The Journal of Asia Entrepreneurship and Sustainability RESEARCH ARTICLE

An Empirical Study on Determinants of Adoption of Financial Technology Services by Consumers in Delhi-NCR

Ashish Kumar[1], Dr. Indira Sharma[2]

[1]PhD Research Scholar, Oriental University, Indore (M.P); Email: ashish4rv@gmail.com; Orcid id: 0009-0009-5742-8394
[2]Associate Professor, Oriental University, Indore (M.P); Email: indirasharma@orintaluniversity.in; Orcid id: 0000-0001-9290-9171

Abstract
In India, financial technology (FinTech) has gone beyond being a banking innovation and is now an integral part of everyday banking, from payments and transfers to credit, investment, insurance, and personal finance management. Delhi-NCR is an important context given the high smartphone penetration, focus of banking and platform ecosystems, rich in households of high and middle income groups, migrant population, student population, salaried population, merchant population and digitally diverse households. This paper proposes an empirical model to explain consumer acceptance of FinTech services in Delhi-NCR, which combines the Technology Acceptance Model (TAM), Unified Theory of Acceptance and Use of Technology (UTAUT/UTAUT2), perceived-risk theory, trust research, technology readiness and digital-financial-literacy perspectives. The proposed model proposes that performance expectancy, effort expectancy, social influence, facilitating conditions, trust and perceived security, perceived risk, digital financial literacy, personal innovativeness, government/regulatory support and grievance redressal are the major factors that influence the behavioural intention and actual use. The paper also collates the gamut of evidence from India and abroad and places the proposed investigation in the fast-expanding Indian digital-payment ecosystem. The official data reveals that the UPI handled 24.51 billion transactions in August 2026, whereas the Reserve Bank of India's Digital Payments Index had jumped to 516.76 by September 2025, highlighting the massive and maturing landscape in which today's consumer adoption decisions are made. A cross sectional survey is proposed for at least 500 active/future FinTech consumers in Delhi-NCR followed by reliability analysis, exploratory factor analysis and confirmatory factor analysis and structural equation modelling. Primary coefficients, p-values or demographic frequencies are not fabricated because a respondent-level data set was not provided for the current manuscript. Rather, the paper outlines an entire empirical design that can be tested, hypotheses that can be proposed, a measurement system, benchmark evidence, and a template for reporting the results, which can be filled in directly as soon as valid survey data have been collected.

Keywords: FinTech adoption; Delhi-NCR; UPI; mobile banking; TAM; UTAUT; trust; perceived risk; digital financial literacy; government support

1. Introduction

Over the last few years, the landscape of financial services in India has rapidly evolved due to the proliferation of financial services on the smartphones of common consumers, the availability of low cost mobile data, interoperable payment systems, digital identity, and platform based business models. These days FinTech is not just for a handful of tech companies. It is seen now in bank applications, Unified Payments Interface (UPI) apps, mobile wallets, buy-now-pay-later products, digital lending platforms, investment platforms, insurance aggregators, robo-advisory, personal-finance apps and embedded payment options. Here, the adoption issue doesn't just relate to consumers' awareness of digital finance. A more relevant question is: why do some consumers embrace, scale up and persist with FinTech services while others are skeptical, selective, and reliant on cash and branch-based channels?

This is also relevant in India, where digital payments are a massive volume. As per the data released by the National Payments Corporation of India (NPCI), there were 24,508.96 million UPI transactions worth of ₹29.82 trillion (₹29,82,355.95 crore) during August 2026. This exceeded the volume of transactions in April 2026, which was 22,346.80 million. The overall trend of digitisation is also reflected in the Reserve Bank of India's (RBI) Digital Payments Index, which increased from 100 (base) to 493.22 in March 2025 and to 516.76 in September 2025. These are clear signs that digital payments are no longer a stressful component of new technology but are now an integral element of the mainstream payment infrastructure. However, the presence of differences on the individual level regarding trust, usability perceptions, risk concerns, literacy, readiness to be innovative, regulatory confidence, and/or service quality do not go away when aggregated.

Delhi-NCR is an eminently empirical context to investigate these human differences among individuals. The region comprises of the NCR and big

cities like Greater Noida, Faridabad, Ghaziabad, Noida, Gurugram and the National Capital Territory Delhi. It is characterized by the presence of highly connected corporate districts, universities, government offices, start-up clusters, informal markets, residential suburbs, migrant communities and a wide variety of income and education levels. The region's consumers thus have plenty of opportunities and disparity in capability to use FinTech. A regional model can incorporate the adoption process which may be hidden in national samples.

There are a number of helpful starting points to consider when it comes to technology-adoption scholarship. Perceived usefulness and perceived ease of use have been perceived as the cornerstones of technology acceptance (Davis, 1989), and the subsequent models focused on social and facilitating conditions (Venkatesh & Davis, 2000; Venkatesh &Bala, 2008). In the literature, performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value and habit are grouped together as predictors of intention and use since they all contribute to the intention to use in the UTAUT model and UTAUT2 (Venkatesh et al., 2003; Venkatesh et al., 2012). However, for financial services, four factors of trust, security, perceived risk, and grievance redressal are especially relevant, as is the element of financial capability, because users of the service are vulnerable to losing money, privacy concerns, to fraud, and to service failure when adopting it (Featherman & Pavlou, 2003; Gefen et al., 2003; Lee, 2009; Ryu, 2018).

Indian empirical studies provide support for this, as one theory alone cannot explain it. Chawla and Joshi (2019) discovered that trust and security are issues for the mobile-wallet adoption in India. Thakur and Srivastava (2014) emphasized three factors: adoption readiness, innovativeness and perceived risk. Patil et al. (2020) based on an extended version of the UTAUT model concluded that the factors of performance expectancy, attitude, social influence, facilitating conditions, trust-related mechanisms and grievance redressal were significant. Singh, Sinha and Liébana-Cabanillas (2020) highlighted the barriers of stress and personal innovativeness and social influence. Saxena et al. (2023) conducted an interesting study in Delhi-NCR that looked into the factors affecting mobile banking users' behavioural intention to adopt mobile banking and reported that performance expectancy, effort expectancy, social influence, optimism, and innovativeness significantly influenced the behavioural intention, and that governmental support partially mediated the path of mobile banking adoption.

Therefore, the purpose of the present study is to have the following objectives. First, it builds a comprehensive model of broad-based adoption of FinTech, not payments, banking, lending, or investment, but payments, banking, lending, investment and other related services. Second, it focuses the model only on Delhi-NCR as it introduces constructs that are specifically relevant to the regulatory and consumer protection environment in India. Third, it separates behavioural intention from self-reported or actual adoption to avoid the limitation of assuming that attitudes lead to adoption. Fourth, it suggests a strict empirical test of the model with valid scales and factor analysis, as well as a structural equation modelling approach.

Which factors such as Technological, Psychological, Social, capability related and institutional factors significantly influence Delhi-NCR consumers' intention to use FinTech services? How effective are the relationships between behavioural intention and use? Are there explanations added beyond the traditional TAM/UTAUT variables in terms of the concepts of trust, perceived risk, digital financial literacy, government support, and grievance redressal? But how can service providers and policy makers leverage these determinants to make the adoption of safe and inclusive digital-finance more effective?

Figure 1. Growth of India's Digital Payments Index, 2018–2025

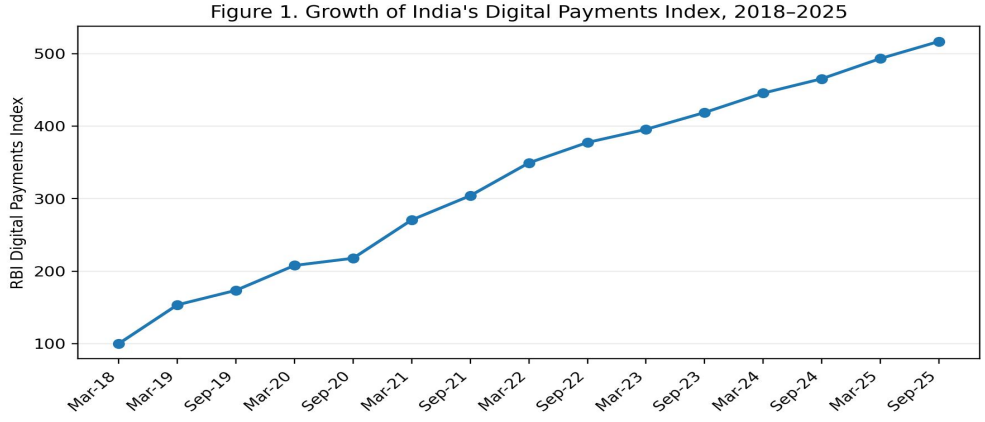

Figure 1. Growth of India's Digital Payments Index, 2018–2025. Source: Reserve Bank of India (RBI-DPI series).

