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Unveiling FinTech adoption: an integrated approach of TAM and E-S-QUAL models for assessing the impact of service quality

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Abstract

Purpose – The rapid advancement of Financial Technology (FinTech) has ushered in a new era of financial services, with innovative solutions that have the potential to transform how individuals and businesses manage their finances. This research study explores the critical factors affecting the adoption of FinTech services by integrating the TAM and the E-S-QUAL model with a special focus on the service quality of FinTech services.
Design/methodology/approach – The study used partial least squares structural equation modelling (PLS-SEM) for testing both measurement and structural models. Data were collected from 304 FinTech users in India.
Findings – The findings supported the hypotheses that perceived ease of use (PE) and perceived usefulness (PU) significantly influence the use of FinTech services. Moreover, a strong positive relationship exists between PE and PU, highlighting the interdependence of these factors in FinTech adoption. Additionally, service quality emerges as a pivotal factor, positively impacting both PE and PU, further enhancing the use of FinTech services.
Practical implications – FinTech companies should prioritise strategic investments in user experience (UX), user interface (UI) design and systematic usability testing, which will lead to significant improvements in user engagement. Policymakers should focus on developing supportive regulatory frameworks that both foster FinTech innovation and safeguard data privacy.
Originality/value – The conceptual model, by integrating TAM and E-S-QUAL in the context of FinTech adoption in an emerging country, India, makes a pivotal contribution to the literature on both service quality and FinTech.

Keywords FinTech, Service quality, Technology acceptance model, E-S-QUAL and digital finance
Paper type Research article

1. Introduction

The financial service industry has undergone a profound transformation in recent years, driven by the emergence of financial technology (FinTech). FinTech represents a fusion of finance and technology, resulting in innovative solutions disrupting traditional banking and financial systems (Corbet *et al*., 2023; Wu *et al*., 2023). This revolution has changed how consumers interact with their money and how businesses manage their finances and engage with customers (Xiao and Yu, 2023). FinTech has democratized access to financial services (Fan *et al*., 2023). It has removed many traditional barriers that hinder people from participating in the financial system, such as geographical constraints, high fees and the need for physical branches (Amnas *et al*., 2023). With the advent of digital wallets, peer-to-peer lending

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platforms and mobile banking apps, individuals from all walks of life can now easily access and manage their finances (Yanga and Zhang, 2022). One of the most significant impacts of FinTech is its role in promoting financial inclusion (Banna *et al*., 2021). FinTech solutions, like mobile banking and microfinance apps, have enabled individuals in underserved areas to access essential financial services, manage savings and build credit histories, thus empowering them economically (Shaikh *et al*., 2023). FinTech has fostered a culture of innovation and competition within the financial industry (Vyas and Jain, 2021). Traditional financial institutions are now forced to adapt and innovate to remain relevant in the face of FinTech disruptors (Wu *et al*., 2023). This competition ultimately benefits consumers by driving down costs, improving service quality and spurring the development of new financial products and services (Asif *et al*., 2023). FinTech companies prioritize user experience, resulting in user-friendly interfaces and customer-centric solutions (Yue *et al*., 2022). The convenience and ease of use associated with FinTech apps and platforms have set a higher standard for customer service in the financial industry (Al-Slehat, 2023). As documented by Senyo and Osabutey (2020), FinTech helps in providing financial advice to the individuals by using the artificial intelligence and data analytics. By analyzing customer data, FinTech companies can offer tailored investment strategies, debt management and financial planning recommendations. This data-driven approach helps individuals make more informed financial decisions (Shaikh and Amin, 2023).

Additionally, FinTech is instrumental in driving financial inclusion initiatives in developing countries, contributing to economic growth and poverty reduction on a global scale (Senyo and Osabutey, 2020). The importance of FinTech in today's economy is profound. Its ability to improve accessibility, foster financial inclusion, reduce costs, drive innovation, enhance the customer experience, provide data-driven insights and manage risks effectively makes it a vital component of the modern financial ecosystem (Shen *et al*., 2020). As FinTech continues to evolve, its influence will only grow, shaping the future of finance and redefining how individuals and businesses interact with money (Coffie and Zhao, 2023). However, the adoption of FinTech services depends on users' perceptions of their ease of use, usefulness and the quality of service they provide (Savitha *et al*., 2022). To shed light on these critical factors influencing FinTech adoption, this research study delves into the intersection of technology acceptance and service quality models. The technology acceptance model (TAM), developed by Davis (1989), has been instrumental in understanding the factors that drive individuals' intentions to use technology. It posits that perceived ease of use (PE) and perceived usefulness (PU) are critical determinants of technology adoption. PE reflects how easy or difficult users perceive a technology to be, while PU relates to its perceived benefits in achieving specific goals (Davis, 1989). In FinTech, users are more likely to embrace these digital financial solutions when they find them user-friendly and perceive practical benefits, such as convenience and cost savings (Ozili, 2018).

