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Digital payments and financial inclusion: A study on the impact of mobile wallets in India

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Abstract
Grounded in the theoretical frameworks of Financial Inclusion Theory and the Technology Acceptance Model (TAM), this study investigates the role of mobile wallets in promoting digital payments and financial inclusion in India, with a specific focus on gender-based disparities. The research comprises three key areas: access to financial services, frequency of mobile wallet usage, and levels of digital literacy. The primary data were collected through simple random sampling. The study tries to evaluate the significance of gender-based differences. Research findings indicate that while mobile wallets have generally increased financial accessibility and usage, disparities persist, particularly in digital literacy and frequency of use among female users.

Keywords: Mobile wallets, digital payments, financial inclusion, gender disparities, digital literacy

Introduction
India, with a population of 1.38 billion, presents a vast potential for digital payments, supported by a large and rapidly growing base of mobile and internet users. As of October 2021, the country had approximately 1.18 billion mobile connections, 700 million internet users, and 600 million smartphones. This infrastructure has positioned India as a global leader, ranking first in the world for the number of real-time payment transactions in 2020, with 25.5 billion transactions.

The journey of digital transactions in India began in 1996 when ICICI Bank introduced online banking. This was followed by other major banks like HDFC, IndusInd, and Citi in 1999, marking the beginning of the digital era in Indian banking. A significant milestone was the establishment of the National Payments Corporation of India (NPCI) in 2008, a body formed by the Reserve Bank of India (RBI) and the Indian Banks' Association (IBA). The NPCI was tasked with creating a robust payment and settlement infrastructure, which led to the launch of several key products like the Aadhaar Enabled Payments System (AEPS) and Bharat Bill Payments System (BBPS).

Definitions
- **Digital Mobile Wallets:** An e-money account, primarily accessed via a mobile phone and held with an e-money issuer. These accounts can be used as a substitute for cash or as stored value to facilitate transactions.
- **Financial Inclusion:** The process of ensuring that all adults have access to a variety of appropriate, safe, and responsibly delivered financial services. These services must also be sustainable for providers and operate within a well-regulated environment.
- **Financial Services:** Economic services provided by financial institutions, including banking, investment, insurance, and wealth management. These services are crucial for managing, growing, and protecting the financial resources of individuals and businesses.
- **Mobile Payment:** The use of a mobile phone to access financial services and execute financial transactions. This includes both transactional and non-transactional services, such as viewing financial information on a user's mobile phone.
- **Digital Financial Inclusion:** The use of cost-effective digital technologies to provide formal financial services to populations that are currently excluded or underserved. The services are specifically tailored to meet the needs of these communities and must be

affordable and sustainable.
- **Financial Products**: Instruments or services offered by financial institutions that allow individuals and businesses to manage their financial resources. Examples include savings accounts, loans, investment funds, and insurance policies.

Digital Financial Inclusion

Digital financial inclusion involves the deployment of the cost-saving digital means to reach currently financially excluded and underserved populations with a range of formal financial services suited to their needs that are responsibly delivered at a cost affordable to customers and sustainable for providers.

While the years of experience with digital financial services often give providers significant advantages, the particular risks introduced by the new services result from, among other things:
- Introduction of non-financial firms deploying new technologies;
- New contractual relationships between financial institutions and third parties, including the use of agent networks and other outsourcing arrangements;
- Different regulatory treatment of deposit-like products (compared to deposits);
- Unknown and as-yet unpredictable costs to inexperienced and vulnerable consumers; and
- Use of new kinds of data—and new uses of data—introducing both new privacy and data security issues. CGAP(2014).

Components of Digital Financial Inclusion

The essential components of digital financial inclusion are as follows:
- Digital transactional platforms enable customers to make or receive payments and transfers and to store value electronically through the use of devices that transmit and receive transaction data and connect to a bank or non-bank permitted to store electronic value
- Devices used by the customers can either be digital devices (mobile phones, etc) that transmit information or instruments (payment cards, etc) that connect to a digital device such as a point-of-sale (POS) terminal.
- Retail agents that have a digital device connected to communications infrastructure to transmit and receive transaction details enable customers to convert cash into electronically stored value ("cash-in") and to transform stored value back into cash ("cash-out").
- Additional financial services via the digital transactional platform may be offered by banks and non-banks to the financially excluded and underserved — credit, savings, insurance, and even securities — often relying on digital data to target customers and manage risk CGAP (2014).

Arif Hasan *et al* 2024 [1] developed and validated a conceptual model to examine the factors influencing consumers' behavioral intention to use mobile wallets (M-wallets) for digital payments. Based on 482 valid responses and structural equation modeling, the study found that trust, compatibility, perceived value, and social influence significantly impact adoption, with trust being the strongest predictor. Interestingly, perceived enjoyment had little effect, suggesting users are more motivated by utility than pleasure. The findings highlight the importance of building trust and aligning M-wallet features with user needs to boost adoption. However, the study was limited to six M-wallets, a specific age group, and one city, which may affect the generalizability of the results. The findings suggest that M-wallet service providers should consider and manage all influencing elements as proactive strategies for M-wallet intention. This strategy can be used to create an M-wallet-user behavioral intention model that will assist enterprises/companies in managing the establishment of their users' behavioral intentions.

