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SURVEY ON THE ROLE OF DIGITAL FINANCIAL SERVICES IN PROMOTING FINANCIAL INCLUSION IN INDIA

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Abstract

This study investigates the role of Digital Financial Services (DFS) in enhancing financial inclusion across diverse socio-economic segments in India. With the exponential rise in mobile banking, digital wallets, and platforms such as UPI, DFS has emerged as a transformative force in bridging financial access gaps, particularly for marginalized populations. The objective of the study is to assess DFS usage patterns, identify key barriers and enablers, and examine the socio-demographic determinants influencing adoption and satisfaction. A structured survey was conducted across three districts in Maharashtra—Pune (urban), Beed (semi-urban), and Nandurbar (rural)—using a stratified random sampling method. A total of 420 respondents participated, and data were analyzed using IBM SPSS Statistics, employing descriptive statistics, ANOVA, and Chi-square tests. The findings reveal that while DFS access is widespread, its meaningful usage is shaped by factors such as income, education, digital literacy, and geography. Higher income and education levels are positively associated with usage frequency and trust in digital platforms. Key barriers identified include digital illiteracy, poor connectivity, and interface complexity. Most users reported satisfaction with DFS, especially for routine transactions like money transfers and bill payments, but advanced financial behaviors like savings and investments remain underutilized. The study fills a significant literature gap by offering a user-level, empirical analysis of DFS adoption and offers actionable insights for policymakers, fintech developers, and regulators. It underscores the need for inclusive digital literacy programs and infrastructure development to translate access into impact.

Keywords: Digital Financial Services, Financial Inclusion, Fintech, UPI, Rural Banking, India.

1. INTRODUCTION

Financial inclusion—the access and usage of affordable financial services by the unbanked and underserved—has emerged as a cornerstone of equitable economic development. Globally, over 1.4 billion adults remained unbanked as of 2021 (World Bank, 2022). In a country like India, with a population exceeding 1.4 billion, promoting financial inclusion is both a developmental imperative and a logistical challenge. Traditional brick-and-mortar banking systems have historically failed to reach the most marginalized populations due to infrastructural, economic, and social constraints.

Against this backdrop, the proliferation of Digital Financial Services (DFS)—encompassing mobile banking, digital wallets, online lending platforms, and digital identity systems—has revolutionized the financial landscape. DFS represents a convergence of financial technology (fintech), telecommunications, and regulatory innovation. These services transcend geographical and socioeconomic barriers, offering the possibility of 24/7 banking, instant fund transfers, remote account openings, and digital credit systems. In India, the growth of DFS has been meteoric, powered by government initiatives such as Jan Dhan Yojana, Aadhaar-enabled Payment Systems (AEPS), the rise of Unified Payments Interface (UPI), and the Digital India program. According to the Reserve Bank of India (2022), over 1.6 billion UPI transactions are processed monthly, with volumes exceeding INR 10 trillion.

While earlier attempts at financial inclusion through banking penetration (bank branches per capita) were limited in scope, the digital transformation has made inclusive finance scalable. As per the Global Findex Database (2021), account ownership in India rose from 35% in 2011 to 77% in 2021, with DFS being a major enabler of this leap. This significant transformation

prompts a vital inquiry: what is the actual role of DFS in improving financial inclusion metrics, and how has its adoption reshaped financial behaviors, especially among marginalized and rural populations?

The ecosystem of digital finance in India is vast and multifaceted. As noted by Ravikumar (2019), the explosion of digital finance has been largely a product of fintech innovation, regulatory flexibility, and public-private partnerships. Platforms like Paytm, PhonePe, Google Pay, and BHIM have rapidly acquired millions of users. Moreover, government policies such as Direct Benefit Transfers (DBTs) to bank accounts have catalyzed digital transaction culture in low-income households. Siddik and Kabiraj (2019) assert that DFS promotes financial inclusion through multiple channels—lower transaction costs, reduced dependence on intermediaries, increased credit access via digital lending platforms, and behavioral nudges for savings and insurance uptake.

Their study reveals that the transaction cost of digital services is approximately 80% lower than traditional services, making them more accessible to the poor. These economic benefits are further amplified in rural India, where physical bank branches remain sparse. Furthermore, Barik and Sharma (2019) highlight that digital financial inclusion is no longer about mere access to accounts but about meaningful usage—including digital payments, remittances, microloans, and insurance. They caution, however, that account dormancy remains high (nearly 35% of PMJDY accounts showed zero balance in 2021), indicating that access does not guarantee impact.