Additionally, this study incorporates the E-S-QUAL model, an extension of the SERVQUAL framework tailored for e-services, to assess the quality of electronic service delivery in the FinTech sector. This model identifies dimensions such as efficiency, system availability, fulfilment and privacy, which collectively contribute to users' assessment of electronic service quality (Parasuraman *et al*., 2005). High service quality catalyses user satisfaction and trust in FinTech products and services (Ghosh, 2018).

Several researchers have empirically examined individuals' adoption of FinTech services (Das and Das, 2022; Jangir *et al*., 2022; Meyliana *et al*., 2019; Putri *et al*., 2023; Savitha *et al*., 2022). However, to the best of our knowledge, research has yet to be conducted on integrating TAM and E-S-QUAL models to understand the adoption of FinTech services. Hence, this research seeks to investigate the adoption of FinTech by employing the TAM and E-S-QUAL models as its theoretical foundation. Specifically, it investigates the relationships between perceived ease of use, perceived usefulness, service quality and FinTech use. Understanding these dynamics is crucial for FinTech companies and policymakers striving to enhance the adoption of digital financial solutions and ensure their continued growth and success in an

increasingly digitized financial landscape. By examining these critical factors, this study aims to provide valuable insights that can inform strategies for improving the design, functionality and overall quality of FinTech services. Ultimately, it seeks to contribute to the knowledge surrounding technology adoption and service quality in FinTech by offering actionable recommendations for industry stakeholders and policymakers alike.

2. Review of literature

To establish a robust theoretical foundation and enhance transparency in the development of this study, a structured and systematic literature review was conducted. The review involved comprehensive searches across major academic databases, including Scopus, Web of Science, and Google Scholar. Keywords such as "FinTech adoption", "TAM", "E-S-QUAL", "digital financial services" and "electronic service quality" were utilised. Studies were analysed, focusing particularly on empirical research employing the TAM or E-S-QUAL frameworks within digital finance contexts. Inclusion criteria emphasised relevance to FinTech adoption, methodological rigour and theoretical coherence, while studies from unrelated fields were excluded unless they offered transferable conceptual insights.

The review identified a considerable body of literature applying TAM to digital finance, highlighting the importance of perceived ease of use (PE) and perceived usefulness (PU) in shaping user adoption behaviour. Numerous studies have confirmed the robustness of TAM across various contexts, including mobile banking, digital wallets and E-commerce platforms (Alnemer, 2022; Türker *et al*., 2022; Wistedt, 2024). In FinTech, the ease of navigating mobile apps is crucial in shaping users' comfort and intention to engage with financial services (Türker *et al*., 2022). Similarly, when users perceive FinTech as effective in achieving financial goals, their likelihood of using such services increases (Sharma *et al*., 2024). This is supported by empirical evidence from multiple studies, which indicates that both PE and PU significantly influence the utilisation of digital financial services (Das and Das, 2022; Putri *et al*., 2023). However, while these studies provide strong support for TAM constructs, they often treat external factors such as platform quality as peripheral rather than integral influences.

Critically, many existing TAM-based studies do not sufficiently investigate how perceptions of service quality might influence users' cognitive evaluations, despite service quality being a key factor in digital environments. While some studies have expanded TAM with constructs such as trust or user satisfaction (Chandra *et al*., 2010; Kumar *et al*., 2023), there is limited agreement on how best to integrate service quality dimensions. This lack of uniformity creates ambiguity regarding the direction and strength of influence from quality-related constructs towards TAM variables. For instance, Ahmed *et al*. (2021) argue that service quality directly affects behavioural intention, whereas Al-Nawafleh *et al*. (2019) suggest that it acts indirectly through perceived usefulness and ease of use.

This gap is addressed by integrating the E-S-QUAL model, a widely recognised framework for assessing service quality in digital environments. The E-S-QUAL model identifies efficiency, fulfilment, privacy and system availability as core dimensions of service quality. Several studies in digital banking and e-commerce suggest that high service quality enhances user experience, thereby improving perceived ease of use and usefulness (Ghosh, 2018; Kang *et al*., 2016; Mujinga, 2020). When systems are efficient and consistently available, users perceive the platform as easier to use (Hijazi, 2023). Likewise, when platforms fulfil service promises and ensure data privacy, users may perceive them as more beneficial (Mujinga, 2020).