Ly and Ly (2024) [12] integrate four foundational theories—Technology Acceptance Model (TAM), Theory of Planned Behavior (TPB), Behavioral Economics, and Diffusion of Innovations—to analyze digital payment adoption in emerging economies. Their model underscores the critical roles of perceived ease of use (PEU), security, efficiency, and perceived behavioral control (PBC) in shaping user acceptance. Additionally, the study highlights the influence of behavioral nudges and financial literacy in accelerating innovation diffusion. Practically, the authors recommend that fintech developers prioritize system usability, security, and efficiency, while policymakers should enhance financial literacy through targeted education to foster wider adoption of digital payments.

Padma Kiran empirically investigates the key factors influencing the adoption of the Unified Payments Interface (UPI) by Indian users, incorporating the Unified Theory of Acceptance and Use of Technology (UTAUT) framework and examining perceived risk as a moderating variable. Data were collected through a survey of regular UPI users, and the proposed model was tested using Partial Least Squares Structural Equation Modeling (PLS-SEM) alongside Multi-Group Analysis (MGA). The findings reveal that performance expectancy, effort expectancy, and social influence significantly and positively affect users' behavioral intention to adopt UPI. Additionally, perceived risk was found to moderate the effects of facilitating conditions, performance expectancy, and social influence. Users generally exhibited similar behavioral patterns across different UPI platforms. The study offers valuable insights for both FinTech providers and policymakers, suggesting that targeted promotional strategies could further enhance UPI adoption and support the broader goal of advancing digital payments in India.

Khalid investigates the impact of the COVID-19 pandemic on digital payment adoption and its relationship with financial inclusion in India. Using a descriptive-analytical approach with secondary data from sources like the RBI and NPCI, the study found a significant increase in UPI usage, stable adoption of mobile wallets, and a plateau in AEPS-assisted services. Regression analysis indicated that UPI and wallet transactions positively influence the Financial Inclusion Index, while AEPS has a negative association. The findings also highlight persistent disparities across rural-urban, gender, and literacy lines, underscoring the need for targeted interventions such as digital literacy initiatives and inclusive financial design to ensure equitable digital participation. The study's practical implications are to guide policy stakeholders and fintech innovators in creating more inclusive financial systems.

Author(s)	Study Focus	Key Findings	IVs & DVs
Demirgüç-Kunt *et al*. (2018) [5]	Role of digital finance in global financial inclusion	Mobile wallets enhance access to financial services in developing economies	IV: Digital finance tools DV: Financial inclusion
Ghosh & Vinod (2017) [6]	Gender disparities in digital financial access in India	Rural women face limitations in accessing digital tools due to socio-cultural factors	IV: Gender DV: Digital financial access
Roy & Sinha (2021) [17]	Mobile wallet usage trends across genders in India	Rising smartphone adoption among women is narrowing usage gaps	IV: Gender DV: Mobile wallet usage frequency
Sharma & Kukreja (2020) [18]	Digital literacy's impact on mobile wallet usage	Digital illiteracy hinders wallet usage, especially among women	IV: Digital literacy DV: Mobile wallet adoption
Venkatesh & Davis (2000) [19]	Technology Acceptance Model (TAM)	Perceived ease of use and perceived usefulness are pivotal in tech adoption	IV: Perceptions (e.g., ease of use, usefulness) DV: Adoption direction
Reserve Bank of India (2020)	Trends in digital banking and financial access in India	Wallet adoption grew notably during COVID-19 era	IV: Mobile wallets DV: Financial inclusion
Painuly & Rohal (2024) [14]	Factors influencing mobile wallet adoption in India	Adoption varies by age, income, education, with rural divide; influenced by ease of use, trust, affordability	IVs: Ease of use, perceived security, affordability, peer influence DV: Adoption
Lakshmanan & Shanmugavel (2025) [11]	Continuation intention of digital wallet use in rural India	Trust, incentives, satisfaction, performance expectancy affect ongoing use	IVs: Trust, incentives, facilitating conditions, performance expectancy, habit DV: Continuation Intent
Hasan *et al*. (2024) [1]	Behavioral intention to use digital payment among Indian youth	Multiple behavioral determinants impact the intention to adopt digital payments	IVs: Behavioral predictors; DV: Behavioral intention to adopt
Biswas (2021) [2]	Mobile financial services' effect on financial behavior in India	Services increase likelihood of investment, insurance, formal borrowing; can reduce gender gaps in inclusion	IV: Use of mobile financial services DV: Investment, insurance, borrowing behavior
Mishra *et al*. (2024) [13]	Digital financial literacy and financial decision-making among Indian women	Literacy, attitude, norms, perceived control predict financial decisions and investment intentions	IVs: Digital financial literacy, attitude, norms, control, access DV: Financial decision-making, investment intention
Iqbal (2021) [9]	Gendered patterns in smartphone ownership and internet autonomy among rural youth	Cultural factors shape smartphone access and autonomy, reinforcing inequalities	IV: Gender, cultural context DV: Smartphone ownership, autonomy
India Literacy Campaigns (RBI, 2024)	National digital literacy efforts in India	Millions trained, significant rural coverage; digital payments awareness raised	IV: Digital literacy campaigns DV: Uptake of digital payments
Internet Saathi Program (2015-2024)	Women-focused digital literacy initiative	Over 17 million rural women trained to use the internet	IV: Internet training programs DV: Digital literacy among women

