Karvir taluka has the lowest number of illiterates (18.6 percent).

Table 2: Educational level of the Nabhik Community in Kolhapur district.

Educational Qualification	Rural		Urban		Total	
	No. of Respondents	%	No. of Respondents	%	No. of Respondents	%
Primary	145	22.2	40	21.4	185	22.0
Secondary	167	25.6	53	28.3	220	26.2
Higher secondary	65	10.0	27	14.4	92	10.9
Graduate	33	5.1	17	9.1	50	6.0
Post Graduate	16	2.4	9	4.8	25	3.0
Other	38	5.8	16	8.6	54	6.4
Not Applicable	189	28.9	25	13.4	214	25.5
Total	653	100	187	100	840	100

Source: Primary Data, 2024.

Table 2 shows the educational attainment of the Nabhik community in Kolhapur district. Of the population of the Nabhik community in Kolhapur district, 22.0 percent have completed primary education, 26.2 percent have completed secondary education, 10.9 percent have completed higher secondary education, 6.0 percent have completed graduation, 3.0 percent have completed postgraduate education and 6.4 percent have completed other types of education.

The data shows that 22.2 percent of the rural population and 21.4 percent of the

urban population have completed primary education. It is seen that the literacy rate of the Nabhik community in urban areas is higher than that of rural areas. In short, the social problems of the Nabhik community in the study area are illiteracy and low education. This is mainly due to the lack of awareness among the community about the importance of education and low income. Low income and poverty contribute to the increase in illiteracy among the Nabhik community in Kolhapur district.

Table 3: Gender wise Education Level in Nabhik community in Study Region

Educational Level	Gender					
	Male		Female		Total	
	No. of Respondents	%	No. of Respondents	%	No. of Respondents	%
Primary	142	23.0	43	19.3	185	22.0
Secondary	168	27.2	52	23.3	220	26.2
Higher secondary	69	11.2	23	10.3	92	10.9
Graduate	38	6.2	12	5.4	50	6.0
Post Graduate	19	3.1	6	2.7	25	3.0
Other	42	6.8	12	5.4	54	6.4
Not Applicable	139	22.5	75	33.6	214	25.5
Total	617	100.0	223	100.0	840	100.0

Source: Primary Data, 2024.

Table 3 shows the gender-wise education rate of the Nabhik community in Kolhapur district. The data shows that about 23.0 percent of the total males and 19.3 percent of the total females have recently completed primary education. 27.2 percent of the total males and 23.3 percent of the total females have recently completed secondary education. It is worth noting that about 33.6 percent of the female respondents are illiterate. The proportion of female graduates is only 5.4 percent and only 2.7 percent of the females have registered postgraduate education.

This shows that the illiteracy rate among males is 22.5 percent and among females is 33.6 percent, which means that the illiteracy rate among females is relatively higher than that among males in Nabhik community. There are several reasons behind the high illiteracy rate among females in Nabhik community. Social ideology and biased gender attitudes can also be a reason for the low literacy rate among females.

Conclusion:

The main conclusion of the study is as follows; Nabhiks live in unity and harmony with other castes in the society. In the last few years, Nabhiks have become more conscious about the education of their children and are also educating their girls. However, the educational status of the Nabhik community was found to be low. The Nabhik community is relatively backward in the professional, educational and political fields. The literacy rate of the Nabhik community was lower than the overall literacy rate of both rural and urban areas. Also, they are deprived of employment opportunities. The female literacy rate in the study area was very low. They still face numerous problems that hinder their progress and development. People from the lower category are getting various benefits from government schemes

to improve their welfare and raise their social and economic status in the society. They are taking advantage of government policies to improve their lives. There is a need to expand the scope of these schemes and create awareness among the people about them. This study shows that while there is still much work to be done to improve the condition of the barber caste community in India, we have come a long way in establishing equality for all in Indian society.

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Threats to the Tree Diversity of Gardens in the Kolhapur City (MS)

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Abstract:

Kolhapur is historical city situated near the shoulders of Western Ghats. The city is rich in heritage sites as well as gardens. According to information from Garden Department, Kolhapur Municipal Corporation (KMC) there are 53 gardens in the Kolhapur city under the control of Kolhapur Municipal Corporation. In the centre of city a historical and biodiversity rich garden i.e. Town hall garden is situated. The Town hall garden is under control of government of Maharashtra. The documentation of tree diversity of these gardens was made. While doing survey of tree species among these gardens we came across different threats to them. These threats and future plans to control them are discussed in the present study.

Keywords: Kolhapur City, Trees, Gardens, Threats.

Introduction:

Gardens can make a significant positive contribution to biodiversity in urban environments and the delivery of ecosystem services. Plants plays vital and important role for every organism on this planet. They act as lifeline and backbone of surrounding environment. Gardens are the places for recreation and relaxation. The public health benefits of gardens have been well described, in terms of improved mental health and well-being, increased physical activity and a source of healthy homegrown nutrition (Chalmin-Pui *et al.*, 2021; de Bell *et al.*, 2020; Soga *et al.*, 2017, Richard *et al.*, 2023). Gardens have also been identified as an important force for social cohesion (Schram-Bijkerk *et al.*, 2018). In addition, they may play a pivotal role in developing positive attitudes towards nature conservation (Cosquer *et al.*, 2012), not least because for many people they constitute their main source of contact with the natural

world (Bhatti and Church, 2001; Dunnett and Qasim, 2000).

Every human being must know their green wealth of the city. To understand their importance in urban life we decided to make survey of trees in the gardens. There are 53 gardens on the record of Kolhapur Municipal Corporation which cover an area of ca. 0.4 % (30 hectare) of total area of Kolhapur city (ESRK, 2015-16). In the present study 60 gardens are surveyed to fulfill the objectives (Aitawade *et al.*, 2019). Desai and Samant (2016) studied 7 gardens as Urban Wilderness area from Kolhapur and they had reported 144 trees and shrubs, 35 butterfly species, 17 reptiles, 105 birds and 17 mammals. The garden habitat had highest number of tree and shrub species, many being ornamental and exotics (Desai and Samant, 2016). Trees in the different gardens are grown as ornamental, fruit and flowering plants as well as for their medicinal value.

Study Area:

Kolhapur is one of the important and heritage rich cities of South Maharashtra, India. It is an important industrial, commercial center and an important educational center. Kolhapur is located on the right bank of the Panchganga River, a tributary of the Krishna River. The city is situated at 16°42' North latitude and 74°14' East longitude at an altitude of 650 meters above mean sea level. The total area of the study region is 66.82 square kilometers. Kolhapur has a moderate climate with annual rainfall ranges from 1,500 to 3,100 mm while temperatures rarely dropping below 15°C and occasionally rising above 40°C.

Methodology:

The survey of tree species of 60 gardens was planned systematically. Survey of each garden is thoroughly made and all tree species were documented, listed and photographed. During this survey threats to the trees also documented. Photographs were taken with the help of mobile camera.

Results and Conclusions:

Gardens are considered essential part of any urban landscape. The Town Hall garden is one of the oldest botanical garden in the Kolhapur city, has preserved a variety of rare trees. Along Jayanti nala, Hutatma Park and Mahavir gardens are situated which support different microhabitats. Rapid growth of city without green places and many anthropogenic activities are exerting pressure on the existing limited garden habitats.

These trees are facing many threats due to anthropogenic activity as well as from some natural enemies like fungi, insects-pests, etc.

Among the 60 gardens, very few gardens in the Kolhapur city are well maintained. These places are not clean and well maintained. There is no well

established compost plant. The fallen and dried leaves were collected and burn in the garden. In some gardens we found that, this biomass is burnt at the base of tree trunk (Fig. 1). There is no proper water management for plants in the garden. In our survey we noticed that many gardens are badly used for drinking alcohol and as a duping yard to dump wastes like plastic plates, cups and glasses, alcohol and beer bottles, food packaging plastic wrappers and bags, plastic drinking bottles, packing boxes, etc. (Fig. 2). Water bodies are also not well maintained (Fig. 2). Some trees (Fig. 1) are infected by insects (Termites, etc.), wood rotting fungi (*Daldania* sp., *Polyporous* sp., *Ganoderma* sp., etc.), parasites (*Loranthus* sp., etc.) etc.

The trees in the gardens are not well pruned and trained. In very few gardens name plates or labels are there for the identification of trees. But all the species are not labeled well scientifically. Weeds are not controlled systematically. Even compound wall of some gardens is in bad condition or fall off. There are no well developed nurseries in the garden for raising seedlings as a part of multiplication and conservation. Vandalism, littering, burning of garden waste, over lighting and apathy towards biodiversity are the major threats to garden habitats in the study area which supports the observations of Desai and Samant (2016).

Remarks and Recommendation:

1. Every garden should have its name board, instruction board and statistical data of plant diversity.
2. Endemic and RET species should be introduced in the gardens as per availability of space for the purpose of conservation.
3. Each tree species of every garden should be well and correctly labeled with help of taxonomist.
4. There should be well established nursery in the gardens which

occupies large area. e.g. Town Hall garden, Hutatma park garden, Mahaveer garden, Tarabai garden etc.

5. In the future plantation programme the trees are planted with scientific base and at proper distance.
6. Burning to fallen and dried leaves should be avoided and banned. It is possible develop well established compost plant in each garden.
7. Carrying plastic, thermocol and related products should be banned in each garden.
8. Impositions of crucial disciplines like Darubandi (ban on Alcohol drinking) are needful for keeping aesthetic value, conservation and development of greenery in the garden.
9. Proper management of water and care should be there for new plantations. Weeding should be done after specific intervals.
10. The present work is an attempt towards bringing in focus of academicians, policy makers and local NGOs for their utilization and conservation as well as development of the gardens.

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Fungal growth on tree trunks



Insect attack on *Pongamia pinnata*



Insect attack on *Ficus microcarpa*



Loranthus on *Euphorbia leucocephala*



Irregular cutting of trees



Threats to the trees due to burning of dried leaves at the base of trunk

Fig. 1: Threats to the trees in the gardens of Kolhapur City



Different wastes are dumped in to gardens.



Alcohol bottles and plastic bags in the gardens.



Water storage tanks are not well maintained



Water resources in some gardens are badly polluted due to dumping of wastes

Fig. 2: Anthropogenic activities responsible for threats to garden trees and water bodies.



Present Insights into Tikka Disease of Groundnut: Pathogenesis, Impact and Management Strategies

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Abstract:

Groundnut is a vital soil seed crop, significantly contributes to global agricultural economics. However, its production is hampered by number of fungal diseases such as tikka disease. Tikka disease of groundnut (*Arachis hypogaea* L.) is caused by *Cercospora arachidicola* (early leaf spot) and *Cercosporidium personatum* (late leaf spot), possess significant threat to groundnut cultivating countries globally. It causes yield loss ranging from 15 to 70 % under severe infection. Current disease management strategies include cultural, chemical and physical practices. In addition to this, use of biological control agents and integrated disease management (IDM) strategies are also implemented by few farmers. Present disease management strategies seem to be not sufficient for complete control of this disease. However, challenges such as fungicide resistance and climate variability demand innovative and progressive preventive measures. Therefore, it is important to develop additional, advanced and more improved disease management strategies via the implementation of sustainable approaches. This review provides a comprehensive overview of the epidemiology, symptoms, impact of tikka disease on groundnut yield and recent research findings on the management of the disease. Hence, this review explains that to prevent commercial loss caused due to tikka disease of groundnut, our future research must focused on developing disease resistant groundnut cultivars, more improved biological control agents and sustainable disease management strategies to ensure groundnut productivity and food security.

Keywords: Groundnut, Tikka Disease, Disease Management, Pathogenesis, Integrated Disease Management (IDM), Biological Control etc.

Introduction:

Groundnut (*Arachis hypogaea* L.), also called as 'Peanut' mainly cultivated for oil production and for human-animal consumption. Groundnut is one of the most important legume known for its diverse uses such as oil production, direct consumption as a food products, and also for animal consumption in the form of hay, silage and peanut cake (Rami et al., 2014). Peanut is an excellent nutritional source as it has been exploited for combating malnutrition in children. Most groundnuts grown in the

world are used for oil production, groundnut butter, confectionaries such as roasted groundnut, snack products, extenders in meat product formulation, soups and desserts.

More than thousands of groundnut varieties grown all over the countries, the most predominate varieties are Spanish, Runner, Virginia and Valencia. Major groundnut producing states of India includes Gujrat, Andhra Pradesh, Rajasthan, Karnataka, Madhya Pradesh, Maharashtra, Tamil Nadu and Uttar Pradesh (Gayatri,

2018). The characters such as differences in flavor, oil content, size, shape and disease resistance decide the preference of selection of variety (Balasubramanian, et al., 2024). Researchers are working on breeding and improvement of groundnut varieties to increase its yield, to develop disease and pest resistant varieties, biotic and abiotic stress tolerant variety, improving quality and quantity of oil including safety of its consumption.

External Morphology of Groundnut:

The peanut commonly known as the legume. Like most other legumes, peanuts contain symbiotic [nitrogen-fixing](#) bacteria in [root nodules](#), which improve [soil fertility](#), making them valuable in [crop rotations](#). The peanut is an [annual herbaceous plant](#) growing 30 to 50 centimetres (12 to 20 in) tall. As a legume, it belongs to the botanical family [Fabaceae](#), also known as Leguminosae, and commonly known as the legume, bean, or pea family.

The [leaves](#) are [opposite](#) and [pinnate](#) with four leaflets (two opposite pairs; no terminal leaflet); each leaflet is 1 to 7 cm long and 1 to 3 cm across. The leaves are [nyctinastic](#); that is, they have "sleep" movements. The flowers are 1 to 1.5 cm across, and yellowish orange with reddish veining. They are borne in [axillary](#) clusters. Peanut fruits develop underground, an unusual feature known as [geocarp](#)y. The pods, technically called legumes, are 3 to 7 centimetres (1 to 3 in) long, normally containing one to four [seeds](#)

Parts of the peanut include:

- [Shell](#) – outer covering, in contact with soil
- [Cotyledons](#) (two) – the main edible part
- [Seed coat](#) – brown paper-like covering of the edible part
- [Radicle](#) – embryonic root at the bottom of the cotyledon, which can be snapped off

- [Plumule](#) – embryonic shoot emerging from the top of the radicle

Production of Groundnut:

Groundnut is grown in about 120 countries in the world in total area of 24.6 million ha, with a world production of 38.2 million tonnes. Asia is major peanut producing region in the world. Among this region, China and India are the major contributors with 15.7 and 5.6 million tonnes in 2010 respectively (FAOSTAT, 2016). Africa ranks second in terms of groundnut production. According to report of Directorate of Economics and Statistics of 2020 The top producers of the groundnut among the countries, China (44%) followed India (20%) and Nigeria (11%) holds the shares of 75% of the world's production. With respect to groundnut oil, India contributes 16 per cent share and hold second largest producer. Worldwide peanut production is principally dedicated to oil and food products. According to Revoredo and Fletcher (2002), peanut production during 1996 to 2000, total peanut production has been divided into 49% of world production has been used for oil and 41% used as a food component. Oil cakes prepared from groundnut are used to feed livestock as it is an excellent source of protein. In most of the foreign countries, groundnut straw is also used as dried hay and represents a major source for cattle feed during dry season.

Among most of the grain legumes, peanut plays a significant role as a nutritional source for human consumption. The positive impact of peanut on human health has been reported by several reports and it has been reported by several researchers and it has been widely exploited for highly nutritious food products used in the treatment of severe child malnutrition (Briend, 2001).

Resistance to Pest and Pathogens:

Pest and pathogen resistance in groundnut (*Arachis hypogaea*) is critical for ensuring its productivity and sustainability. Groundnuts are susceptible to various pests and pathogens that significantly reduce yield and quality. Pest and pathogen resistance in groundnut is critical for ensuring its productivity and sustainability. Groundnuts are susceptible to various pests and pathogens that significantly reduce yield and quality. According to Upadhyaya et al., (2011 b) resistance to pest and pathogens have been reported in several varieties of *Arachis*. Developing and adopting pest- and pathogen-resistant groundnut varieties and implementing holistic management strategies are essential for achieving higher productivity and reducing losses.

Evaluation for Nutritional Value:

The nutritional importance of groundnuts is recognized mainly as proteins, lipids, carbohydrates, vitamins, minerals and organic compounds. The purine present in the groundnut is known as energy and growth supplementing constituents of the human body (Woodroof, 1973). Peanut is an important food and oil crop. Researchers are working on improving protein content, oil quality in seeds and disease resistance against pathogens and diseases. Groundnut is calorie-dense and packed with vitamins, minerals, antioxidants and other nutrients that are vital for maintaining good health. The human dietary system includes groundnut like energy that could prevent immune-based disorders, decrease chronic disease risk and promote longevity. The hunger and malnutrition are serious threats in developing countries which can be reduced by the food supplements like groundnut which are nutrient-rich as well as bioactive compounds (Balasubramanian, et al., 2024). The oil and protein content, sterol composition, fatty acid content of groundnut

seeds has been studied by Stalker et al., (1889).

Groundnuts have been known as a valuable protein source. Because the protein present in groundnut is plant based and also groundnut contains supplementary components viz., fiber and unique bioactive promoting positive health benefits. Groundnut contains moisture 4.9- 6.8 per cent, 21-36.4 per cent protein, 36-54 per cent and fat 18 per cent carbohydrate. The ranges of groundnut nutrient constituents as carbohydrate 21-37 per cent, protein 20.7-25.3 per cent, crude fat 31-46 per cent, ash 1.2-2.3 per cent and crude fiber 1.4-3.9 per cent Yadav et al. (2018). The constituents of Indian raw groundnut kernel are 17.4 per cent carbohydrate, 25.5 per cent protein, 47.3 per cent fat, 5.6 per cent moisture and 1.8 per cent ash (Woodroof, 1973)

Epidemiology and Etiology of Tikka disease of Groundnut:

Groundnut is affected by number of pest and pathogens. Major pests affecting groundnut includes Aphids (*Aphis craccivora*), Thrips (*Thrips tabaci*, *Frankliniella* spp.), White grubs (*Holotrichia* spp.), Red hairy caterpillar (*Amsacta albistriga*) Bihar hairy caterpillar (*Spilosoma obliqua* Hb., Arctiidae, tobacco caterpillar (*Spodoptera litura* (F.), Notcuidae) and gram pod borer (*Helicoverpa armigera* Hb., Noctuidae). The symptomatology of the damage caused by various insects was given by Wightman and Amin (1988). The populations of many pests including *S. litura* have developed resistance to many commercially available pesticides as observed by Gowda (1999). Number of fungal diseases have been reported which causes severe yield loss in groundnut crop. Major fungal diseases and their pathogen includes Early leaf spot, whereas bacterial disease include Bacterial wilt caused due to *Ralstonia solanacearu* and viral disease include Groundnut rosette disease, caused by

Groundnut Rossette Virus and transmitted by aphids.

Among these above-mentioned diseases, fungal disease leaf spot/ tikka disease is one of the most significant foliar diseases of groundnut, caused by two major fungal pathogens:

Cercospora arachidicola causes early leaf spot and *Phaeoisariopsis* (formerly known as *Cercosporidium personatum*) causes late leaf spot. Both cause severe defoliation, reduced photosynthetic activity and yield losses up to 50% and severe.

Due to lack of awareness on diagnosis of pest and diseases, excess usage of chemicals are being used thereby increasing the cost of cultivation. Pathogens, weeds and insect pests causes huge economical losses.

Among the diseases, root rots and leaf spots are the main problem in majority districts resulting in 30% yield losses. The leaf spots commonly called as tikka disease occur wherever the groundnut crop is grown. The pathogens may survive from season to season on volunteer groundnut plants and infected crop debris. Long distance distribution of the pathogens may be by airborne conidia, by movement of the infected crop debris, or by movement of pods or seeds that are surface-contaminated with conidia. Early and late leaf spot pathogens are also soil-borne (Nolt and Reddy, 1984).

Disease Management Strategies implemented by Farmers:

Shahid et al., (2010) stated that productivity levels are much lower to meet the requirements of edible oil production, mainly due to occurrence of various fungal foliar diseases in groundnut plant. Effective disease management strategies for groundnut (*Arachis hypogea* L.) involves integrating cultural, biological, chemical and resistant variety approaches to minimize yield losses.

Below are the key strategies implemented for managing groundnut diseases.

A. Cultural Practices:

Cultural practices are essential in managing Tikka disease of groundnut, caused by *Cercospora arachidicola* (early leaf spot) and *Phaeoisariopsis personata* (late leaf spot). These practices aim to reduce disease incidence and severity by modifying the environment and reducing pathogen inoculum. Below are the key cultural practices:

1. Crop Rotation:

Removal of Crop Residues: Destroy or bury infected plant debris after harvest, as these serve as the primary source of inoculum for the next crop.

Weed Management: Eliminate weeds that can harbor pathogens and act as alternate hosts.

2. Timely Sowing:

Adjust sowing time to avoid peak environmental conditions (high humidity and moderate temperatures) that favor Tikka disease. Early sowing can help the crop escape severe disease pressure.

3. Proper Plant Spacing:

Maintain optimal plant spacing to improve air circulation within the crop canopy. Reduced humidity and better sunlight penetration lower the chances of spore germination and infection.

4. Use of Disease-Free Seeds:

Use certified, disease-free, and high-quality seeds to prevent the introduction of the pathogen into the field. Treat seeds with fungicides (e.g., thiram or captan) to eliminate seed-borne inoculum.

5. Soil Management:

Tillage: Deep plowing can help bury infected plant debris, reducing the availability of inoculum.

Drainage: Avoid waterlogging by ensuring proper drainage, as high moisture promotes disease development.

Soil Amendments: Use gypsum, lime, or other soil conditioners to maintain soil health and suppress disease.

6. Balanced Nutrition:

Provide adequate and balanced nutrients to promote healthy plant growth:

Calcium: Essential for pod development and reducing susceptibility to diseases.

Potassium: Strengthens plant tissues and enhances disease resistance.

Micronutrients: Zinc and boron improve plant defense mechanisms.

Avoid overuse of nitrogen fertilizers, which can lead to lush growth, creating a favorable environment for Tikka disease.

7. Intercropping:

Practice intercropping groundnut with crops like maize or sorghum to reduce disease spread by disrupting the pathogen's movement.

8. Irrigation Management:

Use drip or furrow irrigation to keep the foliage dry, as wet leaves promote the germination and spread of fungal spores. Avoid overhead irrigation, particularly during high humidity conditions.

9. Resistant Varieties:

Cultivate Tikka-resistant groundnut varieties such as TMV 2, ICGV 91114, or JL 24 to minimize disease susceptibility.

By implementing these cultural practices, farmers can effectively manage Tikka disease and reduce dependency on chemical fungicides, making groundnut production more sustainable.

B. Chemical Disease Management:

Though chemical pesticides and fungicides are in use to control the pests and diseases, strategies in approaching eco-friendly practices are the need of the hour for sustainable agriculture. Ghewande and Nandagopal (1997) have reviewed IPM practices to control various pest and diseases in groundnut. Smith and Littrell (1980) reported that application of fungicides plays a significant role in suppression of leaf spot

disease in groundnut and this led to increased usage of fungicides.

Mayee (1987) stated that groundnut is susceptible to various diseases caused due to different causal agents such as fungi, bacteria, virus and nematodes. Number of various fungi causes various diseases in groundnut which leads to heavy yield loss in groundnut cultivating region throughout the world (Mayee, 1995). According to Mayee and Datar (1988), foliar fungal diseases cause severe damage during any growth stage of crop and can cause yield loss up to 25 % or more. Subramanyam et al., (1980), concluded that leaf spot or tikka disease of groundnut is the most important foliar fungal disease of peanut and without foliar application of fungicides the commercial loss may exceed up to 50% (Ghugre et al., 1981).

The pathogen cause leaf spot damage to the plant by reducing the available photosynthetic area by formation of lesions. It leads to leaflet abscission and finally reduction in the quality and quantity of the yield (Sharma et al., 2020). Both fungi produce lesions on the leaflets, petiole, and stem. Due to the infection, severely spotted leaves shed prematurely and the quality and quantity of nuts reduced drastically. Sharma et al., (2020) concluded that, factors such as prolonged high relative humidity for more than two to three days, low temperature (less than 20 ° C) with dew, heavy nitrogen doses and phosphorous fertilizers and deficiency of magnesium in soil play significant role in increasing potentiality of disease.

Previous researchers have been revealed that, combined application of fungicides found to be more significant in prevention of foliar diseases of groundnut. Subrahmaniyam et al., (1995) and Munda et al., (1997) reported that several fungicides have been identified and evaluated for their efficacy to control leaf spot disease in groundnut. Due to fungicide application, genetic potentiality of plant to manage leaf

spot disease increases which leads to decrease in disease incidence and yield reduction (Sharma et al., 2020). Use of systemic fungicides in management of leaf spot disease can inhibit the spore germination and penetration of the pathogens inside the plant. Nutsugah et al., (2007) conducted a study in Northern Ghana and evaluated efficacy of different concentration of tebuconazole against early and late leaf spot disease of peanut. Sharma et al., (2020), performed an experiment and concluded that combined application of two different group of systemic fungicides (Triazole and Strobilurin) i. e. tebuconazole 50% + trifloxystrobin 25% W.G. was found very effective at 0.25 % concentration against early and late leaf spot disease of groundnut pathogen. It also helpful to increase pod as well as haulm yield. Nath et al., (2013) conducted an experiment to test the potentiality of various fungicides, among them tebuconazole found to be most superior and shows increased yield up to 67%. Its presence also reduced disease percentage by 52.42 %. Mushrif et al., (2017) evaluated seven fungicides under both in vitro and in vivo conditions against *Cercospora arachidicola* and *Cercosporidium personatum* during kharif season (2008-09 to 2009-10) and concluded that tebuconazole suppresses the germination of the spore of both the pathogens completely at 50 ppm concentration under both conditions.

C. Biological Control:

Ghewande and Nandagopal (1997) have reviewed IPM practices to control pest and diseases in groundnut. Most of the existing biocontrol agents for management of soil-borne diseases were isolated from the rhizosphere. There is a possibility to explore antagonists from other habitats as potent biocontrol agents (Manjula et al., 2002). Some species of the genus *Trichoderma* have been used as effective biocontrol agents against soil-borne, foliar and postharvest phytopathogenic fungal

pathogens (Kubicek et al., 2001; Sharma et al., 2005) *Trichoderma* spp. was found to colonize the root epidermis and outer cortical layer and release bioactive molecules (Yedidia et al., 1999). Sreenivasalu et al. (2002) have worked on IPM practices in groundnut against *S. litura* and other sucking pests Yambhatnal et al. (2011) revealed IPM module consisting of GPBD-4 variety of groundnut resistant to late leaf spot and rust, seed treatment with *Trichoderma* @ 4g/Kg, foxtail millet as intercrop (7:1). Gajera et al., (2011) in a study revealed that application of *T. viride* and *T. harzianum* found to be effective against collar rot incidence in groundnut caused due to *Aspergillus niger*.

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सरसेनापती प्रतापराव गुजर स्मारक नेसरी महत्व व संवर्धन

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गोषवारा:

ऐतिहासिक दृष्ट्या कोल्हापूर जिल्ह्याला खूप महत्वाचे स्थान आहे. इतिहास म्हणजेच भूतकाळात होऊन गेलेल्या घटनांचा अभ्यास असतो. पण हा इतिहास जाणून घेण्यासाठी विविध साधनांची मदत घ्यावी लागते. त्यांच्या मदतीशिवाय आपण इतिहास जाणून घेऊच शकत नाही. त्या साधनांमध्ये प्राथमिक साधने आणि दुय्यम साधने असे प्रकार आहेत. त्यापैकी प्राथमिक साधनांमध्ये ऐतिहासिक वास्तू, ऐतिहासिक स्मारके, किल्ले, काही समकालीन ग्रंथ अशा विविध घटकांचा समावेश होतो. ही साधने भारतीय पुरातत्व विभागामार्फत जतन करण्याचे प्रयत्न सुरू आहेत. पण सर्वच साधनांकडे या विभागाचे म्हणावे तेवढे लक्ष नाही. त्यामध्ये या ऐतिहासिक साधनांमधील काही साधने नष्ट होण्याच्या मार्गावर आहेत. काही किल्ले मोडकळीस आले आहेत. काही ऐतिहासिक वास्तूंची पडझड झालेली आहे. त्यामुळे ही आपली ऐतिहासिक संस्कृती नष्ट होण्याच्या मार्गावर आहे. यामध्ये काही ऐतिहासिक स्मारके हे नष्ट होण्याच्या मार्गावर आहेत. किंवा त्यांच्याकडे शासनाचे दुर्लक्ष होत आहे.

ऐतिहासिक स्मारकामध्ये कोल्हापूर जिल्ह्यातील नेसरी तालुक्यामध्ये सरसेनापती प्रतापराव गुजर यांचे स्मारक आहे. सरसेनापती प्रतापराव गुजर हे छत्रपती शिवाजी महाराजांचे सेनापती होते. त्यांनी मराठा स्वराज्य वाचवण्यासाठी बहलोल खाना सोबत आपल्या सहा सहकारी मावळ्यांसह ते लढले होते. त्यांनी आपल्या शौर्याने स्वराज्य किंवा मराठ्यांना विजय मिळवून देण्याचा पुरेपूर प्रयत्न केला होता. त्यामुळे या घटनेला बरीच वर्षे झाली आहेत. काळाच्या ओघात ह्या सर्व गोष्टी नामशेष होण्याच्या मार्गावर आहेत. नेसरी येथील स्मारकामुळे ते स्मारक पाहिल्यानंतर लोकांना किंवा आजच्या पिढीला प्रतापराव गुजर यांच्या शौर्याची जाणीव होते. कारण या स्मारकाजवळ एक महादेवाचे मंदिर आहे त्याचबरोबर तेथे एक स्तंभ आहे. त्या स्तंभावर प्रतापराव गुजर यांचा पराक्रम लिहून ठेवला आहे. जर या स्मारकाचे संवर्धन झाले नाही तर हा ऐतिहासिक ठेवा लोकांच्या स्मरणातून हळूहळू नष्ट होईल. आणि आपले मराठी मावळे किंवा त्यांचे पराक्रम ह्या सर्वच गोष्टी लोकांच्या स्मरणातून हळूहळू नाहीशा होतील. त्यामुळे अशा या ऐतिहासिक स्मारकांचे जतन व संवर्धन करणे खूप गरजेचे आहे.

Keywords: इतिहासाच्या अभ्यासाची साधने, ऐतिहासिक स्मारक, स्मारकांचे संवर्धन, संवर्धन करणाऱ्या संस्था, राष्ट्रीय स्मारक प्राधिकरण.

प्रस्तावना :

आपला भारत देश सांस्कृतिक ठेव्याबाबत अतिशय संपन्न आहे. भारत देशास हजारो वर्षांचा सांस्कृतिक इतिहास आहे. कारण हा इतिहास सांगणारी किती एक ऐतिहासिक साधने आज आपल्यामध्ये

अस्तित्वात आहेत. ती आपल्या पूर्वी हजार वर्षांमध्ये झालेल्या घटनेची साक्ष देत उभी आहेत. म्हणून आपल्याला इतिहास समजण्यास त्यांचा उपयोग होतो. या साधनांमध्ये विविध प्रकार आहेत. त्यामध्ये भौतिक, लिखित, मौखिक, पुरातत्वीय इत्यादी साधनांचा

समावेश होतो. या साधनांमध्ये आणखीन एक महत्त्वाचे साधन म्हणजे ऐतिहासिक स्मारक. आज आपल्या अवतीभवती तसेच संपूर्ण जगामध्ये कितीतरी व्यक्तींची स्मारके उभी केलेली आहेत. त्यांचे स्मारक उभे करण्याचे कारण म्हणजे त्यांनी केलेले पराक्रम, त्यांची कामगिरी आणि त्यांचे प्रयत्न होय. पण एवढी महत्त्वाची स्मारके ही आता नष्ट होण्याच्या मार्गावर आहेत. कारण या स्मारकांचे म्हणावे तेवढे संवर्धन सध्या होत नाही आहे. पण ही नष्ट होत असलेली स्मारके आपण जपली पाहिजेत ती सुरक्षित राहिली पाहिजेत. कारण ही स्मारके जर नष्ट झाली तर आपल्या प्राचीन संस्कृती, लोकांचे बलिदान या सर्व गोष्टींचे ज्ञान पुढील पिढीला होणार नाही.

उद्दिष्टे:

- 1) ऐतिहासिक साधनांची ओळख करून देणे.
- 2) ऐतिहासिक साधनांचे विविध प्रकार स्पष्ट करणे.
- 3) ऐतिहासिक साधनांमध्ये स्मारकांचे महत्त्व त्यांचे संवर्धन व जतन यासाठी उपाय योजना सुचविणे.

इतिहासाच्या अभ्यासाची साधने:

इतिहास हा विश्वसनीय पुराव्यावर आधारित असतो. या पुराव्यांना इतिहासाची साधने असे म्हणतात. या साधनांमध्ये भौतिक साधने, लिखित साधने आणि मौखिक साधने असे वर्गीकरण करता येते. भूतकाळात घडलेल्या घटनांची कालक्रमानुसार शास्त्रशुद्ध आणि पद्धतशीर दिलेली माहिती म्हणजे इतिहास होय. व्यक्ती, स्थळ, समाज आणि काळ हे चार घटक इतिहासाच्या दृष्टीने अत्यंत महत्त्वाचे आहेत. त्याचप्रमाणे इतिहासात साधनांचे मूल्यमापन देखील केले जाते. ज्या ऐतिहासिक घटनेचा अभ्यास करायचा असतो तिच्याशी संबंधित अशा अनेक बाबींचा विचार करावा लागतो. त्यामुळे इतिहास लेखन करताना किंवा

इतिहासाचा अभ्यास करताना इतिहासाच्या अभ्यासाची साधने अत्यंत महत्त्वाचे आहेत.

ऐतिहासिक साधनांचे प्रकार:

1) प्राथमिक साधने-

- कागदपत्रांचा आधार
- शासकीय आदेश व कागदपत्र
- राजाने काढलेली फर्माने
- आज्ञापत्रे
- करारनामे
- तहनामे
- पोलीस व न्याय खात्याचे अहवाल
- प्रत्यक्ष सहभागी व्यक्तीचा पत्रव्यवहार
- शासकीय इतिवृत्ते

पुरातत्वीय साधने -

पुरातत्वीय वस्तू , भांडी, आयुधे, चित्रे, शिल्पे वास्तू व स्मारके इत्यादी.

2) दुय्यम साधने -

- तवारीखा
- बखरी
- पोवाडे
- स्तोत्रे
- प्रवासवर्णने
- शकावल्या
- ऐतिहासिक काव्य
- म्हणी
- महजरा /करीने
- वंश वेली
- मुलाखती

पुरातत्वीय साधनांचा वापर करून भूतकाळातील लोकांच्या जीवनाबद्दल आणि संस्कृती बद्दल अधिक जाणून घेता येते. त्यापैकी एक महत्त्वाचे पुरातत्त्व साधन म्हणजे ऐतिहासिक स्मारक होय.

स्मारक:

स्मारक म्हणजे एखाद्या विशेष घटनेची, व्यक्तीची दीर्घकाळ आठवण म्हणून उभारलेला स्तंभ,

बांधलेली वास्तू किंवा त्या सदृश्य बांधकाम आहे. त्यात त्या घटनेपासून मानवास प्रेरणा मिळावी किंवा त्या व्यक्तीचा आदर्श सतत डोळ्यासमोर राहावा म्हणून याची योजना केलेली असते. ऐतिहासिक घटनेचे स्मरण सतत रहावे म्हणूनही स्मारक बांधले जातात.

*उदाहरणार्थ : शहीद स्मारक, जयस्तंभ, विवेकानंद स्मारक, जालियनवाला बाग, हुतात्मा स्मारक इत्यादी.

ऐतिहासिक स्मारक महत्त्व:

महाराष्ट्र राज्याची ओळख इथला इतिहास संस्कृती भाषाशैली आहे. आजही या ठिकाणी समृद्ध ऐतिहासिक आणि सांस्कृतिक ठिकाणांचा वारसा लाभलेला आहे यामध्ये ऐतिहासिक स्मारके ही आजही इतिहास सांगत उभी आहेत. या ठिकाणी असलेल्या ऐतिहासिक खुणा अनेक वर्षांपूर्वीच्या आठवणींचा नकळत मागवा घेऊ लागतात.

ऐतिहासिक स्मारकांचे संवर्धन करणाऱ्या संस्था:

उत्तर सांस्कृतिक मंत्रालयाच्या अंतर्गत राष्ट्रीय स्मारके प्राधिकरण (N M A) केंद्रीय संरक्षक स्मारकांच्या आसपासच्या प्रतिबंधित आणि नियमन केलेल्या क्षेत्राच्या व्यवस्थापनाद्वारे स्मारके आणि स्थळांचे संरक्षण आणि संवर्धन करण्यासाठी जबाबदार आहेत. दुसरीकडे पुरातन वास्तू आणि पुरातत्त्व स्थळांची देखभाल भारतीय पुरातत्त्व सर्वेक्षण हा विभाग करते.

नेसरी येथील सरसेनापती प्रतापराव गुजर यांचे स्मारक :

वेडात मराठे वीर दौडले सात असे ज्यांच्याबद्दल बोलले जाते ते शूर सेनानी म्हणजेच प्रतापराव गुजर आणि त्यांचे सहा सहकारी मावळे म्हणजेच विसाजी बल्लाळ, दिपोजी राऊन्ना विठ्ठल, पिलाजी अत्रे, कृष्णाजी भास्कर, सिद्धी हलाल व विठोजी होय स्वराज्याचे शत्रू अनेक होते. त्यापैकीच विजापूरहून आलेला बहलोल खान यांनी 12000

स्वारानिशी स्वराज्यावर चाल करून मोठ्या धमाकूळ घातला होता. रयतेवर अनन्वित अत्याचार केले होते. बहलोल खानास मारल्याशिवाय मला तोंड दाखवू नका असे शिवाजी महाराजांनी प्रतापरावांना पत्राद्वारे कळवले. त्यांचे पत्र मिळताच सोबत आपल्या सहा मावळ्यांना घेऊन बहलोल खानाच्या मार्गावर प्रतापराव निघाले. पराकोटीची स्वामीनिष्ठा आणि स्वराज्यावरील प्रेमापोटी या सात वीरांनी बारा हजार सैन्यांमध्ये घुसून शेकडो गनिमांना ठार मारले. पण अखेरीस प्रतापराव व सोबतचे सहा वीर मरण पावले. स्वराज्यावरील प्रेमापोटी या सात वीरांनी स्वतःस मरणाच्या हवाली केले. आणि हा वीरांचा पराक्रम इतिहासात कायमचा अमर झाला. बहलोल खान व प्रतापराव यांच्यात गडहिंग्लज तालुक्यातील नेसरी या गावात ही लढाई झाली. त्यामुळे ह्या सात वीरांचा पराक्रम सर्व पिढीला ज्ञात करून देण्यासाठी नेसरी या ठिकाणी प्रतापराव गुजर यांचे स्मारक उभे केले आहे. स्मारका जवळ एक स्तंभ उभा आहे. त्या स्तंभावर प्रतापरावांचा हा पराक्रम लिहून ठेवला आहे. त्यामुळे या ऐतिहासिक महान सेनानींचे स्मारक जतन करणे गरजेचे आहे.

* सध्या नेसरी येथील प्रतापराव गुजर स्मारकांची नित्यनेमाने कोणत्याही मोबदल्याशिवाय श्री महादेव करडे हे सेवा करत आहेत.

ऐतिहासिक स्मारकांच्या संवर्धनाची गरज :

आपला सांस्कृतिक वारसा आपणच जपायला हवा. आणि या करिता तरुणाने पुढाकार घेणे गरजेचे आहे. ऐतिहासिक वास्तू स्मारके कालांतराने ऱ्हासाच्या प्रक्रियेच्या आधीन असतात. ज्यामुळे ती अशी परिस्थिती निर्माण करते की ते ज्या उद्देशाने बांधले गेले ते पूर्ण करू शकले नाहीत. ती स्मारके जर कालांतराने नष्ट झाली तर त्यांचा पराक्रम, मराठ्यांचा इतिहास अशा सर्व गोष्टींचा पुढच्या पिढीला विसर पडेल. आणि त्यांना ह्या गोष्टीचे महत्त्व कधीच कळणार नाही आणि हे आपल्याला होऊ द्यायचे नाही.

संवर्धन कसे करता येईल :

- 1) स्मारकांजवळ प्रशासनाने सुरक्षेसाठी व्यवस्था केली पाहिजे.
- 2) तिथे जाण्यासाठी योग्य सुविधा असायला हवी.
- 3) स्मारकाजवळ स्मारका विषयी माहिती देण्यासाठी गाईडची सुविधा असली पाहिजे जेणेकरून तेथे जाणाऱ्या पर्यटकांना योग्य माहिती मिळेल.
- 4) स्मारक असलेल्या परिसरात स्वच्छता असणे गरजेचे आहे.
- 5) ऐतिहासिक स्मारकांच्या संवर्धनासाठी शासनाने योग्य तो निधी उपलब्ध करून दिला पाहिजे.

निष्कर्ष :

आपला ऐतिहासिक वारसा आपण जपणे गरजेचे आहे. त्याचे संवर्धन केले पाहिजे. जीवन जगत असताना आपल्याला आपल्या देशाची, संस्कृतीची माहिती असणे खूप गरजेचे आहे. आणि हीच माहिती देण्याचे काम ऐतिहासिक साधने करत असतात. त्यापैकीच एक म्हणजे नेसरी येथील प्रतापराव गुजर

यांचे स्मारक आहे. त्यांचे स्मारक आपल्याला त्यांची स्वामीनिष्ठा, त्यांचे स्वराज्य प्रेम या सर्व गोष्टी सांगते. त्यामुळे अशा स्मारकांचे जतन करून त्यांचे महत्त्व पुढल्या पिढीला करून देणे गरजेचे आहे. अन्यथा हे स्मारक कोणाचे आहे आणि या लोकांनी काय केले होते असे प्रश्न आजच्या पिढीला पडू शकतात आणि हे फार धोक्याचे आहे. आणि हे चुकीचेही आहे. यासाठी या ऐतिहासिक स्मारकांचे जतन व संवर्धन करणे गरजेचे आहे.

संदर्भ साधने :

- 1) महा पराक्रमी सर सेनापती प्रतापराव गुजर - दशरथ पाटील.
- 2) राव बेदरकार वादळाचे नाव प्रतापराव - सौरभ महेश करडे.
- 3) शिवरायांचे शिरेदात प्रतापराव गुजर - प्रभाकर भावे.
- 4) [https:// en. wikipedia. org>wiki prataprao.](https://en.wikipedia.org/wiki/prataprao)
- 5) [https://www.facebook.com.](https://www.facebook.com)



कोल्हापुरच्या महिला चळवळीतील अग्रणी नेतृत्व : विमलाबाई बागल

(१९११ ते २००६)

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कोल्हापूर हे एक ऐतिहासिक, सांस्कृतिक आणि सामाजिक दृष्टिकोनातून अत्यंत महत्त्वपूर्ण शहर आहे. त्याचा इतिहास विविध सामाजिक, राजकीय, आणि सांस्कृतिक बदलांशी निगडित आहे. कोल्हापूर शहराने आपली परंपरा निर्माण केली आहे, आणि या शहराने समाज सुधारक, कार्यकर्ते आणि नेत्यांची जडण-घडण केली आहे. विशेषतः स्त्रीवादी इतिहासाच्या बाबतीत, कोल्हापूरने अनेक महत्त्वपूर्ण बदल पाहिले आणि या शहराने भारतीय स्त्रीवादी चळवळीला महत्त्वपूर्ण योगदान दिले. कोल्हापूर जिल्ह्यातील महिला चळवळीला एक ऐतिहासिक परंपरा आहे. आणि या ऐतिहासिक परंपरेतील अग्रगण्य भूमिका निभावणाऱ्या स्त्रियांमध्ये विमलाबाई बागल यांचे योगदान अत्यंत महत्त्वाचे आहे. विमलाबाई बागल, एक अत्यंत समर्पित, शौर्यशील आणि समाजसुधारक नेत्या होत्या, ज्यांनी आपल्या कार्याने महिला चळवळीला दिशा दिली. त्यांचे कार्य संपूर्ण महाराष्ट्रातील महिलांसाठी प्रेरणादायी आहे. विमलाबाई बागल यांनी महिलांच्या हक्कांसाठी, त्यांच्या शिक्षणासाठी आणि सामाजिक समतेसाठी अथक परिश्रम घेतले. तत्कालीन समाजव्यवस्थेत महिलांना अनेक अधिकारांपासून वंचित ठेवले जात होते. मात्र, विमलाबाई बागल यांनी या समजाला नवी

दिशा देण्याचा निर्धार केला. त्यांनी महिलांना शिक्षण घेण्यासाठी प्रेरित केले, त्यांना स्वावलंबी बनवण्यासाठी अनेक उपक्रम राबवले आणि महिलांच्या सामाजिक व आर्थिक स्थितीला उंचावण्यासाठी नेतृत्व केले.

विमलाबाई बागल यांच्या कार्याचा प्रभाव फक्त महिला चळवळीवरच नव्हे, तर संपूर्ण समाजावर झाला. त्यांचे नेतृत्व आणि कार्य कोल्हापुरातील महिलांसाठी एक नवा प्रकाश आहे. विमलाबाई बागल यांचे कार्य आजही प्रेरणादायी आहे. त्यांचा दृष्टिकोन आणि कार्य आजही महिलांच्या सशक्तीकरणाच्या दृष्टीने महत्त्वपूर्ण आहे. त्यांच्या नेतृत्वामुळे कोल्हापुरातील महिला चळवळीला दिशा मिळाली आणि महिलांनी त्यांच्या हक्कांसाठी लढण्याचे धैर्य मिळवले.

विमलाबाई बागल:

विमलाबाई बागल यांचा जन्म ७ मे, १९११ रोजी बेळगाव जिल्ह्यातील मुचंडी या छोट्याशा खेडेगावात झाला. त्यांच्या वडिलांचे नाव गणपतराव बळवंतराव पवार होते. छत्रपती शाहू महाराजांच्या प्रेरणेने पवार कुटुंब कोल्हापूरला आले. शिवाजी विद्यापीठाचे पहिले कुल गुरू डॉ. आप्पासाहेब पवार हे विमलाबाईंचे भाऊ होते. विमलाबाईंचा विवाह हा

सत्यशोधक पद्धतीने वसंतराव खंडेराव बागल यांच्याशी १९२८ मध्ये झाला. बागल कुटुंबियांकडून समाजसेवेचे तसेच समाज परिवर्तनाचे मिळालेले व्रत विमलाबाईंनी आजन्म सांभाळले. विमलाबाईंचे सासरे खंडेराव बागल हे राजर्षी शाहू महाराजांचे कायदेशीर सल्लागार आणि सत्यशोधक विचारवंत होते. छत्रपती शाहू महाराजांच्या पुरोगामी विचारांचा व कार्याचा वारसा जसा बागल घराण्याने जपला होता तसाच विमलाबाई बागल यांनीही पुढे नेला.

