



**DIGITAL TRANSFORMATION IN HIGHER EDUCATION:
GENDER BASED STUDENT ADOPTION PATTERNS STUDY
AT SHIVAJI UNIVERSITY, KOLHAPUR, INDIA**

Prashant T. Patil

Assistant Professor, Dept. of Geography,
Shivaji University, Kolhapur

ABSTRACT:

Digital transformation in higher education institutions (HEIs) is an important intersection of technology adoption and sustainable development, particularly in emerging economies. This study explores digital payment adoption patterns, familiarity with digital financial systems and perceptions of digital transformation among students at Shivaji University, Kolhapur, Maharashtra, India, a public university with more than 60,000 students. Primary data were collected by stratified random sampling through structured questionnaires and semi-structured interviews during the 2021-22 academic year. The results show that 58% of the surveyed students prefer online payment systems for financial transactions, with a statistically significant gender disparity: 75% of male respondents favored digital payment platforms compared to considerably lower proportions among female respondents. About 75% of the respondents were aware of the Unified Payment Interface (UPI) system, but the existing infrastructure issues, especially issues related to internet connectivity (44%) and bank transaction failures (50%) are major barriers to seamless digital integration in the campus context. Gender-based analysis consistently finds that female students are less comfortable, less engaged, and more vulnerable to digital exclusion as compared to their male counterparts. A major knowledge gap is being experienced in the education sector with only 47% of respondents knowing the conceptual underpinnings of digital transformation. The findings stress the importance of gender sensitive digital literacy programs, large investments in campus digital infrastructure, and institutionally embedded sustainable digital transformation strategies aligned with the United Nations Sustainable Development Goals (SDGs), especially SDG 4 (Quality Education), SDG 5 (Gender Equality), and SDG 9 (Industry, Innovation and Infrastructure).

Keywords: Digital Transformation; Higher Education Institutions; Sustainable Development Goals; Digital Payment Systems; Gender Digital Divide

INTRODUCTION:

The rapidly changing nature of digital transformation has fundamentally disrupted the global economic, social and institutional landscape, forcing higher education institutions to rethink their operational approach, pedagogy and administration (Vial, 2019; Fitzgerald et al., 2014). Digital transformation, which can be broadly defined as the integration of digital technology into all aspects of an organization in order to fundamentally change how it operates and delivers value to stakeholders (Westerman et al., 2014), has become the strategic imperative for universities globally rather than just a nice-to-have or enhancement (Bates, 2019; Williamson et al. For HEIs in developing economies such a change is often especially consequential, because digital adoption interacts with pre-existing socio-economic inequities and infrastructure deficits and results in nuanced yet heterogeneous outcomes (van Dijk, 2020; Ragnedda, 2018).

There is a growing theoretical basis for the complementary relationship between digital transformation and sustainable development as competing priorities (Pappas et al., 2018; Goralski and Tan, 2020). Digital technologies are explicitly recognized by the United Nations 2030 Agenda for Sustainable Development, as crucial enablers of sustainable development, and in particular SDG 4 (Quality Education), SDG 5 (Gender Equality), SDG 9 (Innovation and Infrastructure) or SDG 10 (Reduced Inequalities) are highly relevant for higher education purposes ³ _{source}. Digital technologies could expedite reaching these targets by democratizing access to knowledge, bolstering institutional efficiency and implementing more transparent and accountable governance infrastructures (Basilotta-Gomez-Pablos et al., 2022; Vinuesa et al., 2020). Conversely, these same technologies have the potential to widen existing inequalities, particularly in cases when adoption occurs unevenly with demographics (van Dijk 2020; Ragnedda 2018) but as opposed to other groups and regions.

In the case of India, policy levers consisting of National Education Policy 2020, Digital India programme and Pradhan Mantri Jan Dhan Yojana (financial inclusion scheme) are mentioned to be have facilitated digital transformation process for higher education aiming to leapfrog towards digital adoption of various sectors including education and finance (Ministry of Education, Government of India, 2020; Ministry electronics and information technology@nic.in,2019). Among the most notable digital financial innovations appearing in recent years globally is likely the appearance of the Unified Payment Interface developed by the National Payments Corporation of India, which processes billions of transactions monthly and dramatically changes how multiple payment behaviours across demographic categories (see for example Reserve Bank of India 2022; Damodaran 2021). Universities are especially informative locations for the study of adoption of digital

payments, since they consist of students with mostly international rural and urban origins but also differing backgrounds in terms of socio-economic status levels as well as past exposure to technology (Liebana-Cabanillas et al., 2013; Chaouali et al., 2016).

Gender is a significant axis of difference in mobile technology uptake, with an extensive legacy of international literature that highlights continued gender digital divides across advanced and developing contexts (Hafkin and Huyer, 2007; GSMA, 2022). Gender gaps in digital literacy (especially among women and girls), smartphone ownership, internet access and usage are still large with rural and semi-urban females at the end of tread-mill suffering compounded disadvantages driven by cultural factors, limitations on time, mobility and agency; reinforced by economic constraints, patterns of media consumption and differential access to infrastructure 20-21. These existing gaps could be either mitigated through exposure to digital tools and supportive institutions or exacerbated by weak support systems and gender blind technology adoption approaches (Selwyn, 2016; UNESCO, 2019) within the university spaces.