2. Literature Review

2.1 FinTech adoption as a consumer decision

Adoption of Consumer FinTech is not a yes/no question. The person could become aware of a service, think it is beneficial, sign up for an account, make one use and never use it again. This is significant since the intention to use can account for only a portion of the behaviour. Many studies on internet banking, mobile banking, and mobile payments have found that perceived benefits and perceived costs or risks are the key factors influencing the adoption of mobile banking (Gu et al., 2009; Luarn& Lin, 2005; Lin, 2011; Martins et al., 2014). Earlier research in the field of internet-banking has identified a few factors that impact its acceptance: convenience, usefulness, compatibility, and trust (Eriksson et al., 2005; Laforet & Li, 2005; Pikkarainen et al., 2004; Tan & Teo, 2000). When the technology evolved from desktop banking to embedded payments and smartphones, personal innovativeness, social influence, security and context have emerged as key factors (Koenig-Lewis et al., 2010; Oliveira et al., 2016; Schierz et al., 2010).

This benefit-risk is reinforced by mobile payment research. Kim et al. (2010) found that perceived usefulness, ease, credibility, and mobility related benefits influence intention. The extent to which the technology is adopted also relies on situational factors like convenience (Mallat, 2007), perceived risk (de Kerviler et al., 2016) and the nature of the transaction (de Luna et al., 2019). Kalinic et al. (2019), Liébana-Cabanillas et al. (2019) and Slade et al. (2015) also show that the adoption of mobile payment involves technology acceptance, risk perceptions, social processes and user-specific attributes.

2.3 Motivation to use information technology.2.4 Self-efficacy in technology use.

The two intuitive beliefs that are emphasized in TAM are usefulness and ease of use (Davis, 1989), which remain influential. For FinTech, usefulness can be defined as the extent to which the service enhances the speed, ease, control, accessibility, or quality of financial transactions. The ease of use is related to perceived effort to learn, navigate, authenticate, transact, correct errors and receive support. Venkatesh and Davis (2000) extended TAM by demonstrating that social and cognitive factors influence perceptions of usefulness, and TAM3 included technology acceptance and the impact of interventions and individual differences (Venkatesh & Bala, 2008).

These constructs are well supported by Indian research. Chawla and Joshi (2017) discovered multiple attitudes and intentions regarding mobile banking adoption, whereas Chawla and Joshi (2019) revealed that mobile-wallet acceptance is based on usefulness, ease, trust and security. Furthermore, adoption intention in the context of a developing country can be predicted by using perceived usefulness along with social and behavioural factors (Madan and Yadav, 2016). In a similar study, Priya and Gandhi (2018) demonstrated that technology-related beliefs of young Indian consumers are found to be influencing the adoption of mobile banking. The works by Singh & Ghatak (2021) and Singh, Sahni, & Kovid (2020) on e-wallets and FinTech builds upon TAM, but adds trust, innovation, or context to it, not removes its core logic.

In this section the concept of 2.3 UTAUT, social influence and facilitating conditions are discussed.

UTAUT merges several traditions in technology adoption, and posits that intention and use are influenced by performance expectancy, effort expectancy, social influence, and facilitating conditions (Venkatesh et al., 2003). In the consumer domain, UTAsut2 extends the model to include consumer motives of hedonic motivation, price value and habit (Venkatesh et al., 2012). Financial technology: performance expectancy refers to the users' belief that the service will help in the effective conduct of transactions, and simplicity is captured by effort expectancy. Social influence is a phenomenon that can be attributed to family, friends, colleagues, merchants, employers and other social networks. Facilitating conditions involve device availability, Internet access, bank linkage, digital identity, technical compatibility, and access to help.

The model has been very successful in banking and payment applications. Alalwan et al. (2017) added trust to UTAUT2 and found that trust significantly enhances the ability of the model to predict the adoption of mobile banking. Martins et al. (2014) used UTAUT with perceived risk in the context of Internet banking. The relevance of performance, effort, and risk was shown by Shaikh et al. (2018) when they examined mobile banking. de Sena Abrahão et al. (2016) also proved that UTAUT explain mobile-payment intention. Kumar et al. (2020) created a framework for mobile-banking adoption in India based on the UTAUT-related logic, and Saxena et al. (2023) identified a variable set of 536 mobile-banking users in Delhi-NCR as being significant: performance expectancy, effort expectancy, social influence, optimism, and innovativeness.

Avoiding abuse and sustaining trust and safety; reducing complaints and appeals.

Unlike many digital transactions, money can be lost directly due to an error or misuse in financial transactions. Trust, then, becomes a link between technical skills and the eagerness to do business. Gefen et al. (2003) demonstrated that the TAM model can be extended to include trust to explain online behaviour. In financial services, trust involves a belief that the service provider is competent, reliable, honest, is safe to store or use information provided by the customer, and can correct any mistakes in the service. To be sure, perceived security is connected to

but more direct in terms of authentication, privacy, transaction integrity and fraud control.

Trust and security are mentioned repeatedly in Indian evidence as motivators of adoption. Chawla and Joshi (2019) highlighted the need for a secure and stable infrastructure of the mobile wallets. Kumar et al. (2018) discovered that the level of perceived security and grievance redressal influence the continuation intent with regard to mobile wallets. Patil et al. (2020) explicitly included trust and grievance redressal in a consumer mobile-payment model, and concluded that grievance redressal had a positive influence on use behaviour. Pahari et al. (2023) also highlighted confidence, intention, and perceptions related to payment applications. The results indicate that if users trust the platform, they will tolerate little if any usability issues, but if they feel they are not able to get their money back or solve their disputes, they will be discouraged from using it.

2.5 Perceived risk

Perceived risk accounts for uncertainty of possible negative consequences. Featherman and Pavlou's (2003) conceptualization of the e-service risk is multidimensional, which included the following dimensions: performance risk, financial risk, time risk, psychological risk, social risk, and privacy risk. Lee (2009) combined perceived risk and perceived benefit with TAM for internet banking. In the context of mobile payment, Yang et al. (2015) revealed that various risk perceptions affect mobile payment acceptance, while Thakur and Srivastava (2014) pointed out that perceived risk is more significant than other segments of the Indian consumer market. Ryu (2018) also demonstrated the relationship between the perceived benefit and risk on FinTech adoption. It can then be predicted that risk will have a negative effect on users' behavioural intention, even if they understand the product's usefulness.

Purpose: To describe the personal innovativeness and technology readiness concepts.

Content: 2.6 Personal innovativeness and technology readiness.

Not all consumers are equally willing to try out new services. Personal innovativeness is manifested by personal tendency to use new information technologies, and technology readiness is manifested by optimism, innovativeness, discomfort and insecurity. Innovative consumers will be more likely to try out new payment and banking products, self-educate about product features, and embrace uncertainty in the short-term. Lin (2011) showed that the attributes of innovation and knowledge-based trust are important for mobile banking. Thakur and Srivastava (2014) found the personal innovativeness to be an important adoption-readiness factor in India. Singh, Sinha and Liébana-Cabanillas (2020) demonstrated that innovativeness has a significant effect on mobile-wallet adoption and recommendation. Similarly, Saxena et al. (2023) identified innovation and positivity as key factors in Delhi-NCR.

2.7 Digital financial literacy and capability

Financial literacy is a term for the knowledge and skills required for sound financial decisions traditionally. Lusardi and Mitchell (2014) show that there are significant economic consequences of financial literacy. A fundamental understanding of products and interest rates is not enough—digital finance knowledge needs to go beyond that, through device security, authentication, privacy, fraud recognition, permissions, digital records, and processes to resolve disputes. Joseph et al. (2023) explain an important link between FinTech and financial capability and Amnas et al. (2024) call for digital financial literacy to be at the heart of the financial inclusion, brought about by the FinTech. The more digitally financial literate consumers are expected to be able to assess the credibility of the platforms, know how to do the transactions, compare the services and manage the risks. But also, literacy might raise caution since if they know more about privacy and fraud, they might be even more careful. The net effect predicted in this model is positive since capability should increase informed and confident use.