अखिल भारतीय महिला परिषदेचे अधिवेशन कोल्हापूरमध्ये सन १९४१ साली भरले होते. मिसस अय्यर (करवीर भगिनी मंडळाच्या सेक्रेटरी) यांनी महिला परिषदेच्या अधिवेशनाचे निमंत्रण विमलाबाईंना दिले. विमलाबाई अधिवेशनाला हजर राहिल्या. पतीच्या वकिली व्यवसायामुळे अनेक स्त्रियांच्या दुःखी जीवन त्यांच्या कानावर पडत होतेच. परिषद हे त्यांच्यासाठी त्यांच्या सार्वजनिक कामाचा प्रारंभ ठरला. विमलाबाईंच्या आयुष्याला कलाटणी देणारी घटना म्हणजे १९४७ सालच्या अखिल भारतीय महिला परिषदेमध्ये त्यांनी मांडलेले चार ठराव :

- १) एकत्र कुटुंबामध्ये विधवेला स्वतंत्रपणे दत्तक घेण्याचा हक्क असावा,
- २) एकत्र कुटुंबात विधवेला तिच्या नवऱ्याचा हिस्सा मिळावा,
- ३) परित्यक्ता स्त्रीला पतीच्या इस्टेटीमधून व्यवस्थित जीवन जगता येईल अशी रक्कम किंवा इस्टेट तोडून मिळावी.
- ४) कुटुंबातील मुलगा आणि मुलगी या दोघांना वडिलांच्या इस्टेटीमध्ये समान हिस्सा मिळावा.^१

कोल्हापुरात १९४३ साली सुरू झालेल्या द्विभार्या प्रतिबंधक आंदोलनचे नेतृत्व विमलाबाईंनी केले. कोल्हापुरातील राजाराम कॉलेजचे प्रा. ना. सी. फडके यांनी त्यांची पहिली पत्नी आणि मुले असताना दुसरा यशवंती विवाह केला. ही बातमी कळताच विमलाबाईंनी कोल्हापुरातील सर्व महिला प्रतिनिधींना

एकत्र आणून विवाहाच्या निषेधाची सभा आयोजित केली. "वैवाहिक जीवनात अर्ध्यावर वाटेकरीण आणून या प्राध्यापक महाशयांनी आपल्या पत्नीचाच नव्हे, तर जागृत स्त्री समाजाचाही घोर अपमान केला, म्हणून या सभेमध्ये त्या विवाहाचा निषेध तर केलाच; पण अशा प्रकारचे जे विवाह होतील ते बेकायदा ठरवावेत, असाही ठराव करण्यात आला. द्विभार्या प्रतिबंधक कायद्याची मागणी करण्यात आली."^२ कोल्हापूरच्या रिजन्सी कौन्सिलमध्ये हा ठराव नामंजूर झाल्यानंतर महिला मंडळांनी सभा भरवून मुंबई विधानसभेमध्ये हा ठराव पाठविला. मुंबई विधानसभेमध्ये चर्चा होऊन बिल मंजूर झाले.

कोल्हापूर नगरपालिका सदस्य:

कोल्हापूर नगरपालिकेमध्ये स्कूल बोर्डाचे सदस्य म्हणून विमलाबाई यांची 1946 साली निवड झाली. शिक्षण आणि आरोग्य या दोन खात्यांमध्ये काम करण्याची संधी त्यांना मिळाली. शहराच्या, गावच्या वाढत्या लोकसंख्येमुळे सरकारी हॉस्पिटलमध्ये अतिशय गर्दी होते. स्त्रियांना वैद्यकीय मदत वेळोवेळी मिळत नाही या विचारातूनच सुतिका गृहाची स्थापना करण्याची मागणी नगरपालिकेत समोर मांडली. तसेच प्रत्येक वॉर्ड मध्ये दवाखाने सुरू करण्यासाठी देखील विमलाबाईंनी विशेष प्रयत्न केले. १५ ऑगस्ट १९५१ रोजी सावित्रीबाई फुले सुतीकागृहाचे उद्घाटन झाले. नगरपालिकेच्या वतीने 'राजमाता जिजाबाई गर्ल्स हायस्कूल' सुरू करण्यासाठीही विमलाबाई प्रयत्नशील राहिल्या.

१९५० साली 'शुक्रवारपेठ भगिनी मंडळाची' स्थापना झाली. आपल्या समोर उभ्या ठाकलेल्या विविध समस्या अडचणी यांना मार्गदर्शक व सहायक या हेतूने शुक्रवारपेठ भगिनी मंडळाचे कार्य सुरू होते. महिलांसाठी शिवणकलास, बालकमंदिर तसेच प्राथमिक शाळाही या मंडळाने सुरू केल्या. १९८० मध्ये "राजमाता जिजाऊ महिला औद्योगिक सोसायटी" ही संस्था सुरू करण्यात आली. जीवनावश्यक वस्तूंचे

उत्पादन या संस्थेमधून केले जाई. याच मंडळातील भगिनींनी वेळ प्रसंगी तुरुंगवास पण भोगला.

'ललिता विहार' या महिला संस्थेच्या वतीने याविषयी सभा बोलाविण्यात आली होती. सभेच्या अध्यक्ष स्थानी श्रीमती. इंदूमती राणीसाहेब होत्या. पुसाळकर वकील जुन्या प्रचलित हिंदू कायद्याचे मोठेपण सांगत असताना म्हणाले. "हिंदू कायदा धर्मावर आधारलेला आहे. या कायद्यामध्ये दुरुस्ती करण्याची मागणी अविचारीपणाची आहे" असे मत मांडताच विमलाबाई बागल प्रतिउत्तर देण्यास उभा राहिल्या. 'ज्या धर्माने स्त्रीला साधे माणुसकीचे हक्कही नाकारले, ज्या कायद्याने स्त्रीला आर्थिक आणि मानसिकदृष्ट्या परावलंबी बनविले, तो धर्म आणि तो कायदा स्त्रीला जाचक आणि अन्यायकारक वाटत असेल तर तो का मानावा? अखेर स्त्री हीसुद्धा एक माणूस आहे! संवेदनाही माणसाच्याच! अनंत काळापासून वर्षानुवर्षे पुष्कळ सहन केल्यानंतर जागी झालेली स्त्री आज माणुसकीच्या हक्कांसाठी धडपडते आहे. यामधून सुटका होण्यासाठी तिने कायदा आणि धर्म यांचा घोटाला बाजूला करण्यासाठी कायद्यामध्ये दुरुस्तीची मागणी केली तर चुकले कुठे?'^३ यापुढे आम्ही स्वार्थी, अन्यायी, जुलमी कायद्याच्या भक्ष्य बनू इच्छित नाही, असे स्पष्टपणे बजावले.

१९५० साली देशामध्ये अनेक ठिकाणी हिंदू कायद्याच्या दुरुस्ती संबंधीची चर्चासत्रे आयोजित करण्यात आली होती. डॉ. बाबासाहेब आंबेडकर यांनी भारतीय राज्यघटना लिहित असताना हिंदू कोड बिल दुरुस्ती संबंधीच्या व्याख्या व नियम समाविष्ट केले होते. परंतु सनातनी लोकांच्या दृष्टीकोनातून या नियमास मोठ्या प्रमाणात विरोध झाला. जनतेचा कल पाहण्यासाठी शासनाकडून खूप ठिकाणी चर्चासत्रे किंवा परिसंवाद आयोजन केले जात. ज्या ठिकाणी चर्चासत्रे किंवा परिसंवाद असेल तिथे विमलाबाई व त्यांच्या साथीदार तिथे हजर राहत व आपली मते मांडत असत, विरोधकांना प्रश्नांना साजेस उत्तर देत. कोल्हापूर बार कौन्सिलच्या वतीने 'प्रचलित हिंदू कायदा आणि

त्यामधील दुरुस्ती' या विषयावरील चर्चासत्रात हळदीकर वकील बोलत असताना "स्त्रियांमध्ये जागृती होत आहे याबाबत त्यांनी आनंद व्यक्त केला पण त्यांची ही जागृती न्यायालयीन कायदे करून बदलण्यापर्यंत पोहोचते हे मात्र बरोबर नाही" असे सांगून हिंदू कायदा व दुरुस्तीला मान्यता देऊ नये असे मत मांडले आणि अशा सनातन कायदे पंडितांचा अरेरावीपणा उघडपणे दाखवण्यासाठी विमलाबाई म्हणाल्या "अध्यक्ष महाराज, अनादिकालापासून स्त्री कशाचीहि अपेक्षा न ठेवता आपले कर्तव्य पार पाडत आहे. हिंदू कायद्यामुळे तिची कुचंबणा होते आहे. ह्या साऱ्या प्रकाराला कंटाळून आजच्या जाणत्या जगाबरोबर जाणती झालेली स्त्री आपल्या न्याय्य हक्कासाठी, ज्या कायद्यामुळे तिचे न्याय हक्कही पायदळी तुडविले गेले, तो हिंदू कायदा दुरुस्त करून मागत आहे, तर चुकले कुठे?"^४ असा प्रश्न केला.

डॉ. बाबासाहेब आंबेडकर यांची भेट:

१९५२ साली डॉ. बाबासाहेब यांनी संसदेत हिंदू कोड दुरुस्ती विधेयक मांडले. परंतु लोकसभेत झालेला विरोध पाहता डॉ. बाबासाहेबांनी राजीनामा दिला. त्यानंतर ते कोल्हापूरला आले. समाजवादी पक्षाचे चिटणीस आण्णासाहेब चव्हाण यांनी डॉ. बाबासाहेब केव्हा येतील ही बातमी मिळविली आणि आमदार दा. म. शिर्के, आण्णासाहेब चव्हाण, उर्मिलाकाकी सबनीस आणि विमलाबाई बागल यांनी डॉ. बाबासाहेबांची भेट घेतली. 'स्त्रियांचे कैवारी' म्हणून आम्ही तुमचा सत्कार करणार आहोत. सत्कार स्वीकारण्यासाठी आणि कोल्हापूरच्या जनतेला वास्तव सांगण्यासाठी डॉ. बाबासाहेबांना आग्रहाचे निमंत्रण देण्यात आले. "२५ डिसेंबर, १९५२ रोजी १० वाजता राजाराम टॉकीजमध्ये डॉ. बाबासाहेबांचा सत्कार करण्यात आला."^५ दोन – अडीच तास डॉ. बाबासाहेबांनी भाषण दिले.

संयुक्त महाराष्ट्र लढा सीमा सत्याग्रहात सहभागः

भाषावार प्रांतरचना अस्तित्वात आली. गुजरात आणि महाराष्ट्र द्विभाषिक राज्य बनविण्यात आले. विमलाबाई यावेळी म्युनिसिपालिटीच्या सदस्या होत्या. समितीच्या ठरलेल्या आदेशाप्रमाणे त्यांनी राजीनामा दिला व सीमा सत्याग्रहात सहभागी झाल्या. विमलाबाईंनी कोल्हापुरातील महिला सत्याग्रहास सुरुवात केली. सीमा सत्याग्रहासाठी कोल्हापूर जिल्हा संयुक्त महाराष्ट्र समितीच्या सभासदांची नावे माधवराव बागल यांच्या अध्यक्षतेखाली निश्चित करण्यात आली.

विमलाबाईंच्या नेतृत्वाखाली संयुक्त महाराष्ट्राची चळवळ आणि त्यासाठीच्या सत्याग्रहाची महिला आघाडी कार्य करित होती. स्त्रियांचा सहभाग या लढ्यासाठी कसा महत्वाचा आहे हे मुंबईच्या व्यासपीठावर विमलाबाईंनी ठामपणे मांडले. स्त्रियांसाठी लोकसभेची, विधानसभेची उमेदवारीची मागणी केली.

"आम्ही स्त्रिया जगाच्या सुरुवातीपासूनच आमच्यावर असलेली जबाबदारी सांभाळून जीवनामध्ये येणाऱ्या हरएक प्रसंगांना सामोऱ्या जात असतो आणि जातही आहोत. त्याशिवाय राष्ट्रावर, देशावर, राज्यावर, स्वतःच्या घरादारावर काही संकट आले, देशात आंदोलने उभारली, परक्या देशांचे आक्रमण आले, युद्ध पुकारले तरीही ह्या सगळ्यांमध्ये पहिल्यांदा जर कुणाचा बळी पडत असेल, तर तो स्त्रीचा! कोणत्याही, कसल्याही अवस्थेत स्त्री ही बाजूला राहूच शकत नाही. आजही या लढ्यात आम्ही स्त्रिया पुरुषांच्या खांद्याला खांद्या लावून काम करतो आहोत. या आंदोलनामध्ये आम्हीही बरोबरीने भागीदारी केली आहे. म्हणून देशाच्या कारभारात लोकसभेचे उमेदवार म्हणून स्त्रियांनाही स्थान असावे. महाराष्ट्राच्या प्रत्येक जिल्ह्यातून जिल्ह्याच्या कुवतीप्रमाणे स्त्री उमेदवारांना जागा द्याव्यात."^६ असे आपले म्हणणे मांडून विमलाबाईंनी भाषणाचा शेवट केला. मुंबई विधानसभेच्या निवडणुकीसाठी १९५७ मध्ये विमलाबाई बागल यांना कागल मतदारसंघातून संयुक्त महाराष्ट्र समितीची उमेदवारी मिळाली. ४ मार्च, १९५७

रोजी मतदान झाले. ११ मार्च रोजी निकाल लागला. विमलाबाई विजयी झाल्या. संयुक्त महाराष्ट्र समितीच्या प्रतिनिधींमध्ये एकमेव महिला प्रतिनिधी विमलाबाई बागल याच होत्या.

संयुक्त महाराष्ट्र समिती महिला परिषदः

कोल्हापूर येथे संयुक्त महाराष्ट्र समितीच्या वतीने महिला परिषदेत विमलाबाईंनी पुढाकार घेतला होता. महिलांना एकत्र आणून त्यांच्यामध्ये सर्वांगीण जागृती निर्माण करणे, हा परिषदेचा मुख्य हेतू होता. गोदावरी परुळेकर परिषदेच्या अध्यक्षा, अहिल्याबाई रांगणेकर प्रमुख वक्ता तर परिषदेच्या उद्घाटक म्हणून कमलाबाई भागवत या उपस्थित राहिल्या होत्या. परिषदेचे ठिकाण मंगळवारपेठेतील विठोबा मंदिर हे होते. पहिल्या ठरावामध्ये प्रथम संयुक्त महाराष्ट्राची मागणी मांडण्यात आली. तसेच

- १) स्त्री आणि पुरुष यांच्या समान कामाला समान वेतन मिळाले पाहिजे.
- २) कामाचे तास दिवसाचे आठ तास ठरवून मिळावेत.
- ३) तान्हा मुलांसाठी पाळणाघराची व्यवस्था झाली पाहिजे.
- ४) गिरणी कामगार स्त्रियांना बाळंतपणाची रजा मिळाली पाहिजे."^७

तसेच महागाईला आळा बसवण्यासाठी आंदोलने उभारली जावी, असा ठराव मांडण्यात आला. या परिषदेचे प्रास्ताविक विमलाबाई बागल आणि आभार मानले. बकुळाबाई खांडेकर यांनी सर्व महिलांनी अन्यायाविरुद्ध एकत्र येऊन लढा देण्याचे ठरले.

बेळगाव – सीमा सत्याग्रहः

'सीमाभागासह संयुक्त महाराष्ट्र झालाच पाहिजे,' या मागणीसाठी सप्टेंबर १९५७ मध्ये बेळगावच्या लोकांनी सीमालढ्याची हाक दिली. बेळगाव येथे सीमा सत्याग्रहात भाग घेण्याची

विमलाबाईंची तयारी सुरू झाली. महाराष्ट्रातून महिलांचीच पहिली तुकडी जाणार होती. "विमलाबाई बागल, भागीरथीबाई तांबट, लक्ष्मीबाई कदम, गंगू कुडचे, शशी पाटील, विठाबाई काळे, कु. शांता पाटील," हि पहिली तुकडी कोल्हापूरहून बेळगावला निघाली, तसेच भाई माधवराव बागल यांच्या नेतृत्वाखालील पुरुषांची तुकडीही कोल्हापूरहून बेळगावला गेली. सर्व सत्याग्रहींना हिंडलगा जेलमध्ये नेण्यात आले. भाई माधवराव बागल यांनी 'जीवन प्रवाह भाग-३'मध्ये विमलाबाईंच्या कामगिरीची नोंद केली आहे. ते म्हणतात-"मला स्वाभिमान वाटतो की, कोल्हापूरच्या महिला सत्याग्रहास विमलाबाईंनी सुरुवात केली. त्याचा खूप परिणाम झाला. कोल्हापुरातील अनेक महिला सत्याग्रहात सहभागी झाल्या. विमलाबाईंनी माझ्या घराण्याला शोभा आणली. पुढे तिने अनेक सत्याग्रही महिला तयार केल्या." १ १९५९ मध्ये संयुक्त महाराष्ट्र समितीच्या वतीने पार्लमेंटवर मोर्चा आयोजित केला होता. यालाच 'दिल्ली मोर्चा' असे म्हंटले जाते.^{१०}

महाराष्ट्र राज्य श्रमिक महिला समिती:

"मार्च १९६४ मध्ये महाराष्ट्र राज्य श्रमिक महिला समितीची स्थापना पुणे येथे करण्यात आली. या संस्थेच्या अध्यक्षा विमलाबाई बागल, उपाध्यक्षा मालिनीबाई तुळपुळे व सेक्रेटरी रोझा देशपांडे होत्या.^{११}

- १) महागाई, बेकारी, कृत्रिम टंचाई, काळाबाजार, साठेबाजाविरुद्ध जोरदार लढा उभारणे.
- २) मागेल त्याला काम मिळाले पाहिजे.
- ३) जीवनोपयोगी वस्तूंचे भाव गरिबांना परवडेल असे असावे.

अश्या काही मागण्या समितीने केल्या.

सामाजिक स्त्री परिषद:

पुणे येथे २५-२६ सप्टेंबरला लीग फॉर सोशल जस्टीस या संस्थेच्या वतीने सामाजिक स्त्री परिषद आणि कौटुंबिक कायदा परिषदेचे आयोजन करण्यात

आले होते. या परिषदेच्या अध्यक्षा मा. बॅ. सुनीता पुंगलिया या होत्या. त्या कायदेतज्ञ होत्या. सुशिक्षित कार्यकर्त्या तसेच पुण्यातील सामाजिक क्षेत्रामध्ये काम करणाऱ्या सर्व महिला संस्था तर कोल्हापूर मधून विमलाबाई बागल आणि इतर कार्यकर्त्या मोठ्या संख्येने उपस्थित होत्या. स्त्रियांचे समाजामधील स्थान, स्त्रियांशी संबंधित असलेले कायदे कानून, सामाजिक परिस्थिती, विशिष्ट परिस्थितीमध्ये स्त्रीला जाणवणारी असहाय्यता वगैरे १५-२० मुख्य बाबींवर चर्चा झाली. काही ठराव देखील मांडण्यात आले.

एस.टी.ची भाडेवाढ:

एस.टी.च्या वाहतुकीवरील कराची वाढ १० टक्क्यांवरून १५ टक्क्यांवर नेली जाणार होती. याबाबत बोलताना विमलाबाई म्हणतात, "अनेक कारणांनी वाढलेले दळणवळण लक्षात घेता एस.टी. हे एकच प्रवासाचे गरिबांचे साधन आहे. भाड्यात वाढ झाली तर प्रवास करता-करता गोरगरीब मेटाकुटीला येतील, पायी तर ते जाऊ शकत नाहीत. तेव्हा एस.टी. ने प्रवास केल्याशिवाय गत्यंतर नाही. करात जी वाढ केलेली आहे, ती भाड्यात करून पुरी करता कामा नये. एस.टी.ला मिळणाऱ्या फायद्यातून याची रक्कम मिळाली पाहिजे." (१० एप्रिल, १९६१).

स्वातंत्र्य सैनिकांना मानधन:

ज्यांनी स्वातंत्र्य लढ्यात आपली घरदारे गमावले, जमिनी गमावल्या, आपल्या प्राणाची आहुती दिली, रक्त सांडले, बलिदान दिले. अश्या स्वातंत्र्यसैनिकांना जे अपुर मानधन दिल जात या याबाबत विमलाबाईंनी आपले विचार मांडले. स्वातंत्र्यसैनिकांनी दिलेल्या त्यागाचे भरपाई करता येणे अशक्यप्राय गोष्ट आहे परंतु, त्यांच्या पुढील पिढीला जी मदत करता येईल ति सरकारने करावी असे मत मांडले. त्यांच्या मुलांना नोकऱ्या देणे, जमिनी देणे किंवा मासिक मानधन देणे इ. गोष्टी करणे सरकारला शक्य आहे. त्यांनी दिलेल्या अर्जाची नीट छाननी आणि योग्यरित्या चौकशी व्हावी. विमलाबाईंनी पुढे सांगितले की, 'मानधनाबाबत माझे म्हणणे असे आहे की, बऱ्याच

बाबतीत ही रक्कम ज्यांना गरजेची आहे अशा लोकांना न मिळता ज्यांना गरजेची नाही अशांनाच मिळाली आहे.’ महाराष्ट्र विधानसभेत विकेंद्रीकरणासाठी पंचायती व्यवस्थेचे विधेयक मांडण्यात आले. २९ ऑगस्ट, १९६१ रोजी या विधेयकावर विमलाबाईंनी स्त्रियांसाठी राखीव जागांचा प्रश्न मांडला.

आमदार:

१९५७ ते १९६२ या काळात विमलाबाई बागल या कागल मतदारसंघातून आमदार म्हणून निवडून देण्यात आले. अविरतपणे जनतेची सेवा केली. फक्त मतदार संघातीलच नव्हे तर इतर भागातील जनतेचे प्रश्न सभागृहासमोर मांडले. नियमाप्रमाणे विधानसभेचे अधिवेशन सुरू होण्यापूर्वी राज्यपाल सर्व प्रतिनिधींचे स्वागत करतात. राज्यपाल विधानसभा व विधानपरिषद या दोन्ही सभागृहांच्या प्रतिनिधींसमोर भाषण करतात. दुसऱ्या दिवशी राज्यपाल यांच्या भाषणावर आमदारांनी आपली मते व्यक्त करावयाची असतात. दुसऱ्याच दिवशी विमलाबाईंनी आपले नाव पार्टी लिडरकडे दिले. राज्यपालांच्या भाषणावर आपले मत अत्यंत परखड आणि ठामपणे नोंदविले. विमलाबाई कागल यांचे सभागृहातील बोलणे नेहमीच अभ्यासपूर्ण असत. आपली मते तडफदार आणि आग्रहाने मांडत.

जनसेवा हीच ईश्वर सेवा माननाऱ्या विमलाबाईंना विधानसभेत आमदार म्हणून काम करण्याची संधी मिळाली. त्यांनी त्या संधीचे सोने केले. या पाच वर्षांत जनतेच्या विविध गरजांचा, अडचणीचा अभ्यास करून सभागृहात प्रश्न उपस्थित केले. जसे कि, कागल तालुक्यातील शेतकऱ्यांना दिलेले कर्ज, बेकायदा दारू गाळणारे धंदे, ग्रामीण पाणीपुरवठा योजना, सरकारी हॉस्पिटल, बिद्री सहकारी साखर कारखाना, आजरा-हलकर्णी रस्ते बांधणी स्वातंत्र्यसैनिकांना मानधन, गडहिंग्लज-चंदगड रस्ता, जिल्ह्यातील बेसिक स्कूल, चिकोत्रा नदीवरील पूल, आरत महालमधील तलाठी व शिपाई यांचे पगार,

एस.टी. स्टँड ई. जनतेला न्याय मिळवून देण्याचा प्रयत्न अशा अनेक प्रश्नांमधून केला.

कोल्हापूर जिल्ह्यातील पिके, शेती, जमीन, पाणी, शिक्षण, शिक्षकांचे पगार, रंकाळा तलाव, वारणा धरण, कोल्हापूर शहराचा पाणीपुरवठा, येथील बेसिक शाळा, इरिगेशन खाते, राजाराम कॉलेज, पुराभिलेख कार्यालय, एस.टी. वाहतूक, रस्ते बांधणी, दूध संकलन केंद्र, सहकारी सोसायटी, औद्योगिक प्रशिक्षण केंद्र, कोल्हापूर नगरपालिका, शाहू मिल असे अनेक प्रश्न त्यांनी विचारले. एकदा विधान सभेत बोलत असताना “कोल्हापूर नगरपालिका शिक्षणावर जास्त खर्च करते अशी तक्रार विधानसभेत केलेली आढळल्याबरोबर विमलाबाईंनी अतिशय सविस्तरपणे कोल्हापुरातील शिक्षण व्यवस्थेबाबत माहिती दिली. कोल्हापूर नगरपालिका शिक्षणावर जो खर्च करते ही आजचीच गोष्ट नाही. राजर्षी छत्रपती शाहू महाराजांच्या काळापासून शिक्षणावर खर्च चालू आहे आणि तो कसा योग्य आहे, हे सभागृहासमोर ठामपणे मांडले. शिवाय शिक्षणावर केला जाणारा खर्च फायद्याच्या दृष्टीने मोजणे योग्य नाही, तेही त्यांनी स्पष्ट केले.”^{१२}

विमलाबाईंनी विधानसभेत कोल्हापूर जिल्ह्यातील विविध प्रश्न मांडले; पण फक्त कोल्हापुरच नव्हे तर राज्यातल्या कोणत्याही भागातील प्रश्नांविषयी त्या तितक्याच कळवळ्याने आणि पोटतिडकीने बोलत. प्रत्येक समस्येचा नीटनेटका अभ्यास करूनच त्या विधानसभेत बोलत. मग तो प्रश्न कोणाचाही असेल. जसे कि नागपूरमधील कापूस पिकविणारा शेतकरी, असेल किंवा कोकणातील मासेमार. मराठवाड्यातील पूर्णा प्रोजेक्ट, औरंगाबादमधील जुई डॅम, कुलाब्यातील आदिवासींना दिली जाणारी जमीन, पब्लिक सर्व्हिस कमिशनवरील चर्चा, हिंदी परीक्षा मंडळ, एन.सी.सी., स्काऊट शिक्षण, पोलिस बिल, शिक्षणाची बेसिक ट्रेनिंग कॉलेजीस, नागपूर येथील तंत्रशिक्षण केंद्र, नागपूर दंगलीतील नुकसान, साखर उद्योगातील कामगारांचे वेतन, कामगार कल्याण केंद्र, असे अनेक प्रश्न त्यांनी विचारले. इंडियन फॉरेस्ट बिल,

सत्ता विकेंद्रीकरण कायदा, देवस्थान मंडळ, सहकारी सोसायटी बिल, सेल्स टॅक्स डिपार्टमेंटचे वेतन, पुणे जिल्ह्यातील ग्रामोद्योग, मुंबई इलेक्ट्रिक फायनान्स अशा प्रश्नांवरील चर्चेमध्ये सहभागी होऊन त्यांनी आपले अभ्यासपूर्वक मत ठामपणे मांडले. १९७६ साली शिवाजी विद्यापीठाच्या सिनेटवर सभासद म्हणून विमलाबाईंची निवड झाली. त्या माध्यमातून त्यांना शिक्षणक्षेत्रामध्ये कार्य करण्याची संधी मिळाली.

अश्याप्रकारे कोल्हापुरातील महिला चळवळीच्या अग्रणी नेतृत्व, कोल्हापूरच्या कागल मतदार संघाच्या लोकहितदक्ष माजी आमदार, महाराष्ट्र राज्य श्रमिक महिला समितीच्या अध्यक्षा, शेतकरी कामगार पक्षाच्या नेत्या, संयुक्त महाराष्ट्र सीमा सत्याग्रहातील महिला नेत्या, अशा अनेक नात्याने विमलाबाई बागल यांनी जवळजवळ ४०-४५ वर्षे कोल्हापुरातील महिला चळवळीचे नेतृत्व अखंडपणे केले. १९५७ ते १९६२ या काळात आमदार असताना अनेक प्रश्न सरकारच्या निदर्शनास आणून दिले. कष्टकरी कामगार स्त्रियांच्या संघटना उभारल्या, मोर्चे काढले. ज्या कालखंडात स्त्रियांना कोणत्याही प्रकारे कायद्याचे संरक्षण नव्हते, अशा काळात सर्व जबाबदाऱ्या सांभाळून, महिलांना त्यांच्या कायदेशीर हक्कांसाठी लढण्यास प्रेरित केले. स्त्रियांना संघटित होण्यास प्रयत्न केले. विमलाबाईंना कोणताही विषय वर्ज्य नव्हता. सभेत बोलत असतांना परखड व ठाम पणे बोलत. चर्चेमध्ये सहभागी होऊन त्या त्या संबंधित मंत्र्यांना उत्तरे द्यायला त्या भाग पाडत. ज्यावेळी विधानसभा अधिवेशन नसे, त्यावेळी प्रत्यक्ष समाजात मिसळून त्यांचे प्रश्न त्या जाणून घेत. विमलाबाई बागल आयुष्यभर श्रमजीवी जनतेच्या सुख-दुःखात सहभागी झाल्या. ज्या कालखंडात स्त्री चा जन्म हे पाप समजल जात अश्या कालखंडात एकादी स्त्री दिन दलित जनतेचे नेतृत्व करते. त्यांच्या अडीअडचणीवर उपाय शोधते. अश्या स्त्रीची कामगिरी आजही आपणास मार्गदर्शक ठरावी अशीच आहे. विमलाबाई बागल यांच्या जीवनाचा आलेख अत्यंत प्रेरणादायी आहे. त्यांनी

समाजासाठी अनेक योगदान दिले. विशेषतः महिलांसाठी त्यांनी जो वसा घेतला, तो आजही आदर्श ठरतो.

विमलाबाई बागल यांचे योगदान कोल्हापुरातील महिला चळवळीच्या इतिहासामध्ये एक ऐतिहासिक स्थान ठरले आहे. त्यांचे कार्य आजही मार्गदर्शक ठरते. त्यांचे नेतृत्व भविष्यकालीन कार्यकर्त्यांसाठी प्रेरणास्त्रोत म्हणून कायम राहील. विमलाबाई बागल यांनी केवळ महिला चळवळीला दिशा दिली नाही, तर संपूर्ण समाजातील महिलांसाठी समता, स्वावलंबन, आणि अधिकार याबद्दल जागरूकता निर्माण केली. त्यांचे योगदान अनमोल आहे, आणि ते कोल्हापुरातील महिलांच्या सामाजिक, शैक्षणिक आणि आर्थिक सुधारणा करत राहील.

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विमलाबाई बागल यांची कहाणी.

Event by [Max Woman](#)
[#MaharashtraDay](#) [#महाराष्ट्रदिन](#) [#1](#)
[May](#) [#MaxWoman](#)

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www.mymahanagar.com



Role of Women in India's Expanding Manufacturing Workforce

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Abstract:

This paper examine to reach its 2030 economic goals of US\$ 7 trillion, India must increase the proportion of women in its domestic manufacturing workforce. The World Bank estimates that India's GDP growth would increase by 1 percent if the country's female labor force participation rate rose from 25 percent, where it is now, to 50 percent. We discuss how leading industrial firms are making some progress in this area, even as overall female labor force participation in the manufacturing sector is quite bleak. Efforts are underway to ensure greater representation of women in the Indian workforce.

Introduction:

The country has been witnessing a gradual rise in the number of women entering its traditionally male- dominated manufacturing sector in recent years. Increasing the participation of women in factories and offices offer numerous advantages, including diverse perspectives, innovative solutions, a balanced organizational structure, and improved financial performance.

As India strives to attract more multinational companies (MNC's) to establish their manufacturing operations within its borders, the presence of a large, skilled labor force has been a key selling point. Yet, achieving gender parity in the workforce is crucial for India to realize its demographics potential, besides its goal of becoming the world's third- largest economy by 2030. Increasing the number of women in workforce is therefore an essential change that must occur to propel India towards its economic objectives.

Role of Women in India's Manufacturing Workforce:

- While India's female workforce is primarily engaged in the unorganized sector, recent reports indicate that many MNCs are hiring women to be at the forefront of product manufacturing. For example, 72 percent of the approximately 100,000 direct jobs created in Apple's India factory ecosystem by its vendors are held by women in different labor capacities.
- With the primary motivation of expanding the talent pool, a growing number of Indian manufacturing firms are breaking down gender stereotypes by bringing more women onto the work floor. In 2023, Jayant Acharya, the chief executive and joint managing director of JSW steel, stated that over half of the workforce at the company's new color- coated steel manufacturing facility in Pulwama, Kashmir, will be female. It is anticipated that the unit will start operating this month.

- Similarly, the Indian conglomerate Aditya Birla Group asserts that women make up over 50 percent of newly hired engineers on the shop floor. According to Santrupt Mishra, group director of Birla Carbon and group HR head of ABG, there are other factors contributing to this trend, including a rise in a rise in automation, a loosening of laws allowing women to work night shifts in some states, and shop floor amenities that are conducive to women, such as childcare facilities and restrooms.
- Even the automobile manufacturing sector in India is rapidly increasing its female workforce. Women make up roughly 23 percent of new hires at Tata Motors' plants, over 4,500 women work on the factory floor, and over 1,850 of them assist in the assembly of trucks and buses, among other commercial vehicles. There are 1,600 women working three shifts at Tata's Pune Plant, which assembles the larger SUV's – Safari and Harrier.
- When recruiting blue-collar workers for its production facility in Halol, Gujarat, in 2023, well-known automaker MG Motor India stated that the application responses were unexpected. The automobile brand observed that the female candidates showed great attention to detail, extraordinary precision in their work, and equal physical efforts in industries that are dominated by men. The company has employed women to perform quality testing and door and axle fitting.
- In the meantime, both the central and state governments in India are weighing the significant role of female workers in the domestic manufacturing sector. India apex think tank body, NITI Aayog, says that Kerala and Odisha have the highest number of state-backed schemes in the manufacturing sector. These schemes are likely to also incentivize hiring more women on factory and shop floors.
- In 2016, the Karnataka state government set up the first Women's Park at Kalaburagi to facilitate women entrepreneurs opens their manufacturing and processing units. In November 2021, the state announced four industrial parks dedicated to women at Mysuru, Dharwad, Kalabiragi, and Harohalli.
- In a 2022 study titled, "India's Booming Gig and Platform Economy", the Niti Aayog recommended that enterprises that offered livelihood chances where women make up a significant share of their workforce should be eligible for fiscal incentives like tax cuts or start-up subsidies. At present, some states have introduced support programs for women in MSME sectors and startups, yet no full-scale or ambitious targets have been set.
- In Tamil Nadu, women make up 43 percent of the workforce in India's manufacturing sector. More businesses are employing women, particularly in the traditional leather, textile, and automotive industries, as well as in developing fields like electric vehicles, battery electronics, and solar cell manufacture.
- The Annual Survey of Industries in 2019-20, released by the Union Ministry of Statistics and Programme Implementation, shows that 679,000 or 43 percent of the 1.58 million women employed in India's industries are located in Tamil Nadu. The percentage of women working in the state is greater than the average for the country.

- Under the Tamil Industrial Policy, 2021, the state government offers skilling support for resident workers and training subsidies for women and transgender employees for a period of six month for foreign investors, incentives also cover R & D training. Women-owned micro-enterprises in India:
- A vast majority of women-owned micro-enterprises (71.5 percent) are engaged in manufacturing, and the rest in services and trading sectors.
- Women-owned micro-enterprises are concentrated in 10 sub-sectors of manufacturing, services and trading. These sub-sectors account for over 90 percent of the women-owned micro-enterprises.
- There are an estimated 2.7 million women-owned very small enterprises (WVSEs) in India.

Top: 10 Sub-Sectors for Women-Owned Micro-Enterprises

Sr. No.	Name of Sector	Activity	Share of Enterprise
1	Manufacture of wearing apparel	Manufacturing	26.4%
2	Manufacture of tobacco products	Manufacturing	22.6%
3	Retail trade	Trading	15.7%
4	Manufacture of textile	Manufacturing	10.8%
5	Community, Social, and personal services	Services	4.5%
6	Educational Services	Services	3.8%
7	Manufacture of food product	Manufacturing	2.6%
8	Other Manufacturing (including jewelers and bijouterie)	Manufacturing	2.6%
9	Manufacture of wood products	Manufacturing	2.2%
10	Food services activities(eateries)	Service	2.1%

Periodic Labor Force Survey in India (2022-23): Estimated Percentage Distribution of Workers by Industry (%)

Sr. No.	Broad Industry division as per NIC 2008	Rural (%)		Urban (%)	
		Male	Female	Male	Female
1	Agriculture	49.1	76.2	4.7	11.7
2	Mining & Quarrying	0.4	0.1	0.6	0.1
3	Manufacturing	8.2	8.3	20.5	23.9
4	Electricity, Water etc.	0.5	0.1	1.3	0.5
5	Construction	19	4.2	12.6	3.1
6	Trade, Hotel & Restaurant	10.5	4.1	26.5	15.2
7	Transport, storage & communications	5.3	0.2	13.2	5.5
8	Other Services	7	6.9	20.6	40.1
	Total	100	100.1	100	100.1

Data: Ministry of Statistic; PLFS 2022-23

In 2023, the state government establishes a center of excellence (Coe) dedicated to robots and Artificial Intelligence (AI). The higher education department started the process of establishing the center at Rama Devi Women University as part of this exercise at an approximate cost of INR 80 million (US\$ 996,406). This presents a huge opportunity for women to work in R & D and frontier technology roles.

Challenges:

With the manufacturing sector making up 16-17 percent of the country's GDP, there is a clear gender gap in this industry. Women only make about 12 percent of the workforce in the manufacturing sector. Despite a slight increase from 8 percent in 2019 to 12 percent in 2021, the proportion of women in manufacturing operations is still woefully low.

Conclusion:

Manufacturing industries were despite several initiatives at the governmental and industrial levels, there is still much work to be done to encourage more women to pursue careers in

manufacturing – from overcoming biases in families and businesses to facilitating education and skilling.

Finally, to effectively break glass ceilings and have more gender parity in workforce, women need opportunities to deskill and up skill, particularly in fields that are essential to the economy, such as manufacturing, and specialist fields like artificial intelligence and data science that have multispectral application.

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A Review on Rust of Soybean and its Management

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Abstract:

Soybean, a vehicle of socio-economic transformation for millions of small and marginal farmers of central India is continued to occupy the premier position in the oilseed scenario of the country since 2006. In the quest of higher and stable yield as well as quality produce the crop has received attention of a large number of researchers from diverse disciplines. Among the various biotic and abiotic factors leading to low productivity in soybean, diseases are the major factors. Rust of soybean has been one of the major disease taking a heavy loss about 10 to 80%. It is caused by *Phakopsora pachyrhizi*. Currently used methods for managing diseases include chemical, physical, and cultural approaches. Furthermore, only a small percentage of farmers employ integrated disease management techniques and biological control agents. But issues like fungicide resistance and climate change necessitate cutting-edge preventative strategies. It appears that current disease management techniques are unable to fully control this illness. Thus, with the application of sustainable methodologies, it is crucial to create new, more sophisticated, and better disease management strategies. The epidemiology, symptoms, effects of rust disease on soybean yield, and current research findings on soybean rust management are all thoroughly covered in this paper. Thus, future studies should concentrate on creating soybean cultivars that are resistant to disease, better biological control agents, and sustainable disease management strategies to ensure soybean productivity and food security.

Keywords: Soybean, Rust, *Phakopsora pachyrhizi*, disease management, Epidemiology etc.

Introduction:

Soybean is one major and growingly important legume crop. It is appropriate for human consumption and animal feed since it includes up to 40% high-quality proteins and 20% oil. Because soybeans can fix nitrogen from the atmosphere through symbiosis with nitrogen-fixing bacteria, growing them enhances soil fertility. All things considered, soybeans have the potential to greatly enhance human nutrition, expand economic opportunities, and raise farmers' standards of living. However, the many illnesses and insect pests that restrict soybean cultivation have an impact on soybean yields.

Soybean rust, caused by the fungus *Phakopsora pachyrhizi*, is a major disease of soybean. It has been recognized as one of the most important fungal pathogens worldwide (Dean et al., 2012) because of its spread across soybean-growing regions and the potential to devastate soybean yield. The fungus produces numerous urediniospores that are easily dispersed over short (Wen et al., 2017) and long (Isard et al., 2007) distances by wind currents, leading to new infections. Soybean rust was first observed in Africa in 1996 (Kawuki et al., 2003) and has so far spread to more than 10 countries in the continent (Murithi et al., 2015).

Losses from soybean rust infection range from 10% to 80% worldwide (Levy, 2005), raising concerns about its impact on the rapidly growing soybean areas in India. Lesions on soybean leaves caused by the fungus can result in complete defoliation, reducing the photosynthetic capacity, and leading to fewer pods and smaller seeds (Kumudini et al., 2008). Huge losses have been reported in countries like Brazil, where in the 2011/12 growing season grain losses were estimated at over \$192 million, while the costs of controlling it were approximately \$1.54 billion (Godoy et al., 2012).

Causal Organism:

Soybean rust is caused by the fungus *Phakopsora pachyrhizi*. *Phakopsora pachyrhizi* causes significant yield losses. These fungi are obligate pathogens that survive only on green, living host plant tissue and are readily dispersed long distances by wind. The fungus survives winter on living plant tissue.

Classification:

Kingdom: Fungi
Division: Basidiomycota
Class: Pucciniomycetes

Order: Pucciniales
Family: Phakopsoraceae
Genus: *Phakopsora*
Species: *Phakopsora pachyrhizi*

Symptomology:

Soybean rust is potentially one of the most significant diseases of soybean. Soybean rust is caused by the fungus *Phakopsora pachyrhizi*. It can spread quickly and cause leaf spots and defoliation of soybean plants. Under favorable conditions, the pathogen can cause yield losses greater than 50 percent. Symptoms are most common after flowering, beginning on lower leaves. Symptoms begin on leaves in the lower plant canopy. Tan or reddish-brown lesions (spots) develop first on the underside of leaves. Small pustules (blisters) develop in the lesions, which break open and release masses of tan spores. The lesions and pustules, which can be seen with a 20X hand lens, may also appear on pods and stems. Early symptoms of soybean rust (before pustules develop) are difficult to distinguish from other common leaf diseases on soybean. Cool, wet weather or high humidity favor epidemics. Dense canopies provide ideal conditions for disease development.



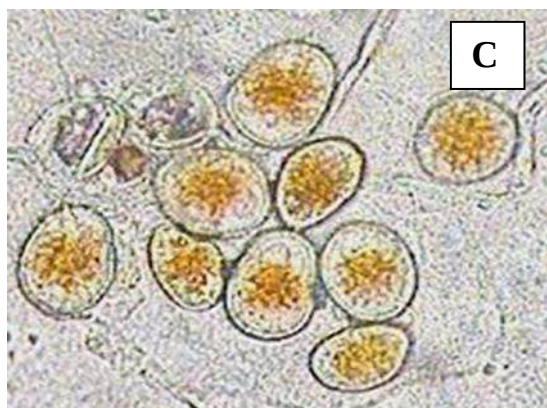


Fig.

A. Healthy Field of Soybean
C. Spores of *Phakopsora pachyrhizi*

B. Infected Field of Soybean
D. Symptoms of Soybean Rust

Conditions and timing that favor disease:

Soybean rust can occur at all stages of soybean development, but is most common in or after the plants begin flowering and pods start developing in the middle of the growing season. Plants are most susceptible during reproductive stages. Extended periods of wet weather, moderate temperatures (59 degrees F to 85 degrees F), and high humidity (over 75 percent) favor disease development.

Disease Management:

Early planting may allow plants to reach advanced growth stages before the arrival of rust inoculum. Effect of sowing time is also helpful for controlling disease. Soybean crop sown in June had minimum (36.15%) rust incidence with maximum seed yield compared with the crop sown in July, where the rust incidence was higher (44.06 and 65.82%) with low seed yield.

Application of fungicide is also effective in managing rust. One prophylactic spray of triadimefon (0.1%) at the appearance and second after 15 days were found highly effective in controlling rust followed by hexaconazole showing (6.45 and 9.60%), propiconazole (9.69% and 9.69%) and difenconazole (9.69% and 12.92% disease index), All the fungicides also resulted in increase of seed yield (0.87 %to 32.9% respectively) over the control,

but the significant increase (32.80%) was found in triadimefon. Highest benefit: cost ratio (0.12) was obtained under mancozeb treatment due to its low market cost, though the other fungicides were more effective. Vyas *et al.* (1997) also reported triadimefon to be very effective against soybean rust. Patil and Anahosur (1998) also reported effective control of soybean rust and increase in yield with the spray of hexaconazole, propiconazole and triadimefon. There will significantly increase in the disease resistance in plants due to application of fertilizers and manure.

Roasted coffee oil decreased rust severity on soybean. (Dalton *et al.* 2015). According to Dalton *et al.* *Bacillus subtilis*, *B. pumilus*, and coffee oil can potentially be developed for controlling soybean rust. Planting resistant varieties has been very successful in managing soybean. Some of the resistant varieties are, PS 1024, PS 1029, Indira Soya 9, MAUS 61, MAUS 61-2, etc.

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Impact of Urbanization and Environmental Changes in Sangli District

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Abstract:

Urbanization in Sangli district has led to significant socio-economic development; however, it has also brought about considerable environmental challenges. This study examines the relationship between urban growth and environmental changes, focusing on aspects such as air and water pollution, deforestation, and land use changes. The findings indicate that while urbanization has improved infrastructure and economic opportunities, it has also resulted in increased pollution levels and loss of natural habitats. The study suggests adopting sustainable urban planning strategies to balance development with environmental conservation.

Introduction:

Urbanization is a global phenomenon that significantly influences the socio-economic and environmental fabric of a region. Sangli district, known for its agricultural and industrial significance in Maharashtra, has witnessed rapid urban expansion over the past few decades. With increasing population density and infrastructure development, the region is experiencing changes in land use patterns, air and water quality, and overall environmental health. Urbanization has led to the growth of commercial and residential sectors, transportation networks, and industries, which contribute to economic progress but also pose challenges such as pollution, resource depletion, and waste management issues.

This study aims to analyze the multifaceted impact of urbanization in Sangli, addressing both its opportunities and challenges. It also explores the potential measures that can help achieve a balance between development and environmental

sustainability. By understanding the changing landscape of the district, stakeholders can implement informed policies to ensure long-term growth without compromising the region's natural ecosystem.