Although prior research has examined TAM and E-S-QUAL independently, there is a lack of comprehensive empirical work that integrates these frameworks into a unified model to explain the adoption of FinTech. This study contributes to this emerging area by proposing a holistic model that connects electronic service quality dimensions with TAM constructs and user behaviour. Compared to earlier partial integration or studies that used either model in isolation, this study's framework enables a more nuanced understanding of the pathways

through which service quality influences user cognition and behavioural intentions. It therefore not only addresses the fragmentation observed in previous research but also provides a more comprehensive analytical framework for FinTech contexts. While TAM and E-S-QUAL are well-established models individually, the literature lacks critically validated models that combine both to examine FinTech adoption. This research aims to fill this theoretical gap by proposing and testing an integrated framework that considers both technological perceptions and service quality expectations. Specifically, the study is guided by the following research questions:

RQ1. How do perceived ease of use and perceived usefulness influence the adoption of FinTech services?

RQ2. How do the dimensions of electronic service quality, such as efficiency, fulfilment, system availability and privacy, impact users' perceptions of ease of use and usefulness?

RQ3. To what extent does electronic service quality directly affect users' adoption of FinTech services, beyond the indirect effects through TAM constructs?

3. Theoretical foundations

3.1 Technology acceptance model

TAM (Davis, 1989) is a widely recognized and influential theoretical framework used to understand and predict information technology and systems adoption. TAM has been used in various contexts to examine users' technology acceptance and utilization. TAM is based on the premise that perceived ease of use (PE) and perceived usefulness (PU) are critical determinants of an individual's intention to use a technology. PE refers to the perceived ease with which a person believes they can use the technology. At the same time, PU is the perceived benefit or usefulness of the technology in facilitating tasks or achieving goals (Davis, 1989). Over the years, researchers have extended and modified the TAM to accommodate additional factors that may influence technology acceptance. Researchers have conducted numerous empirical studies applying TAM to various technologies and contexts (Al-Hattami and Almaqtari, 2023; Corne *et al*., 2023; Kelly and Palaniappan, 2023; Meyliana *et al*., 2019; Sharma and Khurana, 2022). FinTech platforms usually require users to use digital services on their own, such as navigating mobile apps, making financial transactions and managing personal information. As a result, the ease with which users can use these platforms (PE) plays an important role in their decision to adopt them. In the same way, when individuals believe that FinTech services are useful for making financial transactions easier and more comfortable, they will unhesitatingly adopt those services. This study utilises these two factors to understand how people's thoughts about ease and usefulness are shaped by users' perceptions of the quality of FinTech services, which in turn influences their decision to use such services. The current research employs the TAM as one of its theoretical foundations to understand the determinants of FinTech use with service quality as an external variable.

3.2 E-S-QUAL model

The electronic service quality (E-S-QUAL) model is an extension of the well-established SERVQUAL (Parasuraman *et al*., 2005) framework, which has long been used to measure service quality in traditional brick-and-mortar settings. Recognizing the unique characteristics and challenges posed by the digital landscape, Parasuraman *et al*. (2005) created a model explicitly tailored for e-services. This adaptation addresses the dynamic nature of electronic interactions, the importance of website design and the critical role of factors like system availability and privacy in shaping the customer experience. The E-S-QUAL model identifies four key dimensions that collectively contribute to assessing electronic service quality. These

dimensions are efficiency, system availability, fulfilment and privacy. According to Parasuraman *et al*. (2005), Efficiency encompasses the ease and speed of accessing and using FinTech services, fulfilment measures the extent to which FinTech platforms deliver on promises related to FinTech services, system availability assesses the correct technical functioning of FinTech applications and privacy evaluates the degree to which FinTech services ensure the safety and protection of customer information. The E-S-QUAL model has found wide application in both academic research and business practices (Ahmed *et al*., 2021; De Melo *et al*., 2022; Ghosh, 2018; Hijazi, 2023; Kang *et al*., 2016; Mujinga, 2020; Ng *et al*., 2022; Yaya *et al*., 2012). Researchers utilize it to assess and analyse the quality of electronic services across various industries and platforms. The E-S-QUAL model offers a comprehensive and nuanced framework for evaluating electronic service quality. So, in this study, we are using the E-S-QUAL model to evaluate FinTech's service quality.

4. Hypotheses development

4.1 Perceived ease of use (PE)

PE refers to an individual's subjective perception of how easy or difficult it is to use a particular technology or system (Davis, 1989). It is a subjective assessment of the extent to which a person believes that using a technology will be free from effort or complications (Putri *et al*., 2023; Venkatesh and Davis, 2000). Users appreciate FinTech platforms that require minimal effort to understand and operate, as they align with their preferences for simplicity and efficiency (Corne *et al*., 2023; Venkatesh *et al*., 2012). Moreover, the perceived ease of use of FinTech services can significantly affect their actual usage (Wang, 2023). Users who perceive these services as easy to use are more likely to explore their functionalities, conduct financial transactions and integrate them into their daily financial routines (George and Sunny, 2023). High PE minimizes perceived barriers to entry (Yeyouomo *et al*., 2023). It reduces the cognitive effort required to learn and use the technology, making individuals and organizations more willing to try FinTech solutions (Susilo *et al*., 2019). Therefore, the following hypothesis is proposed.