The relationship between fintech and inclusion is not automatic. Kandpal and Mehrotra (2019) note that while the digital ecosystem is expanding, it risks excluding those without digital literacy or smartphone access. This 'second-generation exclusion' demands attention. Their study showed that digital exclusion overlaps significantly with socio-economic and gender disparities, with women being 27% less likely than men to own a smartphone capable of mobile banking. In contrast, Asif et al. (2023) argue that digital channels have allowed previously unbanked populations to access not just transactional services but also microcredit and insurance products that were traditionally inaccessible. Their analysis of UPI data and rural banking correspondents (Bank Mitras) reveals that DFS has expanded in rural and peri-urban areas at twice the rate of urban centers between 2017–2022. Agrawal and Jain (2019) reviewed the evolution of DFS adoption through case studies and noted how state-sponsored infrastructure such as Digital Saksharta Abhiyan and Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA) have raised awareness and literacy around DFS. Their review confirmed that targeted interventions increase not only uptake but also trust in digital systems.

Ghosh and Chaudhury (2022), using a regression model on the Global Findex indicators, found that mobile phone ownership, Aadhaar seeding, and availability of internet services were strong predictors of DFS usage in rural India. They demonstrated that individuals in rural areas with access to mobile data were 3.2 times more likely to use DFS tools like UPI or mobile wallets. Durai and Stella (2019) emphasize that the true potential of DFS lies in its disruptive capability—displacing informal financial systems with traceable, secure, and scalable alternatives. They argue that DFS aligns financial inclusion with broader development outcomes such as women's empowerment, SME growth, and government transparency. Despite these advancements, the journey is incomplete. The digital divide, especially in terms of gender, region, and education, still looms large. Vyas and Jain (2021) point out that while DFS adoption is growing, digital literacy and trust barriers remain key bottlenecks. They recommend a hybrid approach, combining traditional agents with digital channels to enhance credibility and access.

While several studies explore the benefits and challenges of DFS in enhancing financial inclusion, few offer a comprehensive survey-based analysis across demographics in India to quantify how, where, and for whom digital financial services are working. Most available research is either macro-level or theoretical in nature.

This study aims to bridge that gap through a field-level empirical investigation with disaggregated data across age, gender, income, and geography, focusing on usage patterns, accessibility barriers, and perceived trust in DFS platforms.

This study is significant because it aligns with the 2030 UN Sustainable Development Goals, particularly Goal 1 (No Poverty), Goal 8 (Decent Work and Economic Growth), and Goal 9 (Industry, Innovation, and Infrastructure), which all emphasize inclusive financial systems. It will generate actionable insights for fintech firms, government agencies, and regulators, offering policy guidance on strengthening India's financial inclusion agenda through digital channels.

2. LITERATURE REVIEW

The discourse surrounding digital financial services (DFS) and financial inclusion in India has expanded significantly over the past decade. Based on the thematic convergence of existing literature, three core themes have emerged:

The Impact of Fintech on Rural and Low-Income Populations

Asif et al. (2023) conducted an empirical investigation into how fintech platforms are reshaping financial inclusion, especially among rural populations in India. Their mixed-methods research assessed both quantitative adoption rates and qualitative feedback from rural fintech users. The study found that digital wallets and microloan apps were more likely to be adopted when bundled with awareness programs and accessible through vernacular interfaces. Notably, they reported a 64% increase in active account usage post adoption of DFS solutions among low-income households.

Similarly, **Goswami et al. (2022)** emphasized the relevance of mobile money solutions in enhancing access to financial tools in rural India. Their quantitative research, based on survey responses from over 400 respondents across Uttar Pradesh and Bihar, showed that financial technology adoption was strongly influenced by the perceived ease of use, low transaction fees, and peer endorsement. They highlighted that rural women were 47% more likely to trust mobile financial platforms than men, if given sufficient training and community support.

Jena (2025) took a longitudinal approach by using a mixed methods framework to assess fintech adoption among tribal communities in central India. The study concluded that while awareness remained low initially, exposure to government-sponsored digital literacy campaigns significantly improved adoption, resulting in a three-fold increase in mobile-based savings behavior over 18 months.

Digital Ecosystems, Infrastructure, and Policy Support

Raj and Upadhyay (2020) explored how India's regulatory ecosystem, including the creation of the Regulatory Sandbox, has accelerated fintech innovation. Their paper used a case study methodology analyzing firms that benefited from sandbox inclusion. They argued that enabling policies such as deregulated KYC processes, API standardization, and UPI interoperability contributed to India's exponential rise in digital financial inclusion, especially between 2016 and 2020.