Objectives:

The objectives of this study include:

1. To analyze the rate of urbanization in Sangli district.
2. To assess the environmental changes due to urbanization.
3. To suggest sustainable development measures.

Methodology:

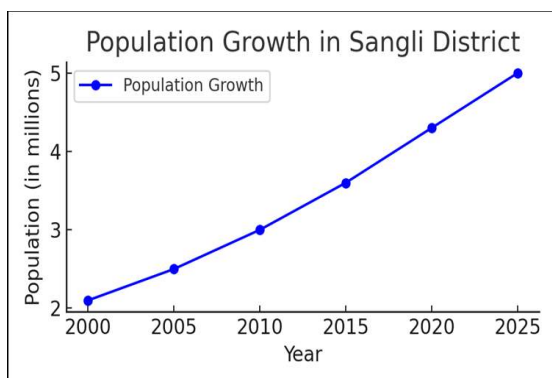
The study employs a mixed-method approach using data from government reports, satellite imagery analysis, and surveys of local communities. Quantitative and qualitative data were collected from secondary sources such as the Census of India, Pollution Control Board, and municipal records. For the measuring of

noise pollution, Air pollution, ground-water pollution we have taken samples from various polluted places through concern instruments and technology. The period 25 years have been considered from 2000 to 2025 for the present investigation. However the period 2010 to 2025 has considered for the calculation of Air Quality Index (AQI) and environmental changes.

Urbanization Trends in Sangli:

The population of Sangli district has grown significantly due to urban expansion (Census of India, 2011). The following chart shows the population growth over the past 20 years (fig.1).

Figure 1: Population growth trend in Sangli District.



Source: Census of India, 2011 & Govt. population reports

Sangli district, located in Maharashtra, has experienced significant urbanization over the past few decades due to industrial growth, infrastructural development, and population migration from rural to urban areas. This trend has been driven by economic opportunities, improved connectivity, and the expansion of educational and healthcare facilities.

Expansion of Urban Areas:

Urbanization in Sangli has led to the expansion of major cities and towns, such as:

- **Sangli-Miraj-Kupwad Municipal Corporation (SMKMC):** The largest urban agglomeration in the district, witnessing rapid growth due to industrialization and improved infrastructure (Sangli Municipal Corporation, 2023).
- **Islampur and Tasgaon:** Emerging urban centers attracting population due to their proximity to highways and agricultural processing industries. (Patil & Deshmukh, 2019).
- **Suburban Expansion:** Rural areas surrounding Sangli city are gradually transforming into suburban zones with mixed land use patterns (Shinde, 2020).

Drivers of Urbanization:

Several factors contribute to the rapid urbanization of Sangli district, including:

Urban Development Department, Maharashtra, (2022):

- **Economic Growth:** The district's sugar industry, textile sector, and agro-based industries have fueled migration and settlement in urban areas.
- **Infrastructure Development:** Improved road connectivity (e.g., highways and expressways), development of industrial zones, and expansion of public transport services.
- **Educational and Healthcare Facilities:** Sangli has become a hub for higher education and medical services, attracting students and professionals from surrounding areas. (WHO report, 2022).
- **Government Policies:** Initiatives like Smart City development and Pradhan Mantri Awas Yojana (PMAY) have facilitated urban expansion and housing projects.

Challenges of Urbanization:

Despite the economic advantages, rapid urbanization has introduced several challenges, including: **Maharashtra Pollution Control Board (MPCB), (2023).**

- **Traffic Congestion:** Rising vehicle numbers have led to increased traffic congestion and air pollution in urban centers.
- **Housing Shortages:** High demand for housing has resulted in informal settlements and rising real estate prices.
- **Pressure on Resources:** Water scarcity, inadequate waste management, and pollution issues have emerged due to the growing population.
- **Loss of Agricultural Land:** The expansion of urban areas has encroached upon fertile agricultural land, affecting local food production.

Future Projections:

Urbanization in Sangli is expected to continue at a rapid pace. Key projections include:

- **Population growth:** Expected to reach 5.5 million by 2030.
- **Smart City Expansion:** The Sangli-Miraj-Kupwad region is likely to see an increase in smart city initiatives with a focus on sustainable urban planning.
- **Infrastructure Development:** Planned projects like metro connectivity and industrial parks will further accelerate urban growth.

Environmental Changes:

Urbanization has led to various environmental issues, including deforestation, water pollution, and air pollution. The following table provides an overview of environmental indicators over the last decade.

Year	Air Quality Index (AQI)	Forest Cover (sq km)
2010	80	1500
2015	95	1400
2020	120	1300
2025	135	1200

Compiled by author 1: Environmental indicators in Sangli District.

Conclusion:

Urbanization in Sangli district has contributed to economic development but has also resulted in significant environmental degradation. To mitigate these impacts, policies focusing on sustainable urban planning, waste management, and green initiatives must be adopted.

The findings of this study reveal that urbanization in Sangli district has significantly transformed the socio-economic landscape, offering numerous opportunities for growth and development. However, these advancements have come at a cost to the environment, with noticeable degradation in several key areas.

Key Findings:**1. Land Use Changes:**

- Rapid urban expansion has led to a reduction in agricultural land and green cover.
- Encroachments on natural water bodies have disrupted the ecological balance.

2. Air and Water Pollution:

- Industrial and vehicular emissions have resulted in deteriorating air quality, with AQI levels showing an upward trend.
- Untreated sewage discharge into the Krishna River and other water sources has led to water contamination.

3. Waste Management Challenges:

- The increasing population has put pressure on waste management

systems, leading to unregulated disposal practices.

- Plastic waste and construction debris have become major pollutants in urban areas.

4. Biodiversity Loss:

- Urban expansion has encroached on forested areas, leading to habitat loss and declining biodiversity.
- Bird and animal populations have seen a decline due to habitat fragmentation.

Recommendations for Sustainable Development:

To mitigate the negative impacts of urbanization, it is imperative to adopt sustainable development strategies, such as:

- **Implementing Green Infrastructure:** Encouraging the development of parks, green belts, and urban forests to enhance environmental sustainability.
- **Strict Pollution Control Measures:** Enforcing stricter regulations on industries and vehicular emissions to improve air and water quality.
- **Sustainable Urban Planning:** Integrating environmental considerations into future city planning processes.
- **Public Awareness Campaigns:** Educating residents on sustainable practices such as waste segregation and water conservation.
- **Enhanced Policy Implementation:** Strengthening the enforcement of existing environmental laws and introducing new initiatives to address emerging challenges.

Recommendations:

- Implement sustainable urban development practices.

- Promote eco-friendly infrastructure and green spaces.
- Strengthen policies for pollution control and waste management.

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Navigating Complexities of Artificial Intelligence And Machine Learning: Addressing Ethical, Social, Security, Environmental and Governance Challenges

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Abstract:

The rapid evolution of artificial intelligence (AI) and machine learning (ML) has brought about transformative benefits, but also raises critical concerns. This paper presents a comprehensive analysis of the intricate challenges surrounding AI and ML, spanning ethical, social, security, environmental, and governance domains. We conduct a thorough examination of current research and practices, identifying key gaps and limitations. Our findings inform a proposed framework for responsible AI and ML development, emphasizing the imperative of interdisciplinary collaboration among academia, industry, government, and civil society.

This research underscores the necessity of developing and implementing effective solutions to address the challenges posed by AI and ML. We advocate for the establishment of ethical guidelines, social norms, and governance frameworks to ensure that these technologies yield equitable benefits for all segments of society. By providing a nuanced understanding of the complex interplay between AI, ML, and society, this study contributes to the ongoing discourse on responsible AI and ML development.

Keywords: Artificial Intelligence, Machine Learning, Ethics, Responsibility, AI Challenges

Introduction:

The integration of artificial intelligence (AI) and machine learning (ML) into various sectors has yielded unprecedented benefits, including enhanced productivity, improved decision-making, and economic growth. However, the rapid advancement of these technologies has also introduced critical concerns, such as ethical ambiguities, social disparities, security vulnerabilities, environmental degradation, and regulatory gaps.

As AI and ML increasingly permeate our daily lives, proactive measures must be taken to address these challenges and ensure responsible development and

deployment. This paper undertakes a comprehensive analysis of the complexities surrounding AI and ML, identifying pivotal challenges, opportunities, and potential solutions. By synthesizing existing research and practice, this study aims to provide a nuanced understanding of the intricate relationships between AI, ML, and society, ultimately informing strategies for responsible AI and ML development.

The imperative to address these challenges is heightened by the profound consequences of unchecked AI and ML growth. Unmitigated, these technologies risk exacerbating social inequalities, eroding

individual autonomy, and undermining institutional trust. Conversely, prioritizing responsible AI and ML development enables us to harness their transformative potential, fostering a more equitable, sustainable, and just society.

The aim of this study is to navigate the complexities of artificial intelligence (AI) and machine learning (ML), identifying key challenges, opportunities, and potential solutions. This research endeavors to provide a comprehensive understanding of the intricate relationships between AI, ML, and society, with a focus on addressing the ethical, social, security, environmental, and governance challenges associated with these technologies. By examining existing research and practice, this study seeks to propose a framework for responsible AI and ML development, ultimately informing strategies for mitigating the negative consequences and maximizing the benefits of AI and ML.

Literature Survey:

Search Strategy:

We explored prominent academic research databases like IEEE Xplore, ScienceDirect, and Google Scholar for articles published between 2021 and 2024 for Artificial and Machine Learning Challenges. Plenty of keywords were used to locate the research papers for the present study, such as ‘Artificial Intelligence’, ‘Machine Learning’, ‘Ethics’, ‘Responsibility’, ‘AI Challenges’. The initial search yielded 20 articles and 5 articles were discarded which didn’t support the specific criteria. We have applied specific inclusion and exclusion criteria as below-

Inclusion:

- Papers that studies about Artificial Intelligence, its challenges and potential solutions.

- Included journal articles from Scopus Indexed Journals, conference papers from prominent research databases.

Exclusion:

- Excluded articles containing unattended studies
- Excluded papers that are too broad or lack specificity.

This section reviews the literature pertaining to the challenges of Artificial Intelligence in various sectors.

Explores the use of Artificial Intelligence (AI) in environmental monitoring, highlighting its ability to forecast disasters, detect pollution sources, and monitor air and water quality. It compares the advantages of AI with the limitations of traditional methods and examines key AI applications that enhance environmental management. While AI holds great potential, challenges such as a shortage of specialized AI professionals in the environmental sector and issues surrounding data access, privacy, and control—especially in regions with limited technological infrastructure—remain significant. The paper calls for proactive data governance by governments to protect sensitive information. Despite these challenges, the future of AI in environmental monitoring is promising, with expected improvements in AI algorithms, data collection methods, and computing power leading to greater accuracy and efficiency in pollution monitoring and management.

Outlined that the widespread deployment of Artificial Intelligence (AI) across various industries has led to significant advancements, but it also brings forth complex ethical dilemmas, including privacy concerns, bias, discrimination, lack of transparency, and risks to human dignity. These challenges could erode public trust

and hinder the legal and societal development of AI systems. The paper stresses the importance of developing AI ethically, in a way that respects human values and rights. It critically explores the key ethical issues and evaluates frameworks from the European Commission, IEEE, and OECD, identifying gaps in enforcement, inclusivity, and stakeholder engagement. Furthermore, the paper provides recommendations to ensure AI aligns with human values and supports societal well-being, advocating for collaborative efforts among researchers and practitioners.

Introduces the concept of "Transparency by Design" to guide the development of transparent AI systems in automated decision-making (ADM) environments. With the rise of AI and its decision-making capabilities, there has been growing demand for transparency in how these systems make decisions. However, the concept of transparency is complex, with multiple interpretations and challenges in practical application. The article reviews the difficulties of applying transparency in ADM and draws on lessons from "Privacy by Design" to create the "Transparency by Design" framework. It outlines nine principles addressing contextual, technical, informational, and stakeholder considerations to help organizations design transparent AI systems from the outset.

Discovered that the ethical challenges surrounding Artificial Intelligence (AI) and Machine Learning (ML) as these technologies increasingly integrate into society. It examines key ethical issues such as fairness, transparency, accountability, and data privacy, and addresses challenges like algorithmic bias, job displacement, and autonomous decision-making. The paper also looks at emerging technologies and regulatory frameworks designed to mitigate these concerns, with a focus on domains like healthcare and education. It emphasizes the importance of

ethical considerations in AI and ML's future development and calls for interdisciplinary collaboration among researchers, policymakers, and industry leaders to ensure AI and ML are developed responsibly and beneficially.

Addresses the legal and human rights challenges posed by Artificial Intelligence (AI), exploring issues such as algorithmic transparency, cybersecurity risks, bias, discrimination, legal personhood, intellectual property, worker impacts, privacy, data protection, and accountability. It uses the concept of 'vulnerability' to highlight key concerns and guide efforts to mitigate risks and protect human well-being. While recognizing the progress made in AI law, the article stresses the need for continuous evaluation and adaptability in addressing the significant impacts of AI, especially on vulnerable individuals and groups and their human rights.

Explained the potential benefits and challenges of integrating Artificial Intelligence (AI) into education. AI offers advantages for students, teachers, and educational administrators, such as personalized learning for students, targeted teaching for educators, and data-driven decision-making for administrators. However, the paper also identifies four key challenges: incomplete algorithm design, insufficient labeled data, over-reliance on technology, and security concerns. To address these issues, the paper proposes solutions including user-driven design, scientific data labeling, balanced technology use, and enhanced security measures to ensure AI's healthy development in education.

Examines the impact of Artificial Intelligence (AI) on the accounting field, highlighting both opportunities and challenges. While AI offers significant advancements, it also presents risks such as job displacement for accounting staff and information security concerns. The paper

discusses these potential risks and proposes solutions to manage the transformation in the accounting industry, emphasizing the importance of risk prevention and comprehensive thinking in AI applications. The goal is to ensure AI technology can develop effectively within the accounting field while minimizing its associated risks.

Methodology:

Effectively navigating AI and ML complexities demands a holistic strategy, tackling ethical, social, security, environmental, and governance challenges. A comprehensive approach must consider bias, transparency, privacy, job displacement, cybersecurity, energy consumption, e-waste, and regulatory frameworks. By prioritizing these factors and fostering collaboration among stakeholders, we can ensure AI and ML technologies yield societal benefits while minimizing adverse consequences. This multifaceted strategy is crucial for harnessing the potential of AI and ML. A comprehensive overview of the key challenges and potential solutions are given below:

Ethical Challenges:**Fairness and Bias:**

In AI and ML, bias and fairness are two of the biggest ethical issues. If the historical data used by machine learning algorithms has biases, the algorithms may reinforce and even worsen those biases. For instance, users with darker skin tones have been reported to experience higher error rates from facial recognition algorithms, which can lead to discrimination, unfair treatment, and privacy violations.

The creation of algorithms that are intended to reduce bias, thorough testing, and a variety of representative datasets are all necessary to address bias in AI. For biases to not gradually infiltrate the system,

it also entails constant observation and modification.

Transparency and Comprehensibility:

It might be difficult to comprehend how AI and ML models make their decisions because they frequently function as "black boxes." In vital fields like healthcare or finance, where comprehending the rationale behind a decision is essential, this lack of transparency may provide a challenge for AI systems. Researchers are trying to create techniques for explaining AI judgments and more interpretable AI models in order to allay this worry. Explainability and transparency not only increase user trust but also make it possible to spot and fix any biases or mistakes.

Data Security and Privacy:

Data security and privacy are issues due to the enormous volume of data needed to train AI algorithms. Personal data collection and storage entails serious obligations. For both individuals and companies, unauthorized access, data breaches, or abuse of sensitive information can have dire repercussions. In order to resolve these ethical issues, AI developers and organizations need to put data security first, use robust encryption, and follow privacy laws such as the California Consumer Privacy Act (CCPA) and the General Data Protection Regulation (GDPR). Strong permission procedures and transparent data usage guidelines are crucial for guaranteeing that people keep control over their personal data .

Safety:

The protection of users is yet another crucial ethical factor in AI. To prevent mishaps or injury caused by AI systems, action must be taken. It additionally signifies environmental stewardship and safety. Additionally, resources should not be used to the point where they have a major adverse effect on the environment.

Social Challenges:**Unemployment:**

Economic inequality may worsen as a result of job displacement brought on by automation and artificial intelligence. Organizations and governments alike must fund retraining and upskilling initiatives.

Inclusion and Equity:

AI systems, especially those in the fields of healthcare and education, must be developed with inclusion and equity in mind.

Security Challenges:**Risks to Cybersecurity:**

AI systems may be subject to online assaults. Secure data storage and encryption are two important security features that developers must prioritize.

Protecting Data:

AI-powered systems need to be built with strong data security features to guard against data breaches.

Environmental Challenges:**Disposal of Electronic Waste:**

One major environmental concern is the e-waste generated by AI technology. Lead, mercury, and cadmium are among the dangerous substances found in e-waste that can contaminate soil and water systems, posing a risk to human health and the environment.

Deterioration of Natural Ecosystems:

Natural habitats and animals are at risk from AI applications such as delivery drones and driverless cars. Automation driven by AI may lead to both increased consumption and waste in some industries, like e-commerce, which has made quick and frequent delivery of items the norm. Growing AI in agriculture may lead to excessive fertilizer and pesticide use, polluting water and soil and destroying biodiversity. Reduced biodiversity and monocultures may result from the use of AI

in farming methods to boost yields at the expense of preserving ecosystem health.

Governance Challenges:**Regulatory Frameworks:**

Strong regulatory frameworks must be established by governments to guarantee that AI development and application are consistent with social values.

Global Collaboration:

To provide uniform standards and rules for AI development and implementation, international cooperation is crucial.

Discussion:

This study aims to navigate the complexities of Artificial Intelligence (AI) and Machine Learning (ML), addressing the challenges associated with these technologies. The goal is to identify and mitigate the ethical, social, security, environmental, and governance risks linked to AI and ML. By examining these challenges, the study seeks to provide insights and recommendations for responsible AI and ML development, ensuring that these technologies benefit society while minimizing adverse consequences. This will inform strategies for harnessing AI and ML safely and effectively.

Conclusion:

The current study emphasizes the difficulties and complications related to machine learning (ML) and artificial intelligence (AI). The development and implementation of these technologies raise ethical, social, security, environmental, and governance issues that must be addressed as they continue to advance and infiltrate many facets of society. We can guarantee the responsible use of AI and ML technologies, which will ultimately benefit society while reducing negative effects, by recognizing and addressing these issues.

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Spatial Distribution and Temporal Growth of Rice in Kolhapur District

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Abstract:

Rice is the main kharif crop grown in the district. Kolhapur district is considered as the core district in Maharashtra for cultivation of rice. In fact rice cultivation has spread through this district. Especially in western region due to climatic conditions are profitable to rice cultivation. In this research paper Study on the Spatial Distribution and Temporal Growth of Rice in Kolhapur District, including Productivity, Area and Yield. The main objective of this paper is to study Spatial Distribution and Temporal Growth of Rice in Kolhapur District.

Keywords: Rice cultivation, Productivity, Area, Yield.

Introduction:

Rice is the main kharif crop grown in the district. Kolhapur district is considered as the core district in Maharashtra for cultivation of rice. In fact rice cultivation has spread through this district. Especially in western region are gainful climatic conditions including rainfall, soil and humidity. In this regard the Productivity of rice and Production of rice depend upon physical and economic factors. In this research paper Study on the Spatial Distribution and Temporal Growth of Rice in Kolhapur District, including Productivity, Area and Yield in 2018. The main objective of this paper is to study Spatial Distribution and Temporal Growth of Rice in Kolhapur District.

Objectives:

1. To Study on the Spatial Distribution and Temporal Growth of Rice in Kolhapur District.

2. To suggest measures for improvement if necessary.

Research Methodology:

Only secondary data has been collect from Books, Journals, Gazetteer, C-DAP, Kolhapur, Socio-Economic and Statistical Abstract Kolhapur District – 2018. Compressive District Agricultural plan district (C-DAP), Kolhapur. Data of rice productivity is taken 2013 and area under rice cultivation is 2017-2018 for discussion regarding spatial distribution. About the temporal growth of area, production and yield of rice in Kolhapur district data is collected from 2008-2009 to 2013-2014.

Limitation of the study:

The present research is related to specific period and only rice crops in India. The conclusion of this research paper may not be applicable to other crops and other district.

Data Analysis and Interpretation:**Spatial Distribution:****Tahsilwise Rice Productivity Status in Kolhapur District**

Sr. No.	Tahsil	Productivity (2013)
1	Hatkangale	2452.00
2	Shirol	1188.80
3	Panhala	2929.70
4	Shauwadi	2997.80
5	Radhanagri	3323.60
6	G.Bavada	4039.90
7	Karveer	3342.40
8	Kagal	2547.90
9	Gadhingalaj	2143.60
10	Bhudargad	3960.20
11	Ajara	2710.60
12	Chandgad	3410.30
	Total	35046.80

Source: C- DAP, KOLHAPUR.

Table shows that in 2013 productivity of rice is 35046.80 kg/ha. in Kolhapur district. Gagan Bavada tehsil is 4039 kg/ha. these are the highest productivity in the district. After that Bhudargad tahsil was second ranking

(3960.20 kg/ha.) followed by Chandgad, Karveer and Radhanagri tahsils. These five tahsils together share over 50 percent productivity of rice in the district. While productivity of Shirol is 1189 kg/ha. that is the low average in the Kolhapur district.

Tahsilwise Area under Rice Cultivation in Kolhapur District -2017-18.

Sr. No.	Tahsil	Area in ha.	Share in Percent
1	Hatkangale	927	0.84
2	Shirol	80	0.07
3	Panhala	10810	9.80
4	Shauwadi	16170	14.66
5	Radhanagri	13150	11.92
6	G.Bavada	3022	2.74
7	Karveer	11461	10.39
8	Kagal	8786	7.96
9	Gadhingalaj	8386	7.60
10	Bhudargad	13187	11.95
11	Ajara	10575	9.58
12	Chandgad	13782	12.49
	District	110,291	100

Source: Socio-Economic and Statistical Abstract Kolhapur District – 2018.

A) High Concentration Zone: (Above 11,000 ha.):

In table shows that the high proportion of rice cultivation is observed in Shahuwadi, Chandgad, Bhudargad, Radhanagari and Karveer tahsils. This is the core area of rice cultivation with 67,750 ha. in this there are the 61.41 percent of rice cultivated area of the district. These farmers have adopted the rice crop in traditional method also called as 'Rub' method. Availability of suitable climate, well, laterite soil, high rainfall, availability of labours, proper cultivation method and proper planning for cultivation practises are the important contributing factors responsible for the high percent of rice cultivation in this tahsils.

B) Moderate Concentration Zone: (6000 – 11000 h a.):

In the table shows that moderate concentration zone includes Panhala (9.80 percent), Ajara (9.58 percent), Kagal (7.96 percent) and Gadhingalaj (7.60 percent)

tahsils, a second largest rice cultivation tahsils with 38,557 ha. Contributing 34.94 percent of rice area of the district. It is observed that the tahsils well rainfall with good irrigation facility and the famous brand of 'Ajara Ghansal'. Besides these suitable climates, suitability of soil, progressive farmers, availability of local market, availability of transport facilities are the crucial factors contributing for the moderate proportion of rice cultivation in Kolhapur district.

C) Low Concentration Zone: (Below 6000 ha.):

This low concentration zone includes Hatkangale (0.84 percent) and Shirol (0.07 percent) tahsils having 927 and 80 ha. area under rice cultivation respectively. These tahsils share 0.84 and 0.07 percent of rice area respectively to the total area under rice cultivation in the study region. The low rainfall and poor quality black soil has affected rice cultivation in Hatkangale and Shirol tahsils.

Temporal Growth of Rice in Kolhapur District:

Temporal Growth of Area, Production and Yield of Rice in Kolhapur District.

Year	Area 00 ha.	Productivity Kg/ha.	Production 00, MT.
2008-09	1118	2583	2859
2009-10	1071	2569	2763
2010-11	1020	2876	2934
2011-12	971	2641	2564
2012-13	1093	2589	2366
2013-14	1120	3029	2650

Source: Compressive District Agricultural plan district (C-DAP), Kolhapur.

In the table shows that the Rice is the major kharif crop grown in the Kolhapur district. The rice crop grown in 74 percent (112000 ha.) of the total area under cereal crops during the kharif season. Hence, average productivity of the crop is 3029 kg/ha. Ranks 3rd in the state. Table 4.13 and figure 4.5 provide the information regarding the growth of rice area under rice cultivation, production and productivity during the period from 2008-09 to 2013-14.

In 2008-09 area under rice cultivation was 111800 hectare has been decreased by 97100 hectare in 2011-12 because of the cultivation of food grain is shrinking, with cash crops like sugarcane. Beside this its production was 285900 metric tonnes in 2008-09 which decline by 256400 metric tonnes in 2011-12 because of decrease under area of rice cultivation. It has been observed that the productivity was 2583 kg/ha. in 2008-09 which increased up to 2641kg/ha. in 2011-

12 because the farmers grown rice for commercial purpose with high variety seeds. However, in 2013-14 in this year area under rice cultivation again increase that is 112000 hectare and also production which increase up to 265000 metric tonnes. Here notable that the productivity also increased. In this way in 2008-09 to 2013-14 in whole periods here show that area under cultivation which is decreased only accept year 2013-14 and production also decreased accept only year 2010-11. However, here notable that productivity has been increased also.

Conclusion:

Overall discussion on the area, production and productivity of rice in the study region, the researcher conclusions of the study that is the concentration of rice reveals the high concentration in Shahuwadi, Bhudargad, Radhanagari, Chandgad, Karveer, Ajara and Panhala tahsils. Followed by G. Bavada, Kagal and Gadhingalaj tahsils and low concentration is observed in Hatkangale and Shirol tahsils. The temporal variations have also observed trends towards the growth. The average area, productivity and production in rice during the period 2008-2009 to 2013-2014 was 639300 ha, 16287 Kg/ha and 1613600 mt. correspondingly. In this way the Kolhapur district have a good potential for the growth of rice cultivation. If provision of adequate water in the eastern part of the study region made available. Available proper market channels. Government support is important to rice growers e.g. subsidies, grants, easy access to credit, insurance. The government should start rice procurement centres on time and at good prices. The government should encourage farmers to cultivate Gansal rice. More research is needed in rice, mainly including new varieties that are resilient to climate change and resistant to pests and diseases.

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जागतिकीकरणाचे सर्वसामान्य शेतकऱ्यांच्या जीवनावर होणाऱ्या परिणामांचे भेदक चित्रण : एस.

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प्रस्तावना :

जागतिकीकरणाच्या आजच्या काळात विविध संस्कृतींचा परस्परांवर खूप प्रभाव पडलेला आहे. नवनव्या धोरणांचा, तंत्रज्ञानाचा मानवी जीवनावर खूप खोलवर परिणाम होतो सामाजिक, शैक्षणिक, आर्थिक, सांस्कृतिक, जीवनच ढवळून निघते व त्याचेच पडसाद साहित्यलेखनातून उमटतात. साहित्य समाजाचाच एक घटक असतो. साहाजिकच तो आपल्या अवतीभवतीच बदलणारं वास्तव, सामाजिक समस्या यांच्या प्रभावाने प्रेरित होऊन लेखन करतो. त्यामुळे जागतिकीकरणाने तत्कालिन साहित्यलेखन प्रभावित होते.

जागतिकीकरणाच्या रेट्याने मानवी जीवन जेवढे सुसह्य झाले तेवढेच सर्व सामान्य माणसांच्या जीवनात अडचणींची भर ही पडत गेली. गरीब श्रीमंतीची दरी रुंदावतच गेली. वेदनेतून विद्रोहाचा जन्म होतो. व विद्रोहातून प्रस्थापित व्यवस्थेला नकार देण्याचा संघर्ष सुरू होतो. सुखसमृद्धीच्या नावाखाली विकसनशील देश आर्थिक संकटात सापडल्याचे दिसून येते. जागतिकीकरणाचे करार करण्यात प्रगत राष्ट्रांनीच पुढाकार घेतला व चाणाक्षपणाने आपला स्वार्थ साधून अप्रगत व विकसनशील देशांचा प्रगतीचा मार्गच खुंटावण्याचा प्रकार आहे. मानवी मूल्ये व नैतिकता या गोंष्टीना व्यवस्थेतून बाहेर काढण्याचा प्रयत्न जागतिकीकरणाच्या धोरणामुळे होतो. मानवी मूल्ये पायदळी तुडविली जातात व मानवी समाजाकडे ग्राहक

म्हणून पाहिले जाते. मूल्य व्यवस्थापनाच अशी जर बिघडत राहिली तर मानवी जीवनावर फार मोठं संकट अशी जागतिकीकरणाने भीती निर्माण झाली.

"शंकर सखाराम" लिखित कादंबरी मध्ये कोकणासारख्या प्रदेशात विविध पश्र्र जागतिकीकरणाने संघर्ष निर्माण झालेले आहेत. त्याचा प्रत्ययकारी वेध एस.ई.झेड या कादंबरीत लेखनाने घेतला आहे. लेखकाने "सेझ" मधून ग्रामीण जीवनातील कष्टाळूपणाला, प्रेमळपणाला सुरुंगच लावलेला दिसून येते "मॉल संस्कृती" ही जागतिकीकरणाची एक उदाहरण आहे.

कादंबरी हा साहित्यप्रकार माणसाच्या सुख:दुखाचे चित्रण करतो मानवी जीवनातील वास्तववाद, सामाजिकता जीवनदृष्टी, संवेदनशीलता यांचे दीर्घ कथन कादंबरीत समाविष्ट असते जीवनाच्या बहुकेंद्रितत्वाचे प्रतिबिंब कादंबरीत उमटत असते.

मराठी साहित्यातील ग्रामीण कादंबरीचा प्रवाह सशक्त करणारे व्यंकटेश माडगुळकर (बनगरवाडी), उद्धव शेळके (धग), शंकर पाटील (टारफुला), रा.रं. बोराडे (पाचोळा) या लेखकांची अख्खी पिढीच निर्माण झाली. १९६० नंतरच्या ग्रामीण कादंबरीवर औद्योगिकरण, यंत्रयुग, आधुनिकीकरण याचा परिणाम दिसून येतो (गोतावळा), आर्थिक प्रगती व समृद्धीच्या गोंडस नावाखाली स्वार्थी भांडवलदार व त्यांना साथ देणारे स्वार्थांध, सत्तापिसासू, राजकारणी, सामाजिक कार्यकर्ते व पैसापिसासू श्रीमंत लोक

शेतकऱ्यांच्या जमिनी हडप करण्याचे कारस्थान रचतात. व त्यांच्या जमिनी हडपतात ही चाललेली लूट समाजाच्या लक्षात आणून देण्याचे काम सामाजिक बांधिलकी म्हणून लेखक लेखनाच्या माध्यमातून करतो व ते वास्तवाचे भान घेऊन "सेझ" ही कादंबरी शंकर सखाराम या लेखकांनी केली आहे. एस. ई झेड विरुद्धचा लढा म्हणजे अन्यायाला तीव्र विरोध करण्याचा जोरदार प्रयत्न आहे. त्यामुळे त्यात संघर्षाची धार तीक्ष्ण झालेली दिसून येते.

शंकर सखाराम यांची सप्टेंबर २००७ मध्ये प्रसिध्द झालेली एस ई झेड (सेझ) ही एक समकालीन वास्तवाचा वेध घेणारी कादंबरी एस ई झेड (विशेष आर्थिक क्षेत्र Special Economic Zone) ही विकास योजना भारताचा विकास व्हावा म्हणून आणली परंतु भारतासारख्या देशात या निर्माण झालेल्या सेझमुळे ग्रामसंस्कृती उध्वस्त होत आहे. जागतिकीकरणाच्या आर्थिक उदारीकरणाच्या नावाखाली इथल्या शेतकऱ्याला लुबाडून भांडवलदारी संस्कृती इथले नैसर्गिक जीवन संपवण्याचा घाट घालते आहे. जागतिकीकरणामुळे कोकणासारख्या भूप्रदेशात काय प्रश्न निर्माण होऊ शकतात. याचे दर्शन घडविणारी "सेझ" ही एम महत्वाची प्रादेशिक कादंबरी !

एस ई झेड" या कादंबरीचा नायक चंद्रकांत थळे (चंदू) हा सुशिक्षित तरुण आहे. तो पदवीधर असल्यामुळे शासकीय - निमशासकीय नोकरी मिळवण्याची धडपड करतो पण सर्व प्रयत्न फॉल ठरतात. मग तो कावेरी पोल्ट्री फार्मिंग कंपनी च्या मदतीने स्वःताचा पोल्ट्री फार्मचा व्यवसाय सुरू करतो व्यवसाय सुरू करताना त्याला अनंत अडचणीचा सामना करावा लागतो. बँका सहजासहजी कर्ज देत नाहीत परंतु या सर्व अडचणीला सामोर जात तो हा व्यवसाय नेटाने चालवतो यात तो स्थिर होत असताना, आर्थिक परिस्थितीही सुधारत असताना बर्ड - फ्ल्यू ची साथ महाराष्ट्राच्या काही भागात सुरू होते व चंदू दुर्दैवाच्या फेऱ्यात अडकतो व इतर व्यवसायीकांबरोबरच याचा आर्थिक फटका चंदूला

बसतो तो कोलमडून जातो. चंदूच्या कुंटूंबात कष्टाळू सोशिक आई वडील व दोन प्रेमळ बहिणी (राधी व मनी) असतात. शेती करून चरितार्थ चालवणाऱ्या कुंटूंबाला ही झळ बसते.

या कादंबरीच्या पूर्वार्धत चंदू थळे या नायकाचा विकास व त्याबरोबर उत्तर कोकणातील अलिबाग परिसरातील लोकसंस्कृती, निसर्ग, तेथील शेतकऱ्यांची जीवन संघर्ष बोलीभाषेच्या लकबीसह चित्रित केला आहे. व उत्तरार्धात कादंबरीचे कथानक गतिमान झालेले दिसून येते. संघर्षाचा आगडोंब लेखकाने मांडला आहे. मूठभर लोकांच्या विकासासाठी उद्धवस्थ होणाऱ्या ग्रामजीवनाची ही प्रादेशिक कादंबरी.

"एस ई झेड" कादंबरीतील नायक चंदू बरोबरच गजानन गुरूजी हे पात्र ही महत्वाची भूमिका बजावताना दिसून येते. ते पेशाने शिक्षक असल्याने वाचनामुळे त्यांचा भोवतालच्या वातावरणात होणारा छोटसा बदलही ते हेरतात. "सेझ" बदल शेतकऱ्यांना, गावकरण्यांना जागृत करण्याच महत्वाच काम गजानन गुरूजी करतात. चंदू हा गावातला कष्टाळू प्रामाणिक तसेच परिस्थितीशी संघर्ष करणार उमदं व्यक्तीमत्व आहे याची नोंद गुरूजींच्या चाणाक्ष नजरेने घेतली होती. सुरवातीला चंदूला नोकरी शोधण्यापेक्षा स्वतंत्र व्यवसाय करण्याचा सल्ला व मदतही गुरूजींनी केली होती गुरूजींनी "सेझ" या योजनेतील दाहक वास्तव गावकरण्यांसमोर मांडण्यावर गाव हादरून जाते. व आपल्या जमिनी आता कंपन्या गिळंकृत करणार याचा धसका चंदूबरोबरच गावकरी घेतात. व तरुण कार्यकर्त्यांच्या सहकार्याने "सेझ" च्या विरोधात उभे राहतात.

कादंबरीच्या सुरवातीलाच नायकाला स्वप्न पडते की, आपल्या जमिनी आपल्याकडून काढून घेतयं तेव्हा तो खडबडून जागा होतो नाही..... नाही... नाही..... आमची जमीन आम्ही देणार नाही, आमची जमीन आमची आई आहे. ती आम्ही देणार नाही !

यानंतर जमीनी पर्यायाने परिसराचे जे वर्णन लेखकाने केले आहे ते अप्रतिम व लक्षवेधक आहे.

"एस ई झेड" हा नेमका काय प्रकार आहे हे अनेक शेतकऱ्यांना माहितच नाही. SEZ म्हणजे देशाच्या निर्यात वाढीच्या योजनांपैकी अलीकडची योजना म्हणजे विशेष आर्थिक क्षेत्र त्याला इंग्रजीत Special Economic Zone असे म्हणतात. १९२९ मध्ये ही योजना स्पेन मध्ये राबविली १९६० नंतर जागतिक बँकेने ही कल्पना स्वीकारली पुढे १९७६ साली चीनने ही विशेष आर्थिक क्षेत्र योजना राबविली त्यामुळे चीनच्या अर्थव्यवस्थेत फार मोठा बदल झाला. देशातील पडीक, नापीक जमीनीचा वापर करणे हे या योजनेची उद्दीष्ट्ये आहेत. आज सुमारे १२० देशात जवळजवळ ४००० अशी क्षेत्र कार्यरत आहेत. चीनमध्ये मात्र फक्त अशी चारच "सेझ" आहेत. त्यांनी या चार "सेझ" मधून प्रगती केली आहे. सन २००० मध्ये निर्यातीचे धोरण डोळ्यासमोर ठेवून भारताने "सेझ" ही कल्पना स्वीकारली. विशेष आर्थिक क्षेत्र स्थापनेबाबतचे विधेयक १० मे २००५ रोजी लोकसभेत मांडण्यात आले आणि आज हे भूत आपल्या शेतकऱ्यांच्या मानगुटीवर बसलेले दिसते.

आपल्या देशात सुमारे ५४७ "एस ई झेड" राबवायचे आहे त्यावेळी सगळ्यात जास्त म्हणजे ७८ सेझ महाराष्ट्रात तर त्यातले ११ "सेझ" एकच्या रायगड, अलिबाग परिसरात राबवायचे आहेत. त्यासाठी रायगड मधील सुमारे एक लाख एकर सुपीक जमिनी ह्या "सेझ" खाली जाणार आहे. "सेझ" प्रामुख्याने नापीक, खडकाळ जमिनीवर उभारला जातो. चीनने तसेच केले पण वापरात आलेल्या जमिनीही सरकारच्या आहेत. पण वास्तवात भारतात नापीक पडीक जमिनी ऐवजी सुपीक जमिनी घेतल्या त्याचा थेट परिणाम ग्रामजीवनावर तेथील संस्कृतीवर झाला व गावच्या नावे उठली गेली. आपल्या कडची योजना ही केवळ जमिनी लाटण्याचा रिअल इस्टेट चा डाव आहे व त्यासाठी ग्रामपातळी पासून राज्य पातळी पर्यंत चालणारी एक यंत्रणा जोरात कामाला लागली आहे. त्यामध्ये

धनदांडगे व आमदार, मंत्री हे याच यंत्रणेचे घटक बनले. हे जेव्हा शेतकऱ्यांच्या लक्षात आले तेव्हा त्या विरोधात काहीही झाले तरी आपल्या जमिनी द्यायच्या नाहीत या मतावर संघर्षसमिती ठाम उभी राहिली.

"सेझ" विरुद्धची संघर्ष समितीच्या आंदोलनामुळे त्यांच्या जमिनी विकत घेतल्या जाणार नाहीत. असे अश्वासन सरकार देते सरकार वर विश्वास ठेवून शेतकरी बेसावध होतो मात्र प्रत्यक्षात सरकार वेगळीच डाळ शिजवतो एकीकडे बेसावध करून दुसरीकडे अलायन, शेतकरी किंवा टाठा या कंपन्यांना आवश्यक जमिनी अधिग्रहित करण्यासाठी परवानगीही देण्यात आली.

SEZ म्हणजे काय ? हे शेतकऱ्यांना कळलेही नसेल मात्र आपली काळी आई जिने आपल्याला पोसले जन्मल्यापासून आपल्या दोन घास भरवले आपल्या मुलाबाळांच्या उदनिर्वाहाचे साधन बनले त्या जमिनीच आपल्याकडून हिसकावून घेतल्या तर आपलच नव्हे तर आपली पिढीच उध्वस्त होईल या भितीने शेतकरी धास्तावले व त्यांच्या मनाची झालेली घालमेल या कादंबरीत व्यक्त झाली आहे.

भारतीय शासनपद्धती लोकशाही स्वरूपाची आहे. त्यामध्ये दुर्बल घटकांवर अन्याय होणार नाही याची ही काळजी घेतली आहे. कायदा सर्वांना समान हे तत्व असतानाही "सेझ" ची अंमलबजावणी करताना आर्थिक विकास धोरणाच्या नावाखाली शेतकऱ्यांवर त्यांचे विचार त्यांची मते जाणून न घेताच त्यांच्या जमिनी बळजबरीने हस्तांतरण करण्याचा घाट शासनाने घातला आहे. लेखकाचा आर्थिक विकास धोरणाला (SEZ) ला विरोध नाही तर ज्या पद्धतीने हो योजना राबवली जाते त्या कार्यपद्धतीला विरोध आहे. यासाठी चीन, कोरिया, सिंगापूर, मलेशिया, आणि अमेरिका या देशांमधील विशेष आर्थिक क्षेत्राची वाटचाल विस्तार व विकास लक्षात घेऊन याबाबतीत पावलं टाकायला हवीत सेझसाठी शासनाने सुपीक जमिनीऐवजी नापीक, खडकाळ, जमिनीचे अधिग्रहण करावे. जमिनीच्या मालकीचे हस्तांतरण न करता जमीन भाडेपट्ट्यावर

देण्यात यावी. शेतकऱ्यांना व्यवसायात सहभागी करून त्यांना काही प्रमाणात सहभाग देण्यात यावा शेतकऱ्यांना व्यवसायात सहभागी करून त्यांना काही प्रमाणात सहभाग द्यावा त्यामुळे शेतकऱ्यांच्या आर्थिक विकासासाठी चालना मिळेल. हे असे उपाय सुचविलेले आहेत. परंतु शासन याची दखल घेत नाही असा अक्षेप कादंबरीकाराचा आहे.

समारोप :

थोडक्यात काय तर "सेझ" (Special Economic Zone) हे जागतिकीकरणाचे नवीन आर्थिक नितीचे अपत्य आहे. समाजातील सर्व क्षेत्रात जागतिकीकरणाने प्रवेश केला आहे. शिक्षण, खाणे, पिणे, बोलणे इ. जागतिकीकरण आले आहे खरे तर ही कादंबरी "सेझ" विरुद्धच्या संघर्षासाठी लिहीली गेली. "सेझ" कादंबरी मनापासून वाचली जात आहे. "सेझ" चे दुष्परिणाम लोकांच्या लक्षात येऊ लागले आहेत. ही कादंबरी सामाजिक बांधिलकी मुल्य जपताना दिसते. शेतकऱ्यांवर होणाऱ्या अन्यायाला वाचा फोडताना दिसते. या कादंबरीचा विजय प्रादेशिक न राहता राष्ट्रीय

पातळीवर पोहचणारा आहे. या कादंबरीचा अनुवाद इंग्रजी, हिंदी भाषेत व्हायला हवा असे म्हटले तर वावगे ठरणार नाही.

निष्कर्ष :

जागतिकीकरणाच्या दुष्परिणामाची परिणामकारकता चित्रीत करण्यात लेखक यशस्वी झाले आहेत. नविन आर्थिक धोरणाला लेखकांचा विरोध नाही. शेतकऱ्यांच्या हिताचे रक्षण करावे व ग्रामसंस्कृती विध्वंस होवू नये याबद्दलची असणारी तळमळ "एस ई झेड" मधून व्यक्त झाली आहे. "सेझ" सारख्या धोरणामुळे भारतासारख्या देशात गरीब श्रीमंत ही दरी अधिक रुंदावण्याची शक्यता नाकारता येत नाही.

संदर्भ :

१. सखाराम शंकर, "एस ई झेड ", सामंत पब्लिकेशन, मुंबई २००८
२. शिविम, संशोधन पत्रिका, अंक पाचवा, समकालिन मराठी साहित्य: प्रेरणा व स्वरूप
३. एस ई झेड (सेझ) कादंबरी, एक शोध, संपादन :- डॉ. धनाजी गुरव

शहरी आणि ग्रामीण असमानता

प्रा. मनिषा हणमंत पाटील

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गोष्टावारा:

प्रस्तुत शोधनिबंधाकरिता 'शहरी आणि ग्रामीण असमानता' हा विषय निवडला आहे. सदर विषयाच्या अध्ययना करिता तथ्य संकलनासाठी संशोधकाने दुय्यम माहिती स्रोतांचा वापर केलेला आहे. या अध्ययनातून निष्कर्ष अंतिम असे दिसून येते, की शहरी आणि ग्रामीण असमानता कमी करण्यासाठी सरकारने ग्रामीण भागातील मूलभूत सोयी सुविधांचा विकास करून शिक्षण, आरोग्यसेवा आणि रोजगाराच्या संधी उपलब्ध करून द्यायला हव्यात.

प्रस्तावना:

ग्रामीण आणि शहरी भागातील लोकसंख्या उत्पन्न पातळी आणि जीवनमानाच्या दर्जामध्ये मोठ्या प्रमाणात निर्माण झालेल्या तफावतीला ग्रामीण शहरी असमतोल किंवा असमानता असे म्हणतात. शहरी आणि ग्रामीण असमानता ही एक जागतिक समस्या आहे, जी शहरे आणि खेड्यांमधील असमान विकास दर्शवते. शहरीकरणामुळे शहरांची प्रगती होत आहे, पण ग्रामीण भाग अजूनही विकासाच्या मुख्य प्रवाहापासून दूरच आहे. भारतात शिक्षण, आरोग्यसेवा, रोजगाराच्या संधी, यामध्ये शहरी आणि ग्रामीण भागात खूप मोठ्या प्रमाणात तफावत दिसून येते. शहरातील वाढते औद्योगीकरण आणि आधुनिकीकरण गुंतवणूक आणि कुशल कामगारांना आकर्षित करतात, ज्यामुळे ग्रामीण भागातून मोठ्या प्रमाणात शहराकडे स्थलांतर वाढते आणि ग्रामीण भाग अविकसित आणि शेतीवर अवलंबून राहतो.

जागतिक पातळीवर ग्रामीण समुदायांना अपुऱ्या आरोग्यसेवा, मर्यादित शैक्षणिक सुविधा, खराब संपर्क सुविधा यासारख्या आव्हानांना तोंड द्यावे लागते. भौगोलिक पृथक्करण, आर्थिक धोरणे आणि जलद

शहरीकरण हे घटक असमानतेला कारणीभूत ठरतात. ज्यामुळे स्थलांतर, शहरातील गर्दी आणि पर्यावरणीय ताण वाढतो.

