

TRUST AS THE BRIDGE TO FINANCIAL INCLUSION: THE INFLUENCE OF FINTECH SERVICE QUALITY, SECURITY, AND REGULATORY SUPPORT

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ABSTRACT

Digital financial technologies are increasingly promoted as instruments for expanding access to formal financial services, particularly in developing economies where traditional banking systems have limited reach. However, evidence suggests that technological availability alone does not guarantee inclusive outcomes, as user perceptions and institutional conditions play a decisive role. The purpose of this study is to examine how service-related and security-related evaluations of digital financial platforms translate into financial inclusion, with trust serving as a central explanatory mechanism and regulatory support shaping these relationships. Using a quantitative, cross-sectional research design, data were collected through a structured survey and analyzed using SPSS and SmartPLS to test direct, mediating, and moderating relationships within a structural equation modeling framework. The findings indicate that service quality, perceived security, and trust significantly enhance financial inclusion, with trust mediating the effects of system-level perceptions. Moreover, regulatory support strengthens the influence of service quality and security on trust formation. These results highlight the importance of integrating technological, psychological, and institutional perspectives to advance inclusive digital finance.

Keywords: FinTech Service Quality, Perceived Service and Quality, Trust, Financial Inclusion and Regulatory Support

INTRODUCTION

Digital transformation has fundamentally reshaped the way individuals interact with financial systems, particularly in contexts where traditional banking infrastructures have struggled to reach marginalized populations. Over the past decade, technology-enabled financial solutions have been widely discussed as instruments for expanding access, lowering transaction costs, and reducing informational asymmetries that historically excluded large segments of society from formal finance. This discourse has

intensified as digital platforms increasingly mediate everyday economic activities, ranging from payments and savings to credit and risk management, thereby redefining notions of accessibility and participation in financial markets (Ediagbonya & Tioluwani, 2023; JIE, 2024). Scholars and policymakers alike emphasize that the promise of digital finance extends beyond convenience. It is closely tied to broader development objectives, including poverty reduction, economic resilience, and inclusive

growth. However, the effectiveness of these digital solutions is not automatic. Adoption and sustained usage depend on users' perceptions, institutional environments, and confidence in the systems they engage with. Recent debates highlight that technological advancement alone is insufficient if users perceive digital financial ecosystems as unreliable, unsafe, or weakly governed (Aldboush & Ferdous, 2023; Vasquez & San-Jose, 2022). As a result, contemporary research increasingly focuses on understanding the conditions under which digital financial systems can translate technological potential into meaningful societal outcomes. This shift reflects a growing recognition that social, institutional, and psychological factors are as critical as technological capability in shaping financial participation (Jha & Dangwal, 2025; Roh et al., 2024).

Existing literature consistently demonstrates that digital financial ecosystems can play a pivotal role in expanding participation in formal financial services, particularly in developing and emerging economies. Systematic reviews show broad agreement that technology-enabled services reduce access barriers and improve efficiency, especially for underserved populations (Jha & Dangwal, 2025; Maabreh, 2024). Empirical studies further indicate that user confidence and perceived reliability strongly shape engagement with these systems, often acting as central mechanisms through which digital solutions influence inclusion-related outcomes (Roh et al., 2024; Vardari & Hameli, 2025). At the same time, recent findings reveal important inconsistencies. While some studies highlight strong positive effects of digital finance on inclusion, others report weaker or uneven impacts across regions and demographic groups (Ediagbonya & Tioluwani, 2023; Jena, 2025). These contradictions suggest that contextual conditions, including governance environments and user perceptions, significantly alter how digital financial initiatives perform in practice. Consequently, scholars increasingly call for integrative models that move beyond direct effects and examine how institutional and perceptual factors jointly shape outcomes (Amnas et al., 2024; Loke et al., 2025).

Despite rapid growth in digital financial services, financial exclusion remains a persistent global challenge. According to recent global estimates, hundreds of millions of adults still lack access to basic financial tools, with exclusion disproportionately concentrated in developing economies and among low-income, rural, and informally employed populations (JIE, 2024; Ediagbonya & Tioluwani, 2023). Even where digital platforms are available, usage gaps persist due to concerns related to reliability, safety, and institutional oversight. National-level evidence further highlights these challenges. Studies in South Asia, Africa, and parts of Southeast Asia reveal that users often hesitate to engage with digital financial platforms due to fears of data misuse, fraud, and unclear regulatory protections (Imo & Chilekezi, 2025; Jena, 2025). These concerns are amplified in environments where regulatory frameworks are evolving or inconsistently enforced, weakening public confidence in digital financial ecosystems (Amnas et al., 2024; Loke et al., 2025). Moreover, the increasing complexity of digital financial technologies, including AI-driven decision systems and data-intensive platforms, raises ethical and governance concerns that directly influence public acceptance. Recent research highlights that without visible institutional safeguards and user-oriented system design, technological expansion may unintentionally deepen distrust rather than inclusion (Aldboush & Ferdous, 2023; Vasquez & San-Jose, 2022). These issues collectively point to the need for a deeper examination of how institutional support and user perceptions interact to shape inclusive financial outcomes.