(Source: Author's Compilation from various sources)

Cashless Economy

In recent years, India has witnessed an unparalleled rise in digital transactions, marking a significant milestone in its journey towards becoming a cashless society. At the forefront of India's digital payment revolution is UPI with a record hit of 16.73 Billion transactions in December 2024. In addition to this, Immediate Payment Service (IMPS), and NETC FASTag have emerged as pivotal players, making financial transactions faster, more accessible, and secure.

Unified Payments Interface (UPI) is a system that powers multiple bank accounts into a single mobile application (of any participating bank), merging several banking features, seamless fund routing & merchant payments into one hood. It has not only made financial transactions fast, secure, and effortless, but also empowered individuals, small businesses, and merchants, driving the country's shift toward a cashless economy.

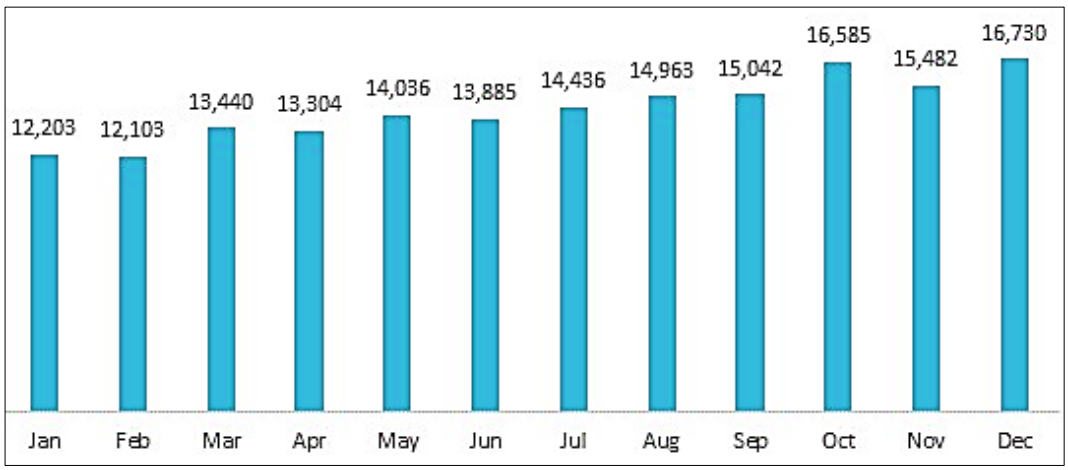


Fig 1: UPI Transactions in 2024 (Volume in Millions)

As of recent data from the National Payments Corporation of India (NPCI), UPI has set a new record by processing over 16.73 billion transactions, with a staggering transaction value of Rs 23.25 lakh crore. This is a notable jump from Rs 21.55 lakh crore in November. In 2024, UPI processed around 172 billion transactions, marking a 46% increase from 117.64 billion in 2023. This rise underscores a broader cultural shift toward financial inclusivity, with UPI being a central pillar.

While UPI has dominated the mobile transaction space, IMPS has long been a trusted service for instant payments between accounts. Launched in 2010, Immediate Payment

Service (IMPS) is a real-time, 24x7 electronic funds transfer service that facilitates quick transactions across banks and financial institutions. Its versatility in supporting transactions through multiple channels, including mobile, ATM, SMS, and the internet, has made it an essential tool for businesses and individuals alike. Recent data indicates that IMPS transactions have surged, with 441 million transactions recorded in December 2024, compared to 407.92 million in November 2024. The transaction value also saw a notable increase, touching Rs 6.01 lakh crore in December, up from Rs 5.58 lakh crore the previous month.