For studying these dynamics, the vast majority of space time data published ranges from the late 1980s through 2016, and thus make Shivaji University, Kolhapur located at 16.6780° N, 74.2556° E an analytically fruitful case study from establishment in 1962 to their systematisation using this report as a starting point - Supposing data on potential between-seat spaces exists for each governance class below) but clearly interesting. The university has a student enrollment of over 60000 and is one of the largest affiliating universities in Maharashtra catering to a demographically diverse student population from both urban Kolhapur and its rural hinterland comprising parts of southwestern Maharashtra and northern Karnataka (Shivaji University, 2022). The continuous digital transformation initiatives at play in the university, towards building a robust infrastructure for digital payments (MobiCash & Campus Wallet), e-governance platforms (Audit and Compliance Management System) and online learning system (NTT Online Learning Platform 2021) offer an organic site to question how inequitable patterns of digital technology adoption exist and ways by which structural processes hinder those left behind from meaningful access to this resourceful tentacle of the economy (Government of Maharashtra, 2021).

However, within the burgeoning international literature on higher education digital transformation (Arora and Rangaswamy, 2013; Nishijima et al., 2017), studies which rely upon primary survey data from Indian regional universities are comparative rarities. Moreover, there is also a lack of local empirical studies that capture the relationship between campus level digital adoption trends and global

sustainable development agendas in higher education in India (Leal Filho et al, 2019; Nambiar and Chitnis, 2021).

This study was designed to fill these gaps via systematic empirical analysis of student digital payment behavior, digital literacy perceptions, and infrastructural related challenges at Shivaji University for the 2021-22 academic year.

The conceptual framework for this study is underpinned by Rogers' (2003) digital diffusion theory, Davis' (1989) Technology Acceptance Model and the capabilities approach to sustainable development as first envisaged by Sen (1999) and later elaborated upon by Nussbaum (2011) together they underscore how individual-level adoption decisions operate in conjunction with structural and infrastructural enablers and constraints. Digital diffusion theory asserts that adoption of innovations occurs in a predictable manner moderated by relative advantage, compatibility, complexity, trialability and observability (Rogers 2003). The Technology Acceptance Model highlights the significance of perceived usefulness and perceived ease of use in predicting intentions to adopt (Davis, 1989). The capabilities approach emphasises whether individuals have the actual freedoms and instrumental opportunities to reap technology yields — attention is drawn at this point by gender-differentiated technology adoption patterns (Sen, 1999; Nussbaum, 2011)

This research has four main objectives: (i) evaluate what students know, their comfort levels and behaviors with digital payment systems for conducting financial transactions; (ii) investigate the infrastructural and social-cultural barriers preventing university students from adopting these technologies; (iii) assess student understanding of digital transformation in relation to sustainable development and; (iv) determine evidence-based best practices regarding equitable and sustainable implementation of digital technology driven transformation in higher educational settings. The paper is organized as follows: the conceptual framework and the literature review are laid out in Section 2. Section 3 presents information on the study area and data collection approaches, and provides details of the analytical method. The Results in Section 4 are organized thematically, around the main research objectives of the study. Section 5 addresses findings in the context of existing literature and theoretical frameworks. Section 6 concludes with policy recommendations in alignment with standards typical of reporting empirical social science research for Scopus-indexed journals (Creswell and Plano Clark, 2017; Tashakkori and Teddlie, 2010; Bryman, 2016).

LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK:

Thus, moving from administrative digitization through learning management systems to ecosystems not only powered by smart campuses but also utilizing

analytics and AI enabled services (Vial, 2019; Bates, 2019). Its success is contingent upon technology, culture, governance and pedagogy (Williamson et al., 2020; Picciano, 2019). COVID-19 hastened uptake but also highlighted inequities (Williamson et al., 2020; Pappas et al., 2018). In India, due to differential availability of infrastructure vis-à-vis digital exposure and readiness of university operation both in terms of capacity and infrastructural framework, the trends in university digitalization are uneven as manifested in rural-urban divides with gendered differences whereby barriers are particularly seen for rural and female students (Ministry of Education Government of India, 2020; Mathur & Ambast, 2021).