Morgan (2022) provided a comparative policy perspective on how India and Southeast Asia differ in fintech governance. He noted that India's ecosystem was relatively robust due to early investments in digital infrastructure (like Aadhaar and UPI). His findings showed that Indian fintech startups leveraged this infrastructure to build scalable DFS platforms, which had a direct correlation with the rise in account ownership—from 53% in 2014 to 77% in 2021.

Gender Inclusion and Social Impacts of DFS

Bala and Singhal (2022) addressed the intersection of fintech and gender equity in financial inclusion. Through field interviews and secondary data, they explored how fintech startups are helping women bypass patriarchal barriers by giving them autonomous access to microloans, savings, and insurance. They emphasized that fintech firms like Mahila Money and digital SHGs (Self-Help Groups) led to a 21% increase in women's self-reported financial decision-making.

Badruddin (2017) presented a conceptual framework on how fintech's effectiveness must be measured not just in outreach but in behavioral transformation. Her work suggested that while many DFS platforms measure transaction volume, real inclusion comes from repeat usage, financial planning adoption, and formal credit migration. She proposed a three-tier metric of access, usage, and trust to evaluate DFS impact comprehensively.

Economic and Monetary Policy Implications

In a more macroeconomic context, **Mittal et al. (2023)** examined how DFS usage correlates with the effectiveness of monetary policy transmission. Using econometric modeling, they found that regions with higher DFS penetration showed more responsive interest rate behaviors to policy shifts, indicating that digital inclusion has significant implications beyond microfinance—it also strengthens formal economic participation.

Mehrotra (2019), however, warned against what he calls the "lost focus" of fintech—a tendency to prioritize profitability over inclusion. His analysis of early-stage fintech startups showed that without targeted mandates, startups tend to drift toward urban-centric, premium services, leaving behind their original inclusion goals. He called for stronger regulatory nudges and incentives for inclusive innovation. Despite extensive research on DFS and fintech innovation in India, there remains a lack of granular, field-based survey analysis on how these services are used across demographic variables such as age, gender, income, and region. Most studies are either conceptual, focused on policy-level frameworks, or limited to macroeconomic indicators. There is a pressing need to evaluate DFS from the user perspective, capturing usage patterns, perceived barriers, trust factors, and socioeconomic impact through primary survey-based tools. This study fills that gap by offering a bottom-up, disaggregated survey analysis of DFS adoption, particularly among marginalized groups. Its significance lies in providing real-world insights for policymakers, fintech developers, and inclusion strategists aiming to optimize DFS design, outreach, and trust-building mechanisms.

3. RESEARCH METHODOLOGY

3.1. Research Design

This study adopted a quantitative survey research design to empirically investigate the role of Digital Financial Services (DFS) in promoting financial inclusion across selected districts in India. The choice of this method was based on the study's objective to analyze patterns, perceptions, and levels of adoption of DFS across socio-demographic segments using structured questionnaires. This design enabled the collection of first-hand data to test the

conceptual assertions found in existing literature and to fill the identified gap concerning user-level experience and usage diversity.

3.2. Population and Sampling

The population for this study comprised individual account holders and digital financial service users in three districts of Maharashtra (Pune, Beed, and Nandurbar). These districts were purposively selected to represent urban, semi-urban, and rural settings, thereby providing a comprehensive demographic and geographic spread. A stratified random sampling method was used to ensure balanced representation across gender, income levels, and urban–rural classification. From the total pool of respondents, 420 valid responses were recorded. The inclusion criteria were:

- Age 18 years and above
- Ownership of at least one bank account
- Access to mobile phones and/or digital platforms (UPI, mobile wallets, net banking)

3.3. Data Collection Tool

The primary instrument used was a structured questionnaire based on a 5-point Likert scale. The questionnaire consisted of three major sections:

1. Demographic details
2. DFS usage patterns (types, frequency, duration)
3. Perceptions regarding accessibility, trust, ease of use, and perceived benefits of DFS

The questionnaire was pre-tested on a pilot group of 40 participants, and Cronbach's alpha value of 0.83 confirmed high reliability.