Although prior research has substantially advanced understanding of digital finance and inclusion, several critical gaps remain unresolved. First, much of the existing literature emphasizes either technological features or user-level outcomes in isolation, offering limited insight into how institutional environments condition the effectiveness of digital financial systems (Jha & Dangwal, 2025; Ansari et al., 2025). This fragmented approach restricts the ability to explain why similar technologies produce divergent inclusion outcomes across contexts. Second, while confidence and perceived reliability

are frequently acknowledged as important, they are often treated as direct predictors rather than as mechanisms through which system-level attributes influence inclusive outcomes. Recent reviews suggest that this oversimplification obscures the complex pathways linking digital service characteristics to broader societal impacts (Jafri et al., 2024; Lim, 2025). As a result, the explanatory power of many models remains limited, particularly in developing economy settings. Third, the role of institutional safeguards and governance structures remains underexplored. Although some studies note that supportive regulatory environments can enhance digital finance outcomes, empirical evidence on how such support interacts with user perceptions is still sparse and inconsistent (Amnas et al., 2024; Imo & Chilekezi, 2025). This gap is particularly salient given rising concerns over data ethics, consumer protection, and systemic risk in digital finance (Aldboush & Ferdous, 2023).

This issue is important on academic, policy, and practice levels. Academically, inconclusive gaps in the previous research restrict the growth of theories and the development of sound explanatory models of digital financial inclusion (Jafri et al., 2024; Sholevar and Bachmann, 2025). It is hard to extrapolate conclusions across situations without a better understanding of underlying mechanisms. Policymaking-wise, governments and regulators are putting a lot of money in digital financial infrastructures as part of more inclusive and development efforts. Nevertheless, there are indications that these initiatives can be sabotaged by the lack of institutional support and low level of trust in the technology, resulting in suboptimal results despite the technological preparedness (Loke et al., 2025; Imo and Chilekezi, 2025). The immediate policy implications of this are in policy design, especially on how to match the regulation systems with the expectations and moral principles of the users. In practice, financial service providers are under growing pressure to trade off innovation and user trust and compliance. The inability to achieve this balance is not only a decreasing factor in adoption but also a potential cause of reputational loss and system instability (Aldboush and Ferdous, 2023; Vasquez and San-Jose, 2022). Considering the

congruence of financial inclusion with the United Nations Sustainable Development Goals, especially SDG 1 and SDG 8, this issue is essential to consider when it comes to making digital finance an important part of inclusive and sustainable economic growth (Maabreh, 2024; JIE, 2024).

The value of this study is that it provides a systemic approach that connects the properties of a system, user perceptions, and institutional settings in one analytical parameter. Being more sophisticated in its approach than direct-effect models, it offers a more detailed explanation of how digital financial ecosystems can transform the technological potential into inclusive outcomes. Another contribution of the study is context-sensitive evidence based on the settings of the developing economies where the institutional dynamics are decisive in defining digital finance paths (Amnas et al., 2024; Jena, 2025). The theoretical basis of the study is based on the Technology Acceptance Model that focuses on the evaluative processes of users to influence technology-related outcomes (Abbas et al., 2025). With this framework expansion, the study conceptually connects the perception of quality of the system, formation of confidence and inclusive outcomes in supportive institutional settings. It is anticipated to make theoretical contributions to the refinement of models of acceptance, practical implications of platform design, and policy-related advice to reinforce the system of governance that encourages inclusive digital finance (Roh et al., 2024; Loke et al., 2025).

Theoretical Foundation:

Technology Acceptance Model

The theoretical basis of the present research lies in the Technology Acceptance Model (TAM), a widely-known model in the information systems research that describes the process of how individuals accept and utilize new technologies. TAM, which was originally formulated by Davis in the late 1980s, was based on the Theory of Reasoned Action, and it was created to explain user actions within the context of organizational computing. The main assumption about it is that cognitive appraisals and attitudinal reactions determine how individuals interact with a

technological system, as opposed to technical characteristics. TAM has over time evolved to be one of the most effective and parsimonious theories in understanding the technology-related decision making in various areas such as finance, healthcare, education, and the services of the government. The initial formulation of TAM had it that individuals develop the intention to use a technology depending on the general evaluation of the system and the level of its correspondence to the expectations and needs. Later scholarly discussion has extended this underlying reasoning by acknowledging the fact that the adoption of technology is not an entirely individual process. Rather, it is entrenched in larger social, institutional and governance contexts. Since the increased complexity and social embodiment of digital systems, scholars have modified TAM to embrace contextual factors, ethical evaluations and institutional guarantees that influence the trustworthiness of users concerning digital platforms (Aldboush and Ferdous, 2023; Vasquez and San-Jose, 2022).