Digital payments are a historical dimension of this shift (Reserve Bank of India, 2022; Damodaran, 2021). India is pushing the country in digital skin due to demonetisation and promotion of UPI but adoption is uneven. Empirical evidence shows that early adoptors are typically young, educated, male and urban; while female gender, rural locations where technical skills are a hindrance tend to be disadvantaged (Damodaran 2021; Hafkin & Huyer 2007). Students pay fees, hostel charges and daily expenses, which is why they matter (Liebana-Cabanillas et al., 2013; Chaouali et al., 2016). Adoption is mediated by campus systems, peer influence and literacy. Selwyn (2016)

This is through greater internet access, device ownership and digital skills possessed by women compared to men, with the gender digital divide remaining wide in South and Southeast Asia (ITU 2020; Kantar IMRB 2021). Socialisation, access to devices, cultural constraints, lack of confidence and scarcity of female role models impose restrictions on the mobile internet use among women in India (Mathur & Ambast, 2021; UNESCO, 2019). Some authors mention that gender-neutral policies can reproduce inequality (Selwyn, 2016; Nishijima et al., 2017). Therefore, sustainable digital transformation ought to consider SDG principles through equity, environmental sustainability and social sustainability (United Nations, 2015; Goralski & Tan, 2020).

MATERIALS AND METHODS:

Shivaji University, Kolhapur started in 1962 (16.6780° N, 74.2556° E) occupies 853 acres and students study at SUK mainly come from urban, peri-urban and rural backgrounds across Maharashtra and northern Karnataka Table 6. Its recent reforms in terms of e-payment, non-linear examinations, online administrative portals and e-learning infrastructure support it as a good context for studying the case of digital transformation (Shivaji University, 2022). This study applied a mixed-methods design with structured questionnaires and semi-structured interviews (Creswell & Plano Clark, 2017; Tashakkori & Teddlie, 2010; Bryman,

2016). Stratified random sampling was done across gender, faculty, department and year. Descriptive statistics, gender cross tabulations and qualitative analysis of themes led the interpretation of quantitative findings.

The actual data was collected with the help of a basic questionnaire with closed-ended and Likert-scale items centered around the following thematic domains: (i) preferred digital payment mode to use for performing financial transactions; (ii) level of comfortability on using digital payment methods; (iii) awareness about different types of digital systems involved specifically focusing UPI mechanisms and their derivatives;(iv) preferred billing method choice;(v) frequency of using digital payments in campus;(vi) names on specific Digital Payment applications used(vii); problems faced during digital payments made inside the campus institution⁷ and(viii)findings in regards to being aware about Digital Transformation. Secondary data were acquired by way of online academic journals, government reports and institutional documents to inform primary findings within broader national and international trends.

RESULTS:

1. Student Preference for Online Payment Systems:

Responses on the distributions about preference for online payment systems with financial transactions showed that 58% of surveyed students preferred online payment systems, whereas 42% stated they prefer from traditional offline payments (Figure 1). From the gender-disaggregated analysis it was clearly revealed that there exists a wide gap of usage in preference for online payment systems (75% male and less than 50% female respondents). Of those who were completely opposed to the idea of using online payment systems for financial transactions, 7% of the total sample said they did not prefer any method (100% female, 0% male). This category was composed of 20% male and 80% female respondents — the greatest number, at 18%. These results suggest that negative or neutral attitudes toward online payment systems lie almost entirely with the female respondents, while strong preference for online systems occurs much more disproportionately among the male respondents.

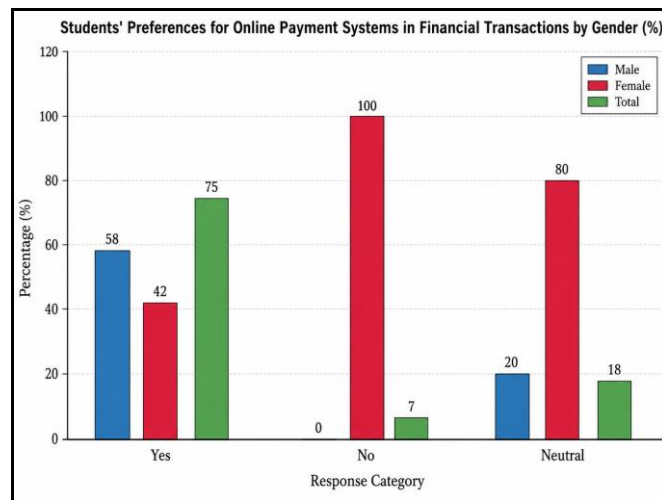


Figure 1: Student Preference for Online Payment Systems by Gender
Source: Primary Data, Fieldwork, 2021-22

2. Student Comfort with Digital Payment Methods:

When they were to define their comfort level with digital payment methods for carrying out any financial transactions, 54% responded as very comfortable (67.74% males and 32.26 females.) — refer Figure 2 Such a distribution makes clear that male students make up the higher-comfort subset. Of the 43% who said they were somewhat comfortable with digital payment methods, three-fourths female and over one quarter male respondents made up this category. Just 2% of respondents reported to be not comfortable with digital payment methods, a subgroup consisting entirely of women (100% female). The pattern of aggregation across comfort categories indicates a very clear and nearly monotonous gender gradient: Males clustered in higher comfort categories, and Females overrepresented in lower comfort categories (some differential distribution between these 2 categories is inevitable), with heavy female representation at the exclusive Female not-comfortable category.