3.4. Data Source Details

Below is the detailed specification of the single data source used for this research:

Parameter	Description
Source of Data	Primary data collected through structured questionnaires
Mode of Data Collection	Offline face-to-face interviews and online Google Forms
Sample Size	420 respondents
Geographic Scope	Pune (urban), Beed (semi-urban), Nandurbar (rural), Maharashtra
Sampling Method	Stratified random sampling
Data Collection Period	January 15 to March 5, 2025
Instrument Type	Structured questionnaire (Likert scale)
No. of Items	35 items grouped into 5 dimensions
Pilot Tested?	Yes (n = 40, Cronbach's $\alpha = 0.83$)
Data Validity Checks	Response consistency, removal of duplicates, logical reversals flagged
Language of Survey	English and Marathi
Ethical Consideration	Consent taken; anonymity and confidentiality assured

3.5. Scope and Limitations

The methodology focused strictly on individual-level users of DFS in the Indian state of Maharashtra. Institutions, fintech firms, and financial intermediaries were not surveyed. The study is also limited by its focus on three districts, though they were selected to represent a cross-section of the state. Furthermore, qualitative insights (e.g., interviews or focus groups) were not included in this study design, which constrains the depth of subjective interpretation but ensures robustness in empirical generalization.

3.6. Data Analysis Tool

The collected data were analyzed using IBM SPSS Statistics (Version 26). The analysis involved:

- Descriptive statistics (mean, SD, frequency)
- Cross-tabulations for demographic vs. usage patterns
- One-way ANOVA to assess statistically significant differences in DFS adoption across income and geographic groups
- Chi-square tests to evaluate relationships between trust and education levels

The choice of SPSS and ANOVA was based on the objective to test mean differences across groups and understand pattern variances that align with the primary research questions derived from the literature gap.

4. RESULTS AND ANALYSIS

This section presents the findings from the survey of 420 respondents across Pune, Beed, and Nandurbar districts. The analysis draws on descriptive statistics, ANOVA, and Chi-square tests to examine the relationship between demographics, usage patterns, perceived benefits, and trust in Digital Financial Services (DFS). Tables generated below are followed by interpretive discussions elaborating the significance of the results.

Table 1: Demographic Distribution (Gender)

Gender	Frequency	Percentage
Male	228	54.3%
Female	183	43.6%
Other	9	2.1%

Interpretation:

The gender composition of the sample is skewed towards males (54.3%), although female participation is relatively significant at 43.6%. The inclusion of 2.1% respondents identifying as 'Other' reflects a degree of inclusivity in the sampling. This distribution aligns with DFS usage trends where mobile ownership and digital participation are slightly higher among men, especially in rural areas. However, the relatively high female representation indicates the growing accessibility of DFS among women, possibly driven by self-help groups (SHGs), microfinance, and government-led DBT initiatives. Understanding gender-based differences in trust, access, and usage will be crucial for tailoring DFS policies that are inclusive and equitable.

Table 2: Age Group Distribution

Age Group	Frequency	Percentage
18–25	86	20.5%
26–35	117	27.9%
36–45	98	23.3%
46–60	76	18.1%
Above 60	43	10.2%

Interpretation:

The majority of users fall between the ages of 26 to 45 (51.2%), representing economically active populations who are likely to engage in employment, entrepreneurship, or household

decision-making. The participation of young adults (20.5%) reflects the digital nativity of newer generations, while 10.2% of respondents are senior citizens, showing early-stage digital adoption among older demographics. The relatively even spread across working-age brackets enables this study to explore generational differences in the adoption and perception of DFS tools.

Table 3: DFS Usage Frequency per Week

Usage Frequency	Respondents
1–2 times	102
3–4 times	137
5–6 times	89
Daily	92

Interpretation:

A significant proportion of respondents (43.3%) use DFS services more than four times a week, indicating high engagement. The largest group (137 respondents) reported using DFS 3–4 times weekly, which suggests routine financial activity such as bill payments, money transfers, or checking account balances. The daily users (21.9%) are likely engaged in regular transactions, such as vendors or micro-entrepreneurs using UPI and QR-code-based payments. This usage frequency validates the deep integration of digital financial tools into everyday financial behavior, a key objective of financial inclusion.

Table 4: Mean DFS Usage Score by Income Group (ANOVA)

Income Group (INR/Month)	Mean DFS Score	Std. Deviation
<10,000	3.1	0.8
10,000–25,000	3.7	0.7
25,000–50,000	4.0	0.6
>50,000	4.3	0.5

Interpretation:

The ANOVA analysis reveals a strong positive correlation between income levels and DFS usage scores. Respondents earning more than INR 50,000 had the highest mean usage score (4.3), while those earning below INR 10,000 had a significantly lower score (3.1). These differences were statistically significant ($p < 0.05$).

This finding suggests that although DFS is accessible to low-income groups, higher income segments exhibit greater diversity and frequency of usage. The implication is that affordability and financial literacy continue to influence adoption depth among the economically weaker sections.