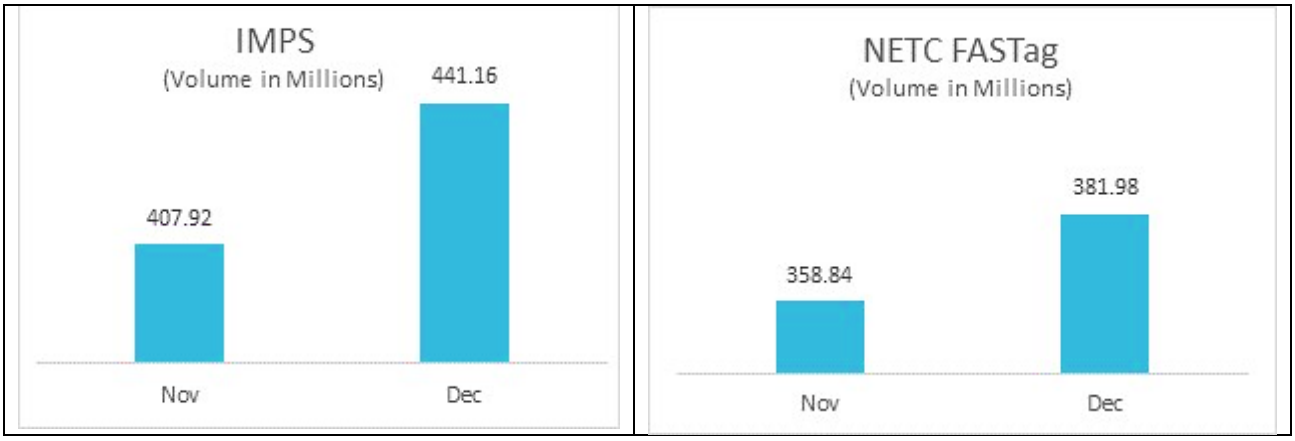


Fig 2: IMPS and NETC FASTag (Voulme in Millions)

Another important digital payment method that has grown in significance is the NETC FASTag**.** National Electronic Toll Collection (NETC) FASTag offers a seamless, cashless way to pay for tolls on national highways, eliminating the need for vehicles to stop at toll plazas. By linking a FASTag to a bank account (be it savings, current, or prepaid), drivers can pay their tolls while on the move, saving both time and fuel. FASTag transactions grew in volume to 381.98 million in December, against 358.84 million in November. The value also increased to Rs 6,642 crore against Rs 6,070 crore in November.

The surge in digital transactions through UPI, IMPS, and NETC FASTag is a testament to India's growing embrace of a digital-first economy. These technologies have not only made financial transactions easier but also more secure, ensuring that users can engage in commerce without the fear of fraud or theft. As India continues to expand its digital infrastructure and enhance its payment systems, the future of financial transactions looks brighter than ever (Ministry of Finance, GoI (2025)).

Progress in Digital Payment Transactions

Digital payments have significantly increased in recent years as a result of coordinated efforts of the Government with all stakeholders. The total digital payment transactions volume increased from 2,071 crore in FY 2017-18 to 18,592 crore in FY 2023-24 at CAGR of 44%. Digital Payment Transactions has seen a tremendous growth especially after FY 2013-14. The digital payment transactions have grown from 220 crore in FY2013-14 to 18,592 Crore in FY2023-24. During the same period, the value of transactions has grown from ₹ 952 lakh crore to ₹ 3,658 lakh crore.

a) Unified Payments Interface (UPI): UPI is an indigenous digital payment system which provides the facility of quick and easy payments from multiple bank accounts in a single mobile application. UPI has revolutionized digital payments in the country; UPI transactions have grown from 92 crore in FY 2017-18 to 13,116 crore in FY 2023-24 at CAGR of 129%. The UPI transactions are expected to cross 20,000 crores in FY2024-25 are estimated.

b) Internationalization of Digital Payments

- India's indigenously developed UPI and RuPay cards are world class platforms for enabling digital payments. Government is making efforts to promote these products globally.
- At present UPI is fully functional and live in UAE, Bhutan, and Singapore, UPI is technically live and pilot tests completed in Nepal, Mauritius, France, and Sri Lanka. Commercial deployment of the payment mode is anticipated soon.
- RuPay cards acceptance is live in Nepal, Bhutan, Singapore, and UAE (Technically live in Maldives).

c) Digital Payment Infrastructure: Coordinated efforts of ecosystem partners have led to an exponential growth in digital payments acceptance infrastructure in the country, increasing from 0.31 crore in FY 2017-18 to 26.95 crore in FY 2022-23. As per RBI data till 31st March 2024, the number of payment acceptance infrastructure is 36.14 crore **(**Source: Department of Financial services, Government of India, https://financialservices.gov.in/beta/en/page/digital-payments).