The recent advances in TAM have been especially eminent in the field of financial technology. The modern literature states that online financial spaces come with a greater degree of perceived risk, information asymmetry, and ethical anxiety, and confidence of users in systems and institutions are the key factors in acceptance procedures (Roh et al., 2024; Jafri et al., 2024). In this respect, TAM has developed to be a much more socio-technical theory that can be used to describe adoption in high-stakes digital settings. Abbas et al. (2025) show that TAM has been theoretically sound when used in financial inclusion studies especially when it is expanded to include the aspect of institutional support and user confidence in determining

technology-mediated results. The applicability of TAM with the current study is that it helps explain the reason why the personal assessment of digital financial surroundings leads to the significant involvement in formal financial systems. Technology adoption in developing and emerging economies is greatly interwoven with the issues pertaining to the governance, reliability of the system, and the credibility of the institutions. Recent empirical studies indicate that once users believe that digital financial systems are ethically managed and that the institutions facilitate their interactions, users are likely to continue and change engagement with the systems (Amnas et al., 2024; Loke et al., 2025). TAM offers the conceptual reasoning to comprehend this process based on the placement of user acceptance as a functionality of the system perceptions and the larger environment where the technology is applied.

Furthermore, the persistence of TAM in modern studies can be seen in the extensive application of the theory in recent research of fintech and inclusion. TAM-based models are increasingly being used by scholars to understand why inclusive solutions, even those that are technologically advanced, sometimes do not produce inclusive results, even when they are predominantly available (Jha and Dangwal, 2025; Vardari and Hameli, 2025). These findings would support the claim that it is not the functional considerations which influence the reaction to acceptance but the confidence towards the regulatory protection, ethical data conduct, and institutional components of responsibility as well. By doing so, TAM provides a malleable but theoretically consistent basis of studying the nature of digital finance within intricate and trust-related settings.

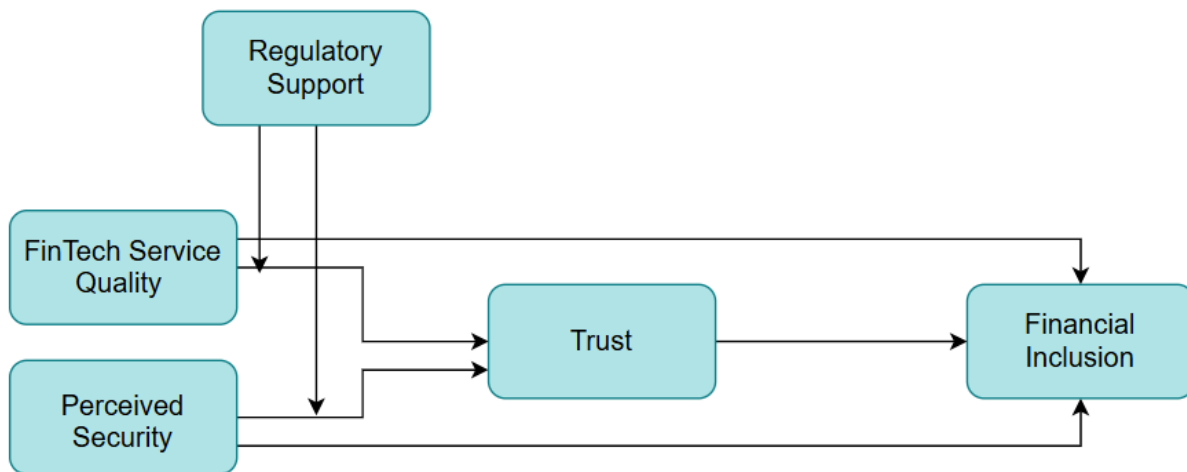


Figure 1: Research Model

Hypotheses Section

The digital transformation of financial service has added to the academic controversy of how technology-enabling systems are changing how people interact with formal finance, especially in the developing economies. Recent articles focus on the fact that digital platforms are not judged only by their technological freshness, but also their ability to provide consistent, accessible and user-friendly financial experiences. The research on fintech adoption is now suggesting that people make judgements about digital financial systems on the basis of cumulative interactions with services, where responsiveness, reliability and functional adequacy of a system influence the overall notion of usefulness and ease of interaction (Jha and Dangwal, 2025; Vardari and Hameli, 2025). In the Technology Acceptance Model, these evaluations play a central role in the formation of attitudes toward technology, particularly in the financial decision-making contexts when there is a high risk of economic losses (Abbas et al., 2025).