Table 5: Trust in DFS vs. Education Level (Chi-square)

Education Level	High Trust (%)
Primary	34.6%
Secondary	52.1%
Graduate	71.3%
Postgraduate	84.5%

Interpretation:

The chi-square analysis highlights a positive relationship between education and trust in DFS platforms. Trust scores rose progressively with educational attainment—only 34.6% of respondents with primary education had high trust, compared to 84.5% among postgraduates. The variation was statistically significant ($p < 0.01$).

This indicates that trust is influenced by digital and financial literacy, which are both more accessible to educated users. Targeted awareness campaigns and simplified UI designs may bridge this trust gap for less-educated populations.

Table 6: Perceived Benefits of DFS

Benefit	Frequency	Percentage
Convenience	301	71.7%
Faster Transactions	276	65.7%
Reduced Cost	198	47.1%
Better Record-Keeping	142	33.8%

Interpretation:

The most commonly perceived benefits were convenience (71.7%) and faster transactions (65.7%). These are direct outcomes of digital efficiency and platform design. However, fewer users appreciated benefits like reduced cost (47.1%) or better financial record-keeping (33.8%), suggesting limited awareness of long-term advantages such as traceability and financial planning. This gap in benefit perception underlines the importance of user education in maximizing DFS utility and encouraging sustained usage beyond mere transaction execution.

Table 7: Barriers to DFS Use

Barrier	Frequency	Percentage
Lack of Digital Literacy	174	41.4%
Poor Network	122	29.0%
Security Concerns	97	23.1%
Complex Interfaces	83	19.8%

Interpretation:

The most cited barrier was lack of digital literacy (41.4%), indicating that many potential users find it difficult to navigate DFS platforms. Poor connectivity (29%) and security concerns (23.1%) are also significant deterrents, particularly in rural regions. Interestingly, nearly 20% of users found user interfaces too complex.

These insights suggest that fintech platforms need to invest in **vernacularized and intuitive UI/UX**, along with awareness drives. Infrastructure development and trust-enhancing features like transaction insurance could address the remaining deterrents.

Table 8: DFS Usage by Region

Region	Mean Usage Score	Std. Deviation
Urban (Pune)	4.1	0.5
Semi-urban (Beed)	3.6	0.6
Rural (Nandurbar)	3.2	0.7

Interpretation:

Geographic segmentation revealed that urban respondents had the highest mean usage score (4.1), followed by semi-urban (3.6), and rural (3.2). These differences suggest that **urban areas benefit from better infrastructure, exposure, and support ecosystems** for DFS.

Rural regions, while making progress, lag due to constraints such as mobile coverage, awareness, and digital training. This finding validates the hypothesis that DFS adoption is uneven across geographies and justifies region-specific intervention strategies.

Table 9: Preferred DFS Platforms

Platform	Users (n)	Percentage
Google Pay	138	32.9%
PhonePe	121	28.8%
Paytm	87	20.7%
BHIM	42	10.0%
Bank Apps	32	7.6%

Interpretation:

Google Pay emerged as the most preferred DFS platform (32.9%), followed by PhonePe (28.8%) and Paytm (20.7%). The preference reflects market penetration, advertising visibility, and perceived ease of use. BHIM and individual bank apps were used less frequently, possibly due to interface limitations or restricted service integration. These findings indicate that user preference is closely linked to app reputation, user interface, speed, and peer adoption. It also shows how private players are dominating DFS usage, which has regulatory and strategic implications for state-backed initiatives like BHIM.

Table 10: Purpose of DFS Usage

Purpose	Frequency	Percentage
Money Transfer	267	63.6%
Utility Bill Payment	194	46.2%
Online Shopping	173	41.2%
Loan Repayment	84	20.0%
Savings/Investment	61	14.5%

Interpretation:

Money transfer was the leading purpose of DFS usage, cited by 63.6% of respondents. This is consistent with national trends of UPI usage, especially for P2P transactions. Bill payments and online shopping followed, reflecting the increasing digitalization of regular expenses. Notably, only 20% used DFS for loan repayment and 14.5% for savings or investment, indicating that while transactional adoption is high, more complex financial behaviors still lag. This distinction highlights a crucial dimension of financial inclusion—usage depth—which remains an area for targeted digital financial literacy initiatives.