Table 1: Mobile wallet payments in India

Parameter	Value	Unit	Time Period / Year	CAGR (%)
Mobile Wallet Transactions (Forecast)	6.39 trillion	US$	By 2028	18.3 (2024-2028)
Mobile Wallet Transactions (Forecast)	531.8 trillion	INR (Rs.)	By 2028	18.3 (2024-2028)
UPI Transactions (Actual)	2.5 trillion	US$	2023	72.1 (2019-2023)
UPI Transactions (Actual)	202.8 trillion	INR (Rs.)	2023	72.1 (2019-2023)

(**Source:**https://www.ibef.org/news/mobile-wallet-payments-in-india-to-surpass-us-6-38-trillion-rs-531-trillion-in-2028-globaldata**)**

Mobile Wallet in India

Mobile wallet adoption is surging in India, swiftly becoming a primary payment option, surpassing traditional methods like cash and cards. Payment through mobile wallet is anticipated to grow at a compound annual growth rate (CAGR) of 18.3% between 2024 and 2028 and reach INR531.8 trillion ($6.4 trillion) in 2028, forecasts Global Data, a leading data and analytics company.

GlobalData reveals that the value of mobile wallet payments in India grew at a robust CAGR of 72.1% between 2019 and 2023 to reach INR202.8 trillion ($2.5 trillion) in 2023. This is mainly due to the government's concerted efforts to promote digital payment methods, most prominent being the mobile wallet-based instant payment solution—unified payments interface (UPI).

Shivani Gupta, Senior Banking and Payments Analyst at GlobalData, comments: "India is one of the most developed mobile wallet markets in the world. Mobile wallets are now widely used for day-to-day transactions at supermarkets, grocery stores, and street vendors, as well as for online transactions. The rise in mobile wallet adoption is largely driven by UPI, which facilitates payments in real-time simply by scanning QR codes."

Mobile Wallets and Financial Inclusion

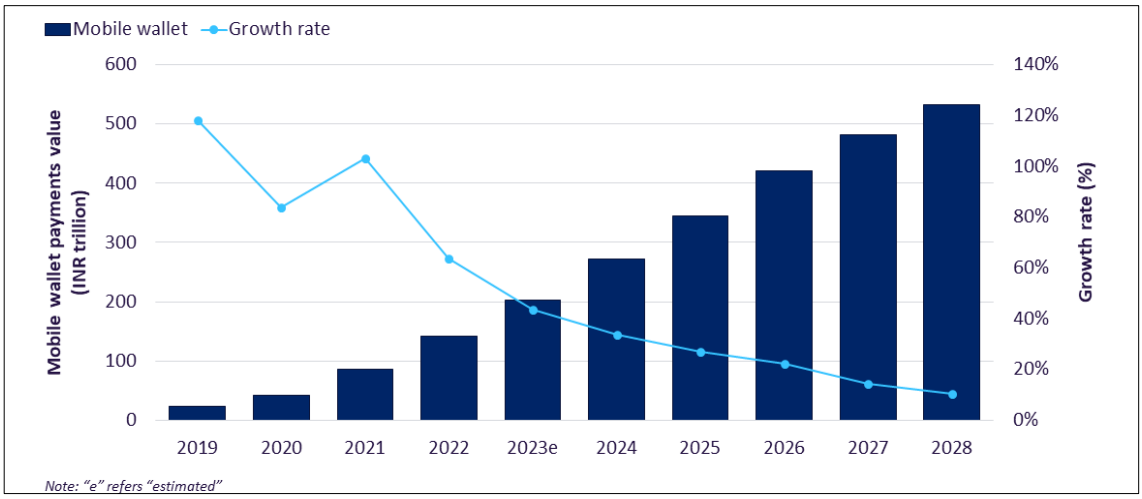
Mobile wallets have been recognized as catalysts for financial inclusion, particularly in developing economies. Demirgüç-Kunt, Klapper, Singer, Ansar, and Hess (2018) [5] argue that digital financial tools can provide the unbanked with greater access to formal financial systems, enabling savings, credit, and remittances. In India, government-led initiatives like Digital India and the Pradhan Mantri Jan Dhan Yojana have laid the groundwork for a more inclusive financial ecosystem, which mobile wallets help to facilitate (Reserve Bank of India [RBI], 2020).

Gender and Access to Digital Finance

Despite overall progress, gender disparities persist in access to digital financial services. Ghosh and Vinod (2017) [6] found that women, especially in rural regions, are significantly less likely to own mobile phones or have access to internet-enabled financial tools. Cultural and social barriers further exacerbate this divide. However, Roy and Sinha (2021) [17] noted a positive shift with increasing smartphone adoption among women, which, combined with awareness programs, is gradually narrowing the gender gap in mobile wallet usage.

Digital Literacy as a Mediator

Digital literacy plays a crucial role in the successful adoption of mobile wallets. According to the Technology Acceptance Model (TAM) proposed by Venkatesh and Davis (2000) [19], users' perceptions of ease of use and usefulness significantly influence their willingness to adopt technology. In the Indian context, Sharma and Kukreja (2020) [18] highlight that limited digital skills among lower-income and less-educated groups — particularly women — hinder adoption and usage of mobile wallets despite physical access to technology.