H1. PE will have a significant and positive effect on FinTech use.

PE and PU often complement FinTech adoption (Zhang *et al*., 2023). When users find a FinTech solution easy to use, it enhances their perception of its usefulness (George, 2018). Individuals tend to believe that if they can easily use a FinTech tool, it is more likely to provide value and benefits in their financial activities (Jangir *et al*., 2022). Alalwan *et al*. (2017) found that perceived ease of use positively influences perceived usefulness, leading to higher adoption intentions. Venkatesh and Davis (2000) also found a strong positive relationship between PE and PU, with both factors significantly influencing technology adoption decisions. In the literature, there is substantial evidence that the TAM construct, perceived ease of use, exerts a significant and favourable influence on perceived usefulness. Hence, we propose the following hypotheses.

H2. PE will have a significant and positive effect on PU.

4.2 Perceived usefulness (PU)

PU refers to an individual's subjective belief or perception that using a particular technology will enhance their job performance or make their tasks easier and more efficient (Davis, 1989). It reflects the user's assessment of how beneficial and valuable the technology is in helping them achieve their goals or complete their tasks (George, 2018; Shaikh *et al*., 2020). Users believe that FinTech platforms can simplify tasks like budgeting, investing, payments and money transfers, ultimately leading to better financial outcomes (Savitha *et al*., 2022). When users perceive that FinTech can genuinely assist them in managing their finances, they are

more likely to start using these services and continue to use them over time (Jangir *et al*., 2022). Users are attracted to FinTech services that offer convenience and efficiency in financial transactions (PH, 2022). When users recognize that FinTech solutions can simplify financial tasks and save time, they are more likely to use them (Jangir *et al*., 2022). This convenience is a major driver of perceived usefulness (Yeyouomo *et al*., 2023). PU arises from the belief that these platforms can help users grow their wealth and achieve their financial goals (Putri *et al*., 2023). Users will be inclined to adopt FinTech services, especially when they believe that they offer practical benefits, cost savings, convenience and personalized financial solutions (Liu *et al*., 2023). Based on the above discussion, we propose the following hypothesis.

H3. PU will have significant and positive effects on Fintech use.

4.3 Service quality

Service quality in the context of FinTech encompasses factors such as reliability, responsiveness, security, convenience and the overall user experience associated with FinTech applications and platforms (Hijazi, 2023; Parasuraman *et al*., 2005). High service quality, which includes user-centred design and user-friendliness, directly enhances PE (George, 2018). Users are more likely to find the technology accessible when it performs predictably without disruptions or errors (Putri *et al*., 2023). Quality customer support and assistance can simplify users' interactions with technology, reducing their effort and increasing their perception of ease of use (Kang *et al*., 2016). Therefore, we put forward the following hypothesis.

H4. Service quality will have a significant and positive effect on PE.

Service quality, including usability, directly impacts PU. A user-friendly technology that allows users to accomplish tasks efficiently is perceived as more useful (Yaya *et al*., 2012). Service quality enhances PU by ensuring that the technology reliably delivers the expected results (Putri *et al*., 2023). It also boosts PU by increasing users' confidence in the technology's utility for achieving their goals (Hijazi, 2023). In essence, service quality positively impacts users' perceptions of how easy a technology is to use and how useful it is, affecting their acceptance and adoption of it (De Melo *et al*., 2022; Mujinga, 2020). Therefore, we propose the following hypotheses.

H5. Service quality has a significant and positive effect on PU.

Users evaluate FinTech service quality based on their interactions with FinTech platforms. High service quality enhances user satisfaction and trust in FinTech products and services (Amnas *et al*., 2023; Mujinga, 2020). Users are more likely to adopt FinTech solutions if they perceive them as reliable, secure and easy to use (Ahmed *et al*., 2021). Positive user experiences, driven by high service quality, can increase customer loyalty and word-of-mouth recommendations (Gautam and Sah, 2023). Users with good experiences with FinTech services are more likely to encourage others to adopt them (Ghosh, 2018). Based on existing literature, the following hypothesis is proposed.

H6. Service quality will have a significant and positive effect on FinTech use.

5. Research methodology

5.1 Measures

To achieve the goals of our current research, we developed a conceptual model (Figure 1). We hypothesized direct relationships between perceived ease of use, perceived usefulness and service quality on FinTech use. Furthermore, we adopted a second-order constructs to assess service quality by examining four dimensions, such as efficiency, fulfilment, system availability and privacy. The study encompasses four variables, each evaluated through several items