Government and regulatory support (2.8)

The level of institutional confidence also influences the adoption of FinTech. Consumers tend not to see digital security in action, which is why they form their perceptions of safety, among other reasons, based on the presence of reputable banks, central-bank oversight, standardized procedures, dispute mechanisms and public digital infrastructure. Gochhwal (2017) spoke about UPI as an innovation in Indian payment system and Rastogi et al. (2021) related UPI innovation to financial inclusion and development. Further, Gupta et al. (2023) demonstrate that understanding the UPI can affect the acceptance of new public digital-money instruments. In a Delhi-NCR model, Saxena et al. (2023) proved that the relationship between behavioural intention and mobile-banking adoption is partially mediated by government support.

2.9 Continuance and actual use

Adoption shouldn't stop at just wanting to adopt. Consumers might have a plan to use a platform and don't actually complete activity due to friction, habit, the merchant not accepting, connectivity, onboarding issues, or risk concerns. Gupta et al. (2020) demonstrated that the expectation-confirmation logic influenced the continuance intentions related to pre-adoption expectations. Pal et al. (2021) investigated the reasons behind the use and continued use of mobile-payment technologies in India, focusing on the need to explore the cases of post-adoption behaviour. In a similar study, Su et al. (2018)

discovered that experience with the Internet influences the adoption of mobile payments. The present study therefore considers behavioural intention as a proximal antecedent of actual use instead of the final dependent variable.

Table 1
Proposed constructs and expected relationships

Construct	Operational meaning	Key theoretical/empirical basis	Expected effect
Performance expectancy	Expected gains in speed, convenience, control and effectiveness	Davis (1989); Venkatesh et al. (2003); Patil et al. (2020)	Positive
Effort expectancy	Perceived ease of learning, navigating and transacting	Venkatesh et al. (2003); Alalwan et al. (2017); Saxena et al. (2023)	Positive
Social influence	Perceived encouragement/expectations from important others	Venkatesh et al. (2012); Singh et al. (2020)	Positive
Facilitating conditions	Availability of device, connectivity, account linkage, support and compatibility	Venkatesh et al. (2003); Patil et al. (2020)	Positive
Trust and security	Confidence in provider reliability, privacy, authentication and transaction integrity	Gefen et al. (2003); Chawla & Joshi (2019)	Positive
Perceived risk	Expected financial, privacy, performance and time loss	Featherman & Pavlou (2003); Lee (2009); Ryu (2018)	Negative
Digital financial literacy	Ability to understand, evaluate and safely use digital financial tools	Lusardi & Mitchell (2014); Amnas et al. (2024)	Positive
Personal innovativeness	Willingness to experiment with new technologies	Thakur & Srivastava (2014); Saxena et al. (2023)	Positive
Government/regulatory support	Confidence in public oversight, payment infrastructure and rules	Saxena et al. (2023); Rastogi et al. (2021)	Positive
Grievance redressal	Confidence in complaint, reversal, refund and dispute resolution	Kumar et al. (2018); Patil et al. (2020)	Positive
Behavioural intention	Plan or willingness to use/expand FinTech use	Venkatesh et al. (2003, 2012)	Positive predictor of use
Actual use	Frequency and breadth of FinTech services used	Patil et al. (2020); Pal et al. (2021)	Outcome

Figure 3. Proposed Integrated Model of Consumer FinTech Adoption in Delhi-NCR

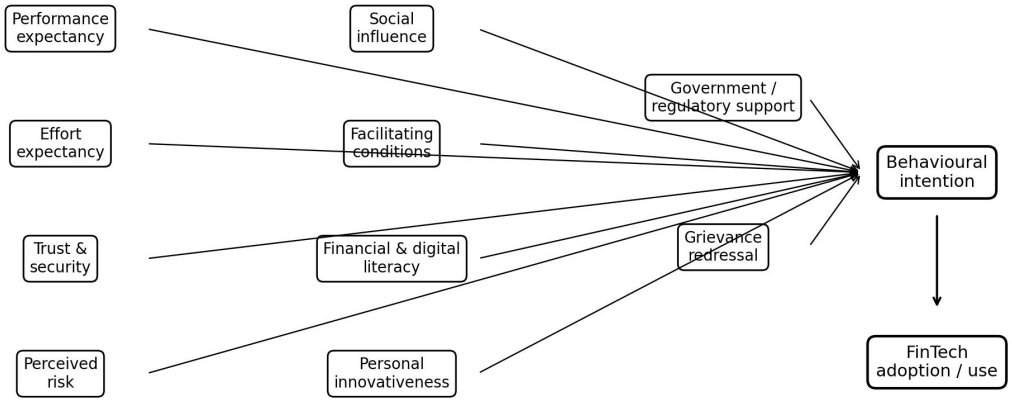

Figure 3. Proposed integrated model of consumer FinTech adoption in Delhi-NCR.

3. Conceptual Framework and Hypotheses

The proposed framework combines TAM, UTAUT, perceived-risk theory, trust research, financial-capability perspectives and technology-readiness research. Behavioural intention is assumed to be the key psychological link to the adoption phenomenon, and actual use represents the behavioural outcome. The number of antecedent constructs included is ten because they represent technological utility, usability, social reinforcement, resource conditions, trust, risk, capability, innovation orientation, regulatory confidence and service recovery.

It is expected that performance expectancy will affect intention as users are more willing to use FinTech if they think it saves time, will make transactions easier to control, will make transactions easier to access, or will provide greater functionality (Davis, 1989; Venkatesh et al., 2003; Patil et al., 2020). Effort expectancy should also enhance intention because the easier the onboarding and navigation, the less cognitive and procedural effort is needed (Alalwan et al., 2017; Saxena et al., 2023). In a high-density metropolitan area where families, workplaces, peer groups, and merchant networks are also visible, social influence is expected to play a role in payment choice, as seen in studies conducted by Venkatesh et al. (2012) and Singh et al. (2020).

The conditions are conducive to adoption if the intended use is feasible, such as through widely available smartphones and data connectivity, bank accounts, technical support, capability to complete the KYC process, and merchant acceptance (Venkatesh et al., 2003; Patil et al., 2020). Intention should increase in the case of trust and perceived security, while decreasing in the case of perceived risk (Gefen et al., 2003; Featherman & Pavlou, 2003; Ryu, 2018). Addressing informed capability (Lusardi & Mitchell, 2014; Amnas et al., 2024) should aim to strengthen digital financial literacy, which will increase intention. With regard to the specific innovation of personal innovativeness, it is expected that the intention will increase as the personal innovativeness of the consumers will allow them to feel comfortable with trying new digital services (Thakur & Srivastava, 2014; Singh et al., 2020). Government/regulatory support and grievance redressal are expected to enhance intention and/or translation into actual use as it is expected to reduce institutional uncertainty and increase confidence that problems can be resolved (Kumar et al., 2018; Saxena et al., 2023).

Based on this, the following hypotheses are proposed: H1, the performance expectancy positively affects behavioural intention to adopt FinTech services. The positive relationship between H2 and BI. Proposition 3: H3, social influence has a positive effect on behavioral intention. H4:Facilitating conditions affect positively the behavioural intention and/or actual use. H5 is found to positively affect behavioral intention when there is trust and perceived security. The perceived risk has a negative effect on behavioural intention for H6. Digital financial literacy has a positive connection with behavioural intention (H7). H8 is positively related to behavioural intention. The behavioural intention and adoption is found to be positively influenced by the perceived support from government/regulatory. Perceived effectiveness of grievance redressal is positively correlated with behavioural intention and actual use of grievance redressal in H10. The finding is that H11 positively relates to actual FinTech use. We consider it to be essential to examine the impact of age, gender, income, education, and prior digital-payment

experience on selected path strengths as per UTAUT and Indian mobile-wallet studies (Chawla & Joshi, 2020; Venkatesh et al., 2012).