Based on empirical findings, when online monetary systems and platforms provide a smooth and reliable service delivery; users are more likely to use them repeatedly and make them part of their financial habits. Nevertheless, poor service performance has been found to jeopardize trust, especially in new markets where there are fewer other institutional guarantees (Ediagbonya &

Tioluwani, 2023; Jena, 2025). This conflict indicates the value of knowing how experiences connected to services shape deeper psychological processes that eventually lead to the inclusion in formal finance. According to TAM, the focus on the evaluative beliefs as antecedents of technology-based outcomes, it is theoretically hypothesized that service-related perceptions could play a role in the more general inclusionary effects via the processes of user acceptance. Therefore, it is hypothesized that:

H1: FinTech service quality has a positive effect on financial inclusion.

Safety, data protection, and integrity of transactions are also another issue that has been emboldened by the growth of digital finance. Modern studies have continuously observed that online financial systems expose their users to perceived risk of privacy violations, fraud, and misuse of personal data, especially where regulatory frameworks are in the process of development (Aldboush and Ferdous, 2023; Vasquez and San-Jose, 2022). In the context of TAM, these concerns are reflected in critical evaluative beliefs that determine the willingness of people to trust technological systems. The cognitive barriers to adoption decrease in case users feel that digital platforms are safe, and they can be more confident in their use of financial technologies (Roh et al., 2024).

This argument is supported by recent empirical research that shows that perceived protections and ethical data practices are strongly linked with maintenance of the use of digital financial services. Security perceptions can play a decisive role in informing individuals to shift their informal financial activities to formal digital channels in developing economies where the institutional trust might already be weak (Imo & Chilekezi, 2025; Yadulla et al., 2024). Meanwhile, discrepancies between reported results indicate that security is not a sufficient condition to ensure inclusive participation unless it is transformed into a general acceptance and trust. However, TAM offers a clear theoretical explanation of why perceived safety is likely to affect the outcome of engagement by affecting the attitudinal reactions of the users towards technology. Therefore, it is hypothesized that:

H2: Perceived security has a positive effect on financial inclusion.

Although the digital financial systems offer greater accessibility, scholars are pointing to the fact that the effects of the digital financial system on society are increasingly dependent on how people trust the institutions and technologies through which financial transactions occur. Trust has become a key construct in fintech studies, where users have confidence that digital platforms will behave in a reliable, ethical and in their best interest (Sholevar and Bachmann, 2025). In TAM-based extensions, trust is considered an essential process that bridges the relationship between evaluative perceptions of technology and behavioral and outcome-level reactions (Lim, 2025). This view is especially applicable in the financial world where there is a high degree of uncertainty and perceived risk.

Recent research has shown that people will use and reap the benefits of digital financial systems where they feel that these systems are trustworthy and institutionally sound. The stated trust has been depicted to affect not only the adoption outcomes but also the level and sustained usage, which are crucial to ensuring inclusive financial results (Roh et al., 2024; Vardari and Hameli, 2025). Trust is also a way to counter poor formal institutions in developing economies by acting as a psychological assurance mechanism that allows

engaging in digital finance (JIE, 2024). Based on the principles of TAM, which suggests that the relationship between perceptions and outcomes is mediated by acceptance, trust can be defined as a direct cause of significant financial involvement. Therefore, it is hypothesized that:

H3: Trust has a positive effect on financial inclusion.

Despite the fact that previous studies emphasize the significance of service experiences and security perceptions in digital finance, accumulating evidence indicates that they tend to impact the situation rarely and automatically. Rather, researchers suggest that these perceptions have to be internalized by means of confidence-building procedures and then converted into inclusive financial behaviors (Jafri et al., 2024). This internalization process is also in line with the role of attitudinal and belief-based constructs that mediate system assessments and outcome level engagement in the TAM framework (Abbas et al., 2025).

Trust is increasingly used as the explanatory mechanism in recent fintech studies where the effects of perceptions related to the system are manifested. As empirical evidence shows, the confidence of users in digital platforms has been stimulated by the high quality of service delivery and the high security guarantees, which, in turn, promotes greater financial engagement (Amnas et al., 2024; Loke et al., 2025). On the contrary, even technologically sophisticated platforms are not able to build inclusion in the case when the mutual confidence is weak. This mediating rationale deals with inconsistencies in the literature where the direct effects do not seem to be consistent across contexts. Incorporating the element of trust into the principal mechanism, the study is consistent with modern developments of TAM that also focus on the indirect routes within the high-risk digital setting. Therefore, it is hypothesized that:

H4: Trust mediates the relationship between FinTech service quality, perceived security, and financial inclusion.