ग्रामीण भागातील शेतीवर अवलंबून राहणाऱ्यांचे प्रमाण जास्त आणि उत्पादन कमी, शेतीतील छुपी बेरोजगारी हे चिंताजनक प्रश्न ग्रामीण भागासमोर आहेत. कार्यक्षम वर्गातील लोकसंख्येचं शहराकडील स्थलांतर खेडी ओस पडण्यात होत आहे. कार्यक्षम वर्ग शहराकडे गेल्यामुळे ग्रामीण भागात कार्यक्षम वर्गाची कमतरता मोठ्या प्रमाणात जाणवत आहे. त्यामुळे ग्रामीण भागात वृद्धांची संख्या वाढत चालली आहे. शेतीतील कुशल मनुष्यबळाची कमतरता जाणवत आहे. याचा परिणाम शेती विकासावर होत आहे. इतर सोयी सुविधांची कमतरता यामुळे ग्रामीण भाग विकासापासून लांब राहिला आहे. वाढती शहरी लोकसंख्या शहरावर ताण निर्माण करत आहे. झोपडपट्ट्यांचे प्रमाण वाढत आहे. दारिद्र्य, गुन्हेगारी, अस्वच्छता, बालगुन्हेगारी, गलिच्छ राहणीमान या समस्या शहरी भागात वाढत आहेत.

या विषयामेचे निराकरण करण्यासाठी ग्रामीण पायाभूत सुविधांमध्ये गुंतवणूक, धोरणात्मक सुधारणा,

शाश्वत शहरी नियोजन, आंतरराष्ट्रीय सहकार्य याबरोबरच स्थानिक आणि जागतिक प्रयत्नांची आवश्यकता आहे.

अभ्यास विषय:

सदर शोध निबंध करिता संशोधकाने 'शहरी आणि ग्रामीण असमानता' या विषयावर शोध निबंध लिहिलेला आहे.

उद्दिष्ट:

1. शहरी आणि ग्रामीण क्षेत्रांतील आर्थिक, सामाजिक व सांस्कृतिक असमानतेचे विश्लेषण करणे.
2. असमानतेची कारणे आणि उपाययोजना सुचविणे.

तथ्य संकलन:

तथ्य संकलनाकरिता सदर शोध निबंधात संशोधकाने दुय्यम माहिती स्रोतांचा वापर केलेला आहे. यामध्ये इंटरनेटच्या माध्यमातून माहिती मिळवण्यात आली आहे.

संशोधन आराखडा:

प्रस्तुत शोधनिबंधाकरिता संशोधकाने वर्णनात्मक संशोधन आराखड्याचा वापर केला आहे.

१. लोकसंख्या:

जगातील अनेक देशांमध्ये ग्रामीण भागात राहणारी लोकसंख्या जास्त आहे. जसजसा अर्थव्यवस्थेचा विकास होत जातो तसतसा शहरी भागाकडे रोजगार व चांगल्या जीवनमानासाठी ग्रामीण भागातून शहराकडे संक्रमण वाढते. भारतात 2011 च्या जनगणनेनुसार एकूण लोकसंख्येच्या 68.89% लोकसंख्या ग्रामीण भागामध्ये राहते. तर 31.16% लोक शहरात राहतात. लोकसंख्येची घनता शहरी भागात जास्त आहे. तर ग्रामीण भागामध्ये लोकसंख्येची घनता कमी आहे. त्यासोबतच शहरात

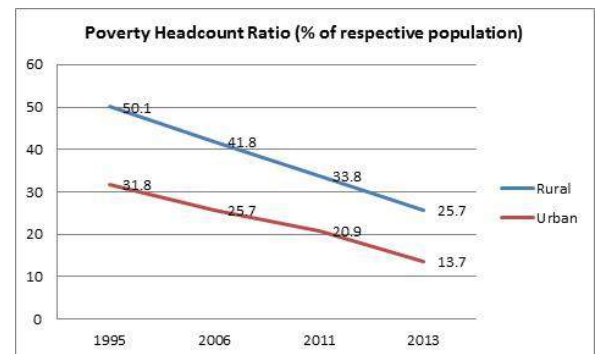
झोपडपट्ट्या, वाहतूक कोंडी आणि प्रदूषण यांसारख्या समस्या निर्माण होतात.

२. बेरोजगारीचे प्रमाण:

ग्रामीण भागात रोजगाराच्या मर्यादित संधी असल्यामुळे मोठ्या प्रमाणावर बेरोजगारी दिसून येते. शेती हा प्रमुख व्यवसाय असल्याने हंगामी बेरोजगारीची समस्या उद्भवते. याउलट शहरी भागात उद्योग, सेवा क्षेत्र, आणि स्टार्टअप्स यामुळे रोजगाराच्या अधिक संधी उपलब्ध होतात. खुली बेरोजगारी ही शहरी भागातील मुख्य समस्या आहे. सन 2009-10 मध्ये प्रत्येक हजार व्यक्ती मागे ग्रामीण भागात 16 व्यक्ती बेरोजगार होत्या. तर शहरी भागात 34 व्यक्ती इतके प्रमाण होते.

३. दारिद्र्याचे प्रमाण:

दारिद्र्य हे ग्रामीण आणि शहरी असमानतेचे एक मुख्य कारण आहे. ग्रामीण भागात आर्थिक उत्पन्न कमी असून शेतीवर अवलंबून राहावे लागते. त्याउलट शहरी भागात जरी उत्पन्नाच्या संधी अधिक असल्या, तरी महागाईमुळे जीवनशैली महागडी ठरते. ग्रामीण भागातील दारिद्र्य हे कुपोषण, शिक्षणाचा अभाव, आणि आरोग्य सुविधांवर परिणाम करते. भारतामध्ये नियोजन मंडळाच्या 2009-10 मधील पाहणीनुसार ग्रामीण भागातील 38.8% लोकसंख्या दारिद्र्यरेषेखालील जीवन जगत होती. अशा लोकांची निरपेक्ष संख्या 274.2% दशलक्ष एवढी होती. शहरी भागात 20.9% लोकसंख्या एवढी होती. अशा लोकांची निरपेक्ष संख्या 2009-10 मध्ये 76.5% दशलक्ष एवढी होती. म्हणजेच शहरी भागापेक्षा ग्रामीण भागामध्ये दारिद्र्याचे प्रमाण जास्त दिसून येते.



४. सामाजिक आणि आर्थिक विषमता:

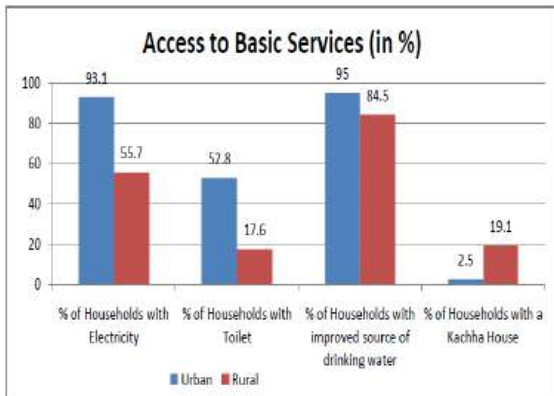
सामाजिक आणि आर्थिक विषमता ही ग्रामीण आणि शहरी असमानतेची मूळ समस्या आहे. ग्रामीण भागात जातीभेद, जमिनीचे असमान वाटप, आणि शिक्षणाचा अभाव यामुळे आर्थिक विषमता तीव्र असते. शहरी भागात तंत्रज्ञानाच्या वाढत्या वापरामुळे आणि आधुनिक साधनांच्या मदतीने उच्च उत्पन्न गट तयार होतो, ज्यामुळे सामाजिक स्तरांमधील अंतर अधिक वाढते.

५. साक्षरतेचे प्रमाण:

ग्रामीण भागातील साक्षरता दर शहरांच्या तुलनेत कमी आहे. शिक्षणाच्या पुरेशा सुविधा नसल्यामुळे ग्रामीण भागातील विद्यार्थी शैक्षणिक संधींपासून वंचित राहतात. त्याउलट शहरी भागात दर्जेदार शाळा, महाविद्यालये, आणि तंत्रज्ञानाशी जोडलेले शिक्षण हे शिक्षणाचा दर्जा उंचावतात. साक्षरतेचे प्रमाण भारतात 2011 च्या जनगणनेनुसार 74.4% एवढे होते. ग्रामीण साक्षरतेचे प्रमाण 68.91% होते. तर शहरी साक्षरतेचे प्रमाण 84.98% होते. ग्रामीण आणि शहरी भागात शिक्षणाचा दर्जा आणि गुणवत्ता इत्यादी मध्ये सुद्धा असमतोल दिसून येतो.

६. मूलभूत सोयीसुविधा:

ग्रामीण भागात मूलभूत सोयीसुविधांची मोठी कमतरता आहे. रस्ते, पाणी, वीज, शिक्षण, वाहतूक आणि इंटरनेट या गोष्टी पुरेशा प्रमाणात उपलब्ध नाहीत. शहरी भागात या सुविधा तुलनेने अधिक प्रमाणात उपलब्ध आहेत, परंतु लोकसंख्येच्या दाटीमुळे त्या पुरेशा ठरण्याचा प्रश्न निर्माण होतो.



७. महिला रोजगाराचे प्रमाण:

ग्रामीण भागात महिलांना रोजगाराच्या संधी अत्यंत मर्यादित असतात. पारंपरिक रूढी-परंपरा, चालीरिती आणि शिक्षणाचा अभाव यामुळे महिला मुख्यतः शेतीशी संबंधित कामांवर अवलंबून असलेल्या दिसतात. शहरी भागात शिक्षण आणि रोजगाराच्या संधी अधिक असल्याने महिला विविध क्षेत्रांमध्ये पुढे येताना दिसत आहेत, परंतु त्यांना भेदभावाचा सामना करावा लागतो.

८. आरोग्याच्या सोयी:

आरोग्याच्या बाबतीत ग्रामीण आणि शहरी भागात मोठ्या प्रमाणात तफावत दिसून येते. शहरी भागात आरोग्याच्या सुविधा मोठ्या प्रमाणात झालेल्या आहेत, सर्व प्रकारच्या आरोग्याची सुविधा करून देणारे दवाखाने उपलब्ध आहेत. त्या प्रमाणात ग्रामीण भागात या सोयी सुविधांचा खूपच तुटवडा दिसून येतो. पुरेसा सकस आहार न मिळाल्यामुळे ग्रामीण भागातील नागरिकांचे आरोग्य सतत बिघडत राहते. एका पाहणीत असे दिसून आले आहे, की ग्रामीण भागात एकूण 59.8% नागरिकांकडे विजेची उपलब्धता आहे. शौचालयाच्या उपलब्धतेच्या बाबतीत 34.1% नागरिकांकडे शौचालय आहे. शहरी भागात 80.8% नागरिकांकडे शौचालय आहेत.

शहरी भागातील 12.9% नागरिक कच्च्या घरामध्ये राहतात. तर ग्रामीण भागातील 19.6% नागरिक पक्क्या घरात राहतात. सुधारित पिण्याच्या पाण्याचा मार्ग शहरी भागात 84.4% उपलब्ध आहे. ग्रामीण भागामध्ये कमीत कमी उत्पन्न असणारे 24.9% नागरिक वास्तव्य करतात. शहरी भागातील प्रमाण 2.60% आहे. मुलांच्या लसीकरणाच्या बाबतीत ग्रामीण भागात लसीकरण कार्यक्रम 50.4% कुटुंबापर्यंत पोहोचलेला आहे. त्यामुळे आरोग्य हा ग्रामीण शहरी असंतुलातील महत्त्वाचा घटक आहे.

९. उद्योग, व्यवसाय:

उद्योगधंदे प्रामुख्याने शहरी भागात केंद्रित झालेले असतात. त्यामुळे रोजगार निर्मिती, आर्थिक विकास, आणि तंत्रज्ञानाचा विकास यांसाठी शहरी भाग अधिक उपयुक्त ठरतो. ग्रामीण भागात छोटे उद्योग किंवा हस्तकलेवर आधारित व्यवसाय मोठ्या प्रमाणात दिसून येतात, जे मोठ्या प्रमाणावर आर्थिक प्रगती साधू शकत नाहीत.

१०. पाणीपुरवठ्याच्या सोयी:

ग्रामीण भागात पाणीपुरवठ्याच्या समस्या गंभीर आहेत. शहरी भागाच्या पिण्याच्या पाण्यासाठी ग्रामीण भागात मोठमोठी धरणे बांधली जातात. महाराष्ट्रात सुद्धा ज्या भागात पाण्याची उपलब्धता कमी आहे त्या भागात धरण बांधून दुष्काळी भागाला पाणी न देता ते पाणी शहराला पुरवले जाते. पाणीपुरवठ्याच्या बाबतीतील अशा प्रकारचा असमतोल ग्रामीण विकासात अडथळा निर्माण करतो. ग्रामीण भागातील नागरिकांना पिण्याच्या पाण्याच्या उपलब्धतेची हमी मिळू शकत नाही. त्यामुळे ग्रामीण भागात अजूनही पारंपारिक पाण्याचे स्रोतच वापरले जातात. शहरी भागात जलप्रदूषण आणि पाण्याच्या अपव्ययामुळे पाणीपुरवठ्यावर ताण येतो.

११. वित्तीय संस्था:

उद्योगधंद्यांचे जाळे निर्माण झाल्यामुळे शहरी भागात वित्तीय संस्था मोठ्या प्रमाणात सुरू होतात. ग्रामीण भागात वित्तीय संस्थांची संख्या तुलनेने कमी आहे. त्यामुळे कर्जप्राप्ती, बचत, आणि गुंतवणुकीसाठी ग्रामीण लोकांना अडचणीचा सामना करावा लागतो. शहरी भागात बँका, वित्तीय संस्था, आणि तंत्रज्ञानावर आधारित सेवांमुळे वित्तीय व्यवहार सोपे झाले आहेत.

१२. रोजगार निर्मिती:

ग्रामीण भागात रोजगार निर्मितीसाठी सरकारने विविध योजना राबवल्या आहेत, परंतु त्या अद्याप पुरेशा ठरलेल्या नाहीत. महात्मा गांधी रोजगार हमी योजना (MGNREGA) यांसारख्या कार्यक्रमांनी ग्रामीण भागातील बेरोजगारी काही अंशी कमी केली

आहे. शहरी भागात खाजगी क्षेत्र आणि सरकारी धोरणांमुळे रोजगार निर्मितीला चालना मिळाली आहे.

१३. विद्युत पुरवठा:

ग्रामीण भागात अद्यापही अनेक गावे वीजेपासून वंचित आहेत. विद्युतपुरवठ्याची असमानता ही ग्रामीण विकासातील एक मोठी अडचण आहे. शहरी भागात सततचा वीजपुरवठा उपलब्ध असतो, परंतु वाढत्या मागणीमुळे भारनियमनाचा सामना करावा लागतो.

१४. वाहतूक सुविधा:

ग्रामीण भागात वाहतूक व्यवस्था अजूनही विकसित झालेली नाही. त्यामुळे लोकांना दैनंदिन जीवनात अडचणींना सामोरे जावे लागते. वाहतुकीची साधने फारच अपुऱ्या प्रमाणात असल्यामुळे ग्रामीण भागातील उत्पादने जलद गतीने शहरी बाजारपेठेत आणण्यात मोठ्या प्रमाणात अडथळे निर्माण होतात. शहरी भागात सार्वजनिक वाहतूक व्यवस्था आणि रस्त्यांची गुणवत्ता चांगली असली, तरी ती लोकसंख्येच्या दाटीवाटीमुळे अपुरी पडते.

निष्कर्ष :

ग्रामीण आणि शहरी असमानता ही भारताच्या एकात्मिक विकासासाठी मोठा अडथळा आहे. या समस्येवर मात करण्यासाठी शाश्वत विकासाची धोरणे तयार करणे गरजेचे आहे. सरकारने ग्रामीण भागातील मूलभूत सुविधांचा विकास करून, शिक्षण, आरोग्यसेवा, आणि रोजगाराच्या संधी उपलब्ध करून द्यायला हव्यात.

प्रत्येक जिल्ह्याचे तेथील लोकांना जास्तीत जास्त फायदा करून देण्यासाठी स्वतंत्र उद्योग व्यवसाय उपलब्ध करून देणे गरजेचे आहे. उदा. ज्या जिल्ह्यांमध्ये सौर ऊर्जा अधिक आहे तेथे सौर ऊर्जा निर्मिती प्रकल्प, हरितगृहाचा वापर यासाठी प्रोत्साहन देऊन व्यवसाय निर्मिती केली पाहिजे. शहरीकरणाचा भार कमी करण्यासाठी ग्रामीण भागांचे शहरीकरण करणे ही काळाची गरज आहे. ग्रामीण आणि शहरी

भागातील दरी कमी झाल्यासच एकसंध आणि
प्रगतिशील भारताची निर्मिती होईल.

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Geographical Determinants of Soil Fertility: A Study of Local Farms and Agricultural Lands in Karad Tehsil

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Abstract:

This study examines the geographical factors influencing soil fertility in the agricultural lands of Karad Tehsil. By analysing soil quality, land use patterns, climatic conditions, and topographical variations, the research aims to identify key determinants that affect crop productivity. The findings are expected to guide local farmers in improving soil management practices, ultimately leading to enhanced agricultural yield and sustainability.

Keywords: Soil, Fertility, Agriculture

Introduction:

Soil fertility is a fundamental factor that directly influences agricultural productivity, and it is determined by a complex interplay of geographical, climatic, and human-induced factors. Understanding the determinants of soil fertility is essential for ensuring sustainable farming practices, especially in regions like Karad Tehsil, where agriculture forms the backbone of the local economy. Karad Tehsil, located in Maharashtra's Satara district, is characterized by a diverse landscape, including plains, valleys, and hills, along with varying climate patterns that significantly affect soil properties and crop yields.

The region's agricultural system is largely rainfed, with staple crops such as sugarcane, groundnut, and rice being cultivated. Despite its agricultural importance, many farmers in Karad Tehsil

face challenges related to declining soil fertility, soil erosion, and the impacts of climate change. These challenges make it critical to analyse how geographical factors such as topography, land use, water availability, and climatic conditions contribute to soil quality and its capacity to support sustainable agriculture.

This study aims to explore the key geographical determinants that affect soil fertility in local farms and agricultural lands across Karad Tehsil. By examining the topography, soil composition, and climatic variations, this research will provide valuable insights into the factors that influence agricultural productivity in the region. The findings of this study will not only enhance the understanding of soil fertility in Karad Tehsil but also help in formulating effective soil management strategies for local farmers.

1. Local Farms vs. Agricultural Lands:

Criteria	Local Farms	Agricultural Lands
Soil Fertility Levels	Varies significantly due to practices used	Generally higher fertility but affected by urbanization
Topography	Diverse; often adapted to local features	More uniform; large-scale cultivation
Water Availability	Dependent on local sources (wells, ponds)	Access to irrigation systems varies widely
Farming Practices	Typically diverse (crop rotation, organic)	More standardized (monoculture)
Impact of Urbanization	Less affected, often remote areas	Higher impact; encroachment on agricultural land
Erosion Risks	Higher in hilly areas without conservation	Moderate; often mitigated through larger scale practices
Nutrient Management	Organic amendments commonly used	Chemical fertilizers prevalent
Biodiversity	Generally higher due to mixed crops	Lower; less crop diversity
Community Knowledge	Strong local knowledge and practices	More reliance on external information
Economic Stability	Variable; dependent on crop diversity	More stable due to economies of scale

Statement of the Problem:

Soil fertility is a critical factor influencing agricultural productivity, yet it is significantly affected by various geographical determinants, such as topography, climate, and land use. In Karad Tehsil, a region characterized by diverse landscapes and agricultural practices, there is limited understanding of how these geographical factors specifically impact soil quality. Farmers face challenges related to soil erosion, nutrient depletion, and changing land use due to urbanization, which threaten their agricultural yields and livelihoods. Despite the acknowledged importance of these geographical influences, there is a lack of empirical data assessing their effects on soil fertility in the local context. This study aims to address this gap by exploring the relationships between geographical determinants and soil fertility in Karad Tehsil, providing insights that can inform sustainable agricultural practices and policies. Understanding these dynamics is essential for enhancing soil health, improving agricultural productivity, and

supporting the economic well-being of the farming community in the region.

Objective of the Study:

1. To identify and analyse the key geographical factors, such as topography, climate, and land use, in the farms and agricultural lands of Karad Tehsil.
2. The study aims to investigate the geographical determinants that impact soil fertility in the farms and agricultural lands of Karad Tehsil.

Research Questions:

1. What are the major geographical factors influencing soil fertility in Karad Tehsil?
2. How does topography affect soil quality and crop yield?
3. What are the impacts of climate and weather patterns on soil fertility?
4. How can farmers improve soil management practices based on geographical factors?

Literature Review:

Soil Fertility and Agricultural Productivity: Several studies emphasize the importance of soil fertility in sustaining crop yield. Fertile soils have adequate nutrients, moisture retention capacity, and organic content necessary for plant growth.

Geographical Factors: According to literature, topographical features such as slope, elevation, and proximity to water bodies play a significant role in soil characteristics. Additionally, climatic elements like rainfall, temperature, and humidity affect nutrient cycling and microbial activity in soils.

Karad Tehsil Overview: Previous research highlights the area's reliance on agriculture, with a focus on staple crops like sugarcane, groundnut, and rice. However, there is limited literature specifically examining the geographical determinants of soil fertility in this region.

(Hani et al., 2003) Sustainable Agriculture adopts productive, competitive and efficient production practices, while protecting and improving the natural environment and the global ecosystem, as well as the socio-economic conditions of local communities.

(De Longe et al., 2016) Sustainable agriculture is defined using the taxonomy of “levels” of practices from a spectrum supporting socio-ecologically sustainable food systems. The levels instrumental to this analysis are: improving system efficiency to reduce the use of inputs (L1), substituting more sustainable inputs and practices into farming systems (L2), redesigning systems based on ecological principles (L3: agro-ecology), and re-establishing connections between producers and consumers to support a socio ecological transformation of the food system (L4: social dimensions of agro-ecology). A fifth level of sustainable agriculture describes the establishment of an equitable, participatory, and just food system that is built upon the farm-scale practices of

L3 and the food relationships supported by L4

Research Methodology:

Karad Tehsil, situated in Satara district, covers a diverse topographical landscape, including plains, valleys, and plateaus. The climate is primarily tropical, with a distinct monsoon season, which greatly influences agricultural activities.

Figure Showing Area of the Study**Area of the Study:**

Karad Tehsil was selected for this study due to its diverse geographical and agricultural characteristics, which include variations in soil types, topography, and climate. This diversity makes it an ideal location to examine the influence of geographical determinants on soil fertility and their impact on local agricultural productivity.

Data Collection:

Data have been collected through both primary and secondary sources.

Primary Data: Soil samples from various farms will be analysed for nutrient content, pH levels, and organic matter. In addition, interviews with local farmers will be conducted to understand farming practices and soil management techniques.

Secondary Data: Climatic data, topographical maps,

and land use patterns will be gathered from government reports and academic studies.

Sampling:

A random sampling method was used to select farms across different geographical features such as lowlands, highlands, and areas near water bodies.

Tools for Analysis: Soil testing kits have been employed to measure nutrient levels, while Geographic Information Systems

(GIS) used to map the soil and topographical characteristics of the study area.

Results and Discussion:

Below is a table in Likert scale format based on the research questions about the geographical determinants of soil fertility in Karad Tehsil. The responses range from Strongly Agree (5) to Strongly Disagree (1):

S.N	Factors	Stat.	SD (1)	D (2)	N (3)	A (4)	SA (5)	Total
1.	The geographical features of Karad Tehsil have a significant impact on soil fertility.	F	7	36	2	42	8	95
		P	7.4	34.89	2.1	44.2	8.4	100
2.	Topography (elevation, slope, etc.) influences soil nutrient and moisture retention in this area.	F	4	57	2	24	8	95
		P	4.2	60	2.1	25.3	8.4	100
3.	Rainfall patterns and temperature variations affect the soil fertility in Karad Tehsil.	F	5	65	1	18	6	95
		P	5.3	68.4	1.1	18.9	6.3	100
4.	Natural water bodies near agricultural lands contribute to improved soil fertility.	F	12	24	1	48	10	95
		P	12.6	25.3	1.1	50.5	10.5	100
5.	Proximity to forested or deforested areas significantly affects the soil health in this region.	F	5	25	4	47	14	95
		P	5.3	26.3	4.2	49.5	14.7	100
6.	Soil erosion (water or wind erosion) has a major impact on soil fertility in Karad Tehsil.	F	6	21	10	43	15	95
		P	6.3	22.1	10.5	45.3	15.8	100
7.	Farming practices like crop rotation or organic farming enhance soil fertility across farms.	F	11	24	4	44	12	95
		P	11.6	25.3	4.2	46.3	12.6	100
8.	Urbanization and land use changes are reducing soil quality in agricultural zones.	F	6	27	2	47	13	95
		P	6.3	28.4	2.1	49.5	13.7	100
9.	The absence of proper irrigation systems negatively affects soil nutrient levels.	F	4	34	2	44	11	95
		P	4.2	35.8	2.1	46.3	11.6	100
10.	Farmers in Karad Tehsil employ effective soil management practices to mitigate geographical factors.	F	3	30	2	50	10	95
		P	3.2	31.6	2.1	52.6	10.5	100

Source: Compiled by Researcher

The analysis of the survey data reveals several key themes regarding the geographical determinants of soil fertility in Karad Tehsil.

Geographical Features and Soil Fertility:

A majority of respondents (52.6% combined "Agree" and "Strongly Agree") acknowledge

that the geographical features of the region significantly impact soil fertility. This suggests that factors such as landforms and climate play crucial roles in determining soil quality.

Topography's Role: The influence of topography on soil nutrient and moisture

retention received a strong affirmation, with 85.3% of respondents recognizing its importance. This indicates that elevation and slope are critical for managing water and nutrients, essential for agricultural productivity.

Climate Effects: Rainfall patterns and temperature fluctuations were similarly highlighted, with 75.3% agreeing that these climatic factors affect soil fertility. This points to the need for adaptive farming practices that consider these environmental variables.

Impact of Natural Water Bodies: Respondents strongly agree (61.1% combined) that natural water bodies enhance soil fertility. This underscores the importance of preserving these ecosystems in agricultural planning and management.

Forest Proximity: The proximity to forested areas also plays a significant role in soil health, with 64.2% of respondents affirming this relationship. This finding suggests that forest conservation efforts could be beneficial for maintaining soil quality in agricultural regions.

Soil Erosion Concerns: There is considerable concern regarding soil erosion, with 60.5% indicating it has a major impact on soil fertility. This highlights an urgent need for erosion control measures to protect soil resources.

Farming Practices: A notable 58.9% of respondents believe that sustainable farming practices, such as crop rotation and organic farming, enhance soil fertility. This reflects a growing recognition of the benefits of sustainable agriculture.

Urbanization and Land Use Changes: The survey indicates that urbanization and land use changes are perceived to diminish soil quality, with 62.2% agreeing on this issue. This calls for policies that balance development with agricultural sustainability.

Irrigation Systems: The absence of effective irrigation systems is viewed as detrimental to soil nutrient levels, with

57.9% of respondents agreeing. This highlights the need for improved irrigation infrastructure to support soil health.

Farmers' Management Practices: While 62.1% of respondents believe that farmers employ effective soil management practices, there remains room for improvement, suggesting that educational initiatives could further enhance these practices.

The analysis indicates a strong awareness among farmers in Karad Tehsil of the various geographical factors affecting soil fertility. The results highlight the need for targeted interventions that address both natural and anthropogenic influences, promoting sustainable agricultural practices to improve soil health in the region.

Findings:

- 1. Influence of Geographical Features:**
The survey reveals that a significant majority (over 52.6%) of respondents agree that geographical features, including topography and climate, play a crucial role in determining soil fertility in Karad Tehsil. This underscores the importance of considering these natural factors in agricultural planning and management.
- 2. Concerns About Soil Erosion and Urbanization:**
A substantial portion of respondents (60.5%) express concern regarding the impact of soil erosion on soil fertility, along with 62.2% noting that urbanization and land use changes are negatively affecting soil quality. These findings highlight the urgent need for effective erosion control measures and sustainable land management practices to preserve soil health in the region.

Suggestions:

- 1. Implement Erosion Control Measures:**
To mitigate the negative effects of soil erosion on fertility, it is essential to adopt comprehensive erosion control

practices. This could include the establishment of vegetative buffers, contour farming, and the use of cover crops. Providing training and resources to local farmers on these techniques can enhance soil stability and fertility.

2. **Promote Sustainable Agricultural Practices:** Encouraging the adoption of sustainable farming practices, such as crop rotation, organic farming, and improved irrigation techniques, can significantly enhance soil health. Agricultural extension programs should be developed to educate farmers on the benefits of these practices and provide them with the necessary tools and support to implement them effectively.

Conclusion:

This study highlights the significant impact of geographical determinants on soil fertility in Karad Tehsil. The findings reveal a strong consensus among respondents regarding the influence of natural features, such as topography and climate, as well as the role of natural water bodies and forest proximity in enhancing soil quality. Conversely, concerns about soil erosion and the adverse effects of urbanization indicate critical challenges facing local agriculture. The awareness of these factors among farmers suggests a readiness to adopt improved soil management practices, yet there remains a pressing need for education and resources to facilitate this transition. To

ensure sustainable agricultural productivity, it is vital to implement effective erosion control measures and promote sustainable farming techniques. This study underscores the importance of integrating geographical insights into agricultural planning and management, advocating for policies that balance environmental conservation with agricultural development. Addressing these challenges will be essential for maintaining soil fertility and enhancing the livelihoods of farmers in Karad Tehsil.

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Geographical Study of In-migrant Workers of Ichalkaranji City

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Abstract:

Ichalkaranji, known as the "Manchester of Maharashtra," is a prominent textile hub that attracts a significant number of in-migrant workers from various regions. This study explores the geographical dimensions of in-migrant workers in Ichalkaranji, focusing on their origins, socio-economic conditions, and spatial distribution within the city. Using a combination of primary surveys and secondary data analysis, the research identifies key source regions of migration and examines factors influencing workers' movement, such as employment opportunities, wages, and living conditions. The study also highlights the challenges faced by migrant workers, including housing shortages, access to basic amenities, and job security. The findings provide insights into the role of migration in shaping the urban landscape and economic dynamics of Ichalkaranji, offering valuable perspectives for policymakers and urban planners to improve the living standards of migrant workers.

Keywords: Migration, Ichalkaranji, Textile Industry, Urbanization, Socio-Economic Conditions.

Introduction:

People always travelling from one place to another for different reason, is simply known as migration. it is the moment of people and it can be permanent or temporary. There are two types of migration within the city that is in migration and out migration. people migrates from one place to another for various reasons, like occupation, employment, various facilities, education, war, famine, natural disaster etc. people migrates from one place to another due to this kind of pull and push factors.

Our Maharashtra is also known as migrated state. as per census 2011, 24,185,603 people out of 112,374,33 migrators in Maharashtra. Ichalkaranji is a well-known city of Maharashtra, known as little Manchester of Maharashtra. It is famous for textile, manufacturing, industrial

and power looms. The area of Ichalkaranji is 49.84 km² and many industries are present in a large scale which includes spinning mills, sizing mills, factories, textile, power looms units, cloth processing units, saw mills. other than this there are many markets, hotels, water treatment plants are present. and It is also famous for automobile industries. Ichalkaranji has mixed community from all parts of India. as per census 2011, 160158 migrants are present out of 287570. Which is around 56% of the total population of Ichalkaranji. The migrators in Ichalkaranji increasing day by day. Metropolitan cities become the main force attracting large number of migration to find job and employment.

Need of Study:

The effects of migration on individuals, households and regions have a significant impact on the national economy and society. The increasing pattern of workers in Ichalkaranji is interconnected with the pattern of growth and development of the city. In this paper In- migration pattern of workers during the last decades are analysed. The main purpose of this paper is to update our knowledge with regard to the emerging migration levels and patterns of workers from census 1991, 2001 and 2011. This paper also falls light on the migrant workers have become one of the ichalkaranji's wealth creators. This pattern of In-migrated workers is interconnected with the pattern of growth and development of Ichalkaranji city. The findings will definitely useful for planners and policy makers in understanding the current situation among the workers of Ichalkaranji.

Objectives:

1. To find the volume of In-migrant workers.

2. To study the trend of in- migrant workers of study area.

Study Area:

The textile town of Ichalkaranji in Kolhapur District is set as 28th municipal corporation of the state from may 2022. The study conducted among the in-migrated workers of Ichalkaranji city. Ichalkaranji is a city of Kolhapur district, Hatkanangale Tehsil of Maharashtra. Ichalkaranji is also known as Manchester City of Maharashtra or textile manufacturing industry. Ichalkaranji is located between Sangli and Kolhapur districts, It lies in Panchaganga valley about 18th miles (29 km) east of Kolhapur, north of the Panchganga river, Hatkanangale is at the south of Ichalkaranji. It is the 151st populist city in India. The city is famous for textile manufacturing and automobile industries. It produces different types of clothes from cotton, around 60% of people of Ichalkaranji are migrated from different states, cities or villages (Table 1).

Table 1: Location and relevant information of Ichalkaranji

Total area	49.84km ² (19.242 sq. mi.)
Elevation	539m (1768 ft.)
Total population	287570
Male population	149691
Female population	137879
Population Rank	151
Population density	5.800km ² (15000sq.mi.)
Literacy Rate	85.987
Coordinates	16.7°N 74.47°E
Per capita income	Rs. 416472
Temperature	62°F to 99° F
Rainfall	1239mm

Source: Compiled by researcher.

Methodology:**Data Collection:**

The big source of in-migration and population related data is the census of

India. This data is classified on the basis of the last residence, place of birth, reason of migration etc. It also shows streams of migration. It helps to analyse different

factors of migration. For this paper we analysed and computed In- migrant workers of Ichalkaranji by place of last residence, duration of residence and migration streams, hence last three decadal census data of 1991, 2001 and 2011 is considered.

Research Methodology:

Data have been presented 3 main migration categories of Ichalkaranji such as intra district inter district and inter state. Also examined the migration streams rural to urban and urban to urban from 1991 to 2011. Analysed last decades data for comparison and to show the growth of migration and worker in-migrants.

Analysis and Discussion:

Hypothesis:

Around 60% people of Ichalkaranji are in migrated from various regions. The major reason of in migration in Ichalkaranji is employment or business.

Limitations:

The present study is totally based on census data. Unavailability of current data of 2021 is a big limitation for the study. Much in-migrant workers of Ichalkaranji leaves in nearby villages which is not included in this data.

Table 2: Total population and total migration in Ichalkaranji

	1991			2001			2011		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Total population	-	-	214950	122727	134883	257610	149691	137879	287570
In-migrants	61568	65672	127240	67858	71420	139278	74588	85570	160158
% of In-migrants with total population	28.6	30.5	59.1	26.3	27.7	51.0	25.9	29.7	55.69
% of In-migrants with total In-migrants	48.3	51.6	-	48.72	51.27	-	46.57	53.42	-

Source – Migration Tables 2011,2001and 1991 census

In comparison to 1991, 2001 and 2011 census, the above data presents decadal growth of in migrant population in Ichalkaranji city. Where we can observe continuous growth in the in-migrants of Ichalkaranji. We have observed that in 1991 almost 60% of Ichalkaranji population is migrated. In 2001 it become 54% and the most noticeable growth which is almost 20000 migrants in 2011. We can observe

much difference in between the migration of Ichalkaranji, There is a rapid growth in the migration of Ichalkaranji. According to 1991, 2001 and 2011 census information women migrants are high as compared to men, which is mostly due to marriage migration. In 2011, 53.42 women migrated with a reason of marriage which is almost more than half of total migration (Table 2).

Table 3: Population distribution of total in-migrants with distance travelled (1991-2011)

Popula- -tion	1991				2001				2011			
	Male	Female	Total	%	Male	Female	Total	%	Male	Female	Total	%
Intra District	21500	23893	45453	35.72	22611	25262	47873	34.37	22949	28336	51285	32.02
Inter District	18220	21433	39653	31.16	17686	20431	38117	27.36	21216	26352	47568	29.70
Inter State	21698	20296	41994	33	27474	25683	53157	38.16	30258	30779	61037	38.11

Source – Migration Tables 2011, 2001 and 1991 census.

Table 3 reveals that the pattern of intra district, inter district and Interstate from 1991 to 2021 indicates that intra district and inter district migration in the city is less as compared to the Interstate migration. people travel most from other states to Ichalkaranji rather than the

Maharashtra. also we can observe the numbers are increasing of every category in 2011, 32.02% of population is intra district 29.70% of population is inter district and 38.11% Population is of Interstate migrants in 2011.

Table 4: Population distribution of in-migrants for employment with distance travelled (1991-2011)

Labours	1991				2001				2011			
	M	F	T	%	M	F	T	%	M	F	T	%
Total labours	12295	570	12865	10.11	33076	1703	34779	24.97	266672	3175	29847	18.6
Intra district labours	4520	180	4600	35.75	11274	522	11796	33.91	7202	967	8169	27.36
Inter district labours	3780	260	3840	29.84	7864	521	8385	24.10	6924	930	7854	26.31
Interstate labours	3955	130	4085	31.75	13887	659	14546	41.82	12459	1272	13731	46.00

Source – Migration Tables 2011, 2001 and 1991 census.

Table 4 reveals that the patterns of intra district, inter district and interstate streams from 1991 to 2011 indicates that the migration due to employment is more in 2001 as compared to 1991 and 2011. This is 24.97 % to the total migrants. It is increased than 1991 and it was again decreased in 2011 by 6 %. We can observe that the long distance migration is more in all the three decades. The migration is increasing with

increasing distance. The interstate workers migration of 1991, 2001 and 2011 is 31.75%, 41.82% and 46.00% respectively with the total workers. We can also observe the slight growth in the interstate female workers migration in 2011. The number of female workers migration is better in 2011 than the previous decades.

Table 5: Population distribution of in-migration for business with distance travelled (1991-2011)

Population	1991				2001				2011			
	M	F	T	%	M	F	T	%	M	F	T	%
Total in-migration	18352	2240	20592	16	2076	100	2176	1.5	2176	737	2793	1.7
Intra district	5200	670	5870	28.50	302	22	324	14.8	309	206	515	18.43
Inter district	5130	780	5910	28.70	313	28	341	15.67	398	209	607	21.73
Inter state	8002	790	8792	42.69	1450	48	1498	68.84	1342	320	1662	59.50

Source – Migration Tables 2011, 2001 and 1991 census.

The 16.1 % of persons in-migrated in Ichalkaranji for business in 1991, which is the biggest value of these three decades. In 1991 migration due to business pattern was same in every category but the number of interstate migration is more. This migration

is declined much in 2001, which is only 1.5% of the total migration and it is increased only by 0.2 % in 2011. In all the above data we observed that the female migration is much less for employment and business as compared to male (Table 5).

Table 6: Interstate population distribution with all duration residence (1991-2011)

Title	Total Migration								Migration For employment								Migration of business							
	2001				2011				2001				2011				2001				2011			
Year	M	F	T	%	M	F	T	%	M	F	T	%	M	F	T	%	M	F	T	%	M	F	T	%
Rajasthan	4826	3180	8006	5	5855	4216	10386	6.4	2097	27	2124	1.5	2193	116	2009	1.4	970	17	987	0.7	940	120	1024	0.6
Uttar Pradesh	1715	710	2425	1.7	2842	1363	4216	2.6	1198	15	1213	0.8	1890	96	1986	1.2	69	2	71	0.05	32	09	41	0.02
Bihar	632	176	1030	0.5	1030	433	1463	0.9	503	0	503	0.3	722	16	738	0.4	08	00	08	0.005	22	5	27	0.01
Andra Pradesh	264	272	536	0.3	314	409	723	0.4	264	272	536	0.3	94	13	107	0.3	18	03	21	0.01	15	7	22	0.01
Karnataka	18693	20424	39117	28.0	18768	22790	41558	25.9	3316	596	9912	7.1	6916	978	7903	4.9	243	19	262	0.04	233	180	413	0.2

Source – Migration Tables 2011, 2001 and 1991 census.

Table 6 indicate the total interstate migrants, the migrants of Karnataka are more in every decade. The major interstate migration to Ichalkaranji is from Rajasthan, Uttar Pradesh, Bihar, Andhra Pradesh and Karnataka state. Out of the total migrants around one quarter migrants are from Karnataka, but the migration percentage of migrants for business from Karnataka is

declined by 2% in 2011 then 2001. Out of the total migrant workers 28.4% workers are migrated from Karnataka. The female worker population is much less as compared to male, but it was increased slightly in 2011 except Karnataka. The migrators from all the states to Ichalkaranji are increasing daily.

Table 7: Decadal Interstate population distribution of Ichalkaranji (1991-2011)

Title	Total Migration								Migration For employment								Migration of business							
	2001				2011				2001				2011				2001				2011			
Year	M	F	T	%	M	F	T	%	M	F	T	%	M	F	T	%	M	F	T	%	M	F	T	%
Total	43374	43263	86632	62.2	46938	50948	97886	70	21986	11328	23028	16.5	17649	2158	20107	14.4	1591	67	1658	11	1656	490	2766	12.5
Rajasthan	2939	1944	4883	5.6	3732	2722	6464	6.6	1082	20	1102	4.7	1261	89	1350	6.7	777	14	191	47.7	806	81	888	41.3
Uttar Pradesh	547	274	821	0.9	1116	590	1705	1.7	350	6	356	1.5	731	38	769	3.8	22	0	22	1.3	21	3	24	1.1
Bihar	125	48	173	0.1	281	138	419	0.4	92	0	92	0.3	86	8	194	0.9	4	0	4	0.2	17	4	21	0.9
Andra Pradesh	160	146	306	0.3	214	214	463	0.4	76	7	83	0.3	72	10	82	0.4	13	0	13	0.7	09	4	13	0.6
Karnataka	12786	12304	25090	28.9	12900	14076	26976	27.5	6868	399	7267	31.5	5925	707	6032	29.9	185	13	198	11.9	178	124	302	14

Source – Migration Tables 2011, 2001 and 1991 census

As per the table no. 7 out of the total migration 62.20% population in 2001 and 70% population in 2011 residence from 10 years and above in Ichalkaranji. It's a huge thing that 70% population of total migrants is living in Ichalkaranji from 10 years. Out of that 14.43% of workers residing here for employment. If we see the numbers of migrators from various state then we can

clearly observe that percentage of Karnataka is greater than any other states. It indicates that 31.55 workers were in-migrated from Karnataka to Ichalkaranji. Migrators in 2001 which were declined by 2% in 2001 and it became 29.99%. the population of female worker migrants is negligible except Karnataka state.

Table 8: Rural-Urban and Urban-Rural migration stream (1991-2011)

Total migration												
	M	F	T	%	M	F	T	%	M	F	T	%
Rural	41918	42860	84778	66.6	54102	55393	109495	78.6	44081	48076	92157	57.5
Urban	19660	22762	42322	33.2	12301	147013	27013	19.3	28264	35946	64210	40.09

Migration for employment												
	M	F	T	%	M	F	T	%	M	F	T	%
Rural	9205	350	9555	14.2	8566	1417	29983	8.2	18916	2061	20977	70.2
Urban	3050	220	3270	25.48	4248	269	4517	0.9	7617	1100	8712	29.2

Migration for business												
	M	F	T	%	M	F	T	%	M	F	T	%
Rural	13772	1580	15352	12.0	1319	63	1382	0.9	1180	402	1582	1.1
Urban	4560	660	5220	4.1	736	32	768	0.5	862	332	1994	0.8

Source – Migration Tables 2011, 2001 and 1991 census.

As Ichalkaranji is urban area there were only two streams of migration are possible.

1. Rural to Urban
2. Urban to Urban

Table 8 indicates the total migrators from Rural to Urban and Urban to Urban migration streams. The data shows that among the 4 migration streams the Rural to Urban migration stream emerges as predominant stream in Ichalkaranji. Urbanization of city, huge employment and job opportunities, overall good facilities, education might be the factors behind higher percentage of Rural to Urban stream.

2011 data indicates that urban to Urban migration stream is also slightly increased and rural to Urban is slightly

decreased. It may be because of the urbanisation of migrators own city or may be migration is forwarded to somewhere else. The data of the reason for migration may throw light on rural to urban predominance stream. If we consider total worker as 100% then it clearly shows the migration stream rural to urban is superior. 74.27 workers were migrated from rural area for employment out of workers in 1991. 86.21 in 2001 and 70.28 in 2011 were migrated for employment, from rural area. In 2011 the migrants of urban area are slightly increased.

The highest data with reason of migration for business in 1991 which is 61.1% of the total migrants and 12.06% are

included in rural to urban migration stream. After those migrants, for business purpose goes decreasing. Overall these streams indicate that people travelled to Ichalkaranji in search of job and employment from rural areas where they didn't get opportunities of employment. Migrants may have driven by a lack of employment options and limited amenities in rural areas.

Result:

Migration is a global multidisciplinary phenomenon. As Ichalkaranji is multidisciplinary state and it has more than 50% of population is migrated from various region. Ichalkaranji has high levels of regional disparity in terms of population distribution and development indicators.

We observed variation in the pattern of growth of population and migrators. There is change in the percentage of the migrators but the numbers of migrators are increasing day by day and it will further increasing much more in future. As increase in distance we can see the increased in migration. We observed long distance migration is more in Ichalkaranji, rather than intra district and inter district. People travelled to Ichalkaranji for various reason but employment is the main reason of males for migrating to Ichalkaranji and marriage is main reason behind female migration. In 2011 more than 46 % workers are from Interstate region and the count of female is negligible. The in-migration of Ichalkaranji is mainly from Rajasthan, Uttar Pradesh, Bihar, Andhra Pradesh and Karnataka. Karnataka is a major state for migrators of Ichalkaranji. In 2011 around 26.47% workers are from Karnataka state only. As Ichalkaranji is closer from Karnataka. Much more population were migrated to Ichalkaranji for business In 1991, which is 16.1% out of total migrators, but after that in 2001 and 2011 it is the declined rapidly and in 2011 it was only 1.7% of the total workers. Out of total

migrators of Ichalkaranji 70% of migrators residence here from 10 years and above as per 2011. Out of that 20.54% are worker population is migrated for employment. Mostly people from Karnataka came to Ichalkaranji 10 years ago and they become settled here. 30% worker migrators are from only Karnataka state. Ichalkaranji is the place where most of semi-skilled and unskilled population in-migrates.

The female also started to migrate to Ichalkaranji for employment purpose in 2011. Much people migrated to Ichalkaranji from rural area around 70 - 75 % population are workers which were migrated from rural area. That indicates people migrated to Ichalkaranji in search of better economic opportunities including more jobs higher wages and better facilities which are often readily available in cities. Ichalkaranji is become municipal corporation in 2022 but earlier it has municipal council and it is one of the important industrial City. There are much pull factors for migrators like employment, higher income, education and healthcare, social amenities, industrial development, business opportunities, infrastructure development etc.