(**Source:** GlobalData Banking and Payments Intelligence Center)

Fig 3: India Mobile Wallet Payments Value (INR trillion), 2019-28

Launched in April 2016, UPI had a user base of 300 million as of October 2023, with the figure growing continuously, courtesy of increasing merchant acceptance points. According to National Payments Corporation of India (NPCI) statistics, 12.1 billion transactions worth INR18.3 trillion ($221.5 billion) were made in February 2024 - up from 7.5 billion transactions worth INR12.4 trillion ($150.1 billion) made in February 2023.

The surge in UPI payments is attributed to the convenience of electronic payments, high smartphone penetration, rising banked population, and the proliferation of UPI-enabled mobile payment solutions in the country. Several mobile wallets, such as Paytm, PhonePe, Amazon Pay, and Google Pay, have incorporated UPI functionality, allowing users to conduct QR code transactions directly from their linked bank accounts.

Furthermore, to increase its presence beyond its national boundary and position itself as a global payment brand, UPI was launched in Sri Lanka, Mauritius, and the UAE in February 2024. Similar agreements are in place with other countries like Singapore, and France with more countries expected to follow the suit (Global Data Plc 2025).

Research Gap

While existing literature affirms the potential of mobile wallets in improving financial inclusion, there is limited

research examining gender-based differences in the Indian context, particularly regarding digital literacy and usage frequency. Most studies have taken a general or urban-centric view, leaving rural and gender-segregated insights underexplored. This study fills the gap by focusing on the intersection of gender, digital literacy, and mobile wallet usage, and how they collectively impact access to financial services in India.

Analysis and Interpretation of Primary Data

The primary data is collected from 120 sample respondents based in the city of Bengaluru drawn using simple random sampling.

1. Access to Financial Services

- **H_0 (Null Hypothesis):** There is no significant difference between male and female respondents in terms of access to financial services.
- **H_1 (Alternative Hypothesis):** There is a significant difference between male and female respondents in terms of access to financial services.

2. Usage Frequency of Mobile Wallets

- **H_0:** There is no significant difference in the frequency of mobile wallet usage between male and female respondents.
- **H_1:** There is a significant difference in the frequency of mobile wallet usage between male and female respondents.

3. Digital Literacy

- **H_0:** There is no significant gender-based difference in digital literacy levels related to mobile wallet use.
- **H_1:** There is a significant gender-based difference in digital literacy levels related to mobile wallet use.

Table 2: Demographic Details of Participants (Mobile Wallet Users, N = 120)

Categories	Sub-categories	Frequency	Percent (%)
Gender	Male	60	50
	Female	60	50
Occupation	Students	30	25
	Working professionals	50	41.7
	Self-employed	25	20.8
	Others	15	12.5
Age	Below 20 years	47	39.2
	20-30 years	17	14.2
	30-40 years	37	30.8
	40-50 years	14	11.7
	Above 60	5	4.2

The demographic profile of the 120 mobile wallet users shows an equal distribution between males and females, each constituting 50% of the sample. This gender balance indicates that mobile wallet adoption is widespread and not limited to one gender. In terms of occupation, the largest segment consists of working professionals (41.7%), followed by students (25%) and self-employed individuals (20.8%). This distribution suggests that mobile wallets are popular among employed adults and younger users who are either studying or running their own businesses.

Age-wise, the majority of mobile wallet users are relatively young, with 39.2% under 20 years old and 30.8% between 30 and 40 years. The 20-30 years group accounts for 14.2%, while users aged 40-50 years and above 60 years constitute smaller proportions (11.7% and 4.2%, respectively). This pattern indicates strong adoption among younger and middle-aged individuals, with comparatively less usage among older adults. Overall, the data reflect that mobile wallets appeal primarily to a younger, working population across both genders.

Table 3: Descriptive Statistics of the Financial Inclusion Variable

Financial Inclusion Subscales	N	Mean	Std. Deviation
Access to Financial Services	120	2.45	0.51
Usage of Financial Services	120	2.3	0.55
Financial Literacy	120	2.6	0.49

The data from 120 respondents shows that the mean score for Access to Financial Services is 2.45 with a standard deviation of 0.51, indicating a moderate level of access among the sample with some variability in responses. The Usage of Financial Services has a slightly lower mean of 2.3 and a standard deviation of 0.55, suggesting that while access exists, the actual usage is somewhat less frequent or consistent among respondents.

Financial Literacy scores the highest mean at 2.6 with a standard deviation of 0.49, implying that respondents generally have a fair understanding of financial concepts, though there is still room for improvement.

The results suggest that while there is reasonable awareness and access to financial services, actual usage lags slightly behind, pointing to potential barriers such as usability or trust. Improving financial literacy could help bridge this gap by empowering users to make better use of available services, thereby enhancing overall financial inclusion.