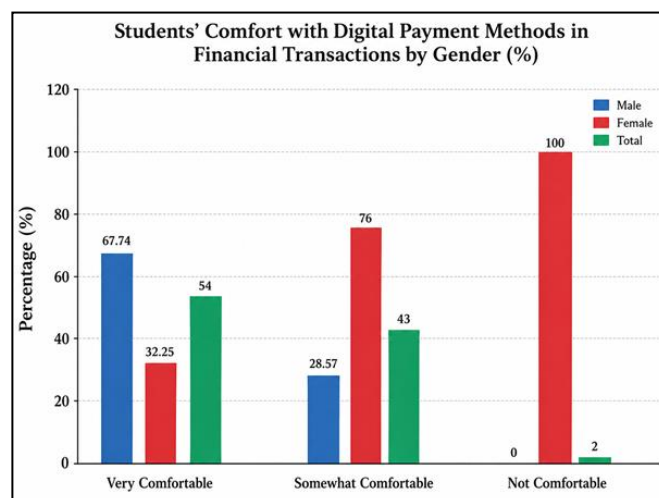


Figure 2: Student Comfort Levels with Digital Payment Methods by Gender
Source: Primary Data, Fieldwork, 2021-22

3. Familiarity with the Unified Payment Interface:

As far as the familiarity of Unified Payment Interface system is concerned, 75% of the respondents were found to be very familiar with UPI (55.81% Male and 44.18% Female) (Figure-3). The known but non-user was in 23% of the answered, female answered to this category with maximum (76%) as compared to male (23%). Just 2% of respondents indicated that they had little to no knowledge of digital payment methods, and this subsample was female only. While familiarity with UPI was very high over the sample, disaggregated by gender, male respondents continued to retain a small proportional advantage among those reported as familiar, while female respondents were strongly over-represented among non-users and those reporting no familiarity, replicating patterns of asymmetric connectedness aligned with broader Indian digital gender gap analyses (Kantar IMRB 2021; GSMA 2022).

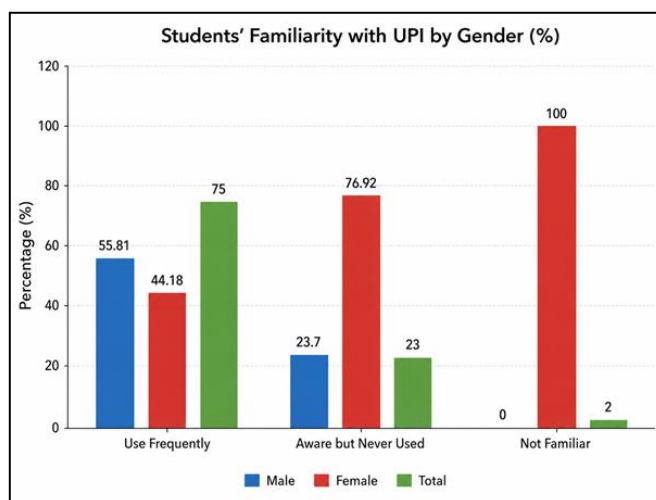


Figure 3: Familiarity with the Unified Payment Interface System by Gender
Source: Primary Data, Fieldwork, 2021-22

4. Bill Payment Method Preferences:

For payments related to periodic bills, such as electricity, water, cellphone and university fees; 40 % of respondents said that only use online payment methods with this subgroup being composed of 61.21% male and 34.78% female (Fig. While 19 of the respondents reported Exclusive offline payment in a roughly equal distribution among male and female respondents (about 50% each). 40% stated they use both online and offline payment modes where more female respondents i.e. 70% than male 30% were observed in this segment too. The large number of respondents in the hybrid payment category, and the majority female within that category suggests a hedging behavioral strategy from female students who retain access to an offline way to pay as this may be viewed more favourably than a solely digital channel of payment due to lower confidence or trust.

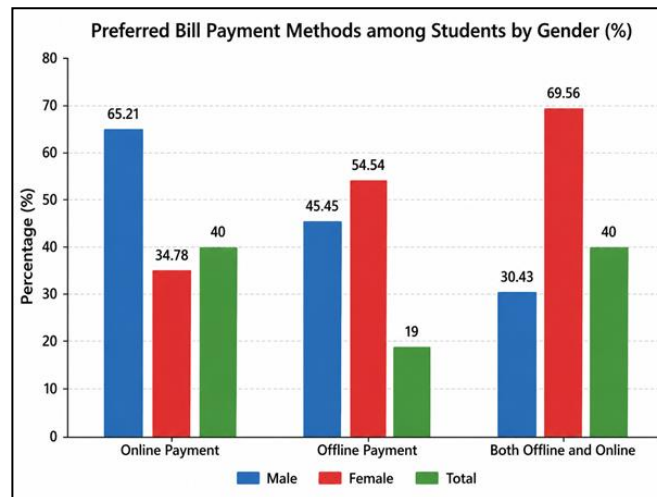


Figure 4: Bill Payment Method Preferences by Gender

Source: Primary Data, Fieldwork, 2021-22

5. Frequency of Digital Payment Use:

Respondents using digital payment method like mobile apps, online banking and e-wallets for financial transactions were asked: How often do you use a digital payment method which have been almost all the time by 47% with 60% males and 40% females of this category (Figure 5). Conversely, 5% of respondents said they never use such digital payment methods to pay for goods or services. Strikingly enough, 46% of respondents stated they only use digital payment methods rarely or in case of emergency (62% female and around 38% male). Having a high number of respondents in the rarely or only Emergency germination, task with how massive deviation it represents by adding that a great part of the collegiate wide is not yet using digital payment as part of their habitual behavior and this portion would be too higher for woman.