4. Research Methodology

4.1 Research design

A quantitative design of explanatory, cross sectional survey design is proposed. The analysis unit is an individual consumer legally eligible to access mainstream financial services and living, studying or working in Delhi-NCR. They can be digital payment or mobile banking users or potential users of digital payment products, mobile banking products, digital lending products, investment products, insurance products, or any FinTech services related to these products. A cross-sectional design would be useful for estimating associations among the constructs of the adoption, at a given time, but should not be used to draw causal inferences, as no causal language can be used or temporal precedence can be established from one survey wave.

Delhi, Gurugram, Noida/Greater Noida, Ghaziabad and Faridabad are the areas of geographical coverage that is proposed. Recruitment should be done on a stratified quota basis, by subregions and by demographic groups, in order to minimize overrepresentation of highly educated central-city users. The data collection method may be mixed online/online intercept: online questionnaires sent via professional, educational, residential, and merchant networks, and in-person tablet/paper-assisted at markets, commercial areas near the metro, campuses, offices, and residential clusters. The same screening criteria and wording of the questions should be applied across the modes.

The minimum recommended sample size is 500. This size is considered appropriate for the stable identification of a multi-construct SEM model when observing 40-50 indicators, if data are suitable with respect to the distributional and measurement assumptions. It is recommended to send 600-650 invitations / forms filled out to be able to exclude incomplete cases, patterned answers, speeders and multivariate outliers. The final paper should include number approached, number responding, number excluded and final usable sample not just achieved sample.

4.2 Instrument development

There should be five sections to the questionnaire. The first should conduct the screening of respondent based on Delhi-NCR, age and awareness/usage of FinTech. The second should include a measurement of technology-adoption beliefs. The third should be trust, security, risk, literacy, government support and redressal of grievances. The fourth should include behavioural intention and actual use. The fifth should capture the socio-demographic and usage context information, such as age, gender, educational level, occupation, income level of household/mobile user, subregion, years of smartphone use, number of FinTech applications used, frequency of using UPI/mobile-banking and exposure to failed or fraudulent transactions.

The majority of latent constructs have 3-5 items measured on a 5 or 7 point Likert agreement scale. The items of performance expectancy, effort expectancy, social influence and facilitating conditions were adapted from UTAUT/UTAUT2 (Venkatesh et al., 2003; Venkatesh et al., 2012) and its Indian adaptation (Patil et al., 2020; Saxena et al., 2023). The trust and security items can be created based on Gefen et al. (2003), Chawla and Joshi (2019), and Alalwan et al. (2017). Risk items should be based on financial risk, privacy risk, performance risk and time risk as per Featherman and Pavlou (2003), Lee (2009) and Thakur and Srivastava (2014). Existing technology-readiness- and personal-innovativeness scales can be used as a resource for innovativeness. Items related to financial-literacy such as general financial-literacy questions should not be used as a stand-alone measure for digital financial literacy; they should also include knowledge/self-efficacy questions of relevance to authentication, fraud recognition, transaction verification, permissions, and processes for financial disputes.

Content validity should be evaluated prior to the fieldwork. A panel of 5-8 experts, from banking/FinTech, consumer behaviour, information systems and research methodology can discuss/review the relevance, clarity, overlap and contextual appropriateness of items. Cognitive interviews conducted with 10-15 consumers from various age and education groups can help detect ambiguities like "FinTech," "security," "regulatory support," or "grievance redressal. The study should then be implemented with 40-60 respondents to test for completion time, variance among items, item missingness, preliminary reliability, and preliminary issues with wording. Deletion of items is not allowed solely because it will maximize Cronbach's alpha; conceptual coverage and content validity need to be maintained.

4.3 Operationalisation

Performance expectancy is the sense of increased speed, convenience, financial control, access or effectiveness. Effort expectancy: Ease of learning and using the service. Social influence reflects perceived encouragement from important others, or expectations. Facilitating conditions are the availability of technical and infrastructural resources. Trust/security is the confidence that is placed in providers, transactions, privacy, authentication and system reliability. Perceived risk involved in anticipated negative consequences or uncertainty. Digital financial literacy is the respondent's understanding, evaluation, and safe use of digital financial tools. Personal innovativeness is the extent to which someone is willing to try new technologies.

Government/regulatory support boosts public trust in rules, oversight and digital-payment infrastructure. Grievance redressal measures build trust in the complaints handling, reversing, refunding, escalating and handling grievances process. The behavioral intention is captured in how willing and planned users are to use or increase the use of FinTech, and the actual use can be captured by self-reported frequency, services used, and recent transactions.

4.4 Data preparation and analysis

Hypothesis testing should be done after data cleaning. The researcher should check for missing, duplicate entries, time taken to complete, straight-lining, impossible demographic combinations, and univariate/multivariate outliers. Data that are missing should be reported and dealt with in a principled way that is suitable for the extent and nature of missingness. Descriptive statistics should be used to summarize the sample and the FinTech-use profile.

The degree of reliability should be measured by Cronbach's alpha and if possible, composite reliability and omega. When adapted or newly contextualised scales have questionable dimensionality, exploratory factor analysis can be used. The measurement model should be evaluated using confirmatory factor analysis. Reporting standardized factor loadings, average variance extracted, composite reliability, discriminant validity, and model fit indices are recommended. Common-method bias should not be assessed by a single diagnostic; statistical routines (marker-variable, common-latent-factor and full-collinearity approaches) should be supplemented by procedural ones (anonymity, neutral wording, separation of predictor and outcome sections and mixed-ordering of items).

The hypothesized paths should be tested using a structural equation modelling approach. When the goal is to confirm the theory and the data have roughly the same properties as multivariate assumptions, covariance-based SEM is suitable. If one of the following conditions is present, then PLS-SEM could be considered, though justifying the choice is much more important than justifying it based on sample size: (1) prediction with PLS-SEM, (2) formative constructs in the study, (3) non-normality. Present standardized coefficients, standard errors, confidence intervals, exact P values, effect sizes (when appropriate) and R^2 for endogenous variables. Bootstrapping should be used for evaluating indirect effects in the presence of theoretically justified mediators, such as government support. Demographic moderation may be tested via multi-group analysis or interaction terms.

4.5 Ethical considerations

Participation should be voluntary and consent should be based on information. The survey should not ask for passwords, PINs, card numbers, bank account numbers, Aadhaar numbers, etc. which are not required. The academic purpose, the expected time to completion, the approach to data retention, protections for confidentiality, and the ability to opt out without penalty should be explained to respondents. The questions on fraud experience should be optional and sensitive. Before analysis and sharing the final dataset should be de-identified.

Table 2
Recommended statistical analysis and reporting

Stage	Recommended statistics	Purpose / reporting note
Descriptive profile	Frequencies, percentages, mean/SD	Demographics, service types, usage frequency, fraud/failure exposure
Reliability	Cronbach's alpha; composite reliability/omega	Internal consistency; avoid deleting items solely to inflate alpha
EFA (if required)	KMO, Bartlett, extraction, rotated loadings	Explore dimensionality of adapted/new scales
CFA	Standardized loadings; CFI/TLI; RMSEA/SRMR; AVE/CR	Convergent validity and model fit
Discriminant validity	HTMT and/or Fornell-Larcker with cross-loading review	Distinctness among trust, security, risk and related constructs
Structural model	Standardized β, SE, CI, p, R^2	Test H1–H11 without causal overclaiming
Indirect effects	Bootstrapped confidence intervals	Test mediation where theoretically specified
Moderation/multi-group	Interaction terms or multi-group SEM	Age, gender, income, education, prior experience

5. Secondary Evidence, Benchmark Findings, and Empirical Expectations

5.1 Digital-payment context

The contextual evidence was found to be very strong in support of the relevance of a study of adoption in the Delhi-NCR area. As per the RBI-DPI series, the digital payments have recorded a steady growth in terms of the depth of the payments and its performance from 2018 till 2025. The index increased by over five times compared to its base level in March 2018 to come to September 2025. This does not mean that all consumers are the same or all feel equally comfortable using FinTech but it suggests that the infrastructure and transaction context is now ripe for individual differences in trust, literacy, level of innovation readiness and risk perception to become increasingly significant determinants of usage differentials.