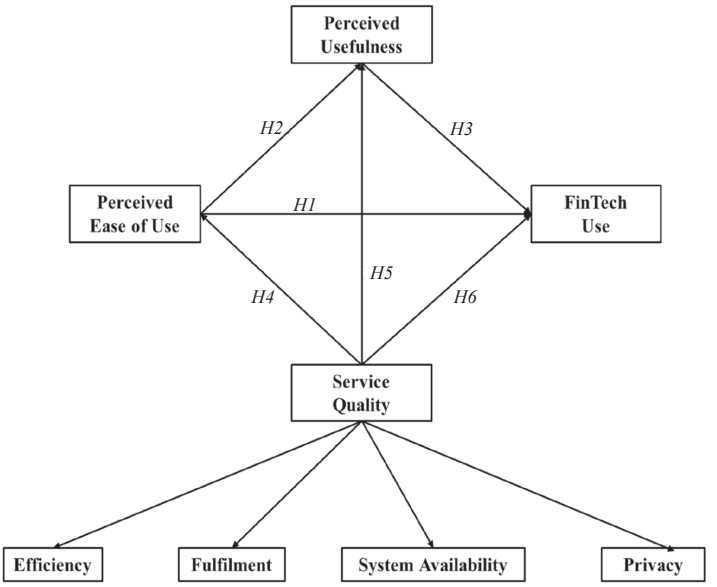

Figure 1. Conceptual model. Source: Authors' own work

adapted from existing literature and adjusted to suit the specific research context. The items assessing PE and PUs were drawn from Davis (1989), while those about FinTech usage were adapted from Venkatesh *et al*. (2012). Furthermore, items related to service quality were sourced from Parasuraman *et al*. (2005). All the measures were assessed using a five-point Likert scale, spanning from "strongly disagree" (1) to "strongly agree" (5). The research questionnaire was divided into two sections: The first section was dedicated to collecting demographic information, while the second section was designed to capture respondents' perceptions of each variable in our model. The questionnaire was initially designed and subjected to a comprehensive evaluation and validation process by six academic experts and three professionals from the FinTech sector. Before distributing the questionnaire to our target participants, we conducted a pilot study involving 40 individuals to ensure the appropriateness and effectiveness of the measurement instrument for this research (see Appendix for survey instrument).

5.2 Sample

We developed a well-organized questionnaire to collect data from the FinTech users in India. We used Google Forms to collect data. We employed a convenience sampling approach due to the unavailability of a sampling framework for FinTech customers, as recommended in prior studies (Senyo and Osabutey, 2020; Shaikh *et al*., 2023). Using snowball sampling, we first contacted our known people and requested them to recommend the other FinTech users known to them. In all, it took three months to complete data collection [June–August 2023]. Data collection spanned three months, from June 2023 to August 2023. In total, we received 304 responses, which is more than the required sample size of 153 according to G*Power. The demographic profile of respondents is captured in Table 1.

6. Data analysis and results

We used a SmartPLS (4.0) package of structural equation modelling to test the structural model.

Table 1. Demographic characteristics of the sample

Demographic variable	Groups	Frequency	Percentage (%)
Gender	Male	179	58.9
	Female	125	41.1
Age	15–25	82	27.0
	25–35	127	41.8
	35–45	55	18.1
	45–55	27	8.9
	Above 55	13	4.3
Education level	Primary	6	2.0
	Secondary	16	5.3
	Graduation	155	51.0
	Post-graduation	77	25.3
	Professional qualification	50	16.4
Occupation	Student	92	30.3
	Unemployed/Job seeking	35	11.5
	Employed	162	53.3
	Business	15	4.9
Place of residence	Rural	132	43.4
	Urban	172	56.6
Experience in FinTech use	Less than 1 year	7	2.3
	1–3 years	40	13.2
	2–5 years	80	26.3
	More than 5 years	177	58.2
Frequency of FinTech use	Rare	7	2.3
	Some time	43	14.1
	Often	108	35.5
	Always	146	48.0

Source(s): Authors' survey

6.1 Common method bias (CMB) test

We conducted an extensive collinearity examination to appraise the common method bias (CMB) to guarantee the absence of bias in our data. The full collinearity test was conducted to assess CMB; the VIF values ranged from 1.551 to 2.656, which is below the suggested threshold of 3.3, as recommended by Kock (2015). Furthermore, we conducted a common method bias test using Harman's one-factor test (Podsakoff *et al*., 2003). The results showed that the variance in the research data accounted for 46.15%, which is below the critical threshold of 50%. As a result, there was no evidence of common method bias in the dataset.

6.2 Assessment of measurement model

The results reveal that the reliability coefficients (Cronbach's alpha) for all the constructs were over the acceptable levels of 0.70. The composite reliability of the constructs ranged between 0.909 and 0.913 is also acceptable (Henseler *et al*., 2016). These results vouch for the validity and reliability of the constructs used in this research. The reliability is presented in Table 2.

To establish convergent validity, a construct's AVE value is recommended to exceed 0.50 (Hair *et al*., 2021). As depicted in Table 2, all constructs in our model exhibit AVE values surpassing this threshold, indicating robust convergent validity. We used the Fornell–Larcker criterion (Fornell and Larcker, 1981) to assess discriminant validity in our study. As shown in Table 3, the square roots of the AVE values exceed the correlations between any two constructs in our study. This indicates the presence of discriminant validity in our research (Hair *et al*., 2021).