People migrating to Ichalkaranji due to these pull factors. Employment is the major reason behind the migration to Ichalkaranji city. Population migrating to urban area helps in the development of that area. but it causes many consequences like labour market, migration employment issues, migrant refugees, human rights violence, social security issues and displacement etc. and Ichalkaranji also will face these kind of problems in future. So this kind of macro level studies helps government to make policies on these issues. The migrant labours have become one of the Ichalkaranji's wealth creators. Ichalkaranji gives relatively higher wages for all labourers. so large opportunity for employment, shortage of local labours and

prompt payment at the end of week has attracted in migration from other states.

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कागल तालुक्यातील लिंगनूर दु ॥ येथील दुग्ध उत्पादनाचा भौगोलिक अभ्यास

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गोषवारा:

प्रस्तुत शोध निबंध कोल्हापूर जिल्ह्यातील कागल तालुक्यातील लिंगनूर दुमाला या गावातील दुग्ध उत्पादनाच्या भौगोलिक अध्ययनावर आधारित आहे. सदर अभ्यासामध्ये दुग्ध व्यवसायावर परिणाम करणारे भौगोलिक, सामाजिक व आर्थिक घटक, म्हैस व गाय दूध उत्पादनातील बदल, दूध संकलन संस्था, तसेच या व्यवसायातील अडचणी व उपाय योजनांचा सखोल अभ्यास करण्यात आलेला आहे.

अभ्यासासाठी प्राथमिक व दुय्यम माहिती गोळा करून क्षेत्रभेट, प्रश्नावली, मुलाखती व आकडेवारी विश्लेषण यांचा वापर करण्यात आला असून या अभ्यासात असे निदर्शनास आले की लिंगनूर दु ॥ गावात जलसिंचन, वाहतूक, सहकारी संस्था, साक्षरता, सुपीक काळी जमीन यामुळे दुग्ध व्यवसायास पोषक वातावरण निर्माण झाले आहे.

२०१०-११ व २०२३-२४ मधील जनावरांच्या आकडेवारीनुसार म्हशींची संख्या ३९.१७% नी घटली असून गायींची संख्या १२५.५३% नी वाढलेली आहे. ही बदलती प्रवृत्ती गायींच्या संगोपनाकडे वाढता कल असल्याचे दर्शवते. गावात ५ सहकारी व २ खाजगी दूध संस्था कार्यरत असून, २०१५ मध्ये २७० लिटर इतके दूध संकलन होत होते ते २०२४ मध्ये १७८० लिटरपर्यंत पोहोचले आहे.

दुग्ध व्यवसायासमोरील प्रमुख अडचणी म्हणजे खाद्याच्या वाढत्या किंमती, दूध दर कमी, आधुनिक गोठ्यांचा अभाव, योग्य प्रशिक्षणाची कमतरता इत्यादी समस्यांवर उपाय म्हणून शासनाने अनुदान, प्रशिक्षण, कर्जपुरवठा व दूधाला हमीभाव देणे गरजेचे आहे.

अंततः लिंगनूर दुमाला हे गाव दुग्ध उत्पादनासाठी अनुकूल असून योग्य मार्गदर्शन व सहाय्य मिळाल्यास हा व्यवसाय अधिक बहरू शकतो, असे अभ्यासातून स्पष्ट होते.

नमुना शब्द: दुग्ध उत्पादन, संकलन संस्था, गोठा, हमीभाव.

प्रस्तावना :

सद्यस्थितीत पशुपालन व दुग्ध व्यवसाय हा फक्त शेती पुरक व्यवसाय राहिलेला नसून मुख्य व्यवसाय म्हणून मोठ्या प्रमाणात वाढत आहे. एकूण लोकसंख्येच्या जवळपास ६० ते ७० टक्के लोकसंख्या ही शेती व शेती पूरक व्यवसायावर अवलंबून आहे. भारतात १९७० मध्ये दूधाचे उत्पादन ३० द. लक्ष टन इतके होते. ते १९९८ मध्ये ७५ द. लक्ष टन २००५ मध्ये ९४ द. लक्ष टनापर्यंत वाढले. २०१० मध्ये हेच

प्रमाण १०० द. ल. टनापर्यंत गेले आहे. या दूध उत्पादनामध्ये अल्प व भूमीहीन शेतकऱ्यांचा वाटा जवळपास ७०% पर्यंत आहे. अगदी अलीकडील आकडेवारीनुसार भारतात दरडोई दूधाची उपलब्धता २४० ग्रॅम आहे. जनावरांच्या संख्येत भारत प्रथम क्रमांकावर असून दूध उत्पादनात अग्रेसर असणारा देश आहे. दुग्ध उत्पादनातील महाराष्ट्र हे एक महत्वाचे राज्य म्हणून ओळखले जाते. राज्याच्या एकूण दुग्ध उत्पादनात पश्चिम महाराष्ट्रातील कोल्हापूर, सांगली,

सातारा, पुणे या जिल्ह्यांचा ८० % वाटा आहे. यापैकी कोल्हापूर जिल्ह्यातून कृष्णा, कोयना, पंचगंगा, दूधगंगा, वेदगंगा, कुंभी, कासारी, वारणा, भोगावती या महत्वाच्या नद्या वाहतात. या नद्यांच्या खोऱ्यात बारमाही पाणी पुरवठ्यामुळे हिरव्या चाऱ्याची वर्षभर उपलब्धता असल्याने दुग्ध व्यवसायाला चालना मिळाली आहे. गोकुळ, शाहू, वारणा यासारख्या दुग्ध संकलन व प्रक्रिया संस्थामुळे दुग्ध व्यवसायाचा विकास झालेला आहे.

कागल तालुक्याचा विचार केला तर प्रामुख्याने दूधगंगा, वेदगंगा नद्यांच्या खोऱ्यात बागाईत शेती प्रदेशात शेतीला मुख्य जोडधंदा म्हणून येथील शेतकरी दुग्ध व्यवसाय करतात. काळमावाडी धरणामुळे दूधगंगा नदीमध्ये बारमाही पाण्याची उपलब्धता झाली असल्यामुळे नजीकच्या लिंगनूर दुमाला, मौजे सांगाव, कसबा सांगाव, सुळकूड यासारख्या गावामध्ये दुग्ध व्यवसाय हळूहळू विकसित होत गेल्याचे दिसून येते. लिंगनूर दु ॥ हे गाव कागल शहरापासून ३ कि.मी.

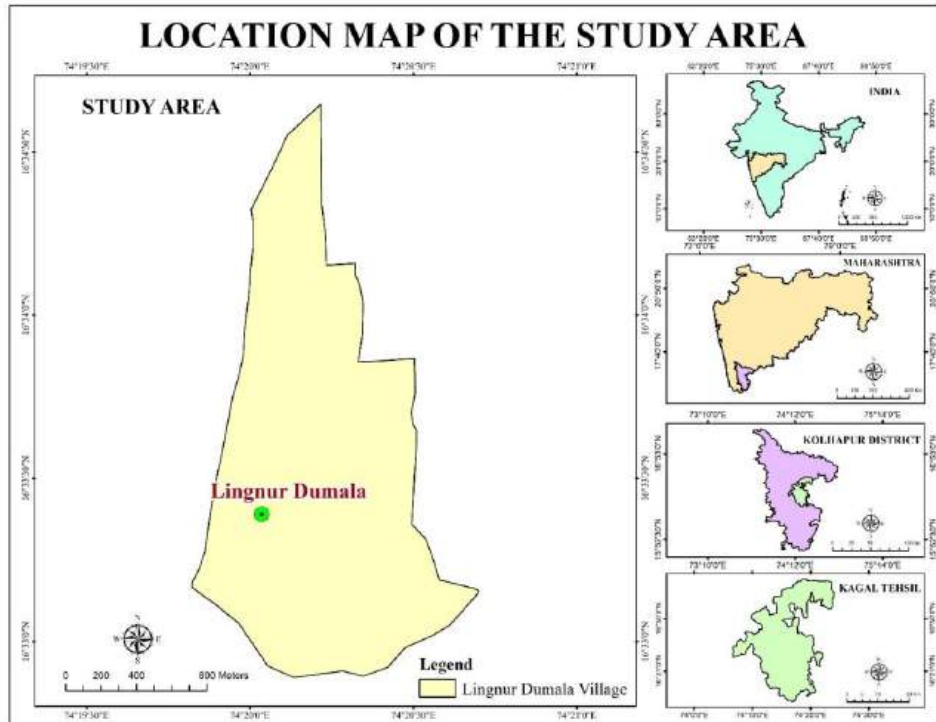
अंतरावर आहे. दूधगंगा नदीमुळे या गावातील शेत जमीन ओलिताखाली आल्यामुळे येथील शेतकरी ऊस या बागाईत पिकाबरोबर शेती पूरक व्यवसाय म्हणून दुग्ध व्यवसायात गुंतलेले आहेत. सदर अभ्यासात लिंगनूर दु ॥या गावातील दुग्ध उत्पादन वाढीचा सखोल अभ्यास करण्याचा प्रयत्न करण्यात आला आहे.

अभ्यासाची उद्दिष्ट्ये: (Objectives)

लिंगनूर दु ॥येथील दूध उत्पादनाचा अभ्यास करताना खालील उद्दिष्ट्यांचा अभ्यास केला आहे.

१. दूध व्यवसायावर परिणाम करणाऱ्या घटकांचा अभ्यास करणे.
२. म्हैस व गायी पासून मिळणाऱ्या दूध उत्पादन वाढीचा अभ्यास करणे.
३. दूध उत्पादनासाठी वाढी संदर्भातील समस्या जाणून घेणे व उपाय सुचवणे.

अभ्यास क्षेत्र: (Study Region)



लिंगनूर दु ॥ हे गाव कागल पासून आग्नेय दिशेस ०३ कि. मी. अंतरावर आहे. या गावचा सर्वसाधारण अक्षवृत्तीय विस्तार $16^{\circ} 32'45''$ उत्तर ते $16^{\circ} 38'45''$ उत्तर आणि सर्वसाधारण रेखावृत्तीय विस्तार $74^{\circ}19'50''$ ते $74^{\circ}20'40''$ पूर्व इतका आहे. या गावची निर्मिती साधारणपणे २०० वर्षांपूर्वी झाली असून, गावचे भौगोलिक क्षेत्र २४९ हेक्टर इतके आहे. २०११ च्या जनगणना अहवालानुसार गावची एकूण लोकसंख्या ३०१८ इतकी असून त्यामध्ये १५६० पुरुष व १४५८ इतक्या स्त्रियांचा समावेश आहे.

अभ्यास पद्धती (Methodology):

सदर अभ्यासकरिता प्राथमिक व दुय्यम स्वरूपाची आकडेवारी गोळा करण्यात आली आहे. ही आकडेवारी गोळा करण्यासाठी खालील पद्धतीचा उपयोग करण्यात आला आहे.

१. क्षेत्र भेट: लिंगनूर दु ॥ या गावात जाऊन प्रत्यक्ष निरीक्षणाद्वारे दूध उत्पादनातील महत्वाचे घटक उदा. जनावरे, चारा, गोटा इ. अभ्यासण्यात आले.

२. प्राथमिक माहिती: यामध्ये प्रश्नावली तयार करून गावातील दूध संकलन केंद्रांच्या पदाधिकाऱ्यांच्या मुलाखती घेण्यात आल्या आहेत. मुलाखतीद्वारा विविध प्रकारची माहिती गोळा करण्यात आली आहे. या आकडेवारीचे नंतर सांख्यिकी पद्धतीद्वारा विश्लेषण करण्यात आले आहे.

३. दुय्यम आकडेवारी: सदर क्षेत्र अभ्यासामध्ये दुय्यम स्वरूपाची आकडेवारी ग्रा.पं., तलाठी, तालुका पंचायत मधून गोळा करण्यात आली आहे.

४. विश्लेषण तंत्र : वरील सर्व आकडेवारी विश्लेषण करण्यासाठी सांख्यिकी तंत्राचा वापर करून तक्ते, आलेख, आकृत्या तयार करण्यात आल्या आहेत.

लिंगनूर दु ॥ येथील दुध उत्पादनाचे विश्लेषण:

लिंगनूर दु ॥ गावच्या एकूण शेतजमिनीच्या ९९ % ही जमीन बागायती आहे. त्यामुळे पशुपालन व

दुध उत्पादनासाठी पोषक वातावरण येथे उपलब्ध आहे. गावच्या जवळून दूधगंगा नदी वाहते. त्यामुळे जलसिंचनाची सोय उपलब्ध आहे. पर्यायाने जनावरांना मुबलक चारा उपलब्ध आहे. प्रस्तुत अभ्यासात दुग्ध व्यवसायावर परिणाम करणाऱ्या प्राकृतिक, सामाजिक तसेच आर्थिक घटकांचा अभ्यास करण्याचा प्रयत्न केला आहे. त्यांचे सविस्तर वर्णन पुढीलप्रमाणे,

लिंगनूर दु ॥ येथील दुग्ध व्यवसायावर परिणाम करणारे घटक:

१. जलसिंचनाचा विकास: लिंगनूर दु ॥ येथे दूधगंगा नदी पासून पाणी पुरवठ्याच्या योजना निर्माण झाल्या आहेत. त्यामुळे शेतीला बारमाही पुरवठा करणे शक्य झाले आहे. बागाईत शेतीमुळे जनावरांना हिरवा चार मुबलक प्रमाणात उपलब्ध होतो.
२. काळी जमीन: सुपीकतेच्या बाबतीत काळी जमीन उत्कृष्ट मानली जाते. पर्यायाने या जमिनीतून शेतीचे उत्पादन जास्त निघते. शेतीच्या उत्पादना बरोबरच दुय्यम उत्पादन म्हणून जनावरांच्या चान्याचेही उत्पादन निघते. त्याचा फायदा येथील दूध व्यवसायासाठी झालेला दिसून येतो.
३. वाहतूक: लिंगनूर दु ॥ हे गाव पक्क्या रस्त्यानी इतर शहराशी जोडले आहे. पर्यायाने उत्पादित होणाऱ्या दूधाचे वितरण शक्य तितक्या लवकर जवळच्या शहरामध्ये करता येते.
४. वाहतूकीची साधने: लिंगनूर दु ॥ येथील बहुतेक शेतकऱ्याकडे दोन चाकी स्वयंचलित वाहने आहेत. बरेच शेतकरी व दूध व्यवसायिक त्या वाहनाच्या सहाय्याने दूधाची विक्री करीत असल्याने दिसून आले.
५. साक्षरता: लिंगनूर दु ॥ येथे साक्षरतेचे प्रमाण ७७.९५% आहे. त्यामुळे दुग्ध उत्पादनासाठी त्याचा फायदा झाल्याचे दिसून येते. साक्षरतेमुळे

जनावरांचे खाद्य, दूध उत्पादनातून मिळणारा नफा, जनावरांची निगा इ. बाबतीत शेतकरी जागरूक आहेत. त्याचा फायदा या व्यवसायासाठी झाला आहे.

६. **सहकाराचा विकास:** गावामध्ये सहकारी तत्वावर चालणारी पाच दूध संकलन केंद्रे आहेत. या संकलन केंद्रांमुळे येथील दुग्ध व्यवसायिकांच्या जीवनात बदल घडल्याचे दिसून येते. कारण त्यांच्या मार्फत दूध उत्पादकांच्या दूधाला चांगला दर दिला जातोच; शिवाय म्हैस, गाय खरेदी

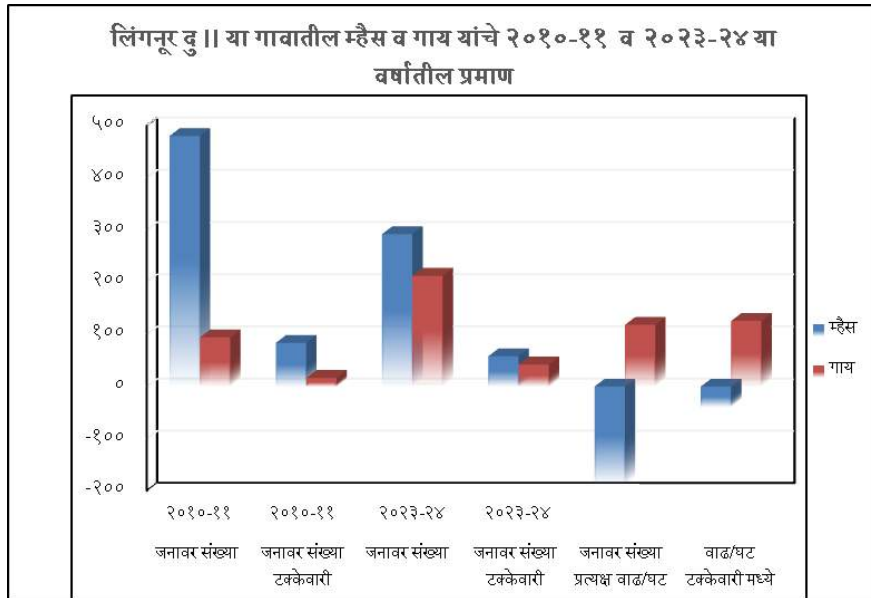
करण्यासाठी अर्थ पुरवठा ही केला जातो. त्याचा फायदा येथील दुग्ध व्यवसायाला झालेला दिसून येतो.

७. **दूधाचा दर:** खाजगी किंवा सहकारी दूध संस्थेमार्फत दूध उत्पादकाना दूधासाठी फॅट प्रमाणे दर दिला जातो. त्यातून महिन्याकाठी खर्च वजा जाऊन निव्वळ नफा म्हणून चांगली रक्कम शिल्लक राहते, त्यामुळे बरेच शेतकरी, शेतमजूर या दूध व्यवसायाकडे आकर्षित झाले आहेत.

म्हैस व गाय यांचे प्रमाण:

म्हैस व गाय यांचे प्रमाण २०१०-११ आणि २०२३-२४

वर्ष	जनावर संख्या २०१०-११	जनावर संख्या टक्केवारी २०१०-११	जनावर संख्या २०२३-२४	जनावर संख्या टक्केवारी २०२३-२४	जनावर संख्या प्रत्यक्ष वाढ/घट	वाढ/घट टक्केवारी मध्ये
म्हैस	४८०	८३.६२	२९२	५७.९४	-१८८	-३९.१७
गाय	९४	१६.३८	२१२	४२.०६	११८	१२५.५३



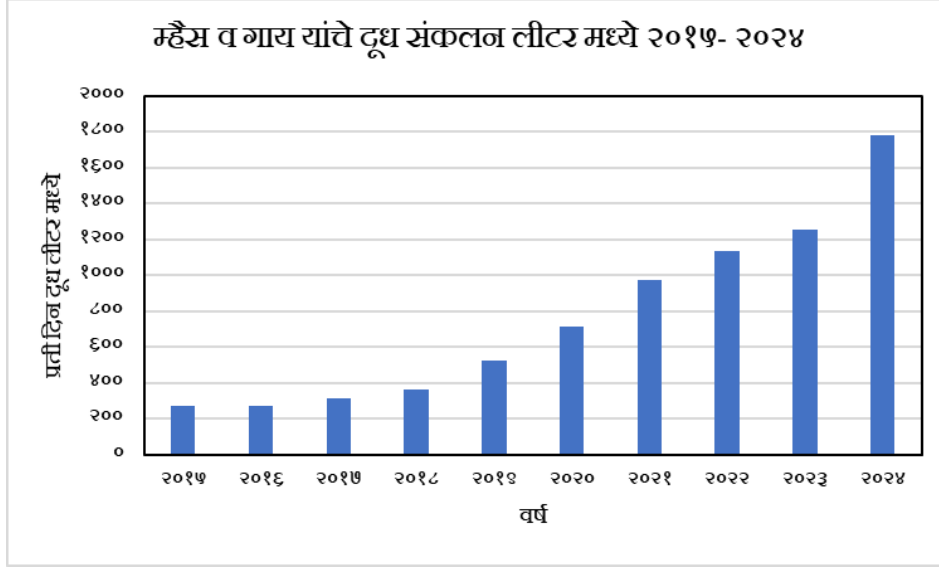
लिंगनूर दु.॥ या गावातील म्हैस व गाय यांचे २०१०-११ व २०२३-२४ या वर्षातील प्रमाण प्रश्नावलीच्या सहाय्याने अभ्यासण्यात आले. खालील आकडेवरीन म्हैस व गाय प्रमाणात कशा प्रकारे

वाढअथवा घट झाली आहे ते लक्षात येते. वर्ष २०१०-११ च्या तुलनेत २०२३-२४ या वर्षात १८८ ने म्हैशींची संख्या कमी झाली असून गायीच्या संख्येत २०१०-११ च्या तुलनेत २०२३-२४ या वर्षात ११८ ने

वाढ झालेली दिसून येते. प्रत्यक्ष वाढ/घट टक्केवारीच्या स्वरूपात पहिली असता असे लक्षात येते की, म्हैशींची टक्केवारी २०१०-११ च्या तुलनेत २०२३-२४ या वर्षात ३९.१७ टक्क्यांनी घटली आहे. लिंगनूर दु ॥ या गावात गायींची संख्या २०१०-११ च्या तुलनेत

२०२३-२४ या वर्षात ११८ नी प्रत्यक्षात वाढ झाली असून गाईच्या बाबतीत ही वाढ १२५.५३ टक्के पर्यंत पोहोचलेली दिसून येते. यावरून असे स्पष्ट होते की, गाईच्या टक्केवारीत जवळपास दुपटीहून अधिक वाढ झालेली आहे.

लिंगनूर दु ॥ गावातील दूध संकलन:



गावातील दूध संकलनाचा अभ्यास केल्यास असे दिसून येते की, प्रस्तुत गावात ५ सहकारी दूध संस्था असून २ खाजगी दूध संस्था आहेत. एकूण ०७ दूध संस्थेमार्फत दूधाची खरेदी केली जाते. यापैकी हनुमान सहकारी दूध संस्था सर्वात जुनी असून तिची स्थापना १९७८ मध्ये झाली आहे. तर रेणूका महिला दूध संस्था ही महिलांची दूध संस्था असून तिची स्थापना २०१० मध्ये झाली आहे. खाजगी दूध संस्थेत गणेश दूध संस्था व सौरभ दूध संस्था यांचा समावेश होतो. लिंगनूर दु ॥ या गावी दूध उत्पादन जास्त असून सरासरी रोज ७६० लिटर्स दूध उत्पादित केले जाते. २०१५ ते २०२४ या दहा वर्षातील दूधाचे संकलन पाहिले असे दिसते की, इ.स. २०१५ मध्ये या गावात सरासरी २७० लिटर्स दूधाचे उत्पादन होते पण हेच प्रमाण २०२४ मध्ये १७८० लिटर्स पर्यंत वाढले आहे. ही वाढ ६.६ पट झाली आहे. एकूणच अर्थ लिंगनूर दु ॥ येथे दूध उत्पादन वाढीस चालना मिळाला सर्व

खाजगी व सहकारी संस्थांची दूध व्यवसायातील उलाढाल लाखत असून या छोट्याशा गावात दूधापासून किती मोठ्या प्रमाणात वार्षिक उलाढाल होते हे लक्षात येते.

दूध उत्पादनाच्या समस्या :

लिंगनूर दु ॥ या गावातील दूध व्यवसायाचा अभ्यास केल्यानंतर खालील समस्या असल्याचे निदर्शनास आले.

१. खाद्याच्या वाढत्या किंमती
२. दूधाला मिळणारा कमी दर
३. आधुनिक व सुसज्ज गोठ्याचा अभाव
४. उदरनिर्वाहक दृष्टीकोन
५. दूधाळ जनावरांच्या प्रजातींचा अभाव
६. नजिकची पंचतारांकित औ. वसाहतीमुळे तरुणांचे शेतीकडे दुर्लक्ष
७. दुभत्या जनावरांच्या वाढत्या किंमती

८. दुग्ध व्यवसायाशी निगडीत ज्ञानाचा अभाव
९. शासनाचे प्रतिकूल धोरण

दूध उत्पादनाच्या विकासासाठी उपाय योजना :

१. खाद्याच्या वाढत्या किंमती लक्षात घेता चारा निर्मितीच्या नवीन तंत्राचा वापर करून कमीत कमी वेळात कमीत कमी क्षेत्रातून जास्तीत जास्त चारा निर्माण करण्यासाठी शेतकऱ्यांना मार्गदर्शन करणे गरजेचे आहे.
२. दूधाला हमी भाव मिळणे आवश्यक आहे.
३. आधुनिक गोठ्याची बांधणी करून सुसज्ज गोठा तयार करण्यास शासकीय अनुदान उपलब्ध होणे गरजेचे आहे.
४. ऊदरनिर्वाहक दृष्टिकोण बाजूला ठेऊन व्यवसायीक दृष्टीकोनातून दुग्ध व्यवसाय करणे गरजेचे आहे.
५. दूधाळ जनावरांच्या प्रजातींची निवड करून जोपासना केल्यास दुग्ध उत्पादनात वाढ घडवून आणता येईल.
६. शासकीय अनुदानातून दुभत्या जनावरांच्या प्रजाती शेतकारींना उपलब्ध करून देणे आवश्यक आहे.
७. दुग्ध व्यवसायाशी निगडीत ज्ञानाचा अभाव दूर करण्यासाठी दुग्ध व्यवसायात पदार्पण करू इच्छिणाऱ्यांना प्रशिक्षण प्रदान करणे आवश्यक आहे.
८. शेतकऱ्यांना दुभती जनावरे घेण्यासाठी कमी व्याजामध्ये कर्ज पुरवठा करणे गरजेचे आहे.
९. जर योग्य मार्गदर्शन, वित्तपुरवठा केला तर येथील दूध व्यवसाय विकसित होण्यास चांगला वाव आहे.

निष्कर्ष:

लिंगनूर दु ॥ येथील दूध उत्पादनाचा अभ्यास केल्यानंतर खालील निष्कर्ष निदर्शनास आले –

१. लिंगनूर दु ॥ या गावामध्ये म्हैस दूध उत्पादनाचे प्रमाण जास्त आहे परंतु म्हैशींच्या संख्येत घट झाली आहे.
२. गाई पालनाकडे कल वाढला असून गाय दूध उत्पादनात व्यावसायिक मोठ्या प्रमाणात उतरलेले दिसून येतात.
३. हिरवा चारा मोठ्या प्रमाणात उपलब्ध असल्यामुळे गोळी पेंड, गहू भूसा यासारखे पशुखाद्य कमी प्रमाणात वापरले जाते.
४. अल्पभूधारक व शेतमजूर यांचेकडे हिरव्या चान्याचा अभाव आहे, परिणामी ते मुरघास तयार करतात.
५. सह. दूध संस्थाचा प्रसार या गावी झाला असून जवळपास ७ दूध संकलन केंद्रांची स्थापना झालेली आहे .
६. इ.स. २०१०-११ पेक्षा २०२३-२४ मध्ये दुभत्या जनावरांमध्ये गायींच्या संखेत कमालीची वाढ झाली आहे.
८. बऱ्याच वेळा चान्याचे उत्पादन कमी झाल्यामुळे चान्याच्या किमती वाढतात त्यामुळे दूध उत्पादन खर्च वाढतो परिणामी नफा कमी मिळतो.

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कोकणातील बदलते हवामान व मत्स्य व्यवसायापुढील आव्हाने

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सारांश :

औद्योगिक क्रांतीनंतर जीवाश्म इंधन, जंगलतोड, कृषी पद्धती, हरितगृह उत्सर्जन, जागतिक तापमान वाढ व विविध घटक हवामान बदलास कारणीभूत ठरत आहेत. हवामान निरीक्षणामध्ये उच्च तापमान, पर्जन्यातील बदल, दुष्काळ, वादळ, पूर, समुद्र लाटा इत्यादी हवामान घटकांची वारंवारिता पर्यावरणाबरोबर मानवी जीवनावरती ही दूरगामी परिणाम करते. हवामान बदल हे निसर्गासाठी व मानवी जीवनासाठी विनाशकारी असतील असा विविध शास्त्रज्ञांनी अंदाज वर्तवला आहे. महाराष्ट्रातील कोकण किनारपट्टीवरतीही हवामान बदलांचा परिणाम झालेला आढळतो. बदलत्या हवामानाची कोकण किनारपट्टीवर झालेला परिणाम काही वर्षांपासून जाणवत आहे. चक्रीय वादळांच्या संख्येतील वाढ, अवकाळी पाऊस, अतिवृष्टी इत्यादी घटनांमध्ये सातत्याने वाढ होत असल्याचे दिसून येते. वर्ष 2023 मध्ये तब्बल सहा चक्रीय वादळे कोकण किनारपट्टीवर तयार झालेली आढळतात. विशेषता या सहा चक्रीय वादळांचा प्रभाव व परिणाम कोकण किनारपट्टीवर झालेला आढळतो. त्यातून नैसर्गिक आपत्तींच्या घटनांमध्ये वाढ झालेली आढळते. त्याचा परिणाम कोकणातील शेती व पिके उत्पादन, मासेमारी, पर्यटन यावर झालेला आढळतो. हवामान बदलामुळे आंबा, काजू फळबागांचे नुकसान मोठ्या प्रमाणात झाल्याचे दिसून येते. तर परतीच्या पावसामुळे भात पिकाचे नुकसान झालेले आढळते. बदलत्या हवामानाचा अभ्यास व त्यातून होणाऱ्या परिणामांचा अभ्यास करून त्यावर कोणकोणत्या उपाययोजना करता येतील याचा अभ्यास प्रस्तुत शोधनिबंधामध्ये करण्यात आला आहे.

बीज संज्ञा : नैसर्गिक आपत्ती, हवामान बदल, तापमान वाढ, आपत्ती व्यवस्थापन, चक्रीय वादळे, महापूर.

प्रस्तावना :

पृथ्वीवरील हवामान हे सातत्याने बदलत असल्याचे पाहावयास मिळते. सद्यस्थितीला हवामान व भविष्यकाळातील हवामान बदलास मानवी कृती कारणीभूत आहे. मानवी कृती मधून प्रत्यक्ष व अप्रत्यक्ष नैसर्गिक प्रवाहंमध्ये जे बदल घडवून आणण्यात आले आहेत. मानवाकडून हे बदल घडवून आणले जातात. जागतिक तापमान वाढ हवामान बदलाचा सर्वात मोठा बदल होय. एखाद्या ठराविक प्रदेशातील अनेक वर्षांपासून असणाऱ्या ऊन, वारा, पाऊस, थंडी यांची स्थिती म्हणजे हवामान होय. या सरासरी हवेतील बदल

म्हणजे हवामान बदल होय. विसाव्या शतकाच्या तुलनेमध्ये आता जगभरातील तापमान 2.0 अंश वाढले आहे. कार्बनडाय ऑक्साइड वायूचे प्रमाण 50% पेक्षा जास्त वाढ झालेली आढळते. शास्त्रज्ञांच्या म्हणण्यानुसार 2100 पर्यंत तापमान वाढ प्रमाण 1.5 अंश पर्यंत रोखणे गरजेचे आहे. अन्यथा विसाव्या शतकामध्ये पृथ्वीचे तापमान 2.0 अंश वाढण्याची भीती आहे. त्यातून समुद्र पातळी वाढल्याने किनारपट्टीच्या प्रदेशांची नुकसान मोठ्या प्रमाणात होईल. प्रस्तुत निवड क्षेत्रामध्ये मागील 20 ते 30 वर्षात वातावरणामध्ये मोठे बदल झाले आहेत. त्याबरोबर

नैसर्गिक आपत्तींच्या घटकांमध्ये वाढ झाली आहे. हवामान खात्याच्या माहितीनुसार सन 2020 मध्ये मे महिन्यात पश्चिम बंगालमध्ये मोचा, ऑक्टोबर महिन्यामध्ये हामून, नोव्हेंबर महिन्यामध्ये मिधाली, डिसेंबर महिन्यामध्ये मिचॅंग या चार चक्रीवादळांचा तर जून महिन्यामध्ये विपोरजॉय, सप्टेंबर महिन्यामध्ये तेज ही दोन चक्रीय वादळे अरबी समुद्रामध्ये तयार झाली. पूर्व मध्य अरबी समुद्रावर तयार झालेले विपरजॉय हे शक्तिशाली चक्रीवादळ होते. साधारणपणे 06 ते 19 जून असे एकूण 13 दिवस या वादळाची तीव्रता होती. कोकण किनारपट्टीवर याचा प्रभाव जाणवला. वादळी पाऊस झाला, पिकांचे नुकसान व जनजीवन विस्कळीत झाले. हवामान बदलांच्या परिणामांमध्ये वाढते तापमान, हिमनद्या वितळणे, समुद्र पातळीमध्ये वाढ, सरासरी पर्जन्यात बदल, महासागर आम्लीकरण, जैवविविधताचे नुकसान इत्यादी मोठ्या समस्या तयार झालेल्या आढळतात. हवामान बदलांचा परिणाम कमी करणेकरता हरित वायू उत्सर्जन कमी करणे गरजेचे असून वेळीच यावरती उपाययोजना करणे ही काळाची गरज आहे.

अभ्यासाची उद्दिष्टे :

- 1) कोकण किनारपट्टीवरील बदलत्या हवामानाचा अभ्यास करणे.
- 2) कोकण किनारपट्टीवरील बदलत्या हवामानामुळे निर्माण होणाऱ्या समस्यांचा अभ्यास करणे.
- 3) हवामान बदलामुळे होणाऱ्या समस्यावरती कोणते उपाय करता येतील याचा सखोल अभ्यास करणे.

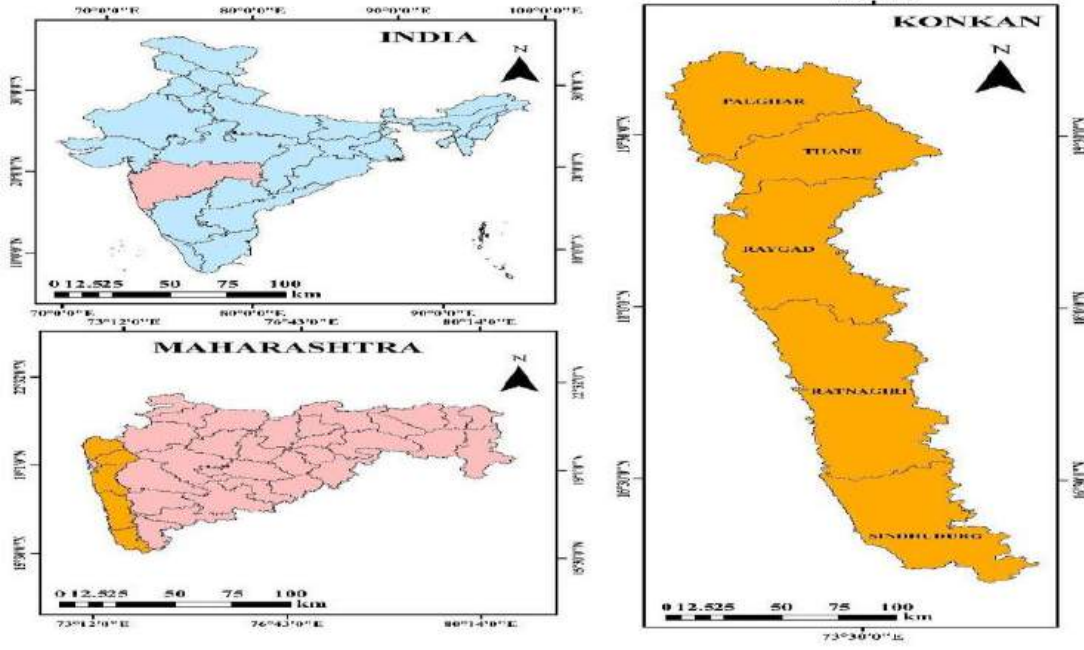
अभ्यास पद्धती :

प्रस्तुत शोध निबंधामध्ये प्राथमिक व द्वितीयक स्वरूपाच्या माहितीचा आधार घेतला आहे. प्राथमिक माहितीमध्ये विश्लेषणासाठी तज्ञ, अभियंत्याच्या प्रसिद्ध झालेल्या मुलाखती, वर्तमानपत्र, पर्यावरणीय लेख यातून मिळणाऱ्या माहितीतून संकलित माहिती केली आहे. विशेष स्पष्टीकरणासाठी नकाशे, आकृत्या, महाराष्ट्र गॅझेट, आर्थिक सामाजिक समालोचन आहवाल व वर्तमानपत्रे यांचा आधार घेतला असून यातून विषयाचे स्पष्टीकरण करण्यात आले आहे.

अभ्यास क्षेत्र :

कोकण हे महाराष्ट्र राज्याच्या पश्चिमेस असून पूर्वेकडे सह्याद्री व पश्चिमेकडे अरबी समुद्र याच्या दरम्यानच्या चिंचोळ्या पट्टीस कोकण संबोधतात. उत्तरेला दमणगंगा नदीपासून दक्षिणेस तरेखोल खाडीपर्यंत हा उत्तर दक्षिण 500 कि.मी पर्यंत चिंचोळी पट्टी पसरलेली आहे. कोकणाची सरासरी रुंदी 50 ते 60 कि.मी. आहे. तर काही ठिकाणी ही रुंदी 80 ते 200 कि.मी. आहे. तर कोठे 40 कि.मी. पर्यंत कमी झाली आहे. कोकणाचा अक्षवृत्तीय विस्तार $18^{\circ} 4'$ अक्षांश व रेखावृत्तीय विस्तार $73^{\circ} 25'$ रेखांशांच्या दरम्यान येतो. कोकणाचे भौगोलिक क्षेत्रफळ 30282 किमी आहे. ते महाराष्ट्राच्या 9.9% इतके आहे. कोकणात महाराष्ट्रातील ठाणे, मुंबई, मुंबई उपनगर, रायगड, रत्नागिरी, सिंधुदुर्ग या जिल्ह्यांचा समावेश होतो.

कोकण विभाग नकाशा



विषय विवेचन :

हवामान सतत होणारे बदल, कोकण किनारपट्टी वरती चक्रीय वादळे येण्याचे वाढलेले प्रमाण, रासायनिक उद्योगधंद्यामुळे कोकण किनारपट्टीवरील वाढलेले प्रदूषण, अनियंत्रित मासेमारी, परराज्यातून राज्यात सर्वाधिक होणारी मासेमारी ही मत्स्य उत्पादन घटण्यामागचे प्रमुख कारणे आहेत. समुद्रामध्ये होणाऱ्या पावसाळ्यामधील वादळे असो किंवा चक्रीय वादळांच्या सर्वांचा सर्वप्रथम फटका मासेमारी या व्यवसायाला बसतो. त्यातून कोकण प्रदेशातील मच्छीमारांना नेहमी मोठ्या प्रमाणात आर्थिक नुकसानीस सामोरे जावे लागते. मागील दोन वर्षात क्यार, फ्यान, निसर्ग, तोक्ते या वादळ वादळी समुद्र किनारपट्टीवरती धडकली आहेत

कोकण विभागाचे एकूण भौगोलिक क्षेत्रफळ 30,282 चौरस किलोमीटर इतके असून या विभागातील जिल्ह्यांना कमी जास्त प्रमाणात सागरी किनारा लाभला आहे. कोकणामध्ये मासेमारी बरोबर शेती हा व्यवसाय मोठ्या प्रमाणात चालतो. रायगड, रत्नागिरी, सिंधुदुर्ग या तीन जिल्ह्यांमध्ये मासेमारी मोठ्या प्रमाणावर चालते एकूण समुद्रकिनार्यापैकी

528 किलोमीटर किनारपट्टीला मासेमारी होते. जिल्हानिहाय रायगड 240 किलोमीटर, रत्नागिरी 167 किलोमीटर, सिंधुदुर्ग 121 किलोमीटर, ठाणे पालघर या जिल्ह्यामध्ये 112 किलोमीटर समुद्रकिनारा मुंबई उपनगर इतकी किनारपट्टी लाभली आहे. कोकण प्रदेशामध्ये सरासरी 3000 मिमी पाऊस, चक्रीय वादळांचे वाढते प्रमाण यामुळे डोंगरावरील पावसाचे पाणी आडवण्याचे साधन कुठेही नाही. धरण व बंधारे अल्प प्रमाणात असल्यामुळे पावसाचे पाणी थेट समुद्राला मिळते. पाण्याबरोबर येणारा गाळ या बंदर भागामध्ये साचतो. त्याचाही परिणाम मासेमारी वरती झालेला आढळतो. सिंधुदुर्ग जिल्ह्यामध्ये आठ तालुक्यांपैकी देवगड, वेंगुर्ला, मालवण या तालुक्यांना समुद्रकिनारा लाभला असून या किनारपट्टीवरती मासेमारी हा व्यवसाय चालतो. रत्नागिरी जिल्ह्यामध्ये नऊ तालुक्यांपैकी मंडणगड, दापोली, गुहागर, रत्नागिरी, राजापूर या तालुक्यांमध्ये मासेमारी हा व्यवसाय चालतो. रायगड जिल्ह्यामध्ये उरण, पनवेल, पेन, अलिबाग, मुरुड, नळा, श्रीवर्धन म्हसळा या किनारपट्टीवरती मासेमारी चालते. ठाणे पालघर या जिल्ह्यामध्ये पालघर, वसई, डहाणू या तालुक्यांमध्ये

मासेमारी होते. कोकण विभागामध्ये एकूण मासेमारी करणाऱ्या गावांची संख्या 456 इतकी असून रायगड मध्ये सर्वाधिक गावे आढळतात.

कौटुंबिक स्थिती :

कोकण विभागांमध्ये सागरी मासेमारी केली जाणारी एकूण गावांची संख्या 456 इतकी आहे. सर्वाधिक गावे रायगड जिल्ह्यात असून त्यांची संख्या 168 एवढे आढळत असून या जिल्ह्यांमध्ये 24026 कुटुंबांचा उदरनिर्वाह मासेमारी या व्यवसायावर चालतो.

सिंधुदुर्ग जिल्ह्यामध्ये 83 गावांमध्ये 7277 इतकी कुटुंबे मासेमारी व्यवसायावरती अवलंबून आहेत. रत्नागिरी जिल्ह्यामध्ये मासेमारी करणारी कुटुंब संख्या 14064 इतकी असून 98 गावांमध्ये मासेमारी हा व्यवसाय चालतो. कोकण विभागामध्ये मासेमारी करणाऱ्या एकूण लोकसंख्येपैकी रायगड जिल्ह्यातील मासेमारी करणारे लोकसंख्येचे प्रमाण 31.99%, रत्नागिरी जिल्ह्यात 17.26%, सिंधुदुर्ग जिल्ह्यात 8.58, ठाणे व पालघर जिल्ह्याचे 31.55% इतकी आढळते.

कोकण विभागातील तालुकानिहाय समुद्र किनारा लांबी व मासे उतरवण्याची केंद्रे

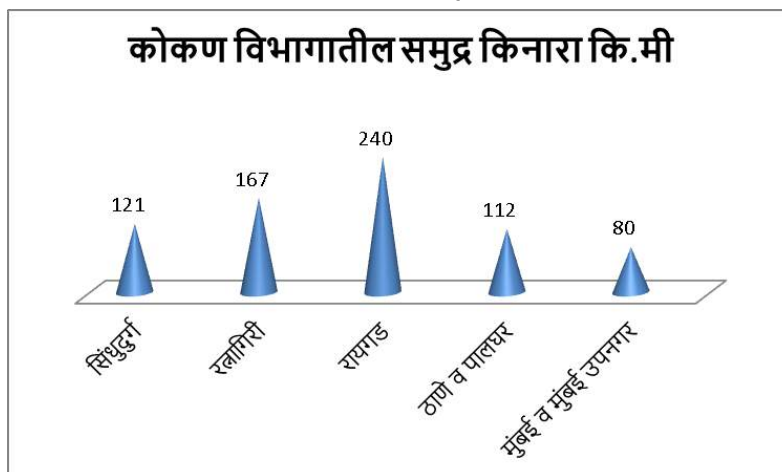
अ.नं	जिल्हा	सागरी किनारा कि.मी	मासे उतरवण्याची केंद्रे	मासेमारी करणाऱ्या गावांची संख्या	मासेमारी करणाऱ्या कुटुंबांची संख्या	मासेमारी करणारी एकूण लोकसंख्या
1	सिंधुदुर्ग	121	34	83	7277	33178
2	रत्नागिरी	167	36	98	14064	66685
3	रायगड	240	36	168	24026	123574
4	ठाणे व पालघर	112	28	77	26821	121869
5	मुंबई व मुंबई उपनगर	80	18	30	9304	40953
	एकूण	720	152	456	81492	386259

स्रोत : जिल्हा आर्थिक सामाजिक समालोचन आहवाल 2023

एकूण मासेमारी करणारे कुटुंबांचे सिंधुदुर्ग जिल्ह्यातील मासेमारी करणारे कुटुंबांची असणारे गुणोत्तर प्रमाण

8.92%, रत्नागिरी 17.29%, रायगड 29.48 व ठाणे 32.91% इतके आढळते.