The numbers bear this out as well, according to UPI. In April 2026, the number of transactions surpassed 22.3 billion, which increased to 24.5 billion in August 2026. As the size of the ecosystem grows, the decision to adopt FinTech takes place in a context of powerful network effects where consumers are seeing the QR payment, UPI handles, payment requests and application-based settlement in daily transactions. Social influence and facilitating conditions thus might act differently on the early stages of the diffusion of mobile payments. With nearly universal merchant acceptance in many urban settings, a consumer may be more limited in their choice by trust, perceived risk, literacy or prior negative experiences.

5.2 Benchmarking from past empirical studies in India

The best one for the proposed Delhi NCR model is the study conducted by Saxena et al. (2023) on 536 mobile banking users in the Delhi NCR. They conclude that the constructs of performance expectancy, effort expectancy, social influence, optimism, and innovativeness are relevant for their findings, which they also find that government support to a certain degree mediates between intention and adoption. The present model builds on the regional logic in three aspects: First, it includes a wider range of FinTech services than mobile banking, second, it introduces a comprehensive benefit-risk profile and third, it explicitly includes grievance redressal and digital financial literacy.

Patil et al. (2020) used an extended version of the meta-UTAUT model to analyse Indian mobile-payment consumers. The final sample of 491 users yielded significant findings of performance expectancy, intention to use, and grievance redressal as predictors of use behaviour, and attitude, social influence and facilitating conditions as determinants of intention to use. This is especially significant as it shows that service recovery issues and complaint resolution are not only service quality problems after the service has been used, but can be determinants of service adoption. Other researchers have also found that security and trust are key factors in mobile-wallet acceptance in India (Chawla and Joshi, 2019) and that there are various technological and behavioural influences in mobile-payment adoption (Shankar and Datta, 2018; Sivathanu, 2019).

Thakur and Srivastava (2014) identified that the adoption readiness, personal innovativeness and perceived risk vary by customer segments, which may imply that the average effect hides the segments and/or experience heterogeneity. Singh, Sinha and Liébana-Cabanillas (2020) discovered that innovativeness and social influence are factors that lead to the adoption and recommendation of mobile-wallets in India. Kumar et al. (2018) demonstrated that perceived security and redressing grievances have an impact on continuance intention, and Kumar et al. (2020) expanded the mobile-banking adoption model. Fahad and Shahid (2022) took an innovation diffusion theory lens on UPI adoption, further supporting the importance of relative advantage and the attributes of innovations in the Indian payment landscape.

These relationships are interpreted with the help of research outside of India. Older research by Oliveira et al. (2016) revealed that the determinants of mobile-payment adoption affect intention to recommend as well, which suggests that adoption can lead to social diffusion. Schierz et al. (2010) and Yang et al. (2012) found that compatibility, beliefs, social influences and personal traits influence mobile-payment acceptance over time. Alalwan et al. (2017) demonstrated that explaining the mobile-banking adoption process through a UTAUT2 framework is made more robust when trust is incorporated into the framework. de Kerviler et al. (2016) highlighted that convenience and risk are both important factors in explaining in-store mobile-payment adoption. The studies confirm the model of simultaneous influence of usefulness, usability, trust, risk, social context and personal characteristics.

5.3 Expected pattern of relationships

Based on theoretical and empirical considerations, it can be surmised that among the factors that have a positive relationship with behavioural intention, the performance expectancy is one of the strongest. The main justification for consumers to use financial technology is to address transaction issues—it will be faster than cash handling; it will be available outside of branch hours; it can be searched; it can be carried around; it is becoming more integral to commerce. Performance expectancy should not be the only determinant however. There are instances where a process that looks like a good system, but has an unsuccessful transaction, may be resistant to change.

The effects of trust/security and perceived risk are likely to be high and opposite. It is not a rarity that Delhi-NCR consumers receive warnings about phishing, remote-access fraud, social engineering, fake payment screenshots, account takeover and unauthorized transactions. These experiences can cause risk to become salient even for people with experience of using the drugs. This barrier should be mitigated by trust in regulated banks, supported applications, robust authentication and trusted dispute processes. The potential for grievance redressal may also influence actual use, as those who feel transactions that didn't go as planned or were disputed have been resolved may be more willing to make more frequent and higher value transactions.

The direct and enabling role of digital financial literacy is expected. With literate consumers, any information about transactions can be understood, payments can be identified from receipts, permissions can be understood, suspicious links can be identified, merchant identifiers can be checked, and systems for complaints can be navigated. This information can minimize unnecessary risks and boost confidence. Personal innovativeness should have a positive influence and can be less in some mature urban markets due to the less “novel” nature of the FinTech. Even as social influence becomes less significant in UPI transactions, it can continue to be a significant influence on newer categories like digital credit, investment app or insurance app.

It is expected that government/regulatory support is going to have an impact as it will lessen uncertainty. While users might not be aware of the specifics of payment-system regulation, they can be given cues for legitimacy through visible links to regulated banks, RBI/NPCI infrastructure, standardised grievance procedures, and standardised public digital processes. This is in line with Saxena et al. (2023) who reported the mediating effect. Facilitating conditions are thought to affect both intention and use, particularly as consumers have constraints regarding their devices, connectivity, KYC, language, and access to support.

5.4 Data-integrity statement

With this request no data set is provided on the respondent level in Delhi-NCR. This manuscript, therefore, fails to report fake percentages by demographic, Cronbach's alpha, factor loadings, correlations, regression coefficients, path coefficients, p values, or hypothesis decisions. The tables below differentiate between benchmarks that can be supported in the literature and those for which the data must be collected in the field. If a real data set becomes available, the analysis in this section can be performed directly and these descriptive, measurement-model and structural-model results can be replaced.

Figure 2. UPI Transaction Volume, April–August 2026

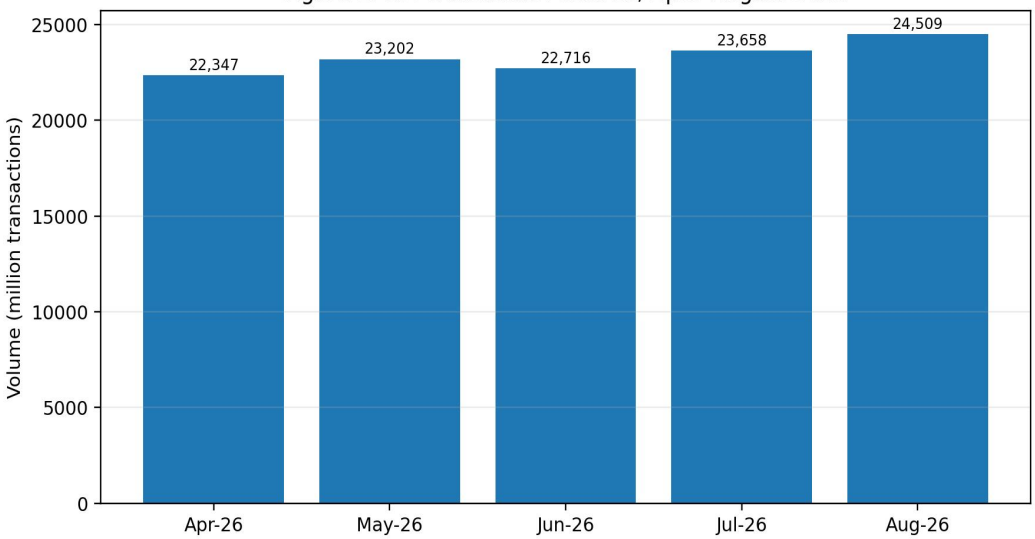

Figure 2. UPI transaction volume, April–August 2026. Source: NPCI UPI Product Statistics.