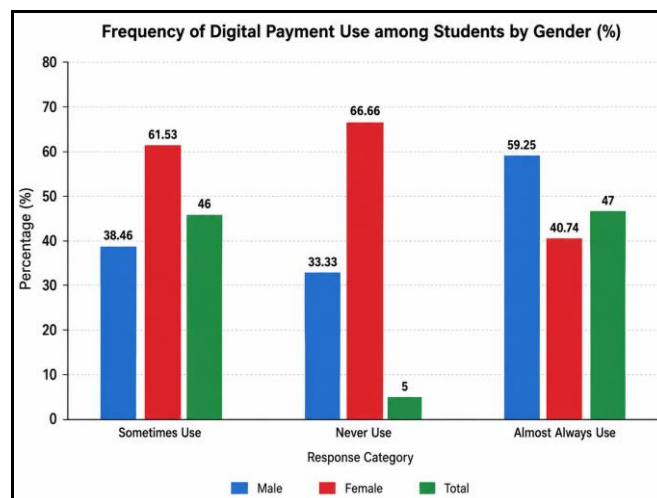


Figure 5: Frequency of Digital Payment Method Use by Gender

Source: Primary Data, Fieldwork, 2021-22

6. Digital Payment Applications Used:

The data collected from survey responses regarding the particular digital payment apps showed that mobile wallet applications, which are particularly faced by Paytm, Google pay and PhonePe among these platforms represent approximately 95% of the total registered users within sample for each. Around 4% of the respondents were using online banking applications for money transfer and the usage rate of online banking applications among male respondents was higher in relation to female respondents. The remaining 2% was made up of other payment applications. These results have a similarity with national-level data about the dominance of UPI-based applications in Indian digital payment market as reported by Reserve Bank of India (2022) and Damodaran (2021).

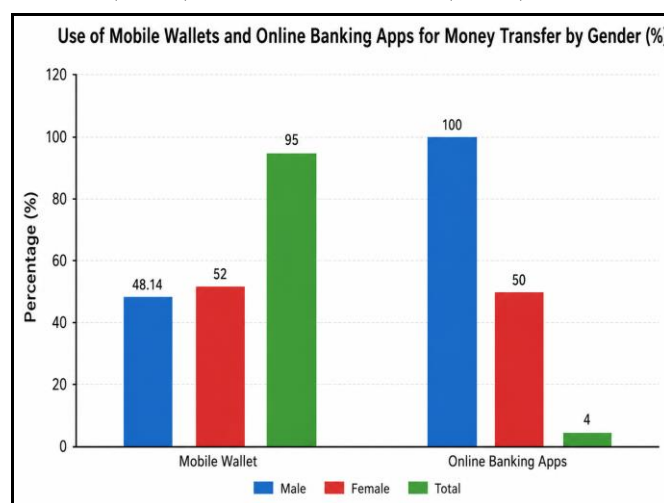


Figure 6: Digital Payment Applications Used
Source: Primary Data, Fieldwork, 2021-22

7. Challenges during Digital Payments on Campus:

The reported challenges when using digital payments on the university campus were well analysed and yielded a predominant infrastructure-blocking pattern (Figure 6). Forty-four percent of respondents reported internet connectivity issues, with 68% of those facing internet-related difficulties being female. 50% of respondents reported a bank transaction error or issue, with male and female responses evenly split at 50%. Also only 6% of respondents reported issues with understanding the universities online payment system. These results imply that in the campus context, it is infrastructure deficiencies including internet problems and banking system deficiency rather than user interface complexity that act as barriers to digital payment previously suggested with such a focus on how user-interface complex are; but of even greater concern these findings reveal that infrastructure barrier represents majority share of total impact onto adoption process, by disproportional impacting female students Internet accessability specifically.

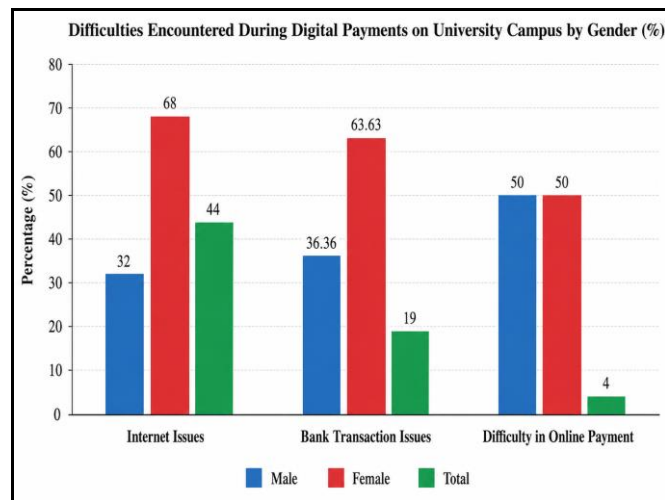


Figure 7: Challenges Encountered During Digital Payments on Campus by Gender
Source: Primary Data, Fieldwork, 2021-22