Table 2. Reliability and convergent validity

Construct	Items	Loading	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
Efficiency (EF)	EF1	0.819	0.847	0.854	0.897	0.685
	EF2	0.877				
	EF3	0.804				
	EF4	0.808				
Fulfilment (FF)	FF1	0.785	0.844	0.850	0.896	0.683
	FF2	0.883				
	FF3	0.860				
	FF4	0.772				
System availability (SA)	SA1	0.759	0.816	0.819	0.879	0.645
	SA2	0.793				
	SA3	0.842				
	SA4	0.817				
Privacy (PR)	PR1	0.815	0.837	0.838	0.891	0.672
	PR2	0.838				
	PR3	0.831				
	PR4	0.794				
Perceived ease of use (PE)	PE1	0.831	0.872	0.874	0.913	0.724
	PE2	0.870				
	PE3	0.872				
	PE4	0.828				
Perceived usefulness (PU)	PU1	0.802	0.867	0.869	0.909	0.715
	PU2	0.885				
	PU3	0.854				
	PU4	0.838				
FinTech use (FU)	FU1	0.777	0.808	0.815	0.874	0.634
	FU2	0.778				
	FU3	0.836				
	FU4	0.792				

Source(s): Primary data

Table 3. Discriminant validity: Fornell–Larcker criterion

	EF	FF	FU	PE	PR	PU	SA
EF	0.828						
FF	0.736	0.826					
FU	0.645	0.665	0.796				
PE	0.652	0.679	0.774	0.851			
PR	0.654	0.627	0.643	0.730	0.820		
PU	0.660	0.653	0.724	0.737	0.665	0.845	
SA	0.728	0.786	0.662	0.649	0.678	0.653	0.803

Source(s): Primary data

6.3 Assessment of structural model

The outcomes concerning the direct relationships among the constructs are presented in Table 4. The findings robustly support our hypotheses. First, they reveal a significant positive impact of perceived ease of use ($\beta = 0.403$; $p < 0.001$) and perceived usefulness ($\beta = 0.236$; $p < 0.01$) on the use of FinTech services, thereby confirming H1 and H3. Additionally, the results demonstrate a positive and significant effect of perceived ease of use ($\beta = 0.397$;

Table 4. Results of hypothesis testing

Hypothesis	Path	β	Standard deviation (STDEV)	*T* statistics (|O/STDEV|)	*P*-values	Decision
H1	PE → FU	0.403	0.075	5.377	0.000	Supported
H2	PE → PU	0.397	0.078	5.103	0.000	Supported
H3	PU → FU	0.236	0.079	2.974	0.003	Supported
H4	SQ → PE	0.77	0.028	27.337	0.000	Supported
H5	SQ → PU	0.441	0.076	5.78	0.000	Supported
H6	SQ → FU	0.256	0.079	3.241	0.001	Supported

Source(s): Primary data

$p < 0.001$) on perceived usefulness, lending strong support to H2. Furthermore, our analysis highlights the substantial influence of service quality on perceived ease of use ($\beta = 0.770$; $p < 0.001$) and perceived usefulness ($\beta = 0.441$; $p < 0.001$), corroborating H4 and H5. However, the results also highlight the significant positive influence of service quality on FinTech use ($\beta = 0.256$; $p < 0.001$), thereby accepting H6. Table 5 presents the specific indirect effects of service quality on fintech use. The results demonstrate a positive and significant indirect effect of SQ on FinTech use through PE ($\beta = 0.310$; $p < 0.001$) and through PU ($\beta = 0.104$; $p < 0.01$). Additionally, the findings reveal a significant positive indirect effect of service quality through both PE and PU ($\beta = 0.072$; $p < 0.01$).

The *R*-squared values show that the model accounted for 67.3% of the variation in FinTech use. Similarly, the service quality accounted for 59.3% of the variation in perceived ease of use and 62.2% of perceived usefulness. Further, Q^2 values [Stone–Geisser] vouch for the predictive capability of the model. The results indicated that the values for perceived ease of use ($Q^2 = 0.591$), perceived usefulness ($Q^2 = 0.548$) and FinTech use ($Q^2 = 0.548$) were all greater than zero ($Q^2 > 0$), vouching for the predictive accuracy of the model (Hair *et al*., 2021) findings. The results of the structural model are presented in Figure 2.

7. Discussion

In this research, our primary focus was to examine the factors influencing customers' adoption of FinTech services, particularly emphasizing the role of service quality in this process. The study provides strong empirical evidence that perceived ease of use, perceived usefulness and service quality are essential factors influencing the use of FinTech services.