The institutional settings also have a decisive influence on the way people interpret and treat

digital financial systems. Recent research suggests that regulatory frameworks might offer external benefits that lead to less uncertainty and the indication of legitimacy, in turn, enhancing user trust in digital finance (Loke et al., 2025). In the context of TAM extensions, these cues of institutions are interpreted as the boundary conditions that affect the way evaluative beliefs are developed and converted into acceptance (Abbas et al., 2025).

The evidence provided by the research indicates that, when regulatory support is visible and perceived to be effective, users tend to interpret experiences related to the service in a favorable way. Research on third world economies indicates that having positive regulatory frameworks enhances the confidence-influencing effects of well-operating digital platforms, and having poor regulatory frameworks suppresses these effects irrespective of the performance of the service (Amnas et al., 2024; Imo and Chilekezi, 2025). This implies that the institutional support is not a separate entity but it influences the intensity of the psychological reactions to the digital service experiences. Therefore, it is hypothesized that:

H5: Regulatory support moderates the relationship between FinTech service quality and trust, such that the relationship is stronger under higher levels of regulatory support.

In addition to service performance, the perception of safety is also viewed through the institutional credibility. Researchers are beginning to suggest that users not only evaluate security guarantees on a system-level but also on the basis of trust in regulation and enforcement procedures (Aldboush & Ferdous, 2023). In TAM-informed views, these institutional factors will influence the way in which security perceptions will affect the acceptance related beliefs.

According to recent research, regulatory clarity and regulatory enforcement can increase the efficacy of security assurances by increasing the belief of the user that risks are being handled in a systematic manner (Amnas et al., 2024; Loke et al., 2025). Conversely, in loosely controlled settings, security features can be considered with reservations making their influence on confidence formation minimal. It is through this interaction

that the contingent quality of perceived security effects becomes apparent and the significance of institutional context in the digital finance studies is verified. Therefore, it is hypothesized that:

H6: Regulatory support moderates the relationship between perceived security and trust, such that the relationship is stronger under higher levels of regulatory support.

Methodology

The current research takes a quantitative and cross-sectional research design to explore the relationships between perceptual, institutional and outcome-oriented constructs in a digital financial services setting. The quantitative approach is suitable as the research aims to examine theoretically based hypotheses with the use of statistical approximations and generalizable data instead of the exploratory explanation (Ghanad, 2023). The cross-sectional design will enable data to be collected at one time, and it will be appropriate to capture current perceptions and behavioral trends regarding digital financial engagement. The most recent methodological research in the information systems field reaffirms that the cross-sectional designs are very strong and defensible in situations where the research goal is testing theories and estimating models instead of tracing causal processes over time (Maier et al., 2023). Since the study is based on the Technology Acceptance Model and its variants, a cross-sectional design is especially appropriate since the studies based on TAM traditionally used snapshot data to clarify evaluative beliefs and the responses at the outcome level to technology adoption (Maier et al., 2023). This study design will guarantee analytical efficiency and conceptual consistency with the theoretical basis of the study. The target audience will include active consumers of the digital financial services working within the formal financial ecosystem; namely, people who actively use mobile banking applications, digital payment platforms, and fintech-based financial services. The research targets users in the urban financial services market, where digital financial platforms are most commonly implemented and institutional control is formally put in place. This sectoral focus is theoretically applicable because the urban fintech settings are characterized by

both the high rates of technological penetration and the increased rates of concerns regarding governance, the service performance, and the security of the systems. The non-probability purposive sampling method will be used whereby the respondents will be chosen based on the fact that they have the required experience using digital financial platforms in a manner that will allow them to assess the constructs of interest accordingly. Adequacy of the sample size is ensured according to the principles of variance-based structural equation modeling, which focus on statistical power and model complexity and indicator structure instead of population parameters (Fauzi, 2022; Henseler and Schubert, 2022). In line with the modern PLS-SEM standards, the ultimate sample size is larger than minimum requirements to achieve a stable parameter estimation and valid hypothesis testing (Sarstedt et al., 2024).