Table 4: Descriptive Statistics and Difference in Financial Inclusion Subscales Gender-wise

Variable	Gender	N	Mean	S.D	Std. Error Mean	p-value	Significance
Access to Financial Services	Male	60	2.35	0.52	0.067	0.034	Significant
	Female	60	2.55	0.48	0.062		
Usage Frequency	Male	60	2.28	0.53	0.068	0.412	Not Significant
	Female	60	2.32	0.57	0.074		
Digital Literacy	Male	60	2.48	0.5	0.065	0.021	Significant
	Female	60	2.72	0.46	0.059		

The analysis of gender-based differences in financial inclusion subscales reveals meaningful insights. Female respondents reported better access to financial services through mobile wallets compared to male respondents. This difference was found to be statistically significant, indicating that gender plays a role in how individuals perceive and benefit from access to financial tools provided by digital platforms. As a result, the null hypothesis, which stated there would be no significant difference between males and females in terms of access to financial services, is rejected.

In contrast, when examining the frequency of mobile wallet usage, both male and female respondents demonstrated similar usage patterns. The statistical test showed no significant difference between the two groups. This suggests that mobile wallet usage has become equally integrated into the daily lives of both genders, and the null hypothesis for this variable is not rejected.

Regarding digital literacy, the results revealed that female respondents scored higher than their male counterparts, indicating better understanding and use of digital financial services. This gender-based difference was statistically significant, suggesting that women, in this sample, are more digitally literate in the context of mobile wallet usage. Hence, the null hypothesis stating no significant gender-based difference in digital literacy is also rejected.

Overall, the findings suggest that while mobile wallet usage frequency is comparable between genders, females exhibit higher access to financial services and greater digital literacy, highlighting areas where gender differences still influence financial inclusion outcomes.

Table 5: ANOVA Table of Financial Inclusion Subscales by Mobile Wallet User Groups

Subscale	Source	Sum of Squares	df	Mean Square	F	Sig. (p-value)
Access to Financial Services	Between Groups	12.3	3	4.085	6.135	.000 HS
	Within Groups	79.7	116	0.687		
	Total	92	119			
Usage Frequency	Between Groups	18.6	3	6.214	9.832	.000 HS
	Within Groups	73.4	116	0.632		
	Total	92	119			
Digital Literacy	Between Groups	5.14	3	1.712	2.571	0.058 (NS)
	Within Groups	77.2	116	0.666		
	Total	82.4	119			

Based on the ANOVA results for the three subscales related to financial inclusion among 120 respondents, significant differences were found in both Access to Financial Services and Usage Frequency across the groups analyzed. Specifically, the p-values for Access to Financial Services and Usage Frequency were less than 0.01, indicating strong evidence that these variables differ significantly among the groups, which could be based on factors such as age, gender, or other demographic segments.

In contrast, Digital Literacy showed no statistically significant difference across the groups, with a p-value of 0.058, which is slightly above the common significance threshold of 0.05. This suggests that digital literacy levels are relatively consistent across the groups considered in this study.

While access to financial services and the frequency of mobile wallet usage vary significantly among different groups, digital literacy remains fairly uniform. This highlights the need to focus on improving access and encouraging more frequent usage in targeted segments, while digital literacy programs may be broadly applicable across the population.

Table 6: Descriptive Statistics and Differences in Financial Inclusion Variables Age-wise (N=120)

Financial Inclusion Subscale	Age Class	N	Mean	S.D	Std. Error Mean	P value (Sig)
Access to Financial Services	Below 30	64	3.48	0.82	0.103	P = 0.037 < 0.05 (S)
	Above 30	56	3.72	0.76	0.102	
Usage Frequency of Mobile Wallets	Below 30	64	3.78	0.91	0.114	P = 0.143 > 0.05 (NS)
	Above 30	56	3.65	0.88	0.118	
Digital Literacy	Below 30	64	3.22	0.88	0.11	P = 0.028 < 0.05 (S)
	Above 30	56	3.5	0.8	0.107	

The analysis of financial inclusion subscales across two age groups — Below 30 years and Above 30 years — reveals several key findings. For Access to Financial Services, the mean score for respondents above 30 years (3.72) is higher than for those below 30 years (3.48), and this difference is statistically significant ($p = 0.037 < 0.05$). This indicates

that older respondents have better access to financial services, possibly due to greater experience or established financial habits.

Regarding the Usage Frequency of Mobile Wallets, the mean usage among respondents below 30 years (3.78) is slightly higher than those above 30 years (3.65), but this difference is not statistically significant ($p = 0.143 > 0.05$). This suggests that mobile wallet usage frequency is relatively similar across the two age groups, reflecting widespread adoption among both younger and older users.

For Digital Literacy, respondents above 30 years scored higher (mean = 3.5) compared to those below 30 years (mean = 3.22), and this difference is statistically significant ($p = 0.028 < 0.05$). This may indicate that older users, despite common assumptions, demonstrate stronger digital literacy related to financial technology in this sample.