Table 3
Recent UPI transaction statistics

Month	Banks live on UPI	Volume (million)	Value (₹ crore)
April 2026	713	22,346.80	29,02,988.05
May 2026	720	23,201.93	29,90,424.21
June 2026	731	22,716.07	28,92,138.67

Month	Banks live on UPI	Volume (million)	Value (₹ crore)
July 2026	741	23,658.35	29,87,880.49
August 2026	752	24,508.96	29,82,355.95

Table 4
Selected empirical benchmark studies

Study	Context	Relevance to present model
Thakur & Srivastava (2014)	India; mobile payments	Adoption readiness, innovativeness and perceived risk vary across customer groups.
Chawla & Joshi (2019)	India; mobile wallets	Trust and security are central to consumer attitude and intention.
Patil et al. (2020)	India; 491 mobile-payment consumers	Performance expectancy, social influence, facilitating conditions and grievance redressal are important in intention/use pathways.
Singh, Sinha, & Liébana-Cabanillas (2020)	India; mobile wallets	Innovativeness, social influence and user stress contribute to adoption/recommendation.
Saxena et al. (2023)	Delhi-NCR; 536 mobile-banking users	Performance expectancy, effort expectancy, social influence, optimism and innovativeness predict intention; government support partially mediates adoption.
Jacob et al. (2024)	India; low-income consumers	Highlights the need to understand UPI adoption across financially constrained user groups.
Rashid et al. (2025)	Rural India; e-wallets	Extends TAM to explain e-wallet intention in a lower-access context.

6. Discussion

There are some theoretical implications for the integrated framework. Firstly, it takes the view of a financial-risk decision to the adoption of FinTech and not solely an information-technology decision. However, TAM and UTAUT are important to explain utility and effort beliefs, whereas for monetary service, it is important to add concerns about loss, privacy, and trust and dispute, which can have a significant impact on acceptance. The framework is thus made up of positive beliefs about performance and inhibitors, and institutional safeguards. This balance is in line with Ryu's (2018) view on benefits versus risks, as well as empirical findings which show that perceived risk and trust continue to be important even when there is great value in the technology.

Second, the framework is more focused on post failure confidence. Typically, many models of traditional adoption emphasize the actions that are taken prior to the first use, but the willingness to trust a payment or banking application also hinges on what one expects to occur should the application fail. Kumar et al. (2018) and Patil et al. (2020) suggest that grievance redressal can impact on continuance and actual use. This construct can be manifested as clarity of complaint channels, speed of reversal, access to human support, complaint tracking, escalation and perceived fairness in the Indian context. Technical consumers who are skeptical of dispute resolution will likely only transact at FinTech for low dollar amounts.

Third, the model distinguishes between the digital financial literacy and general facilitating conditions. Having a smartphone and Internet connection does not ensure that a consumer is able to read and understand a payment screen, identify the signs of fraud, compare credit costs, or control privacy settings. Digital financial education is therefore a competency, rather than just an infrastructure variable. It also opens up concrete opportunities as well, as literacy can be strengthened through targeted interventions – unlike age or personality.

Fourth, the study regionalises institutional support. While much research on adoption focuses on regulation as background information, the evidence from Saxena et al. (2023) from the Delhi-NCR indicates that the effect of government support can impact the relationship between intention and adoption. This is particularly possible in India where digital finance has a close connection with the interoperable public and regulated infrastructure. Consumers can deduce the legitimacy from the ecosystem level of protection even if they do not distinguish between the role of the institution.

Managerially, the framework suggests that FinTech companies need to not consider adoption a solely marketing-awareness issue. A positive return on investment must start with tangible security and recovery measures: faster transactions, easier record keeping, 24/7 availability, better control. Onboarding should involve as few steps as possible, be in simple text, include instructions on permissions, and let users know right away if the transaction was successful or not. When users have made a mistake, made a transaction that they didn't authorize, or received a refund that they did not receive, help systems need to tell them what they can do.

These are all the ways in which provider identity and pricing transparency, transaction visibility, privacy explanations, and consistent authentication can build trust. But “more security” can also lead to some conflict. The challenge of the design problem is, therefore, not to increase the number of authentication actions, but to provide security that is proportionate and avoid actions that are not understandable to the user. Risk communication must be helpful, not scare-y: users should be given explicit instructions on PIN secrecy, collect requests, screen sharing, remote-access applications and how to interpret QR codes, and official complaint channels.

The model also emphasises on the digital financial literacy and redressal as adoption infrastructure for regulators and policymakers. Rather than “use digital payments”, a public campaign needs to be directed towards “use them safely and know how to solve issues.” Consumer education should be targeted by age, language, previous experience and product type. Data from complaints can also be used diagnostically: if the same types of complaints are occurring repeatedly, then it may be a design, interoperability, disclosure, or support issue that is affecting the adoption of the transaction, even if the number of transactions is increasing.

Inclusion is also a theme of the framework. Despite high number of transactions, there can be some level of distrust. Certain age groups, first-time smartphone users, individuals in informal sector jobs, low-literacy consumers and those who have been victims of fraud may be in need of different types of support. Access and the ability to adopt must be combined for inclusive adoption. The use of multilingual interfaces, assistance in getting started, voice support, easy-to-use design, and transparent human support can lower effort and trust that does not require all users to perform complex digital processes on their own.

7. Conclusion

This paper proposes a holistic empirical framework for the study of the determinants of the adoption of FinTech services by consumers in Delhi-NCR. It combines existing technology-adoption frameworks with elements that are crucial in financial services, such as trust, security, perceived risk, digital financial literacy, government/regulatory support, and grievance redressal. The resulting model acknowledges that consumers are more likely to use the new FinTech when they believe there is a real improvement in the level of performance they can achieve, that using FinTech requires little to no effort, that people will be supported socially and infrastructurally through the use of FinTech, that trust in FinTech is warranted, that it is easy to use safely, and that institutions will be there to protect them if they try it and things go wrong, or if they have any disputes.

The Delhi-NCR scenario is both theoretically and practically of value. It's a metropolis that's also technologically diverse and socially and economically complex, which allows you to explore advanced users as well as the hesitant and capability-limited customers. There are some evidences found in the previous studies conducted in the region which supports the importance of performance expectancy, effort expectancy, social influence, innovativeness, optimism and government support (Saxena et al., 2023). Trust (Chawla & Joshi, 2019), risk (Patil et al., 2020), grievance redressal (Singh et al., 2020), and adoption readiness (Thakur & Srivastava, 2014) are added to the Indian research. The proposed study is a combination of all these strands and clearly demarcates intention from actual use.

The main problem with the paper is that it is based on no primary respondent data and hence no empirical coefficients are created. This ensures the integrity of research and facilitates the implementation in the field. At least 500 usable responses from Delhi-NCR should be collected using stratified quotas across key subregions; the measurement model should be examined and validated; the measurement structure should be tested; and demographic hetereogenity should be examined. Future, longitudinal research could examine trends in adoption over time in relation to trust, habit, exposure to fraud and regulatory changes. Given varying financial consequences, product-specific studies could include a comparison of payments, digital credit, investments and insurance.

During rehearsals, the message is that the adoption

process is not a convenient one. The key attributes of a mature FinTech ecosystem are the following: useful, easy, trusted, understandable, recoverable in case of failure and institutionally credible. Companies which focus on speed or incentives, but not on gaining long-term customer reliance, can get trial without lasting loyalty. In addition to technology, there should be capability and confidence for sustainable adoption.

8. Limitations and future research.

The major drawback is the lack of data at the respondent level in the material provided for this manuscript. The proposed model is thus empirically testable and not empirically estimated in the present document. There should be a true survey completed before reporting hypotheses for acceptance, mediation, moderation, or prediction of accuracy. The cross-sectional design will also limit the ability to make causal inferences and self-reported use could be influenced by recall or social-desirability bias. Ethically viable, transaction-verified measures, longitudinal designs, and comparisons of products are recommended for future research. It is also important to explore whether the relative importance of trust, effort, and regulatory confidence is affected by exposure to fraud, language preference, disability/accessibility needs, and type of FinTech service. The results of comparison between the cities of Delhi-NCR and tier-2/tier-3 cities would help in knowing if the results obtained in the metros would also hold true for the other cities in different infrastructural and socioeconomic conditions.