कोकण विभागातील समुद्र किनारपट्टी



कोकण विभागातील मत्स्य उत्पादन :

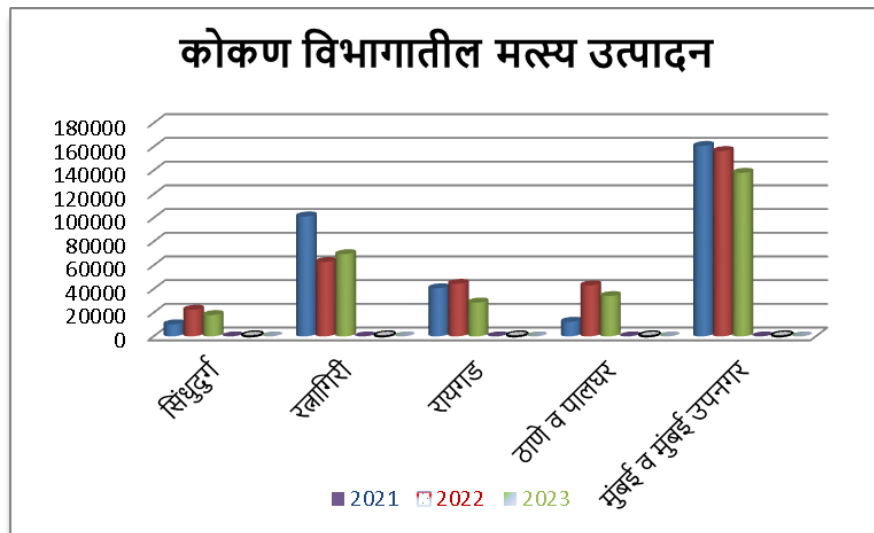
अरबी समुद्र महाराष्ट्र राज्याच्या पश्चिमेस पसरला असून उत्तर बाजूस दमनगंगेचे खोरे व दक्षिणेकडील तेंरेखोलपर्यंत कोकण कोकण विभाग पसरला आहे. कोकणात विभागाची लांबी 30 ते 60 कि.मी तर भौगोलिक क्षेत्रफळ 30,282 चौरस किलोमीटर इतकी आहे. अर्नाळा, जंजिरा, सुवर्णदुर्ग, विजयदुर्ग, सिंधुदुर्ग हे सागरी किल्ले कोकणामध्ये आढळतात. कोकणातील जिल्ह्यांमध्ये मुंबई, अलिबाग, मुरुड, श्रीवर्धन, जयगड, दाभोळ, हर्णे, बाणकोट, रत्नागिरी, मालवण, वेंगुर्ला इत्यादी महत्त्वाची बंदरे आहेत. कोकण विभागामध्ये मुंबई, साष्टी, धारापुरी,

अंजदीव, खांदेरी, उंदेरी इत्यादी बेटे असलेली आढळतात. कोकणातील नद्या पूर्वेकडून पश्चिमेकडेवाहत जाऊन अरबी समुद्राला जाऊन मिळतात. ठाणे जिल्ह्यामध्ये दातीवार, वसई, ठाणे तर मुंबईमध्ये मनोरी, मालाड, माहीम, रायगड जिल्ह्यामध्ये पनवेल, धरमतर, राजापुरी इत्यादी खाड्या कोकणात आढळतात. रत्नागिरी जिल्ह्यात केळशी, दाभोळ, जयगड, भाट्ये, पूर्णगड, जैतापूर इत्यादी खाड्या आहेत. सिंधुदुर्ग जिल्ह्यात देवगड, अचरा, कलावली, कर्ली इत्यादी खाड्या आढळतात. कोकण विभागामध्ये खाड्यामधूनही मोठ्या प्रमाणात मासेमारी हा व्यवसाय चालतो.

कोकणातील सागरी मत्स्य व्यवसायातील उत्पादन (मेट्रिक टनमध्ये)

अ नं	जिल्हा	2021	2022	2023
1	सिंधुदुर्ग	10167	22457	17976
2	रत्नागिरी	101228	62717	69358
3	रायगड	40601	44342	28541
4	ठाणे व पालघर	12363	43069	34023
5	मुंबई व मुंबई उपनगर	160708	156369	138034

स्रोत : जिल्हा आर्थिक सामाजिक समालोचन आहवाल 2023



राज्य सांख्यिकीय विभागाकडून जाहीर झालेला आकडेवारीवरून कोकण विभागामध्ये पाच जिल्ह्यांमध्ये उत्पादनात मुंबई या जिल्ह्याचा प्रथम

क्रमांक लागत असून त्याखालोखाल रत्नागिरी, ठाणे, रायगड, सिंधुदुर्ग या जिल्ह्यांचा क्रमांक मत्स्य उत्पादनात लागतो. राज्याचे मत्स्य उत्पादन 2022-

2023 4,46,256 मेट्रिक टन होते. 2023-2024 मध्ये 3,64,288 मेट्रिक टन इतके आसल्याचे आढळते. राज्याचे मत्स्य उत्पादन 2022-2023 तुलनेत 2023-2024 मध्ये 81,868 मेट्रिक टनांनी घटल्याचे आढळते. रत्नागिरी जिल्हा वगळता इतर सर्व जिल्यांमध्ये मत्स्य उत्पादन कमालीचे घटल्याचे आढळते. मागील पाच वर्षांची आकडेवारी लक्षात घेता 2023-2024 मध्ये सर्वात कमी उत्पादन झाले. ही चिंतेची बाब आहे.

मत्स्य उत्पादन उत्पादन घटण्याची कारणे :

1) हवामानात सतत होणारा बदल:

किनारपट्टी वरती वादळ काळामध्ये समुद्र खवळतो. किनारपट्टीवरील मासे खोल समुद्रात निघून जातात. वादळ खराब हवामान काळात प्रशासनाकडून मच्छीमारांना धोक्याचा इशारा दिला जातो. त्यामुळे बोटी बंद ठेवल्या जातात.

2) चक्रीवादळांचे वाढते प्रमाण:

अलीकडच्या काळात समुद्रामध्ये चक्रीय वादळांचे प्रमाण वाढलेले आढळते. निसर्ग, तोक्ते, फयान, क्यार,इ चक्रीय वादळे गेल्या दोन वर्षांमध्ये किनारपट्टीवरती धडकली आहेत त्याचा परिणाम अति मुसळधार पर्जन्य, पूर परिस्थिती, ढगाळ वातावरण इ वातावरणीय बदल किनारपट्टीवर झालेले आढळतात.

3) रासायनिक उद्योगधंद्यामुळे किनारपट्टीवरील प्रदूषण:

मागील दोन दशकांमध्ये विविध रासायनिक कंपन्यांची निर्मिती कोकण भागात झाली आहे. रास, रसायनी, तलोजा, पाताळगंगा, नागोठणे, रोहा, महाड, लोटे, अलिबाग या परिसरात रासायनिक कंपन्या उभारल्या गेल्याने त्या कंपनीतून बाहेर पडणारे रसायन मिश्रित पाणी समुद्रात सोडले जाते. त्यामुळे किनारपट्टी प्रदूषित होते याचा परिणाम माशांवरती होतो.

4) अनियंत्रित मासेमारी:

खोल समुद्रात जाऊनही मासे न मिळाल्याने वाढते इंधनाचे दर भरमसाठ मजुरी बोटीची डागडुजी या होणाऱ्या खर्चाने मच्छीमार कर्जबाजारी आहेत त्यामुळे पारंपारिक व्यवसायातून दूर जाऊन अन्य क्षेत्रातील

व्यवसाय निवडत आहेत 1962 मध्ये यांत्रिक मासेमारीची सुरुवात झाली मत्स्य व्यवसायाला प्रोत्साहन देण्यासाठी ही या मासेमारीची सुरुवात करण्यात आली सरकारी विविध सोयी सुविधा त्यामुळे यांत्रिक लोकांच्या संख्येत वाढ झाली त्यातून मासेमारीचे प्रमाण वाढले व अनियंत्रित मासेमारी ची सुरुवात झाली.

5) परराज्यातून बोटीद्वारे राज्याच्या सागरी हद्दीत होणारी मासेमारी:

परराज्यातील नागरीक बोटीद्वारे एखाद्या राज्याच्या सागरी हद्दीमध्ये येऊन मासेमारी करून जातात याचा परिणाम माशांची संख्या कमी होते.

उपायोजना:

- 1) मासेमारीवरती बंधने हवीत. मासेमारीचे जाळे कसे असावे किती आकाराचे असावे यासाठीची नियमावली असावी. त्या नियमांच्या अंमलबजावणीसाठी यंत्रणा असावी.
- 2) सरकारी योजना राबवणे गरजेचे असून लोकसहभाग महत्वाचा आहे.
- 3) सागरी मत्स्य व्यवसाय समित्यांची स्थापना करणे गरजेचे आहे.
- 4) स्वच्छ सागर निर्मळ सागर ही संकल्पना राबवणे गरजेचे आहे .
- 5) समुद्री शैवाळ, कालवे, शिंपल्यांचे पालन करणे गरजेचे आहे.
- 6) समुद्रामध्ये पिंजऱ्यातील मत्स्यपालन करणे गरजेचे आहे.
- 7) समुद्रासाठी मत्स्य पर्यटन विकास करणे.
- 8) समुद्र प्लास्टिक निर्मूलन मोहीम
- 9) शाश्वत मासेमारी.
- 10) संरक्षित दुर्मिळ सागरी प्रजातींची जनजागृती.
- 11) मान्सून काळामधील मासेमारीवरती बंधने.
- 12) मासेमारी अधिनियमांचे काटेकोरपणे अंमलबजावणी करणे.

- 13) कोकण विभागातील कंपन्यावरती कडक निर्बंध व अंमलबजावणी.
- 14) मासेमारी व्यवसायामध्ये परराज्यातील घुसखोरीविरुद्ध कडक कायदे व निर्बंध लावणे.

संदर्भ सूची :

- 1) कथा कोकण किनाऱ्याची : प्रकाश गोळे
- 2) हवामान बदलाचा कोकण किनारपट्टीवरील परिणाम : रजनीश जोशी उपसंपादक, दैनिक सकाळ.
- 3) हवामान बदल व किनारपट्टीवरील वस्ती : जॉन डिसोझा वोल्तर मेंडोझा
- 4) मासेमारी प्रश्नाचे अभ्यासक : महेंद्र पराडकर
- 5) जिल्हा आर्थिक सामाजिक समालोचन आहवाल, 2023
- 6) मुलाखत, सत्यजित पेरेकर मच्छीमार, अलिबाग
- 7) संजय पाटील उपायुक्त मत्स्यव्यवसाय विभाग, रायगड



Cultivating Hospitality: Unlocking the Potential of Agro-Tourism in Kolhapur District, Maharashtra

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Introduction:

Tourism is a pivotal industry, praised and encouraged across the globe for its role in attracting, transporting, housing, feeding, and entertaining tourists (Patil Rajaram, 2013). It significantly contributes to economies and employment worldwide (Weaver, 1998; Hawkins and Lamoureux, 2001), including in developing countries like India, where it has seen substantial growth over the last two decades. Despite this, there's still room for improvement.

Agriculture in India, although rich in potential, remains unstable. It has progressed since Independence, with an increase in growth rate from 1% per annum pre-Independence to about 2.6% post-Independence (Tripathi and Prasad, 2009). Maharashtra, especially the south-western part, boasts significant crop production due to irrigation development.

To tackle new challenges in the agrarian sector, innovative techniques have been introduced. One such initiative is the concept of 'Agro-Tourism,' particularly in Maharashtra. This study focuses on agro-tourism and its developmental challenges in the Kolhapur district.

Objective of the Study:

1. To find out the Agro-Tourism regions in Kolhapur district.

Material and Methods:

For the present paper the data is collected from Secondary sources i.e., Socio Economic Review, Census of India, Agricultural reports and projects, ATDC India, etc. The collected data has been tabulated, converted and interpretation have been given.

Study Area:

Kolhapur is the southernmost district of Maharashtra. This is industrially and agriculturally developed district. It lies between 15° to 17° North latitude and 73° to 74° East longitude. It is the part of Deccan Plateau in the rain shadow region of the Sahyadri mountain ranges on the southernmost tip of Maharashtra state. Sangli district to the north, Ratnagiri and Sindhudurg to the West Belgaum district of Karnataka State to the east and south. Total area of this district is 7685.00 sq. km. The mean daily maximum temperature in Kolhapur district is 38.1° C and the mean daily minimum is 15.2° C. The average annual rainfall within the district varies widely from 600mm in Shirol taluka in the east to 6000 mm in Gaganbawada in the western part.

Concept of Agro-tourism:

Agritourism is a form of rural tourism that leverages agritouristic households and farms to provide

accommodation and meals in an unpolluted, picturesque environment rich in natural attractions, cultural-historical values, traditions, and customs (Bogdan, 1995).

The Agri Tourism Development Corporation (ATDC) was founded by Pandurang Taware in 2005. This entrepreneur, who comes from a farming background, initiated ATDC to facilitate agricultural tourism in Maharashtra. Following extensive research and a pilot program in Baramati in 2005, ATDC now boasts 500 trained farmers and 152 agritourism locations throughout Maharashtra. Since its inception, there has been a 25% increase in farmers' income.

ATDC aims to promote agricultural tourism to achieve income, employment, and economic stability in rural Indian communities. It encourages urban tourists to return to their roots, helping rural farmers and communities by boosting activities, services, and amenities.

Potentiality of Agro-Tourism in Kolhapur District:

1. The inexpensive food, accommodation and transportation is possible in agro-tourism.
2. The urban people have curiosity to observe the agricultural crops and processes. The urban dwellers from the district have this kind of option.
3. Life in the agricultural area is different from the urban areas.
4. Recreational activity can be available for all type of age group in agricultural areas.
5. One can get the peace and tranquility at the agricultural farm.
6. This tourism is useful to those, who migrate and spend their life in the cities. Through this activity in rural areas urban people have the option to live like rural people.

Table 1: Copping Pattern of Kolhapur District

Sr. No.	Name of Crop	Area under crop (in 000' Hectare)	
		2001-02	2011-12
1.	Cereals	1772	1715
2.	Pulses	279	314
3.	Oil Seeds	1340	1341
4.	Sugarcane	968	1087
	Total	4359	4457

Source: Socio-Economic Review of Kolhapur district 2013.

The provided table highlights the area under various cropping patterns in Kolhapur district for the years 2001-02 and 2011-12. The main crops cultivated include cereals, pulses, oil seeds, and sugarcane.

- **Cereals and Sugarcane:** These two categories occupy the largest cultivation areas, demonstrating their significance in the district's agricultural landscape.
- **Pulses and Oil Seeds:** These crops cover smaller areas compared to cereals and sugarcane but still play a vital role in the district's agricultural diversity.

This cropping pattern is strategically vital for planning agro-tourism in Kolhapur district. The substantial cultivation of sugarcane and cereals indicates strong agricultural activity, which can be leveraged to develop agro-tourism farms. Such farms can offer urban tourists a firsthand experience of the farming process, contributing to the economic stability of the region by attracting more visitors.

The data clearly shows that leveraging the cultivation areas of cereals and sugarcane can help create successful agro-tourism enterprises, enabling Kolhapur district to capitalize on its agricultural strengths for future tourism development.

Table 2: Taluka-wise Major Crops in Kolhapur District

Sr. No.	Name of Taluka	Major Crop area	Area under Cultivation of major Crop in Hectare
1.	Shahuwadi	Rice	13,812
2.	Panhala	Rice	11,054
3.	Hatkanangale	Jowar	6,896
4.	Shirol	Sugarcane	17,883
5.	Karveer	Sugarcane	19,936
6.	Gaganbavada	Sugarcane	10,244
7.	Radhanagari	Rice	11,797
8.	Kagal	Groundnut	11,614
9.	Bhudargadh	Rice	12,586
10.	Ajara	Rice	9,067
11.	Gadhinglaj	Groundnut	19,875
12.	Chandgad	Rice	13,599
		Ragi	7,126
	District Total		108,669

Source: Socio-Economic Review of Kolhapur District, 2013.

The table identifies the major crops and their corresponding cultivation areas across the talukas of Kolhapur district:

- **Rice:** Dominates in Shahuwadi, Panhala, Radhanagari, Bhudargad, Ajara, and Chandgad talukas, highlighting these regions as key rice production areas.
- **Jowar:** Hatkanangale taluka stands out with the maximum area under Jowar cultivation.
- **Sugarcane:** Shirol, Karveer, and Gaganbavada talukas prioritize sugarcane, with Radhanagari emerging as a notable sugarcane cultivating area in recent times.
- **Groundnut:** Kagal and Gadhinglaj talukas have significant groundnut cultivation.
- **Ragi (Finger Millet):** Chandgad taluka also ranks Ragi as an important crop, indicating its agricultural diversity.

These cropping patterns reveal the potential for establishing agro-tourism centers tailored to the unique agricultural strengths of each taluka. The diverse range of crops such as rice, sugarcane, groundnut, and Ragi offers varied agro-tourism experiences, attracting urban visitors to the

rural farming lifestyle and contributing to the district's economic growth.

In conclusion, leveraging the major crops in each taluka can help develop successful agro-tourism enterprises, providing economic stability and growth opportunities for the Kolhapur district.

A Review on Agro-tourism in Kolhapur District:

Maharashtra State Agriculture and Rural Tourism Co-operative Federation Ltd. have developed some agro-tourism centres in the district. These are following,

1. Ramkrushna Visava Agri-Tourism Center: This center is established by Mr. Mahesh Deshmukh at Kodoli in Panhala taluka.
2. M.M.G. Agri Tourism Center: This center is developed by Mandan A. Mirajkar, at Shendur in Kagal taluka.
3. Anandvan Agri Tourism Center: This center is developed by Sanjay A. Bajage at Padavalwadi at Karveer taluka.
4. Sahyadri Agri Arogya Tourism Center: This place was developed by Mrs. Nanda S. Shinde and Sanjay Shinde at Savarde khurd in Kagal taluka.

Apart from these four agri tourism centers there are much more potentialities to establish the new and distinguished places of agri tourism in the district. All the above referred tourism centres are developed on plain lands of the district. With these centres following are some upcoming opportunities in the sector of Agro-tourism in Kolhapur district.

- **Tea Plantation in Humboli Village:** Balasaheb Takawade from Pune District initially faced challenges with tea plantation in Humboli village, Amba Ghat, as only 5% of the 13,550 saplings survived. Nevertheless, he expanded the plantation area yearly and now successfully operates over 45 acres. This project's success has been recognized by the United Planters' Association of Southern India (UPASI). The location has significant potential as an agro-tourism center.

- **Cashew Plantation in Chandgad Taluka:** While Chandgad taluka is known for Rice and Ragi production, Cashew is a major fruit crop, widespread across almost all villages. In 2001, the taluka had 2,129 hectares of cashew crop production and hosts many cashew processing units. It ranks first in Kolhapur district for cashew production and has potential to develop agro-tourism centers focused on farm and cashew processing enterprise.

Suggestions for establish Enterprises for Agro-tourism areas in Kolhapur district:

In Kolhapur district, sugarcane is the major cash crop. Other crops have less cultivable area. For the establishment of Agro-tourism through the opening of enterprises supportive to the sugarcane and other relevant crops found in the district are,

Table 3: Enterprises for Potential Agro-Tourism areas in Kolhapur District

Sr. No.	Types of Enterprise	Type of Crop/ Animal	Potential Area
1.	Wineries	Grapes	Shirol and Hatkanangale
2.	Arts and Crafts Demonstrations	Wood	Gaganbawada, Radhanagari, Shahuwadi, Panhala, Ajara, Chandgad, Bhudargad
3.	Farm Store (Farm Equipment)	--	Shirol, Karveer, Hatkanangale, Kagal
4.	Roadside stand selling of Fresh products	Fruits, forest fruits, Local fruit vegetables	All talukas
5.	Sheep Shearing	Sheeps	Shahuwadi, Panhala, Ajara, Chandgad, Bhudargad, Gadhinglaj (Small hilly area)
6.	Wool Processing	Sheeps	Market places or main villages
7.	Farm vacations, Bed and Breakfast	Rice	Western hilly and remote villages of district
8.	Bad Weather- Heavy rainfall	--	Western hilly and remote villages of the district
9.	Picnic grounds and moonlight activities	--	Western hilly and remote villages of the district
10.	Farm Schools to teach particular skill	Medicinal plants and herbs Forest vegetables	Places like Amba, Gaganbawada, Radhanagari, Ajara, Chandgad, Nesari
11.	Miniature village	--	Village itself the exhibition spot Western remote hilly villages are suitable
12.	Jaggery farm	Sugarcane	Western Sugarcane cultivating villages of the district

Source: Compiled by Researcher.

Proposed Network of Agro-tourism in Kolhapur District:

- 1) **Kodoli-Amba Route:** This proposed network runs through Panhala and Shahuwadi talukas along State Highway No. 204, connected to AH No. 47. Starting from Kodoli village, where an agro-tourism center has been established, it extends through Bambawade, Shahuwadi, and Malkapur, reaching Amba village. This route has the potential to develop agro-tourism centers focusing on jaggery farms, sugarcane cultivation, and tea plantations.
- 2) **Kolhapur to Gaganbawada Route:** Originating from Kolhapur city and extending to Gaganbawada taluka, this route features small villages along State Highway No. 277, which are home to sugarcane cultivation and jaggery farms. These villages could become significant agro-tourism centers.
- 3) **Kagal-Gadhinglaj to Chandgad Route:** The route from Kagal through Gadhinglaj to Chandgad is pivotal for establishing agro-tourism in various villages along this road. Kagal is already part of an agro-tourism project, with cashew and Ragi (finger millet) being key crops. In Chandgad taluka, small villages house cashew farms, cashew processing units, jaggery units, miniature village sites, and Ragi cultivation farms, all of which are valuable sites for developing agro-tourism enterprises.

Conclusion:

1) Emergence of Agro-Tourism in Developing Countries:

- Agro-tourism is becoming a significant economic aspect in

developing countries, especially in India.

- There is a gradual pace of tourism development in India, with new trends such as environmentally sensitive and protective tourism gaining traction.

2) Kolhapur District as a Viable Destination:

- Kolhapur district stands out due to its strong agricultural framework and supportive infrastructure.
- Agro-tourism in India was initiated in Baramati by the Agri Tourism Development Corporation (ATDC) and is showing great promise.

3) Agricultural Development in Kolhapur:

- Kolhapur's agriculture includes food grain and sugarcane cultivation.
- Enterprises such as tea plantations in Shahuwadi, and Cashew and Ragi farming in Chandgad, enhance its potential for agro-tourism enterprises.

4) Supportive Infrastructure and Proximity:

- The district can provide affordable food, accommodation, and transportation.
- Its proximity to rural and agricultural areas makes it attractive for urban tourists seeking a rural experience.

5) Potential Agro-Tourism Routes:

- Establishing routes such as Kodoli-Amba, Kolhapur-Gaganbawada, and Kagal-Gadhinglaj-Chandgad can foster sector growth.
- These routes will link various agro-tourism sites, creating a cohesive network supporting large-scale development and aiding agricultural communities.

6) Economic Opportunities and Strategic Planning:

- Agro-tourism has immense potential to revitalize agriculturally backward areas by creating economic opportunities.
- With strategic planning and promotion, Kolhapur can harness this potential to become a leading agro-tourism hub, benefiting both the local agricultural economy and tourist influx.

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Diversity of Grasshoppers (Acrididae) In Different Habitats of Shahuwadi Tahsil, and Boundaries of Ratnagiri District (Maharashtra)

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Abstract:

The grasshoppers are included in class insecta of phylum Arthropoda. The reach diversity and species reaches of grasshoppers is seen in the month of September and October. The grasshoppers are voracious feeders. Grasshoppers are playing very important role in grassland ecosystem. Life cycle of grasshoppers shows complete metamorphosis. The stages of life cycle include namely- Egg, Nymph and Adult. To protect from predators grasshoppers shows camouflage mechanism. Grasshoppers are voracious eater and mostly damage to agricultural crops like rice, maize, vegetables etc. This study was undertaken from May 2023 to May 2024 in different habitats of Shahuwadi Tahsil of Kolhapur district and boundaries of Ratnagiri district.

Keywords: Grasshoppers, Ecosystem, Nymph, Arthropoda, Predator

Introduction:

The grasshopper family Acrididae is one of the most diverse lineages within Orthoptera, including more than 6,700 valid species distributed worldwide. Grasshoppers are dominant herbivores, which have diversified into grassland, desert, semi-aquatic, alpine, and tropical forest habitats, and exhibit a wide array of morphological, ecological, and behavioral diversity.

The present study on grasshopper diversity was carried out in different habitats of Shahuwadi Tahsil and boundaries of Ratnagiri district of Maharashtra state. The short horned grasshoppers were collected from these areas during the May 2023 to May 2024. Different areas were chosen with the intension of survey amongst different habitats which includes open grasslands, bushy vegetation with grass land patches, bushy, shrubby areas, ground surfaces and agricultural areas, forest areas. Species diversity of grasshoppers is depend on climatic conditions. Some climatic factors such as temperature, humidity, rainfalls

influence grasshopper species diversity. The grasshoppers choose grasses according to their body colours to protect from enemies.

Materials and Methods:

Grasshoppers were collected from different habitats using sweeping net in the morning and evening time. The collection was done during May-2023 to May-2024. Collected specimens were brought to laboratory and processed for dry preservation. The specimens were first relaxed, pinned, labelled, stretched on stretching box and left for 72 h to prevent decomposition. The specimens were sorted out into different taxonomic groups. The collected grasshoppers were identified using the book Fauna of British India (Kirby, 1914) and also by referring to the web pages namely, <http://bugguide.net> and <http://www.orthoptera.org>.

Study Area:

Grasshopper diversity was studied at different habitats of Shahuwadi Tahsil and

boundries of Ratnagiri district. This places are located in the foot hills of Sayhadri Ghat and with deciduous and semi evergreen forest. Shauwadi Tahsil is geographically situated at 11.0398° N Latitude and

76.8788° E Longitude. The study area was divided into different habitats namely, grasslands, shrubs, agricultural area, forest area and human altered area.

Table 1. The Grasshoppers diversity of different habitats of Shahuwadi Tahsil

Sr.No.	Sampling habitats	Species	Family	Subfamily	Tribe
1	Grasslands	<i>Cruciotacris decisa</i>	Acrididae	Gomphocerinae	Arcypterini
		<i>Acrotylus insubricus</i>	Acrididae	Oedipodinae	Acrotylini
		<i>Paropaon sp.</i>	Acrididae	Rhytidochrotinae	
		<i>Hieroglyphus nigrorepletus</i>	Acrididae	Hemiacridinae	Hieroglyphini
		<i>Angaracris barabensis</i>	Acrididae	Oedipodinae	
		<i>Atractomorpha crenulata</i>	Pyrgomorphidae	Pyrgomorphinae	Atractomorphin
		<i>Tagsta indica</i>	Pyrgomorphidae	Pyrgomorphinae	Tagastin
		<i>Chrotogonus oxypterus</i>	Pyrgomorphidae	Pyrgomorphinae	Chrotogonini
		<i>Hieroglyphus oryzivorus</i>	Acrididae	Hemiacridinae	Hieroglyphini
		<i>Eucoptacra praemorsa</i>	--	Coptacrinae	
		<i>Galidacris variabilis</i>	Acrididae	Rhytidochrotinae	
2	Agricultural Area	<i>Gastrimargus africanus</i>	Acrididae	Oedipodinae	Locustini
		<i>Acrotylus humbertianus</i>	Acrididae	Oedipodinae	Acrotylini
		<i>Chrotogonus turanicus</i>	Pyrgomorphidae	Pyrgomorphinae	Chrotogonini
		<i>Hieroglyphus nigrorepletus</i>	Acrididae	Hemiacridinae	Hieroglyphini
		<i>Spathosternum prasiniferum</i>		Spathosterninae	Spathosternini
3	Shurbby area	<i>Acrida exaltata</i>	Acrididae	Acridinae	Acridini
		<i>Cyrtacanthacris tartarica</i>	Acrididae	Cyrtacanthacridinae	Cyrtacanthacridini
		<i>Acrida gigantea</i>	Acrididae	Acridinae	Acridini
		<i>Chrotogonus oxypterus</i>	Pyrgomorphidae	Pyrgomorphinae	Chrotogonini
		<i>Atractomorpha psittacina</i>	Pyrgomorphidae	Pyrgomorphinae	Atractomorphini
		<i>Trilophidia anuulata</i>	Acrididae	Oedipodinae	Trilophidiini
4	Forest Area	<i>Sphingonotus longipennis</i>	Acrididae	Oedipodinae	Sphingonotini
		<i>Eyprepocnemis alacris</i>	Acrididae	Eyprepocnemidinae	Eyprepocnemidini
		<i>Oxya fuscovittata</i>	Acrididae	Oxyinae	Oxyini
		<i>Catantops pinguis</i>	Acrididae	Catantopinae	Catantopini
		<i>Chrotogonus trachypterus</i>	Pyrgomorphidae	Pyrgomorphinae	Chrotogonini
		<i>Aulacobothrus luteipes</i> (Walker, 1871)	Acrididae	Gomphocerinae	Arcypterini
		<i>Hieroglyphus nigrorepletus</i>	Acrididae	Hemiacridinae	Hieroglyphini

Table 2. The Grasshoppers diversity of different habitats of boundaries of Ratnagiri District

Sr. No.	Sampling habitat	Species	Family	Subfamily	Tribe
1	Grasslands	<i>Atractomorpha crenulata</i>	Pyrgomorphidae	Pyrgomorphinae	Atractomorphin
		<i>Acrotylus insubricus</i>	Acrididae	Oedipodinae	Acrotylini
		<i>Angaracris barabensis</i>	Acrididae	Oedipodinae	
		<i>Oxya hyla intricata</i>	Acrididae	Oxyinae	Oxyini
		<i>Cruciotacris decisa</i>	Acrididae	Gomphocerinae	Arcypterini
		<i>Heteropternis respondens</i>	Acrididae	Oedipodinae	Epacromiini
2	Agricultural Area	<i>Spathosternum prasiniferum</i>	Acrididae	Spathosterninae	Spathosternini
		<i>Hieroglyphus banian</i>	Acrididae	Hemiacridinae	Hieroglyphini
		<i>Oedaleus seneglenis</i>	Acrididae	Oedipodinae	Locustini
		<i>Galidacris variabilis</i>	Acrididae	Rhytidochrotinae	
		<i>Chrotogonus oxypterus</i>	Pyrgomorphidae	Pyrgomorphinae	Chrotogonini
		<i>Abracris</i> sp	Acrididae	Ommatolampidinae	
		<i>Aiolopus simulatrix</i>	Acrididae	Oedipodinae	Epacromiini
		<i>Aiolopus thalassinus</i>	Acrididae	Oedipodinae	Epacromiini
		<i>Gastrimargus africanus</i>	Acrididae	Oedipodinae	Locustini
		<i>Hieroglyphus nigrarepletus</i>	Acrididae	Hemiacridinae	Hieroglyphini
		<i>Acrotylus humbertianus</i>	Acrididae	Oedipodinae	Acrotylini
3	Shurbby area	<i>Acrida exaltata</i>	Acrididae	Acridinae	Acridini
		<i>Oxya japonica japonica</i>	Acrididae	Oxyinae	Oxyini
		<i>Chrotogonus trachypterus</i>	Pyrgomorphidae	Pyrgomorphinae	Chrotogonini
		<i>Cyrtacanthacris tartarica</i>	Acrididae	Cyrtacanthacridinae	Cyrtacanthacridini
		<i>Oedaleus abruptus</i>	Acrididae	Oedipodinae	Locustini
4	Forest Area	<i>Sphingonotus longipennis</i>	Acrididae	Oedipodinae	Sphingonotini
		<i>Catantops pinguis</i>	Acrididae	Catantopinae	Catantopini
		<i>Hieroglyphus nigrarepletus</i>	Acrididae	Hemiacridinae	Hieroglyphini
		<i>Oxya japonica japonica</i>	Acrididae	Oxyinae	Oxyini
		<i>Acrida turrita</i>	Acrididae	Acridinae	Acridini
		<i>Truxalis indica</i>	Acrididae	Acridinae	Truxalini

Result and Discussions:

The checklist of Table 1 and 2 of grasshoppers is an outcome of field work carried out between months May 2023 to May 2024 which is strictly short horned grasshopper survey based on selected areas of Shahuwadin Tahsil and boundries of Ratnagiri district. 20 species documented were found to be present in various habitats studied grasslands, shrubby area, forest area and agricultural fields from Shahuwadi Tahsil and boundries or Ratnagiri district.

The present study shows that 26 species belongs to 14 different genera belonging to 2 families, 11 sub families and

14 tribes have been recoded (Table 1 and 2). was recorded. Families Acrididae (90%), and Pyrgomorphidae (10%) are confirm between the different habitats of Shahuwadin Tahsil and boundries of Ratnagiri district. whereas maximum species represented by subfamily Pyrgomorphinae(10), Oedipodinae (7) followed by Hemiacridinae(7), Oxyinae(03), , Acridinae(04), Catantopinae(02), Eyprepocnemidinae(01) and Spathosterninae(02) This study reported that the family Acididae of Grasshopper is having wide habitat preference.

Conclusion:

On the basis of this study we can conclude that different habitats of Shahuwadin Tehsil and boundries of Ratnagiri district shows the variety of short horned grasshoppers belonging to phylum Orthoptera and family Acrididae. The continuous study from these areas will add the more numbers of species in the current list of the species. A long-term study needed to observe taxonomy, species richness and distribution in all seasons and their interaction with the environmental changes.

Conflicts of Interest:

Authors declare that there is no conflict of interests regarding the publication of this paper.

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Geographical Analysis of Forest Distribution, Degradation, and Conservation in Ajara Tehsil, Maharashtra

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Abstract:

Forests are mainly useful for the ecological balance of the environment. India has a variety of climates. Forest diversity is found in India. Ajra tehsil is a part of the Sahyadri mountain range. This paper focuses on the forests of Ajra tehsil which covers an area of 17,560.36 hectares, of which 22% is forest area. The region has diverse vegetation such as Ain, Kinjal, Hirda, Behada, Hela, Savar and Pawana, which provide habitat to diverse wildlife such as bison, elephant, peacock and numerous bird species. Conservation efforts are needed to protect the biodiversity of the region and highlight the importance of sustainable forest management practices.

Keywords: *Forest distribution, Biodiversity, Ecological studies, Remote sensing, Species composition.*

Introduction:

Forests are an important component of the global ecosystem, maintaining biodiversity and ecological balance. In India, forests cover approximately 21% of the country's geographical area. This maintains ecological stability. Ajra tehsil in Kolhapur district of Maharashtra is known for its rich forest cover and biodiversity. This study examines the distribution pattern and ecological significance of forests in Ajra tehsil.

Study Region:

Ajara tehsil, located in the Kolhapur district of Maharashtra, India, covers an area of 548.8 square kilometers and comprises 99 villages. Geographically, it is situated between 16° 07' N to 16° 12' N latitude and 74° 12' E to 74° 20' E longitude, within the Sahyadri hill ranges. The terrain of Ajara tehsil has an average elevation of 660 meters, with a north-south length of 32 kilometers and an east-west width of 37

kilometers. The Hiranyakeshi River and its tributary, Chitri, flow through the tehsil, which experiences a humid climate with an average annual rainfall of 1900 mm. Temperature fluctuations range from 30.25°C to 15.71°C, with high relative humidity ranging from 84.84% to 67.73%. Ajara tehsil boasts an extensive forest cover of 14,836 hectares and serves as a gateway to the Konkan region, strategically located near Kolhapur city and Goa state.

Data Base and Methodology:

This study integrates primary and secondary data to investigate forest distribution and deforestation in Ajara Tehsil. Primary data were collected through field observations, semi-structured interviews, and focus group discussions. Secondary data were sourced from official records, peer-reviewed research articles, and government datasets.

Objectives:

This study aims to achieve the following objectives:

1. To investigate the distribution of forests in Ajara Tehsil.

2. To analyze the causes of deforestation in Ajara Tehsil.
3. To examine the consequences of forest degradation in Ajara Tehsil.

Ajara Tehsil: Forest Distribution- 2024-25

(Figures in Hectors)

Sr. No.	Circle	Reserved Forest	Protected Forest	Unclassified Forest	Private Forest	Total Forest
1	Ajara	139.37	125.45	0	0	264.82
2	Salgaon	402.01	401.37	0.02	0	803.40
3	Madilage	583.08	305.82	0	0	888.90
Total North Ajara		1124.46 (57.45 %)	832.64 (42.54 %)	0.02 (0.001 %)	0	1957.12
4	Chafavade	739.75	138.69	0	0	778.44
5	Shirsangi	414.74	334.11	0	0	748.85
6	Polgaon	289.96	266.01	13.42	0	569.39
7	Ite	459.61	251.48	0	0	711.09
8	Maligre	571.12	407.82	0	0	978.94
9	Awandi	945.08	13.59	102.44	0	1061.11
10	Latgaon	1069.61	0	0	0	1069.61
Total South Ajara		3420.26 (56.83 %)	2481.31 (41.23 %)	115.86 (1.92 %)	0	6017.43
11	Dhangarmola	2050.73	183.19	0	0	2233.92
12	Parpoli	1239.11	120.74	4.50	0	1364.35
13	Gavase	429.25	190.66	0	0	619.91
14	Haroli	854.03	319.61	0	84.46	1258.10
15	Suleran	1873.78	430.01	14.13	0	2317.92
Total Dhangarmola		6446.9 (82.71 %)	1244.21 (15.96 %)	18.63 (0.23 %)	84.46 (1.08 %)	7794.20
16	Gadhinglaj	50.01	371.58	0	0	421.59
17	Masewadi	0	394.29	0	286.20	480.49
18	H. Sasgiri	50.01	1455.40	0	268.20	1791.61
Total Gadhinglaj		100.02	2221.27	0	554.4	2693.69
Total Area under forest		11041.63 (62.87 %)	6013.56 (43.24 %)	134.51 (0.76 %)	370.66 (2.11%)	17560.36

Source - Forest Department, Ajara 2024

The table shows the Forest Distribution in Ajara Tehsil. Ajara Tehsil, situated in the Western Ghats, boasts a diverse and complex forest ecosystem. The forest department has delineated four distinct circles: North Ajara, South Ajara, Dhangarmola, and Gadhinglaj. Each circle

exhibits unique forest characteristics, harboring a rich array of flora and fauna.

North Ajara Circle:

The North Ajara Circle is distinguished by its predominantly deciduous forest cover, with a significant 57.45% of the forest classified as reserved.

This indicates a high level of protection and conservation efforts in the region, ensuring the preservation of valuable biodiversity. The remaining 42.54% is protected forest, while a negligible 0.02% remains unclassified. Deciduous tree species, including Bamboo, Terminalia, Anogeissus, and Nilgari, dominate this region's scrub forest, providing a unique habitat for various wildlife species. The presence of Bison, Fox, and other wildlife species underscores the importance of preserving this ecosystem.

South Ajara Circle:

The South Ajara Circle boasts a unique semi-evergreen forest cover, with a notable 56.83% designated as reserved forests. This classification underscores a moderate yet crucial level of protection and conservation efforts, emphasizing the need for sustained initiatives to safeguard the region's ecological integrity. The remaining forest cover comprises 41.23% protected forests and a modest 1.92% unclassified forests, collectively providing a vital habitat for an array of wildlife species, including the majestic Bison and elusive Fox. The preservation of this ecosystem is paramount, necessitating the adoption of sustainable forest management practices to maintain the delicate balance between human needs and environmental stewardship.

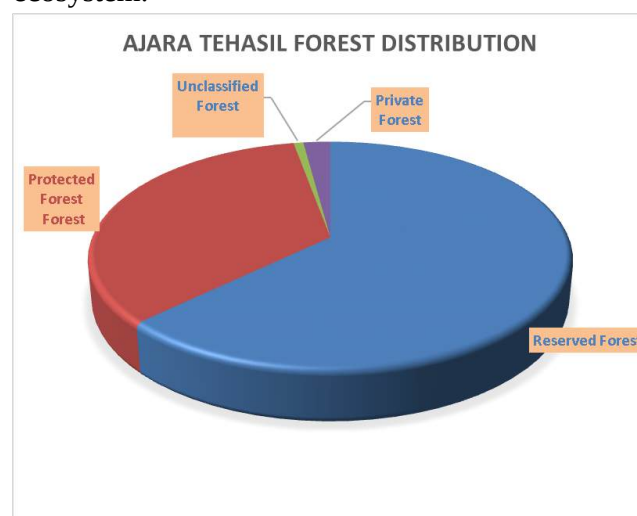
Dhangarmola Circle:

The Dhangarmola Circle is distinguished by its vast reserved forest cover, which encompasses 82.71% of the area. This significant proportion of protected land underscores the region's strong conservation efforts, providing a secure habitat for a diverse array of wildlife. The remaining 17.29% of the area comprises 14.52% protected forest, 0.76% unclassified forest, and 2.01% private forest. The dense forests of this region serve as a sanctuary for various wildlife species, including Bison, Sambar, Elephants, Wild Boar, Leopard, Monkey, and numerous bird species, highlighting the importance of preserving

this ecosystem and maintaining the delicate balance of nature.

Gadhinglaj Circle:

The Gadhinglaj Circle is characterized by a diverse forest landscape, comprising 62.87% reserved forest, 34.17% protected forest, 0.76% unclassified forest, and 2.11% private forest. The scrub forest in this area is fragmented due to human settlements, resulting in a mosaic landscape. Notably, the presence of private forest underscores the importance of collaborative conservation efforts among stakeholders to ensure the long-term sustainability of this ecosystem.



Consequences of Forest Degradation in Ajara Tehsil:

- 1. Irreversible Loss of Biodiversity:** The combined effects of forest fires, invasive species, and habitat fragmentation are causing the permanent loss of many plant and animal species. The introduction of invasive species like Nilgari (*Eucalyptus globulus*) has displaced native plants, disturbing the delicate balance of the ecosystem.
- 2. Fragmented Habitats:** Expanding agricultural practices and urbanization are causing forests to become fragmented. As a result, wildlife populations become isolated, unable to migrate or

interact with other groups, which harms their ability to thrive. This fragmentation is particularly evident in areas where infrastructure is encroaching on forest land.

3. Soil Erosion and Degradation:

Deforestation, overgrazing, and the expansion of farming activities are causing soil erosion in Ajara Tehsil. The removal of trees and overgrazing by livestock make the soil more vulnerable to erosion, reducing its fertility and disrupting the water cycle. This, in turn, affects agriculture and the forest's ability to regenerate.

4. Disruption of Ecosystem

Functions: Forest degradation has a negative impact on the critical ecosystem services that forests provide, such as regulating water cycles, carbon absorption, and nutrient cycling. As these services break down, both local ecosystems and global environmental conditions are affected.

5. Increasing Human-Wildlife

Conflicts: As the forest shrinks, wildlife is forced into human settlements in search of food and shelter, leading to more conflicts. For example, in areas like Bisan, animals are encroaching on agricultural lands, damaging crops, and increasing tensions between humans and wildlife.

6. Hindered Forest Regeneration:

Forest regeneration is hindered by invasive species, overgrazing, and forest fires. Non-native species, such as Nilgari trees, are preventing native plants from growing back, reducing the ability of the forest to recover naturally and threatening the sustainability of the ecosystem.

7. Impact on Local Communities:

The degradation of forests is also

affecting the livelihoods of local communities. Many depend on forest products like firewood, medicinal plants, and fodder for livestock. As these resources become scarcer, communities face challenges in sustaining their daily needs and income.

Methods for Conserving Ajara Tehsil Forests:

1. Community-driven Conservation:

Local communities should be actively involved in forest conservation efforts through awareness campaigns, forming forest protection committees, and engaging in eco-tourism. For example, communities in Chiri Dam have started eco-tourism projects, which help conserve the forest while providing sustainable income.

2. Sustainable Forest Management

Practices: Sustainable Forest management should include practices such as selective logging, replanting, and afforestation to ensure that forest resources are used responsibly. Certification of sustainably harvested forest products and regular monitoring can also support long-term forest health.

3. Strengthening Forest Protection

Laws: There is a need to enhance the enforcement of forest protection laws and increase surveillance through modern technology such as drones. Collaboration between forest departments and law enforcement can help reduce illegal activities and protect forest resources.

4. Education and Awareness Campaigns:

Conducting educational programs in schools and communities, creating informative materials, and supporting research on forest conservation can raise

awareness about the need for protecting forests. Local residents should be made aware of the long-term benefits forests provide.

- 5. Promoting Alternative Livelihoods:** Encourage locals to adopt alternative livelihoods like beekeeping, mushroom farming, and producing handicrafts. Offering training and financial support for these alternative activities can reduce pressure on forests while promoting sustainable economic opportunities.

Conclusion:

The forests of Ajara Tehsil play a crucial role in the local ecosystem, but they are facing significant threats from deforestation and land-use changes. Protecting these forests requires a balanced approach, combining effective forest policies, active community participation, and sustainable management practices. Through careful monitoring and local conservation strategies, we can ensure the long-term sustainability of these forests, even in the face of environmental and human challenges.

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Drone Technology: Principals and Applications in Geography

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Introduction:

Geography, as a discipline, relies heavily on the acquisition, analysis, and interpretation of spatial and temporal data. Traditionally, geographers have employed field surveys, satellite imagery, and aerial photography to understand and represent the Earth's surface and phenomena. While effective, these methods have limitations in terms of cost, accessibility, and data resolution. In recent years, drone technology has emerged as a disruptive force, bridging gaps in data collection and offering new avenues for research and application (Colomina & Molina, 2014).

Drones, or Unmanned Aerial Vehicles (UAVs), are aircraft systems operated without an onboard human pilot. Controlled remotely or autonomously through pre-programmed flight paths, drones are equipped with sensors and cameras capable of capturing high-resolution imagery and geospatial data. Their ability to operate in challenging terrains, coupled with declining costs and user-friendly interfaces, has made them increasingly accessible to researchers and practitioners in geography (Hardin & Jensen, 2011).

This paper delves into the principles that govern drone operations and explores their multifaceted applications in geographic contexts. From mapping land use changes to responding to natural disasters, drones have

revolutionized how geographers gather and analyze information.

Principles of Drone Technology:

1. Aerodynamics and Flight Mechanics:

At the core of any drone's operation is its aerodynamic design and flight mechanics. Drones come in various forms, including fixed-wing, rotary-wing (multirotor), and hybrid systems. Fixed-wing drones are ideal for covering large areas, while multirotor drones offer greater maneuverability and are preferred for detailed inspections in smaller regions.

Stability, lift, thrust, and drag are the four fundamental aerodynamic forces that affect drone flight. Sensors such as gyroscopes, accelerometers, and magnetometers help maintain balance and orientation during flight. Flight controllers process these inputs to stabilize the drone and adjust to environmental conditions.

2. Navigation and Positioning:

Global Positioning System (GPS) integration is critical for drone navigation. GPS enables autonomous flight, geotagging of images, and precise location tracking. In addition to GPS, drones may utilize GLONASS, Galileo, or BeiDou satellite systems to improve positional accuracy.

Real-Time Kinematic (RTK) and Post-Processed Kinematic (PPK) systems further enhance accuracy, especially in

mapping and surveying applications. These systems correct GPS data errors and provide centimeter-level precision (Gupta & Shukla, 2018).

3. Imaging and Remote Sensing:

The imaging systems onboard drones vary based on application. Common payloads include:

- RGB Cameras: Standard optical cameras for visual imagery.
- Multispectral Sensors: Capture data across multiple wavelengths for vegetation analysis.
- Thermal Cameras: Detect heat signatures, useful in environmental and structural assessments.
- LiDAR (Light Detection and Ranging): Measures distances using laser pulses, generating accurate 3D models of terrain and structures.

Remote sensing via drones allows for the collection of detailed spatial data without direct physical contact with the subject, making it ideal for hazardous or inaccessible locations (Laliberte & Rango, 2009).

4. Data Processing and GIS Integration:

The data captured by drones is processed using photogrammetry software to generate orthomosaic maps, digital elevation models (DEMs), and 3D reconstructions. Geographic Information Systems (GIS) play a vital role in analyzing, visualizing, and interpreting this data.

Software tools such as Pix4D, Agisoft Metashape, DroneDeploy, and ESRI ArcGIS enable seamless integration of drone-derived data with existing spatial datasets, enhancing the analytical capabilities of geographers (Turner et al., 2016).