8. *Familiarity with Digital Transformation in the Education Sector:*

The results show that 47% of respondents are very familiar with the concept of digital transformation in education sector, this category included 59.25% male and about 41% female (Figure 7.). Just 2% of respondents said they were not familiar with the idea of digital transformation in education. The moderate familiarity rate overall suggests that the student cohort remains somewhat unaware of digital transformation characterised as a conceptual framework (many have very little or no high familiarity with this topic at all even though they contributed actively to their university's digital transformation approaches).

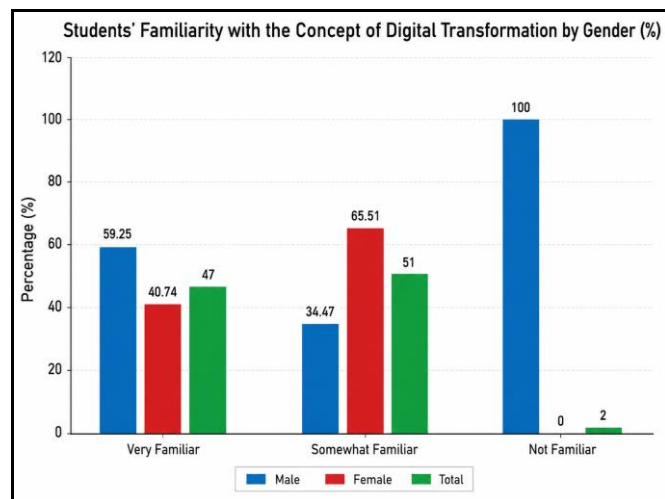


Figure 8: Student Familiarity with Digital Transformation in the Education Sector
by Gender

Source: Primary Data, Fieldwork, 2021-22

DISCUSSION:***1. Gender-Differentiated Digital Adoption Patterns:***

The most empirical finding for all dimensions of digital payment adoption is the gender differentials. Online payments have seen higher preference and comfort from male students who also massively used UPI and digital transformation during the past year ⁶. Females are over-represented in lower comfort levels, extremely rare-use or non-users groups and hybrid-or offline-payments. The pattern aligns with existing evidence on the gender digital divides in India and broader research literature demonstrating gender gaps in the adoption of digital financial services (Kantar IMRB 2021; Mathur and Ambast 2021; Hafkin & Huyer, 2007; GSMA 2022). Sex: Since all respondents who opposed or expressed discomfort with online payments are female, and given that females make up 76% of UPI non-users and 62% of those who use it rarely or only in emergencies, sex is the most prominent predictor of non-adoption in this sample. Inequality such as these may limit access to services and it could counter SDG 5 and SDG 10 (the United Nations,2015). More broadly, these findings also align with differential digital exposure, more limited access to devices, lower self-efficacy and cultural constraints (UNESCO 2019; Selwyn 2016).

2. Infrastructure Barriers and Their Differential Impacts:

Infrastructure a huge barrier: 44% say internet connectivity issues while 50% experience bank transaction failures While these affect all students, 68% of those with internet issues are female, indicating a possible interaction between campus infrastructure and unequal access to good devices or data (Nishijima et al., 2017; van Dijk, 2020). Because 94% did not report difficulty understanding the payment, user interface design is not a barrier; however, the reliability of technological infrastructure is. This means that campus wide Wi-Fi enhancement, reliability of the network, and offline viable payment methods should be institutional priorities (Nambiar & Chitnis, 2021; Leal Filho et al., 2019).

3. UPI Adoption and the National Digital Payment Ecosystem:

Discovery of 75% of respondents was very aware about UPI is vital growth in quasi form digital payments till 2016 (Reserve Bank of India,2022; Damodaran,2021). Paytm, Google Pay and PhonePe dominate among 95% of digital payment users, mirroring India's UPI ecosystem structure (Reserve Bank of India, 2022) But 75% familiarity does not mean daily usage, which is at 47%. The 46% who use digital payments infrequently or only for emergencies show that awareness is not enough. Infrastructure failures and confidence deficits also remained key barriers, consistent with Rogers (2003) and Davis (1989).

4. Digital Transformation Awareness and Sustainable Development Alignment

Only 47% said they were very familiar with digital transformation in education, even though all of them studied in a University that is undergoing some form of digitalisation. It shows a gap in conceptual awareness for students that could create barriers to them using institutional digital processes and engaging with digitally enabled sustainable development (Leal Filho et al., 2019; Nambiar and Chitnis, 2021). IT deployment is essential to achieve sustainable digital transformation, but requires stakeholder engagement and literacy (Pappas et al., 2018; Goralski and Tan, 2020). This awareness is crucial; otherwise, students remain passive bystanders when they should be active agents acting under the principles of participatory governance (United Nations, 2015; Sen, 1999). Digital transformative literacy should therefore be apportioned across faculties (Leal Filho et al., 2019; Nussbaum, 2011).