Reference

1. Ajzen, I. (1991). The theory of planned behavior. Organizational Behavior and Human Decision Processes, 50(2), 179–211. https://doi.org/10.1016/0749-5978(91)90020-T
2. Alalwan, A. A., Dwivedi, Y. K., & Rana, N. P. (2017). Factors influencing adoption of mobile banking by Jordanian bank customers: Extending UTAUT2 with trust. International Journal of Information Management, 37(3), 99–110. https://doi.org/10.1016/j.ijinfomgt.2017.01.002
3. Amnas, M. B., Selvam, M., & Parayitam, S. (2024). FinTech and financial inclusion: Exploring the mediating role of digital financial literacy and the moderating influence of perceived regulatory support. Journal of Risk and Financial Management, 17(3), 108. https://doi.org/10.3390/jrfm17030108
4. Chawla, D., & Joshi, H. (2017). High versus low consumer attitude and intention towards adoption of mobile banking in India: An empirical study. Vision, 21(4), 410–424. https://doi.org/10.1177/0972262917733188
5. Chawla, D., & Joshi, H. (2019). Consumer attitude and intention to adopt mobile wallet in India: An empirical study. International Journal of Bank Marketing, 37(7), 1590–1618. https://doi.org/10.1108/IJBM-09-2018-0256
6. Chawla, D., & Joshi, H. (2020). The moderating role of gender and age in the adoption of mobile wallet. Foresight, 22(4), 483–504. https://doi.org/10.1108/FS-11-2019-0094
7. Chawla, D., & Joshi, H. (2023). Role of mediator in examining the influence of antecedents of mobile wallet adoption on attitude and intention. Global Business Review, 24(4), 609–625. https://doi.org/10.1177/0972150920924506
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. de Kerviler, G., Demoulin, N. T. M., & Zidda, P. (2016). Adoption of in-store mobile payment: Are perceived risk and convenience the only drivers? Journal of Retailing and Consumer Services, 31, 334–344. https://doi.org/10.1016/j.jretconser.2016.04.011
10. de Luna, I. R., Liébana-Cabanillas, F., Sánchez-Fernández, J., & Muñoz-Leiva, F. (2019). Mobile payment is not all the same: The adoption of mobile payment systems depending on the technology applied. Technological Forecasting and Social Change, 146, 931–944. https://doi.org/10.1016/j.techfore.2018.09.018
11. de Sena Abrahão, R., Moriguchi, S. N., & Andrade, D. F. (2016). Intention of adoption of mobile payment: An analysis in the light of the Unified Theory of Acceptance and Use of Technology (UTAUT). Revista de Administração e Inovação, 13(3), 221–230. https://doi.org/10.1016/j.rai.2016.06.003
12. Eriksson, K., Kerem, K., & Nilsson, D. (2005). Customer acceptance of internet banking in Estonia. International Journal of Bank Marketing, 23(2), 200–216. https://doi.org/10.1108/02652320510584412
13. Fahad, & Shahid, M. (2022). Exploring the determinants of adoption of Unified Payment Interface (UPI) in India: A study based on diffusion of innovation theory. Digital Business, 2(2), 100040. https://doi.org/10.1016/j.digbus.2022.100040
14. Featherman, M. S., & Pavlou, P. A. (2003). Predicting e-services adoption: A perceived risk facets perspective. International Journal of Human-Computer Studies, 59(4), 451–474. https://doi.org/10.1016/S1071-

5819(03)00111-3

15. Gefen, D., Karahanna, E., & Straub, D. W. (2003). Trust and TAM in online shopping: An integrated model. MIS Quarterly, 27(1), 51–90. https://doi.org/10.2307/30036519
16. Gochhwal, R. (2017). Unified payment interface—An advancement in payment systems. American Journal of Industrial and Business Management, 7, 1174–1191. https://doi.org/10.4236/ajibm.2017.710084
17. Gu, J.-C., Lee, S.-C., & Suh, Y.-H. (2009). Determinants of behavioral intention to mobile banking. Expert Systems with Applications, 36(9), 11605–11616. https://doi.org/10.1016/j.eswa.2009.03.024
18. Gupta, A., Yousaf, A., & Mishra, A. (2020). How pre-adoption expectancies shape post-adoption continuance intentions: An extended expectation-confirmation model. International Journal of Information Management, 52, 102094. https://doi.org/10.1016/j.ijinfomgt.2020.102094
19. Gupta, M., Taneja, S., Sharma, V., Singh, A., Rupeika-Apoga, R., & Jangir, K. (2023). Does previous experience with the Unified Payments Interface (UPI) affect the usage of central bank digital currency (CBDC)? Journal of Risk and Financial Management, 16(6), 286. https://doi.org/10.3390/jrfm16060286
20. Hussain, M., Mollik, A. T., Johns, R., & Rahman, M. S. (2019). M-payment adoption for bottom of pyramid segment: An empirical investigation. International Journal of Bank Marketing, 37(1), 362–381. https://doi.org/10.1108/IJBM-01-2018-0013
21. Jacob, R. C., Jacob, M. E., & Johnson, J. (2024). Understanding factors affecting UPI adoption among low-income consumers in India. Indian Journal of Finance, 18(7), 44–59. https://doi.org/10.17010/ijf/2024/v18i7/174032
22. Joseph, D., Girish, S., & Suresh, G. (2023). FinTech and financial capability, what do we know and what we do not know: A scoping review. Indian Journal of Finance, 17(12), 40–55. https://doi.org/10.17010/ijf/2023/v17i12/170910
23. Jünger, M., & Mietzner, M. (2020). Banking goes digital: The adoption of FinTech services by German households. Finance Research Letters, 34, 101260. https://doi.org/10.1016/j.frl.2019.08.008
24. Kalinic, Z., Marinkovic, V., Molinillo, S., & Liébana-Cabanillas, F. (2019). A multi-analytical approach to peer-to-peer mobile payment acceptance prediction. Journal of Retailing and Consumer Services, 49, 143–153. https://doi.org/10.1016/j.jretconser.2019.03.016
25. Kim, C., Mirusmonov, M., & Lee, I. (2010). An empirical examination of factors influencing the intention to use mobile payment. Computers in Human Behavior, 26(3), 310–322. https://doi.org/10.1016/j.chb.2009.10.013
26. Koenig-Lewis, N., Palmer, A., & Moll, A. (2010). Predicting young consumers' take up of mobile banking services. International Journal of Bank Marketing, 28(5), 410–432. https://doi.org/10.1108/02652321011064917
27. Kumar, A., Adlakaha, A., & Mukherjee, K. (2018). The effect of perceived security and grievance redressal on continuance intention to use M-wallets in a developing country. International Journal of Bank Marketing, 36(7), 1170–1189. https://doi.org/10.1108/IJBM-04-2017-0077
28. Kumar, A., Dhingra, S., Batra, V., & Purohit, H. (2020). A framework of mobile banking adoption in India. Journal of Open Innovation: Technology, Market, and Complexity, 6(2), 40. https://doi.org/10.3390/joitmc6020040
29. Laforet, S., & Li, X. (2005). Consumers' attitudes towards online and mobile banking in China. International Journal of Bank Marketing, 23(5), 362–380. https://doi.org/10.1108/02652320510629250
30. Lee, M.-C. (2009). Factors influencing the adoption of internet banking: An integration of TAM and TPB with perceived risk and perceived benefit. Electronic Commerce Research and Applications, 8(3), 130–141. https://doi.org/10.1016/j.elerap.2008.11.006
31. Liébana-Cabanillas, F., Molinillo, S., & Ruiz-Montañez, M. (2019). To use or not to use, that is the question: Analysis of the determining factors for using NFC mobile payment systems in public transportation. Technological Forecasting and Social Change, 139, 266–276. https://doi.org/10.1016/j.techfore.2018.11.012
32. Ligon, E., Malick, B., Sheth, K., & Trachtman, C. (2019). What explains low adoption of digital payment technologies? Evidence from small-scale merchants in Jaipur, India. PLOS ONE, 14(7), e0219450. https://doi.org/10.1371/journal.pone.0219450
33. Lin, H.-F. (2011). An empirical investigation of mobile banking adoption: The effect of innovation attributes and knowledge-based trust. International Journal of Information Management, 31(3), 252–260. https://doi.org/10.1016/j.ijinfomgt.2010.07.006
34. Luarn, P., & Lin, H.-H. (2005). Toward an

understanding of the behavioral intention to use mobile banking. Computers in Human Behavior, 21(6), 873–891. https://doi.org/10.1016/j.chb.2004.03.003