Table 7: Correlation Matrix

Variables	Access	Usage Frequency	Digital Literacy	Financial Inclusion Overall
Access to Financial Services	1			
Usage Frequency	0.62**	1		
Digital Literacy	0.54**	0.48**	1	
Financial Inclusion Overall	0.88**	0.75**	0.68**	1

The analysis reveals a strong positive correlation ($r = 0.62$) between Access to Financial Services and Usage Frequency, indicating that individuals who use mobile wallets more frequently tend to have better access to financial services. This suggests that frequent use of digital payment methods enhances users' integration into the formal financial system. Digital Literacy shows a moderate correlation with both access and usage, underscoring the critical role of digital skills in enabling effective use of mobile wallets and improving access to financial services. Users with higher digital literacy are more likely to navigate digital financial platforms confidently, leading to greater financial inclusion.

Furthermore, all three variables—access, usage frequency, and digital literacy—are strongly correlated with the overall financial inclusion score. This demonstrates that they are reliable and significant indicators of financial inclusion in the context of mobile wallet adoption.

Table 8: Correlation Table for Male

Variables	Access	Usage Frequency	Digital Literacy
Access to Financial Services	1		
Usage Frequency	0.60**	1	
Digital Literacy	0.50**	0.45*	1

For male respondents, the correlation matrix shows positive relationships among the three key variables related to financial inclusion. Access to Financial Services is strongly correlated with Usage Frequency ($r = 0.60$, $p < 0.01$), indicating that individuals who have better access to financial services tend to use mobile wallets more frequently. Additionally, Access to Financial Services is moderately correlated with Digital Literacy ($r = 0.50$, $p < 0.01$), highlighting that greater digital skills are associated with improved access to financial services.

Usage Frequency also correlates moderately with Digital Literacy ($r = 0.45$, $p < 0.05$), suggesting that users with higher digital literacy tend to engage more frequently in mobile wallet transactions.

Table 9: Correlation Table for Female

Variables	Access	Usage Frequency	Digital Literacy
Access to Financial Services	1		
Usage Frequency	0.65**	1	
Digital Literacy	0.55**	0.50**	1

For female respondents, the correlation analysis shows strong positive relationships among the financial inclusion variables. Access to Financial Services has a strong positive correlation with Usage Frequency ($r = 0.65$, $p < 0.01$), indicating that women with better access to financial services tend to use mobile wallets more frequently.

Similarly, Access to Financial Services is strongly correlated with Digital Literacy ($r = 0.55$, $p < 0.01$), suggesting that higher digital skills among women are associated with improved access to financial services. Additionally, Usage Frequency and Digital Literacy are positively correlated ($r = 0.50$, $p < 0.01$), showing that women with greater digital literacy tend to use mobile wallets more often.

Suggestions

1. **Enhance Digital Literacy Programs:** Develop targeted digital education initiatives, especially for women and younger populations, to boost confidence and competence in using mobile wallets and other digital financial services.
2. **Improve Access to Technology and Infrastructure** Expand affordable internet connectivity and smartphone access in rural and underserved areas to ensure more people can utilize mobile wallets effectively.
3. **Promote Awareness Campaigns:** Conduct awareness drives that explain the benefits, security features, and ease of mobile wallet usage to reduce hesitation and mistrust among potential users.
4. **Customize Financial Products:** Encourage mobile wallet providers to design products tailored to the needs of different demographic groups, such as older adults or low-income users, to enhance usability and relevance.
5. **Strengthen Regulatory Frameworks:** Ensure robust consumer protection policies and transparent transaction processes to build trust in digital payments and safeguard users' interests.
6. **Collaborate with Local Institutions:** Partner with community organizations, banks, and local governments to facilitate adoption and provide hands-on support for new users.
7. **Monitor and Evaluate:** Establish systems to track progress and challenges in mobile wallet adoption and financial inclusion, allowing for data-driven improvements over time.

These suggestions aim to create an inclusive digital financial ecosystem where mobile wallets act as a key enabler for economic participation and growth.

Conclusion

This study highlights the transformative role of mobile wallets in advancing financial inclusion across diverse demographic groups in India. The findings reveal that

mobile wallet usage significantly enhances access to formal financial services, with usage frequency strongly linked to better financial inclusion outcomes. Digital literacy emerges as a critical factor, positively influencing both access and the frequency of mobile wallet usage, emphasizing the need for digital skill development alongside technology adoption.

Age-wise analysis indicates that older users tend to have better access to financial services and higher digital literacy, although mobile wallet usage frequency remains relatively consistent across age groups. Gender-based analysis further underscores that women with greater digital literacy exhibit improved access and usage, highlighting digital empowerment as a key pathway for inclusive financial growth. Overall, the study confirms that mobile wallets serve as an effective tool in bridging financial gaps by making digital payments more accessible and convenient. However, sustained efforts are necessary to enhance digital literacy and infrastructure, ensuring that the benefits of digital financial services reach all segments of society equally. Policymakers and stakeholders should thus focus on targeted interventions that promote both technology adoption and digital education to realize the full potential of financial inclusion in India.

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