5. Implications for Sustainable Digital Transformation in Higher Education:

Focusing on the results, it can be concluded that these support a sustainable digital transformation model so far as addressing infrastructure, gender equity, digital literacy and institutional awareness is combined (Pappas et al., 2018; Leal Filho et al., 2019). The digital tools of Shivaji University and SDG 4 show paracetamol connection, as for SDG5, SDG9 and SDG10 gender equality, of Inclusive Infrastructure are not met (United Nations, 2015; ITU, 2020). The hybrid payment behavior of female students, so significant in the 40% total using both online and F2F modes collectively between October-December, should be recognized as a rational reaction to unreliable infrastructure and variable confidence. In line with the capabilities framework of Sen (1999) and Nussbaum (2011), institutions need to facilitate hybrid systems while minimizing barriers for voluntary digital adoption.

CONCLUSION:

Based on primary fieldwork data collected during the academic year 2021-22, this study offers empirical insights into digital payment adoption (or lack thereof), along with barriers to digital infrastructure availability and awareness of digital transformation among students at Shivaji University, Kolhapur; disaggregated by gender. Results show clear and policy relevant differences in terms of digital adoption by male and female students across all the measured dimensions.

And the main takeaways are First, even though 58% of students prefer digital payment systems and 75% reveal high familiarity with UPI, a sustained use case for digital payments remains approximately within the ambit of only 47%, thereby

showing a stark divergence between familiarity and behaviour towards usage. Secondly, gender is the most potent axis of differentiation. Males are overrepresented in the categories of high-adoption, high-comfort and frequent-use, while females are more often positioned in low-adoption, non-use and ambivalent categories. Third, majority barriers are infrastructure related rather than usability, such as internet connectivity issues (44%) and bank transaction failures (50%). These barriers hamper female students more. Fourth, only 47% of respondents reported high familiarity with digital transformation; this reveals that there is a gap in the knowledge of digital transformation and calls for developing literacy on the subject throughout university programmes.

The clear relevance of these findings can be manifested for the SDG 4, SDG 5, SDG 9 and SDG 10. Your coverage of sustainable and scalable digital transformation in higher education should therefore also include the consideration of equity, infrastructure reliability and conceptual literacy so that it is not just about the deployment of technology.

The study calls for improvements in campus-wide digital infrastructure as well, especially the expansion of Wi-Fi and reliability of the network. Then the digital literacy programs, specially aimed to instil confidence, skills and comfort factored in the way with which we want our girl students to embrace themselves better. They should have offline or interruption-tolerant digital payment systems. Digital transformation proficiency can be interspersed across all ends of different faculties. Gender-disaggregated monitoring should similarly be a component of institutional strategies, to help ensure that digitalization is conducive to equality and inclusive development.

Longitudinal and comparative multi-institutional designs are needed in future research. More qualitative work should interrogate the gendered barriers that limit digital access and participation, including peer networks, family responsibilities and availability of computers at home and prior experiences with educational technology.

REFERENCES:

1. Arora, P., & Rangaswamy, N. (2013). Digital leisure for development: Reframing new media practice in the Global South. *Media, Culture & Society*, 45(7), 898-905. <https://doi.org/10.1177/0163443713501923>
2. Basilotta-Gómez-Pablos, V., Matarranz, M., Casado-Aranda, L. A., & Otto, A. (2022). Teachers' digital competencies in higher education: A systematic literature review. *International Journal of Educational Technology in Higher Education*, 19(1), Article 8. <https://doi.org/10.1186/s41239-021-00312-8>
3. Bates, A. W. (2019). *Teaching in a digital age: Guidelines for designing teaching and learning* (2nd ed.). Tony Bates Associates Ltd.