35. Lusardi, A., & Mitchell, O. S. (2014). The economic importance of financial literacy: Theory and evidence. Journal of Economic Literature, 52(1), 5–44. https://doi.org/10.1257/jel.52.1.5
36. Madan, K., & Yadav, R. (2016). Behavioural intention to adopt mobile wallet: A developing country perspective. Journal of Indian Business Research, 8(3), 227–244. https://doi.org/10.1108/JIBR-10-2015-0112
37. Mallat, N. (2007). Exploring consumer adoption of mobile payments: A qualitative study. The Journal of Strategic Information Systems, 16(4), 413–432. https://doi.org/10.1016/j.jsis.2007.08.001
38. Martins, C., Oliveira, T., & Popovič, A. (2014). Understanding the internet banking adoption: A unified theory of acceptance and use of technology and perceived risk application. International Journal of Information Management, 34(1), 1–13. https://doi.org/10.1016/j.ijinfomgt.2013.06.002
39. Morosan, C., & DeFranco, A. (2016). It's about time: Revisiting UTAUT2 to examine consumers' intentions to use NFC mobile payments in hotels. International Journal of Hospitality Management, 53, 17–29. https://doi.org/10.1016/j.ijhm.2015.11.003
40. Oliveira, T., Thomas, M., Baptista, G., & Campos, F. (2016). Mobile payment: Understanding the determinants of customer adoption and intention to recommend the technology. Computers in Human Behavior, 61, 404–414. https://doi.org/10.1016/j.chb.2016.03.030
41. Pahari, S., Manna, A., & Biswas, D. (2023). Pay with confidence: A thematic analysis of user intentions and perceptions on third-party and banking payment apps. Indian Journal of Finance, 17(5), 25–38. https://doi.org/10.17010/ijf/2023/v17i5/172735
42. Pal, A., Herath, T., De', R., & Rao, H. R. (2021). Why do people use mobile payment technologies and why would they continue? An examination and implications from India. Research Policy, 50(6), 104228. https://doi.org/10.1016/j.respol.2021.104228
43. Patil, P., Tamilmani, K., Rana, N. P., & Raghavan, V. (2020). Understanding consumer adoption of mobile payment in India: Extending Meta-UTAUT model with personal innovativeness, anxiety, trust, and grievance redressal. International Journal of Information Management, 54, 102144. https://doi.org/10.1016/j.ijinfomgt.2020.102144
44. Pikkarainen, T., Pikkarainen, K., Karjaluoto, H., & Pahnila, S. (2004). Consumer acceptance of online banking: An extension of the technology acceptance model. Internet Research, 14(3), 224–235. https://doi.org/10.1108/10662240410542652
45. Priya, R., & Gandhi, A. V. (2018). Mobile banking adoption in an emerging economy: An empirical analysis of young Indian consumers. Benchmarking: An International Journal, 25(2), 743–762. https://doi.org/10.1108/BIJ-01-2016-0009
46. Rashid, M., Shamsi, M. A., Anwar, I., Saleem, I., & Yahya, A. T. (2025). Consumer intention to adopt e-wallets in rural India: An investigation by extending the technology acceptance model. Cogent Business & Management, 12(1), 2428776. https://doi.org/10.1080/23311975.2024.2428776
47. Rastogi, S., Panse, C., Sharma, A., & Bhimavarapu, V. M. (2021). Unified payment interface (UPI): A digital innovation and its impact on financial inclusion and economic development. Universal Journal of Accounting and Finance, 9(3), 518–530. https://doi.org/10.13189/ujaf.2021.090326
48. Ryu, H.-S. (2018). What makes users willing or hesitant to use FinTech? Industrial Management & Data Systems, 118(3), 541–569. https://doi.org/10.1108/IMDS-07-2017-0325
49. Saxena, N., Gera, N., & Taneja, M. (2023). Factors influencing mobile banking adoption in India: The role of government support as a mediator. The Electronic Journal of Information Systems in Developing Countries, 89(6), e12287. https://doi.org/10.1002/isd2.12287
50. Schierz, P. G., Schilke, O., & Wirtz, B. W. (2010). Understanding consumer acceptance of mobile payment services: An empirical analysis. Electronic Commerce Research and Applications, 9(3), 209–216. https://doi.org/10.1016/j.elerap.2009.07.005
51. Shaikh, A. A., Glavee-Geo, R., & Karjaluoto, H. (2018). How relevant are risk perceptions, effort, and performance expectancy in mobile banking adoption? International Journal of E-Business Research, 14(2), 39–60. https://doi.org/10.4018/IJEBR.2018040103
52. Shankar, A., & Datta, B. (2018). Factors affecting mobile payment adoption intention: An Indian perspective. Global Business Review, 19(3_suppl), S72–S89.

https://doi.org/10.1177/0972150918757870

53. Shen, Y.-C., Huang, C.-Y., Chu, C.-H., & Hsu, C.-T. (2010). A benefit-cost perspective of the consumer adoption of the mobile banking system. Behaviour & Information Technology, 29(5), 497–511. https://doi.org/10.1080/01449290903490658
54. Singh, N., Sinha, N., & Liébana-Cabanillas, F. J. (2020). Determining factors in the adoption and recommendation of mobile wallet services in India: Analysis of the effect of innovativeness, stress to use and social influence. International Journal of Information Management, 50, 191–205. https://doi.org/10.1016/j.ijinfomgt.2019.05.022
55. Singh, S., & Ghatak, S. (2021). Investigating e-wallet adoption in India: Extending the TAM model. International Journal of E-Business Research, 17(3), 42–54. https://doi.org/10.4018/IJEBR.2021070103
56. Singh, S., Sahni, M. M., & Kovid, R. K. (2020). What drives FinTech adoption? A multi-method evaluation using an adapted technology acceptance model. Management Decision, 58(8), 1675–1697. https://doi.org/10.1108/MD-09-2019-1318
57. Sivathanu, B. (2019). Adoption of digital payment systems in the era of demonetization in India: An empirical study. Journal of Science and Technology Policy Management, 10(1), 143–171. https://doi.org/10.1108/JSTPM-07-2017-0033
58. Slade, E. L., Williams, M. D., Dwivedi, Y. K., & Piercy, N. C. (2015). Exploring consumer adoption of proximity mobile payments. Journal of Strategic Marketing, 23(3), 209–223. https://doi.org/10.1080/0965254X.2014.914075
59. Srivastava, S., Mohta, A., & Shunmugasundaram, V. (2024). What drives mobile payment FinTech adoption in India? Global Business Review. Advance online publication. https://doi.org/10.1177/09721509241238556
60. Su, P., Wang, L., & Yan, J. (2018). How users' Internet experience affects the adoption of mobile payment: A mediation model. Technology Analysis & Strategic Management, 30(2), 186–197. https://doi.org/10.1080/09537325.2017.1297788
61. Tan, M., & Teo, T. S. H. (2000). Factors influencing the adoption of Internet banking. Journal of the Association for Information Systems, 1(1), 1–44. https://doi.org/10.17705/1jais.00005
62. Thakur, R., & Srivastava, M. (2014). Adoption readiness, personal innovativeness, perceived risk and usage intention across customer groups for mobile payment services in India. Internet Research, 24(3), 369–392. https://doi.org/10.1108/IntR-12-2012-0244
63. Venkatesh, V., & Bala, H. (2008). Technology Acceptance Model 3 and a research agenda on interventions. Decision Sciences, 39(2), 273–315. https://doi.org/10.1111/j.1540-5915.2008.00192.x
64. Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. Management Science, 46(2), 186–204. https://doi.org/10.1287/mnsc.46.2.186.11926
65. Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. MIS Quarterly, 27(3), 425–478. https://doi.org/10.2307/30036540
66. Venkatesh, V., Thong, J. Y. L., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. MIS Quarterly, 36(1), 157–178. https://doi.org/10.2307/41410412
67. Yang, S., Lu, Y., Gupta, S., Cao, Y., & Zhang, R. (2012). Mobile payment services adoption across time: An empirical study of the effects of behavioral beliefs, social influences, and personal traits. Computers in Human Behavior, 28(1), 129–142. https://doi.org/10.1016/j.chb.2011.08.019
68. Yang, Y., Liu, Y., Li, H., & Yu, B. (2015). Understanding perceived risks in mobile payment acceptance. Industrial Management & Data Systems, 115(2), 253–269. https://doi.org/10.1108/IMDS-08-2014-0243
69. National Payments Corporation of India. (2026). Unified Payments Interface (UPI) product statistics. https://www.npci.org.in/product/upi/product-statistics
70. Reserve Bank of India. (2026). RBI–Digital Payments Index for September 2025. Reserve Bank of India.