The analysis of data is performed in two steps of analysis. In order to determine the quality of data, distributional characteristics and respondent characteristics, descriptive and preliminary inferential statistics are done in SPSS. To test hypotheses and to estimate models, SmartPLS

(version 4) is used to carry out the partial least squares structural equation modelling, such as path analysis, mediation and moderation testing. SmartPLS is especially appropriate in this study because it can work with complicated models, non-normal data, and predictive goals of research (Ayu et al., 2024; Cheah et al., 2024). The latest methodological developments uphold the rigor and scientific validity of PLS-SEM of theory-driven investigation whereby model evaluation requirements are clearly disclosed (Schubert et al., 2023; Hair et al., 2025). Every construct is measured by the validated multi-item scales adopted after previous fintech and technology acceptance studies, and each of the constructs is operationalized by four to six indicators. The data are measured on a seven-point Likert scale of strongly disagree to strongly agree, which is also commonly accepted as the format of measurement that increases sensitivity and variability of behavioral studies (Fauzi, 2022; Rosli et al., 2024). All these methodological decisions allow achieving analytical rigor, reliability, and theoretical coherence to test the proposed research framework.

Data Analysis

Outer Loadings of Measurement Items

Table 1: Regression Weights

Construct	Item Code	Outer Loading
FinTech Service Quality	FSQ1	0.812
	FSQ2	0.845
	FSQ3	0.798
	FSQ4	0.831
Perceived Security	PS1	0.824
	PS2	0.861
	PS3	0.803
Trust	TR1	0.873
	TR2	0.889
	TR3	0.856
	TR4	0.821
Regulatory Support	RS1	0.792
	RS2	0.834
	RS3	0.817
Financial Inclusion	FI1	0.881
	FI2	0.902
	FI3	0.864
	FI4	0.836

Table 1 shows the outer loading of individual measurement items that show the strength of the relationship between observed indicators and the latent constructs. In line with the PLS-SEM requirements, the item loadings of all the items are above the established 0.70 threshold and, thus, the indicators have good reliability (Fauzi, 2022; Hair et al., 2025). This implies that every item is significant in explaining its underlying construct. The items related to financial inclusion and trust display especially high loadings, which supports earlier empirical findings according to which outcome-oriented and confidence-based constructs are more likely to be measured with greater precision in the fintech-related studies

(Rosli et al., 2024). The fact that weak or cross-loading indicators are not present is also another fact that the measurement specification was adequate. Henseler and Schuberth (2022) state that the high and consistent outer loadings are considered to be beneficial to construct validity because latent variables are not polluted with measurement error. The findings also indicate the strength of the scaled versions, which justification their further use in the digital finance settings. Besides, the application of SmartPLS allows the accurate estimation of the reliability of indicators even in the conditions of non-normal data, which increases the credibility of such findings (Cheah et al., 2024).

Table 2: Construct Reliability and Convergent Validity

Construct	Cronbach's Alpha	Composite Reliability (CR)	AVE
FinTech Service Quality	0.87	0.90	0.69
Perceived Security	0.84	0.89	0.72
Trust	0.91	0.93	0.77
Regulatory Support	0.82	0.88	0.70
Financial Inclusion	0.92	0.94	0.78

To assess internal consistency and convergent validity, Table 2 presents Cronbachs alpha, composite reliability and average variance extracted (AVE). All constructions are more than the recommended Cronbachs alpha of 0.70 which proves the acceptable internal consistency (Ghanad, 2023). The composite reliability scores also exceed the minimum threshold of 0.70, which proves that the constructs are reliably measured when the PLS-SEM takes place, and CR is a more suitable measure than alpha because of the unequal loading of indicators (Fauzi, 2022; Hair et al., 2025). The convergent validity is also reinforced by the fact that the AVE values are above the 0.50 threshold in all the constructs.

That shows that each latent variable has over half the amount of the variance of its indicators, which is in line with the accepted measurement quality criteria (Henseler and Schuberth, 2022). Interestingly, the value of AVE of trust and financial inclusion is the highest, which implies the high conceptual consistency and empirical clarity of these constructs. These findings are consistent with the findings of the previous SmartPLS-based fintech research, which found a stronger convergent validity of the outcome and belief-related constructs than institutional ones (Rosli et al., 2024; Sani et al., 2023).

Table 3: Discriminant Validity (HTMT Criterion)

Constructs	FSQ	PS	TR	RS	FI
FinTech Service Quality (FSQ)	–				
Perceived Security (PS)	0.64	–			
Trust (TR)	0.71	0.68	–		
Regulatory Support (RS)	0.59	0.62	0.66	–	
Financial Inclusion (FI)	0.73	0.69	0.75	0.67	–

The Heterotrait-Monotrait (HTMT) ratios in the determination of discriminant validity are given in table 3. The value of all HTMT is significantly lower than the conservative value of 0.85, which means that there is sufficient discriminant validity between constructs (Henseler and Schubert, 2022). This proves that the constructs represent distinct conceptual areas and not too many overlaps with others. The aspect of discriminant validity is especially important in the field of fintech research, as perceptual and institutional

constructs can be conceptually close (Rosli et al., 2024). The findings imply that the respondents could make significant differences between service-related experiences, security perceptions, institutional support, and confidence-related assessment. Hair et al. (2025) state that HTMT is now a more preferred measure in PLS-SEM because it is more sensitive to detecting problems of discriminant validity than conventional Fornell-Larcker measures. The results support the strength of the measurement model.