Table 11: Satisfaction Level with DFS

Satisfaction Level	Respondents	Percentage
Very Satisfied	144	34.3%
Satisfied	176	41.9%
Neutral	56	13.3%
Dissatisfied	31	7.4%
Very Dissatisfied	13	3.1%

Interpretation:

A combined 76.2% of respondents reported being either ‘Very Satisfied’ or ‘Satisfied’ with DFS usage, suggesting a broadly positive user experience. Only 10.5% expressed dissatisfaction, often tied to issues like app errors, transaction delays, or poor customer support. The 13.3% ‘Neutral’ respondents represent a potentially volatile user base whose loyalty and continued use may depend on future experiences. Overall, the satisfaction index confirms the usability and acceptability of DFS among the surveyed population, affirming the effectiveness of fintech innovations while highlighting areas needing improvement.

5. DISCUSSION

The results from Section 4 offer vital insights into the state of digital financial services (DFS) and their role in advancing financial inclusion in the Indian context. By aligning these findings with the themes identified in the literature review, this section delves into the implications, interpretations, and contributions of the study in filling the existing gaps.

5.1. Demographic Patterns and Inclusivity in DFS Adoption

The demographic distribution (Table 1) revealed a commendable level of gender inclusivity, with females constituting 43.6% of DFS users. This finding aligns with Bala and Singhal (2022), who emphasized that fintech platforms are increasingly empowering women by offering private and autonomous channels to access finance. The presence of respondents identifying as 'Other' (2.1%) also underscores an emerging inclusivity in DFS research, though more attention is needed to understand the unique financial needs of these users. This gender representation is particularly significant in light of studies such as Jena (2025), which argued that inclusion metrics must capture usage diversity, not just access.

The age distribution in Table 2, with the majority of users aged 26–45, confirms the assertion by Goswami et al. (2022) that economically active groups are more inclined to use DFS due to their need for efficient transaction channels. Notably, the participation of senior citizens (10.2%) indicates that DFS outreach campaigns may be gaining traction even among older adults—an encouraging sign that addresses the 'generational digital divide' raised by Morgan (2022).

5.2. Usage Intensity and Behavioral Integration

DFS usage frequency (Table 3) reflects strong behavioral integration, with over 43% using DFS more than four times weekly. This supports Asif et al. (2023), who noted a rising trend in habitual digital payments among rural and semi-urban populations. The frequency data point toward DFS becoming an integral component of day-to-day financial behavior—a transformation that the literature often overlooks in favor of macro-level indicators like account ownership. Moreover, the study's observation of daily users being predominantly micro-entrepreneurs aligns with Kandpal and Mehrotra (2019), who emphasized the role of DFS in enabling real-time transactions for small business owners. This usage integration fulfills one of the key objectives of financial inclusion: enabling users not just to possess accounts but to actively manage their finances digitally.

5.3. Income and Educational Disparities in DFS Impact

The results from Table 4 show a statistically significant increase in DFS usage with higher income levels. This trend confirms Raj and Upadhyay's (2020) assertion that while DFS platforms are accessible across income bands, their effective utilization is stratified by income. This discrepancy may stem from the affordability of internet-enabled devices and the confidence to engage with financial systems. Similarly, Table 5 validates the findings of Badruddin (2017), who emphasized the influence of education on trust in digital platforms. Trust in DFS increased proportionally with education, revealing an important insight: financial literacy and digital familiarity are critical determinants of trust, a prerequisite for adoption.

The study thereby reinforces the notion that DFS alone cannot close the financial inclusion gap without complementary investments in digital education and targeted support. This aligns with Mehrotra (2019), who warned against assuming DFS as a panacea without addressing socioeconomic asymmetries.

5.4. Perceived Benefits and Limitations of DFS

The findings from Tables 6 and 7 paint a dual picture of optimism and challenge. Convenience and transaction speed emerged as the most cited benefits, in accordance with Goswami et al. (2022), who noted that ease of use is a dominant motivator in rural India. However, reduced cost and record-keeping—two long-term benefits of DFS—were less acknowledged, suggesting a lack of user education around financial planning.

Simultaneously, major barriers like digital illiteracy and poor network (Table 7) resonate with the limitations identified by Morgan (2022) and Mittal et al. (2023), particularly in rural settings. These challenges highlight the need for comprehensive digital onboarding strategies beyond app-based interfaces. Without resolving these foundational issues, the impact of DFS on true financial inclusion may remain partial and uneven.

5.5. Geographic Variations and Platform Preference

Geographic disparities in DFS usage scores (Table 8) affirm the arguments by Jena (2025) and Asif et al. (2023) that rural and semi-urban users face systemic constraints in accessing and trusting digital platforms. The higher mean usage score in Pune (urban) compared to Nandurbar (rural) is evidence of the infrastructure and awareness divide, reiterating Morgan's (2022) policy recommendation for regional focus.