7.1 Perceived ease of use and FinTech use

PE has a significant positive effect on the use of FinTech services, aligning with studies in the literature (George and Sunny, 2023; George, 2018; Venkatesh and Davis, 2000; Venkatesh

Table 5. Results of specific indirect effect

Path	β	Standard deviation (STDEV)	*T* statistics (|O/STDEV|)	*P*-values
SQ → PE → FU	0.310	0.060	5.205	0.000
SQ → PU → FU	0.104	0.041	2.528	0.011
SQ → PE → PU → FU	0.072	0.028	2.591	0.010

Source(s): Primary data

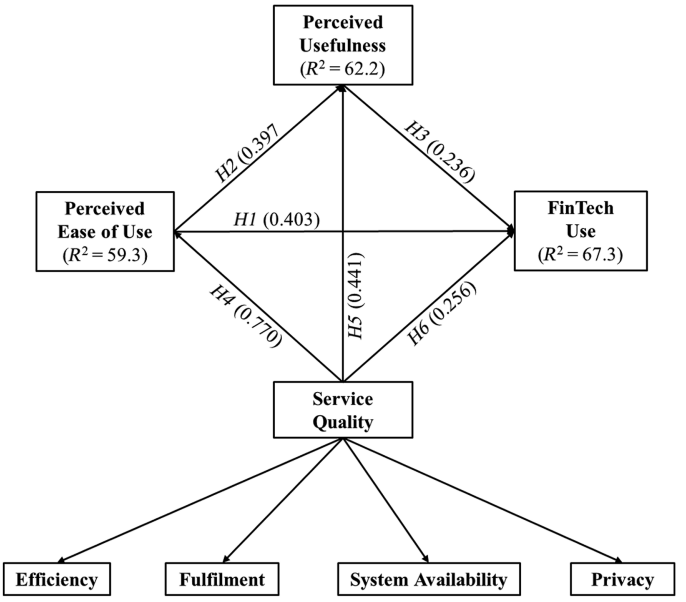

Figure 2. Results of the structural model. Source: Authors' own work

et al., 2012; Wang, 2023; Yeyouomo *et al*., 2023). This suggests that when potential users perceive that a FinTech solution is easy to understand and operate, it reduces the perceived effort and complexity associated with using it. This, in turn, makes individuals and organizations more willing to try FinTech solutions.

7.2 Perceived usefulness and FinTech use

Likewise, the findings reveal that PU is significantly and positively related to the use of FinTech services and positively affects the use of FinTech services, aligning with several studies in literature (Savitha *et al*., 2022; George, 2018; Jangir *et al*., 2022; Putri *et al*., 2023; Shaikh *et al*., 2020). These findings vouch for individuals using FinTech services when they perceive that these tools simplify tasks, save money, provide convenience, offer personalized solutions, enhance efficiency and lead to positive experiences.

7.3 Perceived ease of use and perceived usefulness

This study confirms previous research (Alalwan *et al*., 2017; George, 2018; Zhang *et al*., 2023) that there is a strong positive relationship between PE and PU, indicating that when users find FinTech easy to use, they are more likely to perceive it as applicable. When users perceive a FinTech platform as user-friendly, it enhances their self-assurance, diminishes ambiguity and aids in their comprehension of the platform's usability. This positive relationship encourages users to perceive the technology as more helpful in accomplishing their financial tasks and goals, ultimately leading to higher adoption rates and sustained use of FinTech services.

7.4 Service quality and FinTech use

The discovery that Service Quality, as an antecedent to PE and PU, exerts an indirect influence on FinTech usage highlights the significance of SQ dimensions such as efficiency, fulfilment, system availability and privacy. Fulfilment is a crucial factor in determining service quality within the FinTech industry. When a FinTech service consistently meets or exceeds customer

expectations, it leads to higher satisfaction, trust and loyalty. This, in turn, reduces churn rates, encourages word-of-mouth recommendations and provides a competitive edge. Efficiency is another critical factor influencing service quality in FinTech. An efficient FinTech service enhances the user experience, saves time and costs, increases reliability and boosts competitiveness. Efficiency also aids in regulatory compliance, data security and quick feedback-driven improvements. High system availability ensures that users can access FinTech services consistently without interruptions. This contributes to a reliable and positive user experience. It guarantees continuous access, transaction reliability, trust and compliance, all critical in the financial industry. Privacy measures are essential to safeguard user data. When FinTech platforms prioritize data security, users have greater confidence that their sensitive information is protected, leading to a higher perception of service quality.

Service quality also has a direct positive impact on the use of FinTech services, implying that a positive user experience driven by high service quality enhances the actual use of FinTech platforms. High service quality fosters trust among users, which is a crucial driver of FinTech use. Users adopt FinTech services when they trust that the provider offers reliable, secure and user-friendly financial services.