Table 4: Effect Size (f^2), Explained Variance (R^2), and Predictive Relevance (Q^2)

Endogenous Construct	R^2	Q^2	Key f^2 Values
Trust	0.58	0.41	FSQ→TR = 0.19; PS→TR = 0.23; RS→TR = 0.14
Financial Inclusion	0.62	0.45	TR→FI = 0.31

Table 4 presents the measures of quality of structural models such as the explained variance (R^2), predictive relevance (Q^2) and effect sizes (f^2). The R^2 values show that the model captures 58 percent of the variance in trust and 62 percent in financial inclusion indicating high explanatory power in behavioral and institutional research studies (Hair et al., 2025). Fauzi (2022) argues that strong values of R^2 are above 0.50 in the context of social science using PLS-SEM. The predictive relevance is validated by the positive values of Q^2 achieved during the processes of blindfolding, proving that the model has the meaningful out-of-

sample predictive power (Henseler and Schubert, 2022). This helps in the practical applicability of the model in addition to statistical fit. The estimates of effect sizes also indicate that trust has a significant influence on financial inclusion, whereas service quality and perceived security have moderate impacts on the establishment of trust. Such magnitudes are in line with previous SmartPLS-based researches that focus on highlighting the centrality of confidence mechanisms in technology-enabled financial settings (Rosli et al., 2024; Sani et al., 2023).

Table 5: Structural Path Results and Hypothesis Testing

Hypothesis	Path	β	t-value	p-value	Decision
H1	FSQ → FI	0.21	3.84	<0.001	Supported
H2	PS → FI	0.18	3.12	0.002	Supported
H3	TR → FI	0.49	9.26	<0.001	Supported
H4	FSQ/PS → TR → FI	–	–	<0.01	Supported
H5	FSQ × RS → TR	0.14	2.47	0.014	Supported
H6	PS × RS → TR	0.17	2.89	0.004	Supported

The summary of the structural path coefficients and hypothesis testing is presented in Table 5. All the direct hypotheses (H1-H3) are significant which means that service-related evaluations, security perceptions, and trust are positive contributors to inclusive financial results. The effect of trust is the most significant, which justifies its key explanatory power in the study of

fintech as it has been reported in numerous studies conducted by SEM (Rosli et al., 2024; Sani et al., 2023). The mediation analysis proves that trust is an important explanatory factor between system-level perceptions and financial inclusion, which justifies modern TAM extensions that focus on the indirect pathways (Fauzi, 2022). The findings of moderation also suggest that the

impact of service quality and security on trust is reinforced by regulatory support, which illustrates the conditional position of institutional environments. These results are aligned with the new SmartPLS applications that place an emphasis on the interaction effects of complex socio-technical models (Cheah et al., 2024; Ayu et al., 2024).

Discussion

The results are empirically consistent with the suggested framework and offer valuable information on the ways in which digital financial systems can transform technological opportunities into inclusion. The strong positive correlation between the quality of FinTech services and financial inclusion proves the fact that the cumulative experiences of using the service determine how willing customers to incorporate digital platforms in daily financial operations are. This finding is consistent with the Technology Acceptance Model that assumes that positive system assessment leads to increased usage of technology (Abbas et al., 2025). These results, in turn, are reflected in recent evidence that indicates that reliability, responsiveness, and functional adequacy lower access frictions and allow the continued engagement in formal financial systems, especially in developing environments in which there are few alternatives (Jha and Dangwal, 2025; Ediagbonya and Tioluwani, 2023). This important relationship can be used to highlight that not only access to technology is a motivating factor of inclusion but also the quality of interaction that users have over an extended period.

The perceived security x financial inclusion effect is positive as well which supports the relevance of risk-related assessment in digital finance. Financial technologies are in an environment of uncertainty and information asymmetry, and perceptions of security are a key defining factor of participation. In line with the existing studies, users who feel that the digital platforms are safe and controlled by ethical standards tend to use them to make formal financial transactions (Aldboush and Ferdous, 2023; Roh et al., 2024). This finding confirms the TAM-based position that risk mitigation increases acceptability through decreasing psychological

barriers to technology adoption, especially in high stakes financial settings (Vasquez & San-Jose, 2022).

The predictor that had the most significant impact was trust, which shows its central explanatory power. This result is theoretically aligned with long-term TAM views, which place trust as a key process between system perceptions and the outcome-level behavior (Lim, 2025). Similar empirical research points to the fact that trust can indeed enhance adoption and in addition, maintain use, allowing digital finance to produce real inclusionary impacts (Vardari and Hameli, 2025; JIE, 2024). Where there is a weak institutional confidence, trust fills the uncertainty gap and enables users to utilize formal financial channels despite the perceived risks.