In terms of platform preference (Table 9), private fintech platforms like Google Pay and PhonePe dominate over government-backed BHIM and bank apps. This confirms Mehrotra's (2019) concern that private innovation is outpacing public solutions, raising questions about the sustainability and inclusivity of market-led financial inclusion. The implication is clear: while competition fosters innovation, government platforms need strategic upgrades and user incentives to maintain relevance and trust.

5.6. Use Case Diversity and Satisfaction Insights

Table 10 revealed that money transfers and bill payments were the dominant use cases, while savings, loans, and investments remained underutilized. This finding underscores Badruddin's (2017) insight that DFS adoption tends to plateau at transactional usage unless there are directed nudges toward more complex financial behavior. This usage imbalance may indicate that financial inclusion remains shallow, and without comprehensive financial literacy, users may not transition into full-fledged participation in the formal economy.

In contrast, Table 11 reflects a high satisfaction rate (76.2%), affirming that the user experience with DFS is largely positive. This complements findings by Bala and Singhal (2022), who suggested that perceived value and trust are more influential than sheer functionality in user retention. The neutral and dissatisfied segments, however, reveal potential vulnerabilities—whether due to technical errors, fraud, or unresponsive customer support—that could hamper continued engagement.

5.7. Contributions and Gap Fulfilment

By comparing the results with prior scholarly works, this study has fulfilled the identified literature gap: the lack of disaggregated, user-level analysis of DFS adoption across socio-demographic lines. The survey-based approach offers empirical granularity, revealing how income, education, gender, and geography interact with digital finance usage. Moreover, by analyzing preferences, satisfaction, and barriers, the study provides actionable insights for platform developers and policy architects aiming to expand digital financial inclusion meaningfully.

5.8. Implications for Policy and Practice

The findings suggest that DFS adoption is a multi-layered phenomenon—influenced not just by access but by behavioral, infrastructural, and perceptual variables. Policymakers should focus on:

- Digital literacy training integrated with DFS onboarding
- Incentivizing deeper usage such as savings and credit
- Enhancing the user experience of government-backed platforms
- Improving digital infrastructure in semi-urban and rural areas

Platform developers must prioritize localized UI/UX design, regional language integration, and robust customer service to cater to diverse user needs. Financial inclusion should not only be about outreach but also about engagement and impact—a vision this study advances through its evidence-based, field-level insights.

6. CONCLUSION

This study has critically examined the role of digital financial services (DFS) in promoting financial inclusion across diverse socio-economic and geographic contexts in India. By employing a structured, survey-based methodology and analyzing data from 420 respondents across urban, semi-urban, and rural districts of Maharashtra, the research has provided empirical insights into the patterns, preferences, barriers, and behavioral dimensions of DFS adoption. The results underscore that while access to digital financial tools has expanded significantly, true inclusion hinges on factors such as digital literacy, trust, affordability, and infrastructure.

One of the key takeaways from this study is the nuanced relationship between socio-demographic variables and DFS usage. Education and income were found to be positively correlated with usage frequency and trust levels, suggesting that access alone is insufficient without the foundational support of literacy and economic stability. Similarly, regional disparities in usage scores reflect infrastructural inequalities, which must be addressed if digital finance is to reach India's most underserved communities. These findings align with and extend the existing literature by providing user-level validation of macroeconomic and policy-level assertions.

Another important insight is the observed gap between transactional usage and more complex financial behaviors like saving, investing, or credit management through DFS platforms. While money transfers and bill payments dominate usage patterns, the relatively low engagement with savings and credit instruments indicates that digital financial inclusion remains largely superficial for many users. Bridging this gap will require targeted behavioral nudges, incentive mechanisms, and stronger integration between fintech platforms and formal financial systems.

The study also reveals a strong consumer preference for private fintech apps such as Google Pay and PhonePe over government-backed platforms like BHIM. This finding carries important implications for regulators and policymakers, who must ensure that public digital infrastructure remains competitive, user-friendly, and trustworthy. Enhanced UI/UX design, regional language support, and responsive grievance redressal mechanisms are vital in maintaining user confidence in public DFS systems.

From a policy perspective, the findings call for a multipronged strategy. Investments in digital literacy, especially among women and low-income users, are critical. Infrastructure development, particularly in rural areas, must be prioritized to ensure consistent access. Regulatory frameworks should promote responsible innovation while ensuring consumer protection, especially against cyber fraud and data misuse.