Applications in Geography:

1. Land Use and Land Cover Mapping:

Monitoring land use and land cover (LULC) changes is a core geographic task. Traditional methods, including satellite imagery and manual surveys, often lack the temporal resolution needed for real-time

monitoring. Drones fill this gap by providing up-to-date, high-resolution imagery (Nex & Remondino, 2014).

Multispectral imaging allows for classification of vegetation types, detection of deforestation, and analysis of urban sprawl. Researchers such as Tiwari et al. (2021) in India have demonstrated the use of UAV imagery in campus mapping and urban land classification.

2. Environmental Monitoring:

Environmental geographers use drones to track and document changes in natural ecosystems. Applications include:

- Monitoring coastal erosion and shoreline changes.
- Assessing glacial retreat and snow cover in mountainous regions.
- Tracking wetland health and biodiversity.
- Observing wildlife populations and their habitats.

The ability to deploy drones repeatedly over time allows researchers to build temporal datasets that reveal long-term environmental trends. Gupta & Shukla (2018) and Rai et al. (2020) have used drones for monitoring landslides and glacier movements in India.

3. Urban and Regional Planning:

Urban geographers and planners use drones to gather data for infrastructure development, land allocation, and zoning regulations. High-resolution 3D models of cities assist in visualizing urban morphology and planning future developments.

Drones can also be used to inspect construction sites, monitor traffic flow, and detect unauthorized settlements. The integration of drone imagery into GIS platforms supports data-driven decision-making in urban management (Tiwari et al., 2021).

4. Agricultural Assessment:

Precision agriculture has benefited significantly from drone technology.

Farmers and agricultural geographers use drones to:

- Monitor crop health using multispectral and thermal sensors.
- Assess irrigation efficiency and soil moisture levels.
- Detect pest infestations and nutrient deficiencies.
- Estimate yields and map field variability.

These insights enable targeted interventions, reducing resource wastage and increasing productivity. Athare et al. (2024), Meshram et al. (2024), and Sahoo et al. (2023) have all reported successful implementation of UAVs for precision agriculture in India. Ojha (2023) emphasizes drone efficiency in irrigation and disease detection.

5. Disaster Management and Hazard Mapping:

Drones have proven invaluable in disaster response and risk assessment. Their rapid deployment and ability to capture real-time data make them essential tools during emergencies.

Applications include:

- Mapping damage after earthquakes, floods, or hurricanes.
- Identifying blocked roads and collapsed structures.
- Locating survivors and delivering supplies.
- Assessing landslide risks and floodplain extents.

By providing accurate, up-to-date information, drones aid in effective coordination of relief efforts and post-disaster recovery planning (Gupta & Shukla, 2018; Sankararao et al., 2021).

Challenges and Limitations:

1. Regulatory Constraints:

The widespread adoption of drones is subject to regulatory oversight. In India, the Directorate General of Civil Aviation

(DGCA) governs drone operations. Regulations include restrictions on flying in no-fly zones, mandatory registration, pilot licensing, and altitude limits (DGCA, 2021).

While these measures ensure safety and accountability, they can also limit the scope of geographic research in sensitive areas.

2. Technical and Operational Challenges:

- **Battery Life:** Most commercial drones have limited flight durations (20–40 minutes), requiring multiple flights for large-area coverage.
- **Weather Dependency:** Wind, rain, and extreme temperatures can affect drone performance and data quality.
- **Payload Capacity:** Heavier sensors reduce flight time and may require larger, more expensive drones.

3. Data Management and Privacy Concerns:

The volume of data generated by drones can be overwhelming, necessitating robust storage and processing infrastructure. Moreover, flying over populated areas raises ethical concerns regarding surveillance and individual privacy.

Geographers must adhere to ethical guidelines and obtain necessary permissions when conducting drone-based research.

Future Directions:

The future of drone technology in geography is promising. Emerging trends include:

- **Artificial Intelligence (AI):** Integrating AI enables automated feature detection, image classification, and anomaly identification (Thakur et al., 2021).
- **Swarm Drones:** Multiple drones working in coordination can cover larger areas and perform complex tasks.
- **Real-Time Analytics:** Edge computing allows data processing on the drone itself, enabling immediate insights.

- Integration with Internet of Things (IoT): Combining drones with IoT devices can provide comprehensive environmental monitoring systems.
- Crowdsourced Data Collection: Community-driven drone missions can democratize data gathering and enhance participatory mapping initiatives.

Conclusion:

Drone technology has ushered in a new era of geographic data collection and analysis. Its versatility, efficiency, and affordability have expanded the toolkit available to geographers, enabling them to explore the Earth's surface with unprecedented detail and frequency. From environmental monitoring to urban planning and disaster management, the applications are vast and continually evolving.

While challenges related to regulation, technical limitations, and privacy remain, ongoing advancements in AI, sensor technology, and data processing are addressing these issues. As drones become more integrated with other geospatial technologies, their role in shaping our understanding of geographic phenomena will only grow stronger.

For students, researchers, and practitioners alike, embracing drone technology is not just an option but a necessity in the modern geographic landscape.

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कोल्हापूर जिल्हा गुळ उद्योगाचा इतिहास, सध्यास्थिती व भवितव्य

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सारांश:

गुळाचा पारंपारिक गोडवा आणि रोजगार निर्मितीची क्षमता याचा विचार करता गुळ उद्योग हा भारतीय अर्थव्यवस्थेत महत्वाची भूमिका निभावतो. उत्तर प्रदेशातील मिरत व महाराष्ट्रातील कोल्हापूर जिल्ह्यातील गुळाचा दर्जा सर्वात चांगला मानला जातो. हवामान व जमीन गुणधर्मांमुळे कोल्हापुरी गुळाच्या चवीची जगभर छाप आहे. यामुळेच कोल्हापुरी गुळाला भौगोलिक संकेत (GI) मानांकण मिळाले आहे. गुन्हाळघरांचा जिल्हा म्हणून कोल्हापूरची ओळख आहे. ५० ते ६० वर्षांपूर्वी कोल्हापूर जिल्ह्यात दोन ते अडीच हजार गुन्हाळघरे होती. साखर कारखान्यांच्या उभारणी व विकासानंतर गुन्हाळघरांची संख्या कमी होत गेली. आज रोजी कोल्हापूर जिल्ह्यातील गुन्हाळघरांची संख्या ८८ इतकी आहे. सध्या कोल्हापूरची ओळख असणारा गुळ उद्योग संकटात आहे. यामुळेच कोल्हापूर जिल्ह्यातील गुळ उद्योगाचा इतिहास, सध्यास्थिती व भवितव्य हा विषय संशोधन पत्रिकेसाठी निवडला आहे. यासाठी गुळ उद्योगाच्या इतिहासाचा आढावा घेतला तसेच २००५ पासून २०२४ पर्यंतची या विषयाची माहिती घेतली आहे. हे संशोधन प्राथमिक व दुय्यम माहिती स्रोतांवर अवलंबून आहे. २००५-०६ ला कोल्हापूर जिल्हात १०८० गुन्हाळ घरांच्या माध्यमातून ६८५७०४ क्विंटल गुळाचे उत्पादन होत होते म्हणजे प्रत्येक गुन्हाळघराचा साधारण १०० दिवसांचा हंगाम धरला तर सरासरी ६३५ किलो गुळ प्रतिदिवस उत्पादित होत होता. आज २०२३-२४ ला कोल्हापूर जिल्हात ८८ गुन्हाळघरांच्या माध्यमातून ६४२६४४ क्विंटल गुळाचे उत्पादन झाले. गुन्हाळघरांचा हंगाम साधारण १०० दिवसांचा धरला तर सरासरी ७३०२ किलो गुळ उत्पादन झाले असा अर्थ निघतो. हे उत्पादनाचे गणित विचारात घेता हे कशाही पद्धतीने शक्य नाही याचा अर्थ परराज्यातील साखर घातलेला गुळ कोल्हापुरी गुळाच्या नावावर विकला जातो व कोल्हापूरच्या गुळाला बदनामीला सामोरे जावे लागते आहे. हे थांबायचे असेल व जी.आई. मानांकीत कोल्हापुरी गुळाची ओळख टिकवायची असेल तर नेमके उत्तर शोधण्याचा प्रयत्न या संशोधन पत्रिकेतून केला आहे.

प्रस्तावना:

गुळाचा पारंपारिक गोडवा आणि रोजगार निर्मितीची क्षमता याचा विचार करता गुळ उद्योग हा भारतीय अर्थव्यवस्थेत महत्वाची भूमिका निभावतो. जागतिक ऊस उत्पादनात ब्राझील नंतर भारताचा दूसरा क्रमांक लागतो. भारतात उत्तर प्रदेशानंतर महाराष्ट्राचा ऊस उत्पादनात दूसरा क्रमांक लागतो. भारताच्या एकूण ऊस उत्पादनाच्या १४.९८% ऊस उत्पादन महाराष्ट्रातून होते. महाराष्ट्राचे सरासरी दर हेक्टरी ऊस उत्पादन ७४ टन इतके आहे. तर सरासरी साखर उतारा १० % पर्यंत आहे. उत्तर प्रदेशातील मिरत व

महाराष्ट्रातील कोल्हापूर जिल्ह्यातील गुळाचा दर्जा सर्वात चांगला मानला जातो. गुळाची चव व रंगासाठी कोल्हापुरी गुळाची जगभर ओळख आहे. (दैनिक लोकमत ३० मार्च २०१८)

‘ऊस, ताड, माड इ. वनस्पतींपासून मिळणारा रस उकळून थंड केल्यानंतर जो घनपदार्थ तयार होतो त्यास गुळ म्हणतात.’ लासेन या संशोधकाच्या मते, ‘गुळ’ या शब्दाची उत्पत्ति ‘गौर’ या बंगालमधील प्राचीन काळातील शहराच्या नावावरून आली आहे. ‘प्रथिमकोश’ या बुद्धकालीन ग्रंथात गुळाचा उपयोग

रोजच्या आहारात करावा याबाबत गौतम बुद्ध यांच्या आदेशाचा उल्लेख आढळतो. सम्राट चंद्रगुप्त यांच्या दरबारातील सेल्युकस नायकेटोर यांचे वकील मिगॅस्थिनीस यांनी इ. स. पूर्व ४० च्या सुमारास 'केशरी रंगाचा आणि अंजीर किवा मधापेक्षा गोड असणारा दगड' असे गुळाचे वर्णन केले आहे. त्यानंतर ७० वर्षांनी भारतात आलेल्या हुआनत्संग यांनी भारतीय लोकांच्या रोजच्या आहारात गुळाचा वापर केला जात होता, याचा उल्लेख केला आहे. (दैनिक लोकमत, १६ नोव्हेंबर २०१५)

कोल्हापूर जिल्ह्यातील गुळ उद्योगाचा सुवर्ण इतिहास:

कोल्हापूर जिल्ह्यामध्ये गेल्या १५० वर्षांपासून पारंपारिक पद्धतीने गुळाचे उत्पादन सुरू आहे. हवामान व जमीन गुणधर्मांमुळे कोल्हापुरी गुळाच्या चवीची जगभर छाप आहे. यामुळेच कोल्हापुरी गुळाला भौगोलिक संकेत (GI) मानांकन मिळाले आहे. कोल्हापूरच्या गुळाला बाजारपेठ व योग्य दर मिळावा म्हणून सन १८९५ मध्ये छत्रपती राजर्षि शाहू महाराजांनी कोल्हापूर शहरात स्टेशन परिसरात शाहूपुरी येथे गुळ मार्केट सुरू केले. तेव्हापासून कोल्हापूरमध्ये गुळ उद्योगाने गती घेतली. १९५७ मध्ये शाहूपुरीतील जागा अपुरी पडण्याच्या कारणातून हे गुळ मार्केट १२० एकराच्या परिसरात, पुणा-बेंगलोर रोडवर (शाहू मार्केट यार्ड) स्थानांतरीत केले गेले. गुन्हाळघरांचा जिल्हा म्हणून कोल्हापूरची ओळख आहे. ५० ते ६० वर्षांपूर्वी कोल्हापूर जिल्ह्यात दोन ते अडीच हजार गुराळघरे होती. (दैनिक लोकमत, १६ नोव्हेंबर २०१५)

गुळ उत्पादकांची सध्या स्थिती:

साखर कारखान्यांच्या उभारणी व विकासानंतर व त्यांच्याकडून ऊसाला निश्चित भाव मिळू लागल्याने त्या स्पर्धेत गुन्हाळघरांची संख्या कमी होत गेली. सध्या कोल्हापूरची ओळख असणारा गुळ उद्योग संकटात आहे. आर्थिक तरतूद, मजूर समस्या, अत्याधुनिक तंत्रज्ञानाचा अभाव, भरमसाठ केमिकल्स व साखरेचा मोठ्या प्रमाणात वापर व त्यामुळे गुळाचा

दर्जा ढासळणे, ब्रंडिंग, स्वच्छता व पॅकिंग बाबत काळजी न घेणे, प्रशिक्षणाचा अभाव, उपपदार्थ निर्मितीचा अभाव, साठवणूक व्यवस्था व शीतगृहांचा अभाव, गुळ व्यवसायामधील संशोधन व विकास यामधील कमतरता, व्यवसायातील कमी झालेली प्रामाणिकता, सकारात्मक दृष्टिकोनाचा अभाव, चिकाटी, जिद्द व समजून घेण्याची कमी झालेली वृत्ती, गुळ उत्पादकांच्यामध्ये परस्पर सहकार्याची भावना नसणे इ. अशी अनेक कारणे समोर येतात. कामगार अडव्हान्स, कच्चा मालाच्या किमती, पडलेले गुळाचे दर, केलेल्या गुंतवणुकीवरील कर्जाचे व्याज, व्यापाऱ्यांची मनमानी, गुळासाठी लागणाऱ्या साहित्याच्या किमतीतील वाढ या गूळ उद्योगापुढील सध्याच्या समस्या आहेत. (अग्रोवन, २३ मार्च २०२४) हमाली, तोलाई, वाहतूक खर्च यावरील खर्च एकूणच गूळ उत्पादकांसाठी मारक ठरतो. (दैनिक पुढारी, १३ नोव्हेंबर २०२३) वाढलेला उत्पादन खर्च, कामगारांची कमतरता, खर्चाच्या तुलनेत गुळाला मिळणारा कमी दर यामुळे कोल्हापुरातील गूळ उद्योग अडचणीत आहे. (तरुण भारत, १३ ऑक्टोबर २०२३)

अभ्यासक्षेत्र:

कोल्हापूर जिल्ह्याचा विस्तार १५°४३' ते १७°१०' उत्तर अक्षवृत्त व ७३°४०' ते ७४°४२' पूर्व रेखावृत्त असे आहे. सरासरी समुद्र सपाटीपासूनची उंची ५४५.६ मी. इतकी आहे. कोल्हापूर जिल्ह्याचे एकूण भौगोलिक क्षेत्र ७६८५ चौ. कि. मी. आहे. ऊस उत्पादनासाठी व गूळ उद्योगाच्या विकासासाठी आवश्यक असणारे भौगोलिक पर्यावरण व त्यातून कोल्हापुरी गुळाला मिळालेली वैशिष्ट्यपूर्ण चव, दर्जा, रंग व रवाळपणा यामुळे कोल्हापुरी गुळाला जी.आई. मानांकन मिळाले आहे.

अभ्यास पद्धती:

कोल्हापूरचा गूळ उद्योग सावरायचा असेल तर त्यासाठी कोणत्या प्रयत्नांची आवश्यकता आहे हे शोधण्यासाठीच कोल्हापूर जिल्ह्यातील गूळ उद्योग हा विषय संशोधनासाठी निवडला आहे. यामध्ये कोल्हापूर

जिल्ह्यातील गुळ उद्योगाचा इतिहास जाणून घेण्यासाठी तसेच २००५-०६ ते २०२३-२४ पर्यंतची माहिती मिळवण्यासाठी प्राथमिक, दुय्यम स्त्रोताचा आधार घेतला आहे. यातून कालानुरूप गुळ उत्पादनातील बदल अभ्यासला आहे. तसेच गुळ उत्पादनातील अडचणी व त्या अडचणी सोडवण्यासाठीच्या उपाययोजनांसाठी काही गुन्हाळघरांना प्रत्यक्ष भेट देऊन माहिती मिळवण्याचा प्रयत्न केला आहे. प्राथमिक माहिती करवीर व कागल तालुक्यातील प्रत्यकी १० गुन्हाळघरांना प्रत्यक्ष भेट देऊन निरीक्षण व गुन्हाळघर मालक यांचेशी संवाद साधून मिळवली आहे. गुन्हाळघरांची संख्या व उत्पादन याबाबतची माहिती कोल्हापूर जिल्हा बाजार समितीतून घेतली आहे.

उद्देश:

सदर संशोधनाचे प्रमुख उद्देश पुढील प्रमाणे आहेत.

१. कोल्हापूर जिल्ह्यातील गुळ उद्योगाचा इतिहास व बदलांचा कालावधीनुरूप अभ्यास करणे.
२. कोल्हापूर जिल्ह्यातील गुळ उद्योगाला संकटातून बाहेर काढण्यासाठी उपाय सुचवणे.

विश्लेषण:

कोल्हापूर जिल्ह्यातील गुळ उद्योग हा केवळ एक पारंपारीक शेतीपूरक उद्योग नसून, तो जिल्ह्याच्या सामाजिक, अर्थिक व सांस्कृतीक जडणघडणीचा अविभाज्य भाग राहिला आहे. ऊस उत्पादनात महाराष्ट्रात आघाडीवर असलेल्या कोल्हापूर जिल्ह्यातील हजारो शेतकरी, गुळ उत्पादक, कामगार आणि व्यापारी यांचे जीवन या उद्योगाशी जोडलेले आहे. कोल्हापूर जिल्ह्यातील गुळ उद्योगाचा इतिहास, त्याची सध्यास्थिती आणि भविष्यातील संधी व आव्हाने यांचे विश्लेषण करणे हे या संशोधनाचे प्रमुख उद्दिष्ट आहे.

१. गुळ बनवण्याची पारंपारिक पद्धत व मनुष्यबळातील अडचणी:

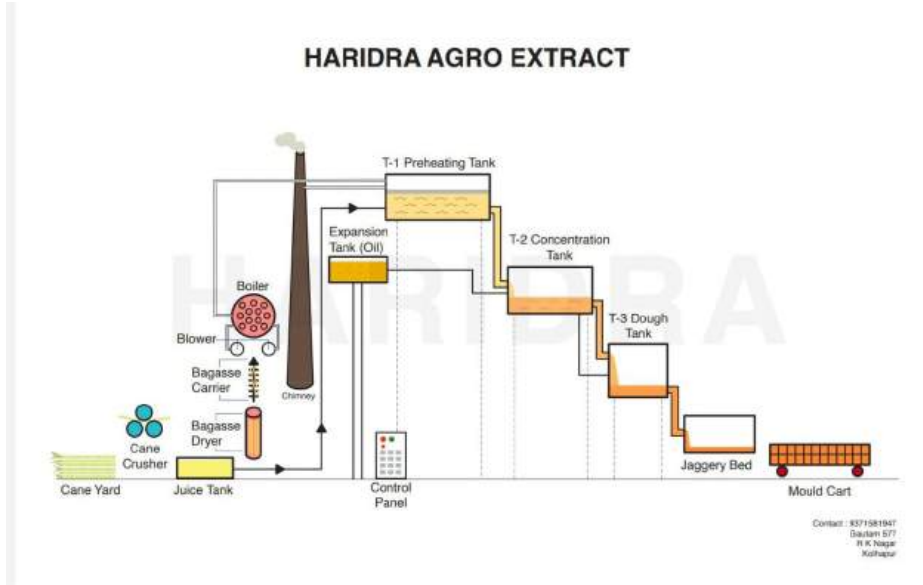
गुळ बनवण्यासाठी पारंपारिक गुन्हाळ घरामध्ये प्रत्यक्ष उष्णता पद्धतीचा वापर होतो. या वेळखाऊ पद्धतीत जास्त मजुर लागतात तसेच जास्त जळण (बग्यास/लाकूड) लागते. तसेच या पद्धतीत गुळ जळण्याचे प्रमाण जास्त राहते. क्रशरची क्षमता ६५ ते ७० टक्के पेक्षा जास्त रस काढण्याची असेल तर रसातील सूक्ष्म कचऱ्याचे प्रमाण वाढते, तसेच रसातील शुक्रोजचे प्रमाण वाढते परंतु खनिजे व ग्लुकोजचे प्रमाण कमी होते परिणामी गुळाचे औषधी महत्त्व कमी होते. (अग्रोवन, २० ऑक्टोबर २०१७) उस तोडणीनंतर ६ ते १२ तासांत गाळप झाले नाही तर गुलातील चोथ्याचे प्रमाण वाढते, रसाची प्रत खालावते, उतारा कमी मिळतो, परिणामी गुळाची प्रत कमी होते. (अग्रोवन, ७ ऑक्टोबर २०१७) या सर्वांवर उत्तर शोधण्याची आवश्यकता आहे. सध्याची परिस्थिती पाहता वरील समस्यांवर उत्तर शोधण्यासाठी आधुनिक तंत्रज्ञानाचा वापर करून गुळ उत्पादनात सलगता आणणे तसेच संशोधन व विकास यासाठी जाणीवपूर्वक प्रयत्नांची आवश्यक आहे.

२. वैयक्तिक गुन्हाळघर उभारणी व आर्थिक अडचणी:

पूर्वी एकत्र कुटूंबपद्धतीमुळे मोठी कुटूंबे होती. त्यातील एक व्यक्ती गुन्हाळघराचे नियोजन पाहत होता. आवश्यक तेथे घरातील इतर लोक मदत करत होते. कोल्हापूर जिल्ह्यातील बहुतेक सर्व गुन्हाळघरे ही वैयक्तिक मालकीची आहेत. पण सध्या विभक्त कुटूंबपद्धतीमुळे अश्या गुन्हाळघरांच्या एकूणच मनुष्यबळ नियोजन, आर्थिक नियोजन, उत्पादन दर्जा, ब्रँडिंग व पॅकेजिंग, साठवणूक, मार्केटिंग अश्या अनेक पातळ्यांवर एकट्याला लढावे लागते व यातूनच सध्याच्या स्थितीत गुन्हाळघरांच्या व्यवसायातून मिळणाऱ्या फायद्यापेक्षा त्रासच जास्त होतो. या गुन्हाळघरांचा उत्पादन खर्च जास्त आहे. त्यामानाने आर्थिक उत्पन्न कमी मिळते. म्हणूनच गुन्हाळघरांची संख्या सातत्याने कमी होताना दिसत आहे. यासाठी

शेतीगट, शेती आधारित कंपनी यांच्या माध्यमातून
व्यावसायिकता जपून गूळ उद्योगाचा विकास साधणे

आवश्यक आहे.



आकृती: आधुनिक गुन्हाळघर संकल्पना

३. गूळ उत्पादनात साखरेची भेसळ व रसायनांचा अति वापर:

कोल्हापूरच्या गुळाचा जो नैसर्गिक दर्जा होता तो अलीकडील काळात नाहीसा झाला आहे. पूर्वी गूळ तयार करताना रसायनांचा वापर होत नव्हता. कळीचा चुना, खाद्य तेल किंवा तूप, नैसर्गिक देशी भेंडी यांचा वापर होत होता. हळूहळू यामध्ये बदल होत गेले व चकाकी येण्यासाठी व पिवळसर कलर येण्यासाठी सोडियम हायड्रोफोस्फेट, सल्फर, मेटानील यलो, भेंडी पावडर इ. केमिकल वापरली जातात. कोल्हापुरी गूळ तयार करताना मोठ्या प्रमाणात रसायनांचा वापर केला जातो. यामुळे गुळाचा दर्जा कमी राहतो. (दैनिक लोकमत, १६ नोव्हेंबर २०१५) गुळामध्ये कॉस्टीक सोडा, ऑक्सलिक एसिड, फॉस्फोरिक एसिड, हायड्रोक्स् पावडर, बेन्झिन ही केमिकल्स वापरली जातात. (विकीपिडिया)

गुळाची निर्मिती कशी केली जावी याचे प्रमाणीकरण नाही. कोणते केमिकल किती प्रमाणात

वापरावे याबाबतही निश्चिती नाही. बाजारात जे चालते ते विकण्याची पद्धत विकसित झाली आहे व पूर्ण वर्षभर उत्पादन घेणे, कमी किमतीत व कमी काळात जास्त उत्पादन व जास्त आर्थिक फायदा घेण्याच्या स्पर्धेतून साखरेपासून गूळ तयार करण्याची पद्धत कोल्हापूर मध्ये रूढ झाली आहे.

४. कोल्हापूर बाजार कमिटीतील गुळ व्यापारातील कालावधीनुरूप बदल:

कोल्हापूर जिल्ह्यातील गुन्हाळघरांच्या बाबतची आकडेवारी सांख्यिकीय विभाग, बाजार कमिटी कोल्हापूर यांचेकडून २००५-०६ ते २०२३-२४ पर्यंतची घेतली आहे व कालानुरूप गूळ उत्पादनातील बदल अभ्यासला आहे.

अ. न.	वर्ष	बाजार कमिटी गूळ आवक (क्विंटल)	प्रती क्विंटल दर		एकूण किंमत (कोटी मध्ये)	गुन्हाळ घर संख्या
			जास्तीत जास्त दर	सरासरी दर		
१.	२००५-०६	६८५७०४	५५५५	१८५०	१०८ ३५.	१०८०
२.	२००८-०९	८०५५६३	३८००	२२००	१७७ २२.	
३.	२०११-१२	७७०२५६	७००१	२८००	२१५ ६७.	७०२
४.	२०१४-१५	६५५४४२	५५००	२९००	१९० ०७.	
	२०१५-१६					२५०
५.	२०१७-१८	६६१७१५	६००१	३३००	२१८ ३६.	
६.	२०२०-२१	६९४२१५	६०००	३४००	२३६०३.	
७.	२०२३-२४	६४२६४४	५१००	३६००	२३१ ३५.	८८

संदर्भ: सांख्यिकीय विभाग, बाजार कमिटी कोल्हापूर.

२००५ पासून २०२४ पर्यंतची बाजार कमिटीतील गुळाची आवक, जास्तीत जास्त दर, सरासरी दर, वार्षिक एकूण उलाढाल या विषयाची माहिती घेतली आहे. २००५-०६ ला कोल्हापूर जिल्हात १०८० गुन्हाळ घरे होती व गुळाचे उत्पादन ६८५७०४ क्विंटल इतके होते म्हणजे प्रत्येक गुन्हाळघराचा साधारण १०० दिवसांचा हंगाम धरला तर सरासरी ६३५ किलो गुळ प्रतिदिवस उत्पादित होत होता. आज २०२३-२४ ला कोल्हापूर जिल्हात ८८ गुन्हाळघराच्या माध्यमातून ६४२६४४ क्विंटल गुळाचे उत्पादन झाले व त्यांचा हंगाम साधारण १०० दिवसांचा धरला तर सरासरी ७३०२ किलो गुळ प्रति दिवस उत्पादित होतो असा होतो. हे उत्पादनाचे गणित विचारात घेता हे कशाही पद्धतीने शक्य नाही याचा अर्थ परराज्यातील गूळ कोल्हापुरी गुळाच्या नावावर विकला जातो व कोल्हापूरच्या गुळाला बदनामीला सामोरे जावे लागते आहे. कर्नाटक मध्ये मंड्या, बेळगाव, बागलकोट येथे छोटी मोठी गुन्हाळ घरे आहेत. हा गूळ महालिंगपूर (मुधोळ) ही बाजारपेठ असूनही कोल्हापूर, सांगली बाजारपेठेत येतो. (दैनिक लोकमत, १६ नोव्हेंबर २०१५) बाजार समितीत येणारा गूळ व त्याच्या एकूण वार्षिक उलाढालीचा विचार करता १८९४-९५ मध्ये कोल्हापूरी गुळाची उलाढाल ६ लाख रुपयाची होती. २००५-०६ मध्ये ती १०८ कोटी, १०१४-१५ मध्ये १९० कोटी, २०२०-२१ मध्ये २३६ कोटी तर २०२३-२४ मध्ये कोल्हापूर मार्केट कमिटीत गुळाची उलाढाल २३१ कोटी राहिली. २००८-२००९ मध्ये गुळाची

आवक ८०५५६३ इतकी वाढली मात्र त्यावेळी सरासरी दर मात्र तुलनेत कमी राहिला.



सर्वसाधारणपणे कोणत्याही उत्पादनाचे उत्पन्न वाढले की दर कमी होतात हे तत्व गुळासाठी लागू होत नाही असे दिसते. म्हणजेच वरील सारणीमध्ये कालावधीनुरूप दर वाढत गेल्याचे जाणवते. पण त्याच बरोबर गुळाचा जास्तीत जास्त दर हा मात्र कमी झाल्याचे दिसते याचा अर्थ पूर्ण वर्षभर साखर वापरून तयार होणारा गूळ व व्यापारी वर्गाचा गूळ दरामध्ये असणारा हस्तक्षेप स्पष्टपणे दिसून येतो. कोल्हापुरी गूळ बनावट नावाने विक्री केला जातो. यासाठी साखरेचा मोठ्या प्रमाणात वापर केला जातो. यासाठी गूळ क्लस्टर ची योजना आवश्यक आहे. (महाराष्ट्र टाईम, १४ सप्टेंबर २०१७)

५. साठवणूक, मार्केटिंग व्यवस्था अभाव:

गूळ साठवणुकीसाठी शेतकऱ्यांची स्वतःची किंवा सामुहिक शीतगृह व गोडाउनची सुविधा असणे अतिशय आवश्यक आहे. राजर्षी शाहू महाराजांच्या

नंतर कोल्हापूरमध्ये यावर काम झाले नाही. यामुळे तयार केलेला गूळ शेतकऱ्यांना बाजार कमिटीमध्येच नेऊन लगेच विकावा लागतो नाहीतर गूळ खराब होऊन नुकसान होण्याचा धोका निर्माण होतो. यातून अर्थिक गणित कोलमडते.

रसायन मुक्त गुळाला मार्केट यार्ड मध्ये योग्य किंमत मिळत नाही. त्याचा रंग थोडा चॉकलेटी डार्क येत असल्याने व त्याचा उत्पादन खर्च जास्त येत असल्याने गुळाचे मार्केट बसवण्यात अडचणी येतात. संपूर्ण जगातील गूळ व्यवसायाच्या अभ्यासातून जगभरात असलेली कोल्हापुरी गुळाची मागणी विचारात घेऊन त्यावरही काम करण्यास संधी आहेत. छ. शाहू गूळ क्लस्टरच्या वतीने MIDC कडे ऑक्टोबर २०१६ मध्ये अर्ज केला. त्यानंतर MIDC कार्यालयाकडून विस्तृत प्रकल्प आराखडा, बांधकाम कच्चा आराखडा व प्रक्रिया शुल्क भरण्याची सूचना केली. त्यानंतर क्लस्टर समितीने डिसेंबर २०१६ मध्ये सर्व कागदपत्रे व शुल्क जमा केले. जानेवारी २०१७ मध्ये तत्कालीन उद्योग मंत्री सुभाष देसाई यांनी क्लस्टर साठी जागा देण्याचे पत्रही दिले मात्र MIDC ने एप्रिल २०१७ मध्ये जागा उपलब्ध नसल्याचे पत्र दिले. ((महाराष्ट्र टाईम्स, १४ सप्टेंबर २०१७))

६. संशोधन, प्रशिक्षण व सहकार्याच्या भावनेचा अभाव: कोल्हापुरी गुळाच्या जगभरातील क्रेझचा विचार करता, जागतिक बाजारात कोल्हापुरी गुळाचे तितके प्रभावी सादरीकरण करणे अजून तरी आपणास जमलेले नाही. यामध्ये गुळाचा दर्जा, प्रमाणीकरण, गुन्हाळघरातील स्वच्छता, व्यावसायिकता, ब्रॅन्डिंग व पॅकेजिंग अश्या अनेक बाबतीत संशोधनाची गरज आहे. गुन्हाळघर मालक, त्यामधील कामगार याच्या प्रशिक्षण कार्याशाळांची आवश्यकता आहे. तसेच परस्परांतील सहकार्याच्या भावनेचा अभाव हाही गूळ उद्योगाच्या विकासातील खूप मोठा अडसर ठरत आहे.

या बरोबरच शासकीय धोरणे अंमलबजावणी मधील कमतरता, स्थानिक प्रशासनाचा व लोकप्रतिनिधींचे दुर्लक्ष्य याचाही परिणाम कोल्हापुरी गुळ उद्योगाच्या विकासावर होताना दिसत आहे. उत्पादकांना प्रशिक्षण देणे, सेंट्रिय गूळ निर्मितीला चालना, उपपदार्थ निर्मितीला संधी, कोल्डस्टोरेज, गूळ उत्पादनाचा दर्जा, संशोधन व विकास कृती आराखडा

बनवण्याची गरज आहे. (महाराष्ट्र टाईम्स, १४ सप्टेंबर २०१७)

निष्कर्ष (Conclusions):

कोल्हापूर जिल्ह्यातील गूळ उद्योग हा केवळ आर्थिकच नव्हे तर संस्कृतीक वारसा आहे. त्याच्या वाढीसाठी आधुनिक तंत्रज्ञानाचा वापर, दर्जेदार उत्पादन, निर्यात क्षमतेचा विकास व शासनाच्या धोरणात्मक मदतीची आवश्यकता आहे. भविष्यात कोल्हापुरी गूळ हा जागतीक स्तरावर नावारूपाला येण्यासाठी संघटीत प्रयत्नांची आवश्यकता आहे.

- १) कोल्हापूर मधील गूळ उद्योगाने अध्याप आधुनिकतेची कस धरलेली नाही. अजूनही पारंपारिक गुन्हाळघरांच्या माध्यमातून गूळ निर्मिती केली जाते. कमीतकमी मजुरामध्ये गुन्हाळ घरातील कामे करणे उर्जा वाचवण्यासाठी प्रयत्न करणे आवश्यक आहे. प्रत्यक्ष उष्णता वापर एवजी अप्रत्यक्ष उष्णता देण्याची पद्धत अवलंबणे आवश्यक आहे. मजुर उपलब्धता, मजुरीचे दर व गुळाच्या दर्जावर ऊस तोडणीपासून गाळप होईपर्यंत ठेवावे लागणारे लक्ष यावर नियोजनबद्ध काम करणे आवश्यक आहे.
- २) कोल्हापूर जिल्ह्यातील बहुतेक गुन्हाळ घरे ही वैयक्तिक मालकीची आहेत. त्यामुळे त्यांना स्वतःला ब्रंडींग व मार्केटिंग मध्ये वेगळेपण सांभाळणे शक्य झाले नाही व सर्व आर्थिक नियोजन, मजुर नियोजन, गुळाच्या दर्जाचे नियोजन अश्या अनेक पातळीवर एकालाच काम करावे लागते त्यामुळे वाढती स्पर्धा व बदलती बाजारपेठेची व्यवस्था यामध्ये त्यांचा निभाव लागणे कठीण होते. यासाठी गट शेतीतून शेतकऱ्यांनी एकत्र येऊन त्यावर काम करणे आवश्यक आहे.
- ३) गूळ उत्पादन करताना मोठ्या प्रमाणात होणारी भेसळ ही कोल्हापूरच्या गुळाला बदनाम करत आहे. किरकोळ फायद्यासाठी अशा प्रकारची आपल्या तत्वांशी तडजोड करणे कोल्हापुरी गुळाच्या भवितव्याबाबत प्रश्नचिन्ह निर्माण करते. यावर व्यावसायिक

प्रामाणीकपणा व दर्जा यावर काम केल्यास चांगले काम होऊ शकते.

- ४) कोल्हापूर बाजार समितीमधील गुळाची आवक व मिळणारा दर यांचा विचार करता असे लक्षात येते की, कोल्हापूरी गुळाला जगभरात मोठी मागणी आहे. परंतु अर्थशास्त्रातील उत्पादन जास्त झाल्यास बाजारातील दर पडतात. हे गुळाच्या बाबतीत दिसत नाही. त्यामुळे गुळाची बाजारपेठ वाढती आहे. पण कोल्हापूरी गुळाचे उत्पादन करणारे गूळ उत्पादक कमी होताना दिसत आहेत. पण त्यामानाने बाजार समितीतील कोल्हापूरी गुळाची आवक कमी होताना दिसत नाही. याचा अर्थ कोल्हापूरमध्ये गूळ उत्पादन कमी होते व कर्नाटकातील गूळ कोल्हापूरी गुळाच्या नावावर व्यापाऱ्यांच्याकडून देशाच्या मार्केट मध्ये विकला जातो. याचा तोटा कोल्हापूर मधील गूळ उत्पादकांना होताना दिसतो.
- ५) बाजार समितीतील व्यापाऱ्यांच्या हातात गुळाचे दर ठरवण्याचा अधिकार असल्याचे स्पष्टपणे जाणवते. त्यावर उपाय म्हणून गुळाचे क्लस्टर निर्माण करणे आवश्यक आहे व गूळ निर्यातीच्या दृष्टीने एकत्रित प्रयत्नांची आवश्यकता आहे.
- ६) बाजार समिती क्षेत्रातील व्यापाऱ्यांनी आपल्या नावे गुळाचे ब्रंडींग केले आहे. सामान्य गूळ उत्पादकांकडून गूळ घेऊन तो आपल्या ब्रंडनेम वर बाजारात विकला जात असल्यामुळे मुल उत्पादकांना त्याचा फायदा मिळत नाही.
- ७) कोल्हापूर जिल्ह्यातील गुळाला GI मानांकन मिळाले आहे, असे असतानाही या गुळाच्या ब्रंडींग व साठवणूकीबाबत जितके काम होणे आवश्यक होते तितके झालेले नाही. त्यामुळे गूळ खराब होण्याला घाबरून गूळ उत्पादक मिळेल त्या किमतीला व्यापाऱ्यांना दिला जातो. परिणामी गूळ उत्पादकांचा तोटा होतो.
- ८) कोल्हापूरी गुळाला जागतिक बाजारपेठ खुणावत असताना निर्यातीमध्ये कर्नाटकचा वाटा जास्त दिसतो. याच्या मागे ज्या प्रमाणात

कोल्हापूरी गुळावर संशोधन व विकासाच्या बाबतीत प्रयत्न होणे आवश्यक होते तितके झाले नसल्याने त्याचा फटका कोल्हापूरी गुळाला बसला आहे.

शिफारशी (Recommendations):

कोल्हापूरच्या गुळ उद्योगाचे भवितव्य विचारात घेता या उद्योगाच्या सध्याच्या व भविष्यात येणाऱ्या सर्व अडचणींच्यावर मात करण्यासाठी सकारात्मक पद्धतीने विचार करण्याची आवश्यकता आहे.

कोणताही उद्योग नावारूपाला आणण्यासाठी किमान १००० दिवस वाट पहावी लागते, तितका संयम ठेवावा लागतो व सातत्याने नाविण्याचा ध्यास घेऊन काम करावे लागते याचा विचार केल्यास व आतापर्यंतच्या अनुभवाच्या आधारावर कोल्हापूर जिल्ह्यातील गुळ उद्योगाच्या भवितव्याबाबत पुढील मुद्दे महत्वाचे आहेत.

- १) सामूहिक तत्वावर प्रकल्प उभारणी व रसायनमुक्त गुळ उत्पादनासाठी प्रयत्नांची आवश्यकता.
- २) अत्याधुनिक तंत्रज्ञान विकासासाठी गुळ उत्पादकांकडून प्रयत्नांची गरज आहे. देशातील प्रमुख तीन गुळ संशोधन केंद्रांपैकी कोल्हापूरमध्ये एक केंद्र आहे. या प्रादेशिक ऊस व गुळ संशोधन केंद्रात अत्याधुनिक स्वयंचलित गुराळघर साकारले आहे. गुळ, काकवी, गुळ पावडर, तयार करण्याचा हा पथदर्शी प्रकल्प आहे. शिवाजी विद्यापीठ, मुंबई आई. आई. टी., आई. टी. सी. यांच्या संयुक्त विद्यमाने राजीव गांधी सायन्स टेक्नॉलॉजी अंतर्गत ६ कोटींचा प्रकल्प पूर्ण झाला आहे. ही सर्व यंत्रणा स्वयंचलित आहे. २५ मजूराने एवजी १० मजुरात येथे सर्व कामे होतील अशी व्यवस्था आहे. गुळव्या एवजी सेन्सरच्या सहाय्याने गुळाची पक्वता निश्चित केली जाते. अशा पद्धतीच्या तंत्रज्ञानाचा वापर सामान्य गुळ उत्पादकाला कसा देता येईल यावर काम करणे आवश्यक आहे.

- ३) गुळापासून वेगवेगळ्या उपपदार्थांची निर्मिती करणे व त्यातून आर्थिक समृद्धी साधणे ही काळाची गरज आहे. यावर सध्याच्या काळात प्रयत्न होताना दिसतात रेडीमिक्स गुळाच्या चहा पावडर, मसाले क्यूब, गुळाची शेंगदाणे/ नारळ बर्फी, काकवी, ड्रायफ्रूट गूळ लाडू, चिरमुरे गूळ लाडू, गूळ पावडर व क्यूब, गुळाची जिलेभी अश्या अनेक पदार्थांची आज रेलचेल आहे. पण हे सर्व पदार्थ गुन्हाळ घरातच बनवले जातील याबाबत अधिक संशोधनाची आवश्यकता आहे यामुळे उर्जेचा वापर कमी करून उत्पादन खर्च कमी करणे व जास्त आर्थिक फायदा मिळवणे शक्य होईल.



- ४) ब्रँडिंग व पॅकेजिंग यावर संशोधनात्मक कार्य होणे आवश्यक आहे.



- ५) साठवणूक व्यवस्था व शीतगृहांची सुविधा उपलब्ध करणे. यातून तयार झालेला गूळ आवश्यकप्रमाणे मार्केट मध्ये आणणे शक्य होईल.
- ६) व्यावसायिक प्रामाणिकता जपणे. कितीही चांगले गूळ निर्मितीचे तंत्रज्ञान व आर्थिक बाजू चांगली असली तरी उद्योगाची सफलता

ही व्यावसायिकांची जिद्द, चिकाटी, जिद्द, होणारे बदल समजून घेण्याची वृत्ती, व्यावसायिक प्रामाणिकपणा, सकारात्मक दृष्टीकोन व बिकट परिस्थितीतून मार्ग काढण्याची होकारात्मक दृष्टी असणे आवश्यक आहे. (अग्रोवन, ४ जुन २०२०)

- ७) जिल्हा नियोजन मंडळ व महानगरपालिकेच्या मदतीने कोल्हापूरमध्ये गुळ विक्रीसाठी स्वतंत्र व्यवस्था निर्माण करणे आवश्यक आहे.
- ८) निर्यातीसाठी सातत्यपूर्ण प्रयत्नांची गरज आहे. कोल्हापुरी गुळाला परदेशात चांगली मागणी असूनही त्यापटीत निर्यात होत नाही. चांगल्या प्रकारचे उत्पादन घेऊन ब्रंडिंग केल्यास निर्यातदारांच्या अडून न जाता थेट निर्यात करता येणे शक्य आहे. (दैनिक लोकमत २० ऑगस्ट २०२४)
- ९) स्थानिक मनुष्यबळ उपलब्धतेची गरज.
- १०) सौरऊर्जा वापर करणे व उत्पादन खर्च कमी आणण्यासाठी जाणिवपूर्वक प्रयत्नांची आवश्यकता आहे.
- ११) गुळाचे मार्केटिंग, संशोधन व विकास यासाठी एकत्रित प्रयत्नांची आवश्यकता.
- १२) गूळ निर्मितीनंतर शिल्लक बाबींपासून जिवानू खत निर्मिती, सेंद्रिय खत तसेच कांडी कोळसा तयार केल्यास त्याचाही फायदा होऊ शकतो.
- १३) गुळ क्लस्टर निर्माण करण्यासाठी प्रयत्न करणे. वरील सर्व बाबी एका छताखाली यायच्या असतील तर गुळ व्यवसायीकांनी एकत्र येणे व गुळ क्लस्टर योजना प्रत्यक्षात आणणेसाठी प्रयत्न करणे काळाची गरज आहे.

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यवतमाळ जिल्ह्यातील रस्ते मार्गांच्या संपर्कतेचे: भौगोलिक अध्ययन

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सारांश :

वाहतूक भूगोल ही मानवी भूगोलाची महत्वाची शाखा आहे. यामध्ये वाहतुकीच्या विविध घटकांचे विविध दृष्टीकोनातून अध्ययन केले जाते. वाहतूकीच्या विविध घटकांमध्ये रस्ते वाहतुकीचे विशेष महत्व आहे, कारण रस्ते मार्गांचे सर्वदूर पसरलेले आहे. कुठल्याही प्रदेशातील रस्ते निर्माण करताना प्रथम त्या प्रदेशातील भौगोलिक घटकांचा आधार घ्यावा लागतो. त्यामुळेच भूगोलामध्ये रस्ते वाहतुकीच्या अभ्यासाला महत्व प्राप्त झालेले आहे.

प्रस्तुत संशोधन निबंधात यवतमाळ जिल्ह्यातील रस्ते मार्गांच्या संपर्कतेचे बिटा व गॅमा निर्देशांक यांच्या सहाय्याने अध्ययन करण्यात आलेले आहे.

बीजसंज्ञा: रस्ते मार्ग, संपर्कता, बिटा निर्देशांक, गॅमा निर्देशांक, परस्परसंबंध

प्रस्तावना:

रस्ते मार्गांच्या विकासात प्रामुख्याने रस्ते मार्गांची सुगमता आणि संपर्कता हे दोन घटक महत्वाचे असतात. केवळ रस्ते मार्ग विकसित होणे आवश्यक नसते तर ते एकमेकांना जोडलेले असले आवश्यक असते. रस्ते मार्ग जेवढ्या प्रमाणात एकमेकास जोडलेले असतील तेव्हा त्यांची संपर्कता अधिक असते. संपर्कता अधिक असलेल्या क्षेत्रात इतर घटकांचा विकास हा लवकर होतो.

प्रस्तुत संशोधन निबंधात यवतमाळ जिल्ह्यातील रस्ते मार्गांच्या संपर्कतेचा बिटा निर्देशांक आणि गॅमा निर्देशांक यांच्या सहाय्याने तालुकानिहाय अध्ययन केलेले आहे.

उद्दिष्टे:

प्रस्तुत संशोधनाची मुख्य उद्दिष्टे पुढीलप्रमाणे आहे.

१. यवतमाळ जिल्ह्यातील रस्ते मार्गांच्या संपर्कतेचा अभ्यास करणे.
२. यवतमाळ जिल्ह्यातील रस्ते मार्ग वाहतुकीतील केंद्राचा आणि शाखाचा अभ्यास करणे.