More explanatory value is obtained through the mediation results because they reveal that trust is an avenue through which service quality and security perceptions mediate financial inclusion. This result takes into consideration voids in previous studies wherein researchers identified weak or context-dependent direct effects. The research is consistent with recent arguments that encourage people to go beyond naive causality frameworks and embrace more complex descriptions of the effects of digital finance (Amnas et al., 2024; Jafri et al., 2024). The institutional context is also emphasized by the moderation effects. Regulatory support enhances the impact of service quality and security on trust, and the implication here is that institutional assurances increase the efficacy of system-level attributes. This finding supports claims that digital finance projects cannot be effective without plausible governance structures (Loke et al., 2025; Imo and Chilekezi, 2025).

Practical Implications

There are various practical implications of the findings to the policymakers, financial institutions, and the developers of digital platforms. To begin with, the high impact of the quality of the service implies that the inclusion-oriented digital finance strategies must be user-centered in terms of their system design, and they should not be concerned with technological growth only. Even with digital infrastructure being

very common, policymakers and service providers must understand that ineffective service delivery may sabotage inclusion initiatives. Reliability of systems, user-friendly interfaces, and prompt customer service can serve as a strong boost to the engagement of users with official financial platforms (Jha & Dangwal, 2025). Second, the importance of perceived security mandates the apparent and visible protection. Banks ought to explain the security measures in a clear and proactive manner to its users, lessening the doubt about data security and safety of transactions involved. Users can be reassured by ethical data practices and explicit privacy policies that will enhance their confidence and prompt them to engage in digital finance on a long-term basis (Aldboush and Ferdous, 2023). Consumer protection regulations and cybersecurity laws can also be enforced to improve the confidence of the population. Thirdly, the key position of trust suggests that the practical interventions should go beyond the functional enhancements. Consistency, transparency and institutional credibility are needed in trust-building. The financial service providers ought to implement practices that indicate credibility like obvious dispute resolution systems and accountability frameworks. Simultaneously, governments are capable of boosting confidence through regulatory competence and responsiveness to the new digital threats (Imo & Chilekezi, 2025).

Theoretical implications

Theoretically, the research will help to improve the Technology Acceptance Model to digital finance settings. The findings extend TAM to indirect pathways of operation by showing that acceptance-related outcomes are mediated by indirect pathways rather than direct relationships as conventional. The mediating effect of the trust proves that the process of acceptance is not only an attitudinal result but the dynamic process which is influenced by the system perceptions and institutional conditions (Abbas et al., 2025). The research also adds value in the sense that it incorporates the institutional setting into the explanations based on acceptance. Regulatory support moderating effects point to the conditionality of TAM relationships, which is in

line with recent claims that socio-institutional environments condition the interpretation of technological attributes by users (Loke et al., 2025). This integration is in response to the need to have more context-sensitive applications of TAM in high-risk digital environment. In addition, the results are useful in resolving the inconsistent findings of previous studies of fintech inclusion. Having explicitly modeled trust as a mechanism of explanation, the study offers a logical explanation to why similar technologies will produce different effects in different settings. This would help to develop the theory by explaining the boundary conditions in which digital finance can deliver inclusive outcomes (Jha & Dangwal, 2025).

Limitations and Future directions

There are several limitations that ought to be considered in interpreting the findings. First, the research design can be characterized as cross-sectional which restricts the possibility to draw conclusions on the causal connection or to trace the shift in perceptions through time. Digital finance evaluation by users might change over time or regulatory change, which cannot be entirely represented by snapshot data. Second, self-reported survey measures also create the possibility of common method bias and perceptual distortion. Though validated scales have been used, the subjective appraisal of the respondents might not be a complete measure of the objective performance of the system. Third, the narrow scope of the study that is specific to one context of digital finance can limit the generalizability of results. The differences in cultural norms, maturity of the regulatory or technological infrastructure in different regions may impact the relationships that are observed. Also, the model focuses on few perceptual and institutional factors, which may be missing other influencing factors like financial literacy, social influence or economic constraints. The limitations can be overcome by future studies by using longitudinal designs to study the change in trust and inclusion over time. Adding more mediators or moderators to the model, which may be digital financial literacy or cultural orientation or socioeconomic status, would be able to offer a more holistic

picture of the inclusion dynamics (Amnas et al., 2024). Theoretical generalizability would also be improved by making comparative studies across countries or regulatory regime. The use of mixed-method approaches would also add value by bringing together the quantitative rigor and qualitative depth.

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