Looking ahead, future research can build on this study by adopting longitudinal designs to track changes in DFS behavior over time. Qualitative approaches such as in-depth interviews could offer deeper insights into user motivations, fears, and decision-making processes that quantitative tools may not fully capture. Moreover, comparative studies across different Indian states or international contexts would enrich the global discourse on digital financial inclusion.

In sum, this research contributes to a more grounded and user-centric understanding of digital financial inclusion in India. It reaffirms that technology alone cannot guarantee inclusion—people, policy, and context must work in tandem to ensure that digital finance becomes a tool of empowerment rather than a source of exclusion.

References

1) Asif, M., Khan, M. N., Tiwari, S., Wani, S. K., & Alam, F. (2023). The impact of fintech and digital financial services on financial inclusion in India. *Journal of Risk and Financial Management, 16*(2), 122. https://www.mdpi.com/1911-8074/16/2/122

2) Bala, S., & Singhal, P. (2022). Digital financial inclusion through FinTech. In *Handbook of Research on Digital Innovation and Financial Technology* (pp. 45–66). IGI Global. https://www.igi-global.com/chapter/digital-financial-inclusion-through-fintech/298279

3) Badruddin, A. (2017). Conceptualization of the effectiveness of Fintech in financial inclusion. *International Journal of Advanced Research in Management and Social Sciences*, https://www.researchgate.net/publication/323475007

4) Goswami, S., Sharma, R. B., & Chouhan, V. (2022). Impact of financial technology (Fintech) on financial inclusion in rural India. *Universal Journal of Accounting and Finance*, 10(3), 88–98. https://www.academia.edu/download/83356931/UJAF13_12226003.pdf

5) Jena, R. K. (2025). Factors influencing the adoption of fintech for the enhancement of financial inclusion in rural India using a mixed methods approach. *Journal of Risk and Financial Management, 18*(3), 150. https://www.mdpi.com/1911-8074/18/3/150

6) Mehrotra, A. (2019). Financial inclusion through fintech—a case of lost focus. *IEEE International Conference on Technology and Entrepreneurship*. https://ieeexplore.ieee.org/document/8776857

7) Mittal, R., Kathuria, T., Saini, M., & Dhingra, B. (2023). Effect of financial inclusion and fintech on the effectiveness of Indian monetary policy: An empirical investigation. *International Journal of Social Economics*. https://www.emerald.com/insight/content/doi/10.1108/IJSE-01-2023-0034/full/html

8) Morgan, P. J. (2022). Fintech and financial inclusion in Southeast Asia and India. *Asian Economic Policy Review, 17*(1), 56–78. https://onlinelibrary.wiley.com/doi/abs/10.1111/aepr.12379

9) Raj, B., & Upadhyay, V. (2020). Role of FinTech in accelerating financial inclusion in India. *Indian Journal of Finance and Economic Policy*, https://www.researchgate.net/publication/341099770

10) Agrawal, G., & Jain, P. (2019). *Digital financial inclusion in India: A review*. In Financial inclusion in emerging markets. IGI Global. https://www.igi-global.com/chapter/digital-financial-inclusion-in-india/225239

11) Barik, R., & Sharma, P. (2019). Analyzing the progress and prospects of financial inclusion in India. *Public Administration*, https://onlinelibrary.wiley.com/doi/abs/10.1002/pa.1948

12) Durai, T., & Stella, G. (2019). Digital finance and its impact on financial inclusion. *International Journal of Management and Commerce Innovations*, https://www.researchgate.net/publication/330933079

13) Ghosh, C., & Hom Chaudhury, R. (2022). Determinants of digital finance in India. *Journal of Economic and Administrative Sciences*, https://www.tandfonline.com/doi/abs/10.1080/2157930X.2020.1850012

14) Kandpal, V., & Mehrotra, R. (2019). Financial inclusion: The role of fintech and digital financial services in India. *SSRN Electronic Journal*. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3485038

15) Ravikumar, T. (2019). Digital financial inclusion: A payoff of financial technology and digital finance uprising in India. *International Journal of Management*, https://www.researchgate.net/publication/337473707

16) Siddik, M. N. A., & Kabiraj, S. (2019). Digital finance for financial inclusion and inclusive growth. In George, B., & Paul, J. (Eds.), *Digital transformation in business and society* (pp. 147–170). Springer. https://link.springer.com/chapter/10.1007/978-3-030-08277-2_10

17) Vyas, V., & Jain, P. (2021). Role of digital economy and technology adoption for financial inclusion in India. *International Journal of Development and Research*, https://www.researchgate.net/publication/352382615