माहिती स्रोत व अभ्यास पद्धती:

प्रस्तुत संशोधन हे प्रामुख्याने द्वितीयक स्रोतावर आधारित आहे. तसेच माहितीचे विश्लेषण ही Graph Theory पद्धतीवर आधारित आहे. यवतमाळ जिल्ह्याचा रस्ते मार्गांचा नकाशा हा सार्वजनिक बांधकाम विभाग यातून संकलित केलेला आहे. तसेच बिटा निर्देशांक आणि गॅमा निर्देशांक काढण्यासाठी के.

जे. कान्स्की (१९६३) यांनी सांगितलेल्या सूत्रांचा उपयोग केलेला आहे.

तसेच बिटा निर्देशांक आणि गॅमा निर्देशांक यातील परस्परसंबंध हा समाश्रयण रेषेद्वारे (Regression Line) दर्शविलेला आहे. समाश्रयण रेषा आणि सहसंबंध हे संगणकामध्ये Microsoft Excell च्या सहाय्याने काढलेली आहे. सहसंबंध हा स्पिरमन यांच्या पद्धतीने काढण्यात आलेला आहे.

सूत्र - १) $\beta = e \div v$

२) $\gamma = e \div 3 (v - 2)$

३) सहसंबंध = $1 - \frac{e \times \sum d^2}{n (n^2 - 1)}$

β - बिटा निर्देशांक,

γ - गॅमा निर्देशांक,

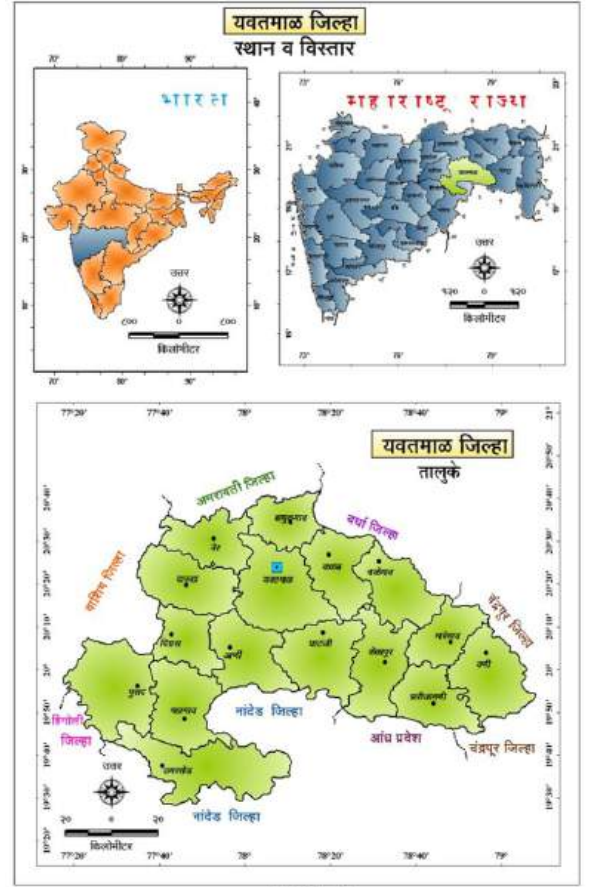
e - शाखांची संख्या,

v - केंद्रांची संख्या

अभ्यास क्षेत्र:

यवतमाळ जिल्ह्याचा अक्षवृत्तीय विस्तार १९०२६' ते २००४२' उत्तर व रेखावृत्तीय विस्तार हा ७७०१८' पूर्व ते ७९००९' पूर्व रेखावृत्त या दरम्यान आहे. जिल्ह्याचे एकूण क्षेत्रफळ १३५८४ चौ.कि.मी. असून ते महाराष्ट्र राज्याच्या एकूण क्षेत्रफळाच्या ४.४०% आहे. यवतमाळ जिल्ह्याचा क्षेत्रफळाच्या दृष्टीने राज्यात ६ वा क्रमांक आहे.

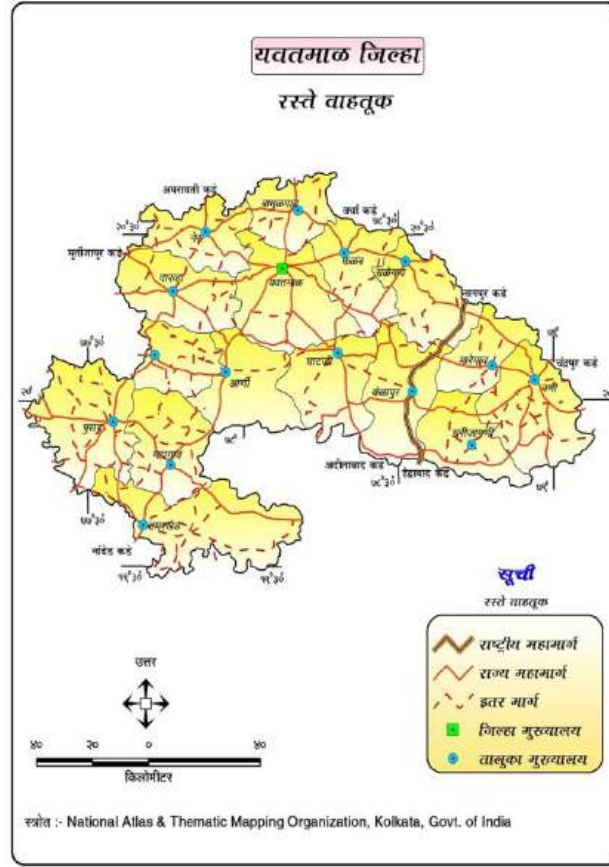
यवतमाळ जिल्ह्याची लोकसंख्या २०११ च्या जनगणनेनुसार एकूण लोकसंख्या २७,७२,३४८ असून त्यापैकी १४,१९,९६५ पुरुष व १३,५२,३८३ स्त्रिया आहेत. लिंग गुणोत्तर प्रमाण ९५२ एवढे आहे.



जिल्ह्यातील रस्ते वाहतूक:

यवतमाळ जिल्ह्यातील ३१ मार्च २०२२ पर्यंत रस्ते मार्गाची एकूण लांबी ही १४५०३.१२ किमी एवढी आहे. त्यापैकी ३३४.४९ किमी राष्ट्रीय महामार्ग, १२६५.०८ किमी राज्य महामार्ग, ६०६७.२३ किमी जिल्हा मार्ग तर ६८३६.३२ किमी ग्रामीण मार्ग आहेत.

रस्ते मार्गाची सर्वाधिक लांबी ही यवतमाळ, पुसद आणि उमरखेड तालुक्यात असून या तालुक्यात १००० किमी पेक्षा अधिक लांबीचे रस्ते आहेत. तर सर्वात कमी लांबी ही बाभूळगाव तालुक्यात आहे. रस्ते मार्गाचा विकास जिल्ह्यात एकसमान आढळत नाही.



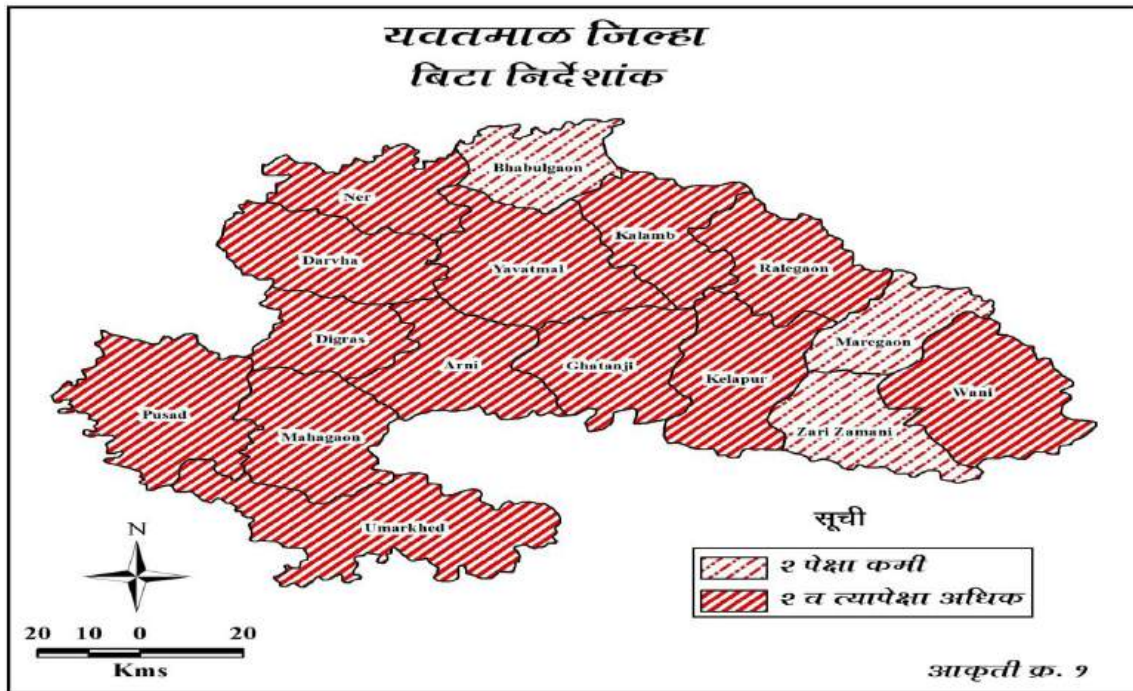
यवतमाळ जिल्हा – रस्ते मार्ग वाहतुकीतील केंद्रे व शाखा

तालुके	केंद्रे	शाखा
नेर	८	१७
बाभूळगाव	४	७
कळंब	४	९
यवतमाळ	८	१६
दारव्हा	७	१५
दिग्रस	७	१५
पुसद	८	१७
उमरखेड	८	१७
महागाव	१०	२१
आर्णी	४	८
घाटंजी	६	१४
केळापूर	७	१५
राळेगाव	५	११
मारेगाव	५	९
झरीझामणी	५	९
वणी	१०	२२
एकूण जिल्हा	१०६	२२२

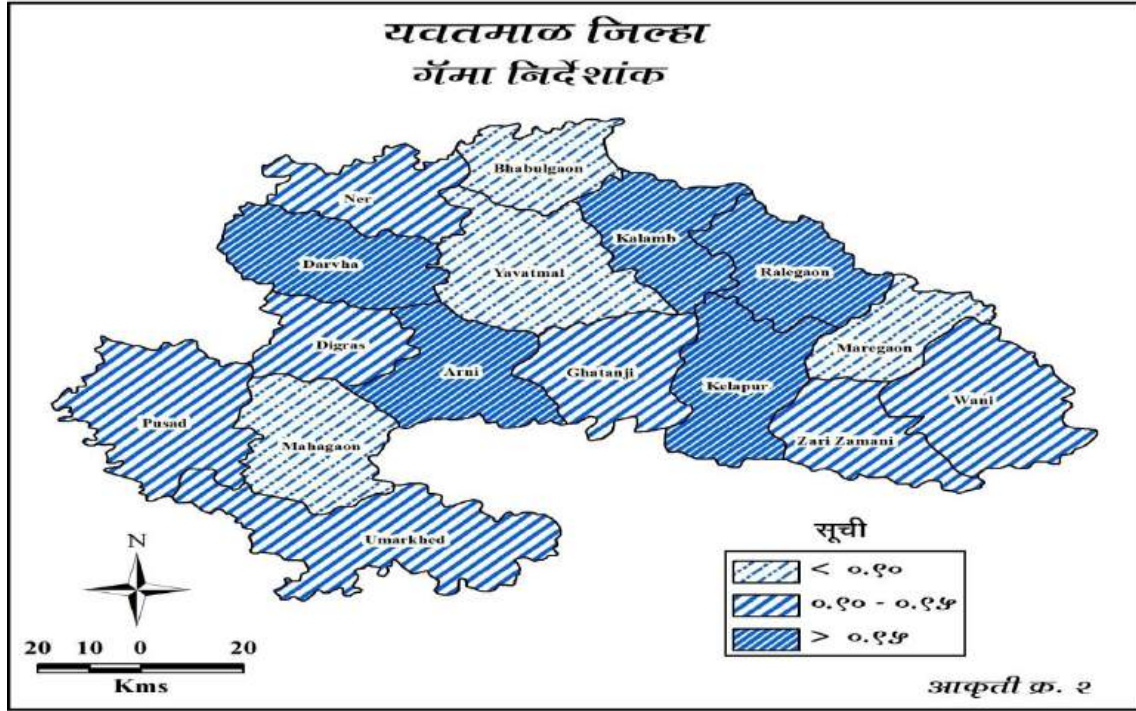
यवतमाळ जिल्हा – रस्ते मार्ग वाहतुकीतील बिटा निर्देशांक

तालुके	बिटा निर्देशांक
नेर	२.१३
बाभूळगाव	१.७५
कळंब	२.२५
यवतमाळ	२.००
दारव्हा	२.१४
दिग्रस	२.१४
पुसद	२.१३
उमरखेड	२.१३
महागाव	२.१०
आर्णी	२.००
घाटंजी	२.३३
केळापूर	२.१४
राळेगाव	२.२०
मारेगाव	१.८०
झरीजामणी	१.८०
वणी	२.२०
एकूण जिल्हा	२.०९

यवतमाळ जिल्हा – रस्ते मार्ग वाहतुकीतील बिटा निर्देशांक



यवतमाळ जिल्हा –रस्ते मार्ग वाहतुकीतील गॅमा निर्देशांक



यवतमाळ जिल्हा –रस्ते मार्ग वाहतुकीतील गॅमा निर्देशांक

तालुके	गॅमा निर्देशांक
नेर	०.९४
बाभूळगाव	०.८५
कळंब	०.९९
यवतमाळ	०.८९
दारव्हा	०.९९
दिग्रस	०.९५
पुसद	०.९४
उमरखेड	०.९४
महागाव	०.८८
आर्णी	०.९९
घाटंजी	०.९५
केळापूर	०.९९
राळेगाव	०.९८
मारेगाव	०.८९
झरीजामणी	०.९१
वणी	०.९२
एकूण जिल्हा	०.७१

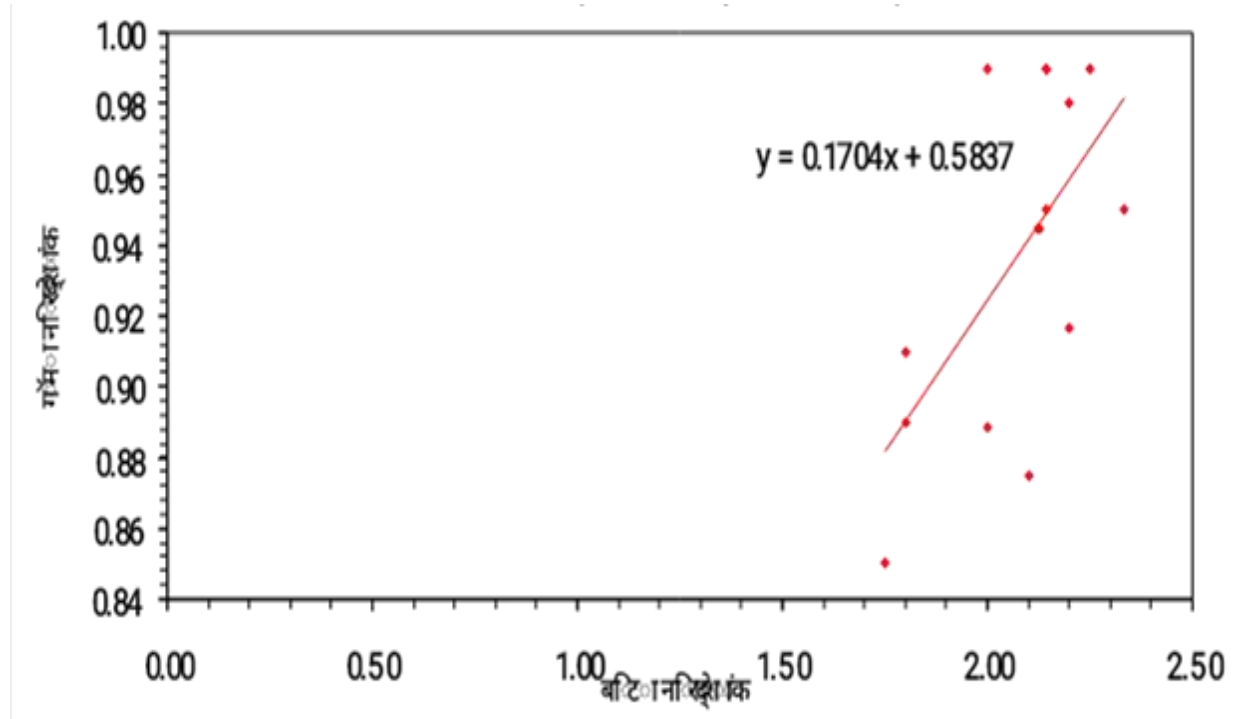
बिटा आणि गॅमा निर्देशांक यांच्यातील परस्परसंबंध

बिटा आणि गॅमा निर्देशांक ह्या दोन्ही संपर्कता मोजण्याचे निर्देशांक आहेत, परंतु दोन्हीचे विश्लेषण करण्याच्या पद्धती वेगवेगळ्या आहेत. ज्या क्षेत्रात बिटा निर्देशांक अधिक असेल त्या क्षेत्रात गॅमा निर्देशांक अधिक असेलच असे नाही. त्यामुळे या दोन घटकात परस्परसंबंध अभ्यासणे आवश्यक आहे.

या दोन घटकातील परस्परसंबंध धनात्मक असून तो मध्यम स्तरीय आहे ($r = + 0.63$). तसेच

‘t’ मूल्याच्या सहाय्याने याचे परीक्षण केले असता ($t = 31.6688$) यातील विश्वासाहर्ता स्तर 99.00% पर्यंत आढळून येते. म्हणजेच यवतमाळ जिल्ह्यातील बिटा आणि गॅमा निर्देशांक या दोन घटकांमध्ये समानता आहे. बिटा निर्देशांक वाढल्यास गॅमा निर्देशांक देखील वाढलेला आढळतो. परंतु ही स्थिती सर्व तालुक्यांमध्ये समान नसल्याने हा सहसंबंध पूर्ण धनात्मक नसून तो मध्यम स्तरीय आढळून येतो.

बिटा आणि गॅमा निर्देशांक यांच्यातील परस्परसंबंध



निष्कर्ष व उपाययोजना:

यवतमाळ जिल्ह्यात बिटा आणि गॅमा निर्देशांक यांनुसार रस्ते मार्गाची संपर्कता ही समाधानकारक आहे. रस्त्यांच्या केंद्रापासून सुमारे सरासरी दोन रस्ते जातात. तर रस्ते मार्गातील रस्ते जोडण्याचे प्रमाण हे 60% पर्यंत पूर्ण झालेले आहे. परंतु सर्व तालुक्यात हे प्रमाण सारखे नाही.

पुसद, यवतमाळ, वणी यासारख्या तालुक्यांमध्ये रस्ते मार्गाची लांबी अधिक असूनही संपर्कता ही मध्यम आहे, कारण या जिल्ह्यातील मुख्य रस्ते अजूनही एकमेकास पूर्णपणे जोडले गेलेले नाही. बऱ्याच भागात रस्ते एकमेकास जोडले असले तरी तो रस्ता तिथेच संपणारा आहे तो पुढे दुसऱ्या रस्त्याला छेदून जात नाही. त्यामुळे शाखांची संख्या कमी होऊन त्याचा प्रभाव संपर्कतेवर होतो.

जिल्ह्यातील बऱ्याच क्षेत्रात मुख्य रस्ते अधिक अंतरावर जोडण्यास वाव आहे. बाभूळगाव आणि मारेगाव या तालुक्यातील मुख्य रस्ते एकमेकास जोडण्याचे प्रमाण कमी आहे. अशा क्षेत्रात हे प्रमाण वाढविणे आवश्यक आहे.

यवतमाळ जिल्ह्यातील आर्णी तालुक्याच्या दक्षिणेकडे तसेच उमरखेड तालुक्याच्या पूर्वेकडे रस्ते मार्ग एकमेकास अतिशय कमी प्रमाणात जोडलेले आहेत. याभागात नवीन मुख्य जोड रस्त्यांची निर्मिती करणे आवश्यक आहे. याचा फायदा या तालुक्यासोबतच शेजारी असलेल्या तालुक्यांना सुद्धा होईल.

जिल्ह्यात झरीजामणी, यवतमाळ, घाटंजी यांच्या बिटा आणि गॅमा निर्देशांकानुसार संपर्कतेमध्ये थोडी तफावत आढळते. कारण बरेच रस्ते एकमेकास जोडले असले तरी एकमेकास मिळणाऱ्या रस्त्यांमध्ये एक रस्ता हा तिथेच संपणारा आहे. म्हणूनच यातील परस्परसंबंध धनात्मक असला तरी तो मध्यम स्तरीय आहे. जिल्ह्यातील अशा भागात रस्त्यांची संपर्कता वाढणे आवश्यक आहे, त्यामुळे वेळ आणि अंतर दोन्ही

कमी होईल तसेच इंधनामध्ये देखील बचत होईल. यामुळे जिल्ह्यातील समान विकासास चालना मिळेल.

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कोल्हापूरच्या पर्यटनातील रोजगाराच्या संधी

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कोल्हापूर हे निसर्ग व जैवविविधतेने नटलेले आहे, कोल्हापूर हे नेहमी पर्यटकांसाठी साद घालत असते. महाराष्ट्र शासनाने कोल्हापूरचे पर्यटन वाढीसाठी कोल्हापूर टुरिझम ही नवीन संकल्पना विकसित केली आहे त्यामुळे पर्यटन संख्या वाढत आहे व रोजगाराच्या संधीही वाढत आहे.

कोल्हापूर शहर हे पंचगंगा नदीच्या काठावर वसलेले आणि जैवविविधता असलेल्या सह्याद्री पर्वत रांगा सभोवताली असलेले आणि पर्यटनासाठी कोल्हापूरची सौंदर्यता पर्यटकांसाठी साद घालत आहे, कोल्हापूर जिल्हा हा ऐतिहासिक, शैक्षणिक, राजकीय, सामाजिक व औद्योगिक यासाठी प्रसिद्ध असणारा हा महत्त्वपूर्ण जिल्हा म्हणून महाराष्ट्रामध्ये नावलौकिक दिसून येतो आणि यातूनच अनेक रोजगार संधी निर्माण झालेल्या दिसून येतात. कोल्हापूर मधील ऐतिहासिक किल्ले, मंदिरे आणि पूर्व रॉयल्सच्या राजेशाही ठिकाणांसाठी प्रसिद्ध शहर आहे. भारताची वैभवता आणि भव्यता शोधण्यासाठी हे सर्वोत्तम ठिकाणांपैकी एक आहे. त्याचबरोबर वन्यजीव फॉरेस्ट लाईफ, जंगल सफारी, पावनखिंड, विशाळगड पन्हाळगड, ज्योतिबा, बौद्ध लेणी, खिद्रापूर, बाहुबली, रामलिंग, आलम प्रभू त्याचबरोबर महत्त्वपूर्ण कोल्हापुरी कुस्तीसाठी प्रसिद्ध असणारे ऐतिहासिक किल्ले खासबाग मैदान, महालक्ष्मी मंदिर, तुळजाभवानी मंदिर, कात्यायनीदेवी मंदिर, रामलिंग, बाहुबली, आलम प्रभू इत्यादी.

कोल्हापूर मधील भारतीय हस्तकलेच्या चमड्यांचे चप्पल, कोल्हापुरी चप्पल आणि तिच्या खासगी स्थानिक दागिन्यांसाठी विशेष प्रसिद्ध कोल्हापुरी साज, सोने व चांदी चांदीच्या दागिन्यांसाठी प्रसिद्ध असणारे गुजरी बाजारपेठ आहे, चांदीच्या दागिन्यासाठी प्रसिद्ध असणारे हुपरी शहर, कोल्हापुरी पायतान, कापशी पायतान ही प्रमुख उत्पादने आपणास कोल्हापूरमध्ये दिसून येतात आणि या उत्पादनांना जगभरातून मागणी दिसून येते त्याचबरोबर खास खव्यासाठी कोल्हापुरी तांबडा पांढरा रस्सा, चटकदार मिसळ, भरलेली वांगी खास मेजवानी कोल्हापूर आपल्यासाठी देत असते.

या सर्व ऐतिहासिक पर्यटनाबरोबर कोल्हापूर जिल्हा रोजगार वाढीसाठी सुद्धा प्रसिद्ध आहे, आणि या ऐतिहासिक स्थळामुळे रोजगारामध्ये मोठ्या प्रमाणात वाढ झालेली दिसून येते आणि विदेशी पर्यटक सुद्धा आवर्जून कोल्हापूरला भेट दिलेले दिसून येतात.

उद्दिष्टे:

1. कोल्हापूरचे ऐतिहासिक महत्त्व जागतिक पटलावर निर्माण करणे .
2. विदेशी पर्यटकांसाठी खास भौतिक व ट्रॅव्हलिंग सुविधा निर्माण करणे.

- पर्यटनच्या दृष्टीने स्थानिक तरुणांमधून विदेशी भाषा बोलणाऱ्या तरुणांना रोजगार संधी निर्माण करणे.
- पर्यटन वाढीसाठी पर्यटकांसाठी विशेष सोयी-सुविधा सवलती निर्माण करणे.
- ऐतिहासिक स्थळाचे महत्त्व पटवून देणे व पर्यटन वाढीसाठी चालना देणे.
- कोल्हापूरचे पर्यटनाच्या दृष्टीने ऐतिहासिक महत्त्व आणि प्रगती संपूर्ण जगासमोर आणणे.
- पर्यटनाच्या दृष्टीने रोजगाराच्या संधी निर्माण करणे.

- विविध संदर्भ ग्रंथ.
- पर्यटन यामध्ये स्थानिक लोकसंख्येशी संवाद साधण्यासाठी, माहिती गोळा करण्यासाठी प्रत्यक्ष भेटी
- निवास, पाणी, स्वच्छतागृहे, राहण्याची आणि बसण्याची ठिकाणे, वाहतूक, रस्ते, उपहारगृह यासंबंधी आणि खाण्यापिण्याची ठिकाणे, मार्गदर्शक, नकाशे इ. या सर्व माहितीचा वापर तयार करण्यासाठी केला गेला आहे.

कोल्हापूर जिल्ह्यातील ऐतिहासिक स्थळे व त्यांचे महत्त्व:

कोल्हापूर जिल्हा ऐतिहासिक जिल्हा म्हणून प्रसिद्ध आहे. पर्यटकांसाठी नैसर्गिक मेजवानी देणारा हा एकमेव जिल्हा आहे त्याचबरोबर प्रत्येक तालुक्यामध्ये कोण कोणती ऐतिहासिक आणि पर्यटन स्थळे आहेत हे आपण पुढील तक्त्यामध्ये दर्शवलेली आहे.

संशोधन संशोधन पद्धती:

- कोल्हापूर गॅझेट.
- करवीर रियासत माहिती पुस्तिका.
- जिल्हा सांख्यिकी कार्यालय कोल्हापूर.
- जिल्हाधिकारी कार्यालय माहिती संग्रहालय.
- नकाशे' मार्गदर्शक पुस्तिका.

तालुके	किल्ले	अभयारण्य/ जंगल	ऐतिहासिक स्थळे	तीर्थक्षेत्रे	लेनी
शाहूवाडी	विशाळगड	चांदोली, अंबा देवराई, मानोली, येळवंजुगाई	पावनखिंड		
पन्हाळा	पावनगड, पन्हाळा	पावनगड	पावनखिंड मार्ग, शिवा काशीद समाधी, रेडे घाटी	पोहाळे लेनी मसाई, पराशर गुहा	
गगनबावडा	गगनबावडा	अनुस्कुरा, पडसाळी, पद्मसत्ती, बोरबेट, मानबे	बावडा, सांगशी	गगनगिरी, पालसांबा	
राधानगरी	शिवगड	दाजीपूर, इंदरगंज		चक्रेश्वर पाषाण युगातील दगड संरचना	
भुदरगड	भुदरगड रांगणा	पाटगाव वाकीघोइल, देवराई-पाल	मौनी मठ, मौनी विद्यापीठ		
गडहिंग्लज	सामानगड	सामानगड	नेसरी		

तालुके	किल्ले	अभयारण्य/ जंगल	ऐतिहासिक स्थळे	तीर्थक्षेत्रे	लेनी
आजरा		धरणमोला, पेरनोली सडा	जैन मंदिर, चलोबा		
चंदगड	पारगड चंदगड/गडहरवगा, कलानिदहिगड महिपालगड	कोलिक, पारगड, जंगमहट्टी	खलनाथ शिवमंदिर महिपालगड, वैद्यनाथ		
कागल	-	लक्ष्मी टेकडी	गयाबी दर्गा, लक्ष्मी मंदिर, राममंदिर		
हातकणंगले	-	अल्लमप्रभू नरंदे	कुंठेगिरी, अल्लमप्रभू, कुंठेगिरी, धुलोबा आलाटे, चिन्मय गणपती, बाहुबली, कुंभोज, हेरले जैन मंदिर, शिरोळ	रामलिंग	
शिरोळ	-		नृसिंहवाडी, खिद्रापूर, कवठेगुलंद, मुक्तेश्वर तेरवाड	खिद्रापूर	
करवीर	बिंदू चौक		प्रयाग संगम, पार्वती मंदिर वडणगे, कणेरीमठ, कात्यायनी मंदिर विठ्ठल मंदिर नंदवल, उजळाई, कात्यायनी वाशी, सांगरूळ, सांगवडे	बीड, बहिरेश्वर, प्रयाग मंदिर, आरे, चंबुखडी	
स्रोत:- कोल्हापूर जिल्हा योजना 2021-22					

किल्ले यांचे ऐतिहासिक महत्त्व आणि रोजगार संधी:

कोल्हापूर जिल्ह्यामध्ये मोठ्या प्रमाणात ऐतिहासिक किल्ले, तीर्थक्षेत्र आणि जंगल सफारी, दुर्मिळ बौद्ध लेणी आणि सह्याद्रीच्या पर्वतरांगांमध्ये वसलेला हा कोल्हापूर जिल्हा पर्यटकांना साद घालत असतो. आपण प्रथमतः किल्ल्यांचे विषयी माहिती घेऊ जिल्ह्यामध्ये जिल्ह्यामध्ये जे किल्ले आहेत त्या किल्ल्यामध्ये प्रामुख्याने पन्हाळगड, विशाळगड, समानगड, पावनगड, भुदरगड ही महत्त्वाची आणि सुप्रसिद्ध नावाजलेले किल्ले आहेत या प्रत्येक किल्ल्यांना शिवाजी महाराजांचा पदस्पर्श झालेला आहे त्यामुळे या ठिकाणी अनेक महाराष्ट्रातील व जगभरातील पर्यटक या ठिकाणी भेटी देण्यात येतात,

यातून या प्रत्येक भागाचा पर्यटन दृष्टीने विकास झालेला दिसून येतो त्याचबरोबर या ठिकाणी गाईड म्हणून काम करणारे लोकांना रोजगार मिळतो आणि पर्यटक आल्यामुळे अनेक हॉटेल्स, लॉज, वाहतूक सेवा, निवासी सेवा, भक्तनिवास यांच्यामध्ये मोठ्या प्रमाणात वाढ झालेली दिसून येते तसेच गडावरचे आसपासचे छोटे-मोठे दुकाने आणि पर्यटकांना लागणाऱ्या सुविधा देणारे छोटे-मोठे दुकानदार ही मोठ्या प्रमाणात दिसून येतात तसेच कोल्हापूर शहर आणि ही पर्यटन स्थळे आसपास असल्यामुळे कोल्हापूर शहरांमध्ये मोठ्या प्रमाणात आज हॉटेल्स, प्रवासी सेवा, टुरिझम गाईड आणि या संदर्भातील प्रगती मोठ्या प्रमाणात झालेली दिसून येते.

दरवर्षी अनेक शिवभक्त पावनगड ते विशाळगड असे पदभ्रमंती करण्यासाठी लाखो विद्यार्थी व शिवभक्त या मोहिमेस सामील होतात त्याचबरोबर या ठिकाणी असणारे ऐतिहासिक बाजीप्रभू यांनी लढवलेली पावनखिंड हे पाहण्यासाठी अनेक दुर्ग अभ्यासक, तरुणवर्ग, पर्यटक, आवर्जून पावनखिंडला भेट देत असतात , इन्फोसिसच्या संस्थापिका माननीय सुधा मूर्ती यांनी आपल्या टेलिव्हिजनच्या मुलाखतीमध्ये पावनखिंडला आवर्जून भेट दिल्याचे आवर्जून सांगतात. दरवर्षी अनेक अनेक विदेशी पर्यटक आवर्जून भेट देत असतात म्हणजेच अनेक मोठमोठे महान व्यक्ती विदेशी पर्यटक किल्ल्यांना भेट देत असतात आणि यातूनच कोल्हापूरचा मोठ्या प्रमाणात पर्यटन व्यवसाय आणि ऐतिहासिक स्थळांचे महत्त्व

आज जागतिक पटलावर दिसून येत आहे. या ऐतिहासिक स्थला अनेक नामवंत विदेशी पर्यटक मोठ्या प्रमाणात भेट देत असल्याने कोल्हापूरच्या अर्थव्यवस्थेला पाठबळ मिळाल्याचे दिसून येते यामध्ये व प्रत्यक्ष-अप्रत्यक्ष रोजगार संधीला चालना मिळते त्याचबरोबर कोल्हापूरला मोठ्या प्रमाणात परकीय चलन मिळालेले दिसून येते.

कोल्हापूर शहरांमधील विविध धार्मिक स्थळांना भेट देण्यासाठी महसूल मंत्री चंद्रकांत पाटील यांनी मोफत एसटी प्रवास सुरू केला तसेच जे ऐतिहासिक स्थळ आहेत त्यासाठी स्पेशल ट्रॅव्हलिंग व्यवस्था सुरू करून दिले त्यामुळे पर्यटन व रोजगारामध्ये वाढ होताना दिसून येत आहे

देशी व विदेशी पर्यटक यांनी कोल्हापूर जिल्ह्याला दिलेल्या भेटीचा अहवाल :

(Domestic and Foreign Visitors in Maharashtra and Kolhapur 2009)

अ.क्र.	महिने	एकूण पर्यटकांची संख्या		परदेशी पर्यटकांची संख्या	
		महाराष्ट्र	कोल्हापूर	महाराष्ट्र	कोल्हापूर
1	जुलै	38811520	74938	99478	-
2	ऑगस्ट	6576499	6576499	91578	-
3	सप्टेंबर	6410321	6410321	99752	-
4	ऑक्टोबर	9615689	490634	172475	50
5	नोव्हेंबर	9523251	9523251	172912	56
6	डिसेंबर	10260569	449689	203348	118
7	जानेवारी	12388527	524964	239554	266
8	फेब्रुवारी	11630198	496677	212316	195
9	मार्च	11206380	484011	203798	194
10	एप्रिल	10808651	528198	193284	188
11	मे	11364167	544987	216365	295
12	जून	11110911	512566	222070	214
13	एकूण	114776687	5642290	2126933	1537

Reference – Tourism survey for State of Maharashtra, Ministry of Tourism (Market Research division) Government of India (June 2009- June 2010)

तीर्थस्थळांचे ऐतिहासिक महत्त्व आणि त्यांचा झालेल्या विकास:

कोल्हापूरमध्ये पुरातन काळापासून व अनेक राजकीय सत्तांच्या राजधानी कोल्हापूरमध्ये दिसून येतात यामध्ये प्रामुख्याने चोल घराणे यांची राजधानी कोल्हापूर होती, छत्रपती चौथे शिवाजी यांची राजधानी करवीर संस्थान होते, कोल्हापूर संस्थान शाहूंचे संस्थान म्हणून म्हणून सर्वांना अभिप्रेत आहे सध्या ही स्थळे पर्यटन स्थळे म्हणून विकसित करण्यास सुरुवात झालेली आहे यामध्ये मुख्यमंत्री पर्यटन योजनाचा आढावा घेतला जात आहे, सध्या शाहूंचे जन्मस्थळ व समाधीस्थळ यांचा नियोजन कमिटीतून विकास झालेला दिसून येतो आणि अनेक लाखो पर्यटक या स्थानांना भेटी देताना दिसून येतात. त्याचबरोबर कोल्हापूरमध्ये महालक्ष्मी मंदिर, तुळजाभवानी मंदिर, कात्यायनी मंदिर आणि अनेक पुरातन मंदिर, शालिनी पॅलेस, शाहू पॅलेस, भवानी मंडप, जुने राजवाडे त्याचबरोबर रजपुतवाडी मधील शाहूंचे फार्म हाऊस, राधानगरी मधील टाक्यांचा वाडा, गगनगिरी मठ, कनेरी मठ, अडीमलया, प्रति सौंदती म्हणून आळते गावची रेणुका, रामलिंग मंदिर, बाहुबली मंदिर, पुरातन खिद्रापूरचे कोपेश्वर मंदिर इत्यादी प्रसिद्ध तीर्थस्थळ आपणास दिसून येतात. आलम प्रभू तसेच कसबा बीड ही ऐतिहासिक राजधानी होऊन गेली आजही या ठिकाणी सोन्याची नाणी उत्खलनामध्ये सापडतात म्हणून या ठिकाणी सोन्याचा पाऊस पाऊस पडतो असे इतिहासामध्ये उल्लेख आढळतो, आजही कसबा बीड या गावांमध्ये कोणत्या ना कोणत्या व्यक्तीस नाणी सापडतात त्याचे जिवंत उदाहरण वर्तमानपत्रांमध्ये नेहमी बातमी प्रसिद्ध होत असते तसेच अनेक जिल्ह्यांमध्ये प्रति अनेक तालुक्यांमध्ये ऐतिहासिक मंदिर आहेत प्रतिपंढरपूर म्हणून आळते गावची रेणुका मंदिर प्रसिद्ध आहे त्याचबरोबर पेटवडगावचा 21 फूट उंचीचा महागणपती प्रसिद्ध आहे, त्याचबरोबर राम मंदिर आज कागल मध्ये भव्य दिव्य असे उभारलेले आहे, त्याचबरोबर बौद्ध लेणी, मसाई पठार, असे अनेक

देवतांचे मंदिर आज आपणास दिसून येतात आणि या तीर्थक्षेत्रांना अनेक देशी आणि विदेशी पर्यटक या ठिकाणास भेट देत असतात.

आज कोल्हापूरमध्ये पर्यटकांची संख्या वाढत चालली आहे आणि त्या प्रमाणात रोजगार ही वाढताना दिसून येत आहे म्हणजेच कोल्हापूरची अर्थव्यवस्था पर्यटन व ऐतिहासिक अर्थव्यवस्था म्हणून नावारूपाला येत आहे.

अभयारण्यांचे ऐतिहासिक महत्त्व व रोजगार संधी:

जंगल सफारी, अभयारण्य यामुळे कोल्हापूरला ऐतिहासिक पर्यटन म्हणून मान्यता मिळालेली आहे. कोल्हापूरमध्ये आज चांदोली अभयारण्य, राधानगरी अभयारण्य, चंदगड अभयारण्य, तिलारी अभयारण्य ही आज महत्त्वाची अभयारण्य जी महाराष्ट्रात एक सर्वोच्च, परिपूर्ण, संपूर्ण अशी अभयारण्य म्हणून विकसित झालेले आहेत आज या अभयारण्यामध्ये अनेक विविध पशु, पक्षी मोठ्या प्रमाणात आढळून येतात आणि या जंगलामध्ये जैवविविधता मोठ्या प्रमाणामध्ये आढळून येते आणि यासाठी आवर्जून पर्यटक जंगल सफारी, संशोधक, तसेच हौशी पर्यटक या घटकांना वारंवार भेट देताना दिसून येतात आणि या आसपासच्या भागांमध्ये अनेक हॉटेल्स, गाईड, प्रवासी त्याचबरोबर छोटे मोठे उद्योग यांचा विकास झालेला दिसून येतो आणि त्यातून अनेक स्थानिक लोकांना रोजगार मिळाला दिसून येते.

ऐतिहासिक बाजारपेठामुळे कोल्हापूरची होणारी आर्थिक प्रगती:

कोल्हापूर जिल्हा ऐतिहासिक जिल्हा म्हणून प्रसिद्ध आहे. महाराष्ट्रामध्ये पर्यटनासाठी हा एक अग्रेसर जिल्हा आहे या ठिकाणी कोल्हापूरची महत्त्वाची आणि मुख्य बाजारपेठ, राजारामपुरी बाजारपेठ, गुळाची बाजारपेठ, जयसिंगपूर वसाहत, लक्ष्मीपुरी बाजारपेठ, शाहूपुरी बाजारपेठ अशा अनेक महत्त्वाच्या बाजारपेठा तसेच कोल्हापूर मधील

जनावरांचा बाजार मिरज, मुरगुड, कागल पेटवडगाव, या ठिकाणी मोठ्या प्रमाणात जनावरांचा बाजार उभारल्याने स्थानिक लोकांना मोठ्या प्रमाणात रोजगार संधी मिळू लागली आहे. आणि उद्योग उभारल्याने कोल्हापूर जिल्ह्यामध्ये मोठ्या प्रमाणात आवक जावक होऊ लागली यातून कोल्हापूर लोकांच्या गरजा पूर्ण होऊ लागल्या व कोल्हापूरमध्ये दैनंदिन व्यापार वाढत असल्यामुळे लोकांना पैसा मिळू लागला व मोठ्या प्रमाणात रोजगार संधी निर्माण झाल्या यातूनच कोल्हापूर परिपूर्ण च्या वाटेवर आहे असे दिसून येते. थोडक्यात शाहू महाराजांनी ज्या ऐतिहासिक बाजारपेठ वसवल्या त्यामुळे आज कोल्हापूरची आर्थिक प्रगती झालेली दिसून येते आणि अर्थकारण एक चांगल्या मार्गावर आलेले दिसून येते.

कोल्हापूर जिल्ह्याची खाद्य संस्कृती व त्याचे अर्थकारण:

कोल्हापूर जिल्ह्यामध्ये खाद्य संस्कृती मोठ्या प्रमाणात विकसित झालेले दिसून येते कोल्हापूर मधील तांबडा पांढरा रस्सा, चटकदार मिसळ, भरलेली वांगी, पिठलं भाकरी, धनगरी मटन, गावरान मटन, अशा अनेक चविष्ट, रुचकर, खाद्य संस्कृती कोल्हापूरमध्ये प्रसिद्ध आहे यासाठी अनेक देशी विदेशी पर्यटक आवर्जून या खाद्यसंस्कृतीला भेट देतात परिणामी आज कोल्हापूरमध्ये मोठ्या प्रमाणात खानावळ, हॉटेल्स, घरगुती खानावळ मोठ्या प्रमाणात विकसित झालेली दिसून येतात आणि एक मोठ्या प्रमाणात स्थानिक लोकांना रोजगार मिळाला मिळालेला दिसून येतो.

निष्कर्ष:

कोल्हापूरमध्ये ऐतिहासिक स्थळे व तीर्थक्षेत्रे मोठ्या प्रमाणात दिसून येतात तसेच तीर्थक्षेत्रांचा विकास झालेला दिसून येतो पण यातील ऐतिहासिक स्थळे व तीर्थक्षेत्रे क्षेत्रासाठी बहुतेक सुविधा आणि वाहतूक सुविधांचा अभाव दिसून येतो. जर योग्य भौतिक व प्रवासी सुविधा उपलब्ध करून दिल्यास

आणखी पर्यटक कोल्हापूरला भेट देतील व कोल्हापूरचा आणखी विकास होईल. कोल्हापूरमध्ये जंगल सफारी साठी मोठ्या प्रमाणात अभयारण्य उपलब्ध आहे पण त्यासाठी काही अभयारण्यामध्ये जंगल सफारी करता येते अनेक अभयारण्यामध्ये जैवविविधता असल्याने त्या ठिकाणी सरकारने जंगल सफारीसाठी प्रवासी सुविधा उपलब्ध करून दिलेल्या दिसून येत नाही.

कोल्हापूर मधील ऐतिहासिक स्थळे व तीर्थक्षेत्रे आहेत त्यांचा देखभाल व व्यवस्थापन अपेक्षेप्रमाणे दिसून येत नाही, त्या स्थळांचे पावित्र्य तसेच स्वच्छता, योग्य नियोजन, व्यवस्थापन येणाऱ्या पर्यटकांची निवाऱ्याची सुविधा जर उपलब्ध करून दिल्यास आणखी पर्यटक भेट देतील व त्याचे महत्त्व पवित्र संपूर्ण जगाला पटवून देतील आणि कोल्हापूरची ऐतिहासिक स्थान जगाच्या पटलावर अबाधित राहील.

आज कोल्हापूरमध्ये मोठ्या प्रमाणात पर्यटक वाढत आहे विदेशी पर्यटक येत आहेत कोल्हापूरचे अर्थकारण बदलत आहे स्थानिक लोकांना रोजगार मिळत आहे.

जर कोल्हापुरातील ऐतिहासिक स्थळे व तीर्थक्षेत्रे यांचे योग्य व्यवस्थापन व नियोजन केल्यास तसेच योग्य माहिती करून उपलब्ध दिल्यास तसेच इंटरनेट ई-बँकिंग सेवा उपलब्ध करून दिल्यास विदेशी पर्यटकांचा ओघ वाढेल जो सध्या कमी दिसून येत आहे. आज कोल्हापूरला देशी -विदेशी पर्यटक यांची संख्या जी आहे ती आणखी वाढेल.

त्याचप्रमाणे संपूर्ण कोल्हापूर जिल्ह्यामध्ये रेल्वे सुविधा उपलब्ध नसल्यामुळे आज आपणाला ग्रामीण भागामध्ये किंवा महत्त्वाच्या ऐतिहासिक स्थळे जाण्यासाठी रेल्वेचा वापर करता येत नाही, त्यामुळे संपूर्ण जिल्ह्यामध्ये रेल्वेचा अपेक्षेप्रमाणे विकास झालेला दिसून येत नाही.

वरील सर्व घटकाचा आढावा घेतल्यास एक गोष्ट लक्षात येते की महाराष्ट्रामध्ये कोल्हापूर जिल्ह्यामध्ये ऐतिहासिक स्थळे व तीर्थक्षेत्र मोठ्या

प्रमाणात आहेत तसेच जैवविविधतेने नटलेले अभयारण्य, ऐतिहासिक वास्तू, राजकीय वारसा, सामाजिक कार्य यांची संपूर्ण वरदान लाभलेला हा कोल्हापूर जिल्हा आपणास दिसून येतो म्हणून जगाच्या पटलावर कोल्हापूर जिल्ह्याचे ऐतिहासिक महत्त्व नेहमी अधोरेखित.

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