8. Theoretical contributions

The research study contributes to the theoretical understanding of technology adoption in the FinTech context by integrating established models, emphasizing the role of service quality, and highlighting the interconnectedness of key factors. These theoretical implications have the potential to inform future research in the field of technology adoption and offer valuable insights for businesses seeking to promote the adoption of FinTech solutions. The study's integration of the TAM and the E-S-QUAL model provides a valuable theoretical framework for understanding the adoption of FinTech. This integration recognizes the importance of not only the perceived ease of use and usefulness of technology but also the critical role of service quality in shaping users' perceptions and intentions. This theoretical approach can be applied to other domains where service quality and technology acceptance are intertwined.

9. Practical implications

The findings of this research study have several practical implications for businesses operating in the FinTech industry and organizations looking to enhance their digital service offerings. FinTech companies should prioritize user-friendly design and interface development. They ensure that their platforms are easy to use, which can significantly increase adoption rates. This implies that investments in user experience (UX) design, user interface (UI) improvements and usability testing can yield substantial benefits. Marketing and communication strategies for FinTech services should highlight their offerings' practical benefits and usefulness. Messages should focus on how the technology simplifies financial tasks, saves money and provides convenience. This can attract and retain users looking for practical solutions to their financial needs. Maintaining high levels of service quality is crucial for FinTech providers. This includes ensuring the reliability and responsiveness of their platforms as well as providing excellent customer support. Positive user experiences driven by high service quality can increase customer loyalty and word-of-mouth referrals. Organizations should actively gather user feedback to continuously improve their FinTech platforms. Addressing user concerns and suggestions can enhance service quality and usability. Additionally, policymakers and regulatory bodies can use the findings to understand the factors that drive FinTech adoption and develop regulations that support the growth of FinTech while ensuring the protection of user data and privacy. Promoting service quality standards and efficiency in the FinTech sector can contribute to a more trustworthy and reliable financial ecosystem.

10. Limitations and future directions

The research provides valuable insights; however, it is not without its limitations. A significant drawback is associated with the chosen sampling method, which relied on convenience sampling. This method may have sample-selection bias because participants are selected based on their accessibility and willingness to participate. Such non-random selection could impact the generalizability of our findings to the broader population of FinTech users in India. Additionally, the geographical focus of the respondents poses another limitation. The study primarily draws participants from specific regions, and the findings may not fully capture the diversity of perspectives across different cultural or economic contexts. This regional concentration could limit the applicability of the study's conclusions on a global scale.

To advance knowledge in this domain, future research could investigate how cultural differences influence perceptions of service quality and the adoption of FinTech services. Understanding cross-cultural variations in attitudes and preferences can guide the development of more tailored and culturally sensitive FinTech solutions. Conducting longitudinal studies in future research would allow the observation of changes in users' perceptions, behaviours and the impact of service quality over an extended period. This approach can provide a more dynamic understanding of the factors influencing FinTech adoption and usage patterns. Delving deeper into user segmentation in future research to identify specific user groups with distinct preferences and needs could enhance user satisfaction and improve adoption rates through tailored FinTech solutions. Additionally, conducting comparative studies between FinTech services and traditional financial services to assess perceived service quality and adoption drivers can guide strategic decisions for both industries.

11. Conclusion

The research study has explored the dynamic interplay of factors influencing the adoption of FinTech services, utilizing the TAM and the E-S-QUAL model as theoretical foundations. The findings of this study have robustly supported the proposed hypotheses, highlighting the significance of PE, PU and service quality in shaping users' intentions to use FinTech services. When users perceive FinTech solutions as user-friendly and beneficial in simplifying tasks and enhancing their financial experiences, they are more inclined to embrace these digital financial tools. Moreover, our study has highlighted the pivotal role of service quality in influencing FinTech adoption. Service quality dimensions, such as fulfillment, efficiency, system availability and privacy, indirectly influence users' perceptions of ease of use and usefulness, demonstrating the significance of a seamless, reliable and secure service environment.

Furthermore, we have established that service quality directly impacts users' intention to use FinTech services, emphasizing the importance of a high-quality user experience in building trust and driving adoption. This underscores the need for FinTech companies to prioritize and continually enhance their service quality to ensure user satisfaction, trust and loyalty. Overall, the findings from this research shed light on the critical factors affecting FinTech adoption, offering valuable insights for industry stakeholders and policymakers. By understanding and addressing these factors, the FinTech sector can continue to evolve and thrive in an increasingly digital financial landscape, ultimately redefining how individuals and businesses interact with money. This study provides actionable recommendations for improving the design, functionality and overall quality of FinTech services, contributing to the broader body of knowledge on technology adoption and service quality within the context of FinTech. As the FinTech sector continues to evolve, its influence will undoubtedly expand, shaping the future of finance and fostering financial inclusion, innovation and accessibility on a global scale.

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Supplementary material
The supplementary material for this article can be found online.

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