



Empowerment of Tribal Women and Gender Equality: A Statistical Analysis

Asst. Prof. Shubhangi P. Patil¹ & Asst. Prof. Yogita M. Sadani²

^{1,2}Department of Statistics,

Dr. D. Y. Patil. Science and Computer Science College, Akurdi, Pune-44

Corresponding Author – Asst. Prof. Shubhangi P. Patil

DOI - 10.5281/zenodo.18887594

Abstract:

The empowerment of tribal women is a crucial component of achieving gender equality and inclusive development. Despite their significant economic and social contributions, tribal women continue to face disparities in education, income, and decision-making power. The present study examines the level of empowerment among tribal women and analyzes its relationship with selected socio-economic variables such as education, employment, and income. A quantitative research design was adopted, and data were collected from 120 tribal women using a structured questionnaire. Statistical tools including percentage analysis, independent sample t-test, chi-square test, Pearson's correlation, and a composite Women Empowerment Index (WEI) were employed. The reliability of the instrument was tested using Cronbach's Alpha. The findings reveal that education and employment significantly influence empowerment levels, and income is positively correlated with empowerment. The study highlights the need for targeted policy interventions to strengthen gender equality among tribal women.

Keywords: Tribal Women, Empowerment, Gender Equality, Cronbach's Alpha, Statistical Analysis

Introduction:

Women empowerment and gender equality are essential for sustainable development and social justice. Tribal women constitute one of the most marginalized groups due to geographical isolation, poverty, low literacy, and socio-cultural constraints. Although tribal societies are often perceived as more egalitarian than mainstream societies, gender inequalities persist in access to education, economic resources, and participation in decision-making. Empowering tribal women not only enhances their individual capabilities but also contributes to the overall development of tribal communities. This study attempts to measure empowerment empirically using statistical tools and to examine its association with gender equality indicators.

Review of Literature:

1. Conceptual Framework:

Empowerment is defined as a process through which individuals enhance their capability to make strategic life choices in contexts where this ability was previously denied (Kabeer, 1999, as discussed in existing literature). Gender equality refers to equal rights, responsibilities, and opportunities for people of all genders.

2. Empowerment in Tribal Contexts:

Studies indicate that tribal women contribute extensively to household and community economies, particularly through the collection and management of forest produce and agricultural labor. Despite this, they often lack decision-making power at both household and community levels.

3. Educational Empowerment:

Research shows that employment status and educational qualifications play crucial roles in enhancing the empowerment of tribal women. A survey of tribal women in Wayanad found that higher levels of education and employment correlated with increased empowerment scores.

4. Policy and Gender Equality:

Policies aimed at gender equality, such as educational programs and employment schemes, have been implemented across India, yet gaps between policy objectives and ground realities persist due to social and structural constraints.

Objectives of the Study:

1. To assess the level of empowerment among tribal women
2. To examine the difference in empowerment between educated and uneducated tribal women
3. To study the association between employment status and household decision-making
4. To analyze the relationship between income and empowerment level

Hypotheses:

- **H₁:** There is a significant difference in empowerment between educated and uneducated tribal women.
- **H₂:** There is a significant association between employment status and

participation in household decision-making.

- **H₃:** There is a significant positive correlation between income and empowerment level.

Methodology:

1. Research Design:

The study follows a **descriptive and analytical research design** based on quantitative methods.

2. Sample Design:

A sample of **120 tribal women** was selected using **simple random sampling** from selected tribal areas.

3. Data Collection Tool:

Primary data were collected using a **structured questionnaire** consisting of 20 statements covering four dimensions of empowerment: economic, social, educational, and political. Responses were measured on a **five-point Likert scale** ranging from strongly disagree (1) to strongly agree (5).

4. Reliability Analysis (Cronbach's Alpha):

The internal consistency reliability of the Women Empowerment Questionnaire was tested using **Cronbach's Alpha**. The scale comprised 20 items measuring four dimensions of empowerment.

Dimension	No. of Items	Cronbach's Alpha (α)
Economic Empowerment	5	0.81
Social Empowerment	5	0.78
Educational Empowerment	5	0.84
Political Empowerment	5	0.76
Overall Scale	20	0.86

The overall Cronbach's Alpha value of **0.86** indicates **high internal consistency**, while dimension-wise values range from **0.76 to 0.84**, which are within acceptable limits. Hence, the

instrument was considered reliable for further statistical analysis.

Analysis and Interpretation:**1. Education and Empowerment (t-Test):**

Group	Mean Empowerment Score
Educated Women	3.82
Uneducated Women	2.91

$$t = 4.36, p < .05$$

Interpretation: Since the p -value is less than 0.05, the null hypothesis is rejected. There is a significant difference in empowerment levels between educated and uneducated tribal women.

2. Employment and Decision-Making (Chi-Square Test):

$$\chi^2 = 9.27, df = 2, p < .05$$

Interpretation: There is a significant association between employment status and participation in household decision-making.

3. Income and Empowerment (Correlation Analysis):

$$\text{Pearson's } r = 0.64, p < .01$$

Interpretation: Income is positively and significantly correlated with empowerment level, indicating that higher income enhances autonomy and self-confidence.

Results:

- Educated tribal women exhibit significantly higher empowerment levels
- Employment status positively influences household decision-making
- Income shows a strong positive correlation with empowerment
- Economic empowerment acts as a foundation for gender equality

Discussion:

The findings confirm empowerment theories that emphasize access to education, income, and employment as key drivers of gender equality. Although tribal women contribute substantially to household economies, formal employment and financial autonomy remain limited. The reliability-tested empowerment index

strengthens the validity of these findings and supports the multidimensional nature of empowerment.

Conclusion:

The study concludes that empowerment of tribal women is essential for achieving gender equality. Statistical analysis reveals that education, employment, and income significantly influence empowerment levels. Reliable measurement through Cronbach's Alpha strengthens the credibility of the findings. Policy interventions focusing on education, skill development, and income-generating opportunities are necessary to promote sustainable empowerment among tribal women.

References:

1. Bhasin, V. (2007). Status of tribal women in India. *Studies on Home and Community Science*, 1(1), 1–16.
2. Desai, N., & Jain, D. (1994). *Women and development in India*. Institute of Social Studies Trust.
3. Government of India. (2011). *Census of India 2011: Scheduled Tribes*. Registrar General of India.
4. Kabeer, N. (1999). Resources, agency, achievements: Reflections on the measurement of women's empowerment. *Development and Change*, 30(3), 435–464.
5. UNDP. (2020). *Gender inequality index*. United Nations Development Programme.

Construction of Women Empowerment Index (WEI)**Step 1: Dimensions of Empowerment:**

Four dimensions are considered:

1. Economic Empowerment (B1–B5)
2. Social Empowerment (C1–C5)
3. Educational Empowerment (D1–D5)

4. Political Empowerment (E1–E5)

Total items = 20

Step 2: Scoring Pattern:

- Each item scored from 1 to 5
- Minimum score per respondent = 20
- Maximum score per respondent = 100

Step 3: Dimension-wise Index:

Dimension Index =

$$\frac{\text{Actual Score} - \text{Minimum Score}}{\text{Maximum Score} - \text{Minimum Score}}$$

Example (Economic Empowerment):

- Minimum = 5

- Maximum = 25

Step 4: Composite Women Empowerment Index:

$$\text{WEI} = \frac{\text{Economic} + \text{Social} + \text{Educational} + \text{Political}}{4}$$

Step 5: Classification of Empowerment Levels:

WEI Score	Level of Empowerment
Below 0.40	Low Empowerment
0.40 – 0.70	Moderate Empowerment
Above 0.70	High Empowerment