4. Bryman, A. (2016). *Social research methods* (5th ed.). Oxford University Press.
5. Chaouali, W., Ben Yahia, I., & Souiden, N. (2016). The interplay of counter-conformity motivation, social influence, and trust in customers' intention to adopt internet banking services. *Journal of Retailing and Consumer Services*, 28, 209-218. <https://doi.org/10.1016/j.jretconser.2015.10.007>
6. Creswell, J. W., & Plano Clark, V. L. (2017). *Designing and conducting mixed methods research* (3rd ed.). SAGE Publications.
7. Damodaran, L. (2021). Digital payments in India: Analysing adoption patterns and barriers. *Economic and Political Weekly*, 56(12), 34-42.
8. Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-340. <https://doi.org/10.2307/249008>
9. Fitzgerald, M., Kruschwitz, N., Bonnet, D., & Welch, M. (2014). Embracing digital technology: A new strategic imperative. *MIT Sloan Management Review*, 55(2), 1-12.
10. Goralski, M. A., & Tan, T. K. (2020). Artificial intelligence and sustainable development. *International Journal of Management Education*, 18(1), Article 100330. <https://doi.org/10.1016/j.ijme.2019.100330>
11. Government of Maharashtra. (2021). *Maharashtra digital transformation policy*.
12. GSMA. (2022). *The mobile gender gap report 2022*.
13. Hafkin, N., & Huyer, S. (2007). Women and gender in ICT statistics and indicators for development. *Information Technologies & International Development*, 4(2), 25-41.
14. ITU. (2020). *Measuring digital development: Facts and figures 2020*.
15. Kantar IMRB. (2021). *ICUBE 2020: India internet 2020 report*.
16. Leal Filho, W., Shiel, C., Paço, A., Mifsud, M., Ávila, L., Brandli, L., Molthan-Hill, P., Pace, P., Azeiteiro, U., Vargas, V., & Caeiro, S. (2019). Sustainable development goals and sustainability teaching at universities: Falling behind or getting ahead of the pack? *Journal of Cleaner Production*, 232, 285-294. <https://doi.org/10.1016/j.jclepro.2019.05.309>
17. Liébana-Cabanillas, F., Muñoz-Leiva, F., & Rejón-Guardia, F. (2013). The determinants of satisfaction with e-banking. *Industrial Management & Data Systems*, 113(2), 235-255. <https://doi.org/10.1108/02635571311303338>
18. Mathur, N., & Ambast, S. (2021). Gender and digital inclusion in India: Evidence from household surveys. *Journal of Development Studies*, 57(9), 1501-1519. <https://doi.org/10.1080/00220388.2021.1875539>
19. Ministry of Education, Government of India. (2020). *National Education Policy 2020*.
20. Ministry of Electronics and Information Technology, Government of India. (2019). *Digital India programme: Progress report*.
21. Nambiar, D., & Chitnis, K. (2021). Digital transformation in Indian higher education: Opportunities and challenges. *Higher Education for the Future*, 8(1), 36-51. <https://doi.org/10.1177/2347631120970653>

22. Nishijima, M., Ivanauskas, T. M., & Sarti, F. M. (2017). Evolution and determinants of digital divide in Brazil (2005-2013). *Telecommunications Policy*, 41(1), 12-24. <https://doi.org/10.1016/j.telpol.2016.10.004>
23. Nussbaum, M. (2011). *Creating capabilities: The human development approach*. Harvard University Press.
24. Pappas, I. O., Mikalef, P., Giannakos, M. N., Krogstie, J., & Lekakos, G. (2018). Big data and business analytics ecosystems: Paving the way towards digital transformation and sustainable societies. *Information Systems and e-Business Management*, 16(3), 479-491. <https://doi.org/10.1007/s10257-018-0377-z>
25. Picciano, A. G. (2019). Artificial intelligence and the academy's loss of purpose. *Online Learning*, 23(3), 270-284. <https://doi.org/10.24059/olj.v23i3.2023>
26. Ragnedda, M. (2018). Conceptualizing digital capital. *Telematics and Informatics*, 35(8), 2366-2375. <https://doi.org/10.1016/j.tele.2018.10.006>
27. Reserve Bank of India. (2022). *Annual report on payment and settlement systems*.
28. Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). Free Press.
29. Selwyn, N. (2016). Minding our language: Why education and technology is full of bullshit and what might be done about it. *Learning, Media and Technology*, 41(3), 437-443. <https://doi.org/10.1080/17439884.2015.1012523>
30. Sen, A. (1999). *Development as freedom*. Oxford University Press.
31. Shivaji University. (2022). *Annual report 2021-22*.
32. Tashakkori, A., & Teddlie, C. (2010). *SAGE handbook of mixed methods in social and behavioral research* (2nd ed.). SAGE Publications.
33. UNESCO. (2019). *I'd blush if I could: Closing gender divides in digital skills through education*.
34. United Nations. (2015). *Transforming our world: The 2030 agenda for sustainable development*.
35. van Dijk, J. A. G. M. (2020). *The digital divide*. Polity Press.
36. Vial, G. (2019). Understanding digital transformation: A review and a research agenda. *Journal of Strategic Information Systems*, 28(2), 118-144. <https://doi.org/10.1016/j.jsis.2019.01.003>
37. Vinuesa, R., Azizpour, H., Leite, I., Balaam, M., Dignum, V., Domisch, S., Felländer, A., Langhans, S. D., Tegmark, M., & Fuso Nerini, F. (2020). The role of artificial intelligence in achieving the Sustainable Development Goals. *Nature Communications*, 11(1), Article 233. <https://doi.org/10.1038/s41467-019-14108-y>
38. Westerman, G., Bonnet, D., & McAfee, A. (2014). *Leading digital: Turning technology into business transformation*. Harvard Business Review Press.
39. Williamson, B., Eynon, R., & Potter, J. (2020). Pandemic politics, pedagogies and practices: Digital technologies and distance education during the coronavirus emergency. *Learning, Media and Technology*, 45(2), 107-114. <https://doi.org/10.1080/17439884.2020.1761641>