

## EXAMINING THE NEXUS OF FINTECH ADOPTION AND FINANCIAL INCLUSION UNDER THE MEDIATING ROLE OF CUSTOMER TRUST

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### ABSTRACT

This study investigates the role of FinTech adoption in enhancing financial inclusion within Pakistan's dual banking system, focusing on the mediating role of customer trust and the moderating role of bank type (Islamic vs. conventional). Despite the rapid digitalization of financial services, Pakistan continues to face a large unbanked population due to limited digital literacy, low trust, and infrastructural constraints. Guided by Diffusion of Innovation (DOI) Trust theory and Institutional theory. The research uses a quantitative method with data obtained from customers of both Islamic and conventional banks through structured questionnaires.

I conducted the data through PLS-SEM & SmartPLS for direct, indirect, and moderating effects. The Findings suggest that Fintech adoption has a direct as well as an indirect positive and significant effect on Financial Inclusion through Customer Trust. The mediator of trust proves to be the most important factor that enhances user adoption and use continuance intentions in using Fintech services. Bank Type had a statistically indifferent moderating effect, although it reveals that the positive influence of Fintech on inclusion is pervasive through both Islamic and conventional banking. In general, the study notes that Fintech acts as a universal enabler of financial inclusion, and it underscores the need to gain customer trust that is rooted in a secure, transparent, and user-friendly digital platform. The practical implications of the findings provide practical insights for the policy makers and banks to develop trust-stimulating Fintech plans, intending to provide greater financial inclusion, on an equity basis, in the Pakistan banking industry.

**Jel Classification Codes:** G21, G23, G24, D14, Z12

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## INTRODUCTION

The act of ensuring individuals and businesses have access to relevant financial services and products at an affordable cost, with transparency and fairness, is referred to as financial inclusion (Ozili, 2020a). Financial inclusion has become a flagship agenda of policymakers in the financial services sector, given the transformation that is taking place in the sector (Ediagbonya & Tioluwani, 2023). Development agencies and financial institutions are increasingly calling for steps to be taken beyond schemes offered to the masses, especially in countries such as Pakistan, where a substantial proportion of the population does not have access to banking. Financial inclusion is a prerequisite for economic development by stimulating economic growth, alleviating poverty, and promoting social justice. (Chowdhury et al., 2024)

The advent of financial technology, or Fintech, has provided new opportunities to drive greater financial inclusion. But the barriers of distance, transaction costs, and paperwork could be surmounted by all sorts of newfangled FinTech – from mobile banking apps to blockchain services. ((Ediagbonya & Tioluwani, 2023; Makina, 2019) In recent history, there has been an increase in instances of FinTech use in Pakistan, spurring the development of new digital touch points to reach urban and rural populations alike. But the potential for technology to expand access to financial products and services is contingent upon one other thing, despite the numerous technology alternatives available and their increased prominence, customer confidence (Mirzaye & Mohiuddin, 2025).

In the context of duality in the Pakistan banking system (conventional as well as Islamic banking), this study examines whether customer trust mediates financial Inclusion on FinTech adoption. This includes me, but Shariah-compliant Islamic banks value moral conduct, which could generate more trust in these customers. Traditional banks offering similar technology services may face different levels of trust based on consumer perceptions and experiences (Barjaktarovic Rakocevic et al., 2025).

Prior research has explored the direct relation between Fintech and financial inclusion, yet scant attention has been given to the mediating role of customer trust with regard to Islamic banking. Besides, very limited empirical studies have yet to test the trust dynamics of Islamic banks with conventional banks in the same financial environment (Amin et al., 2025)

This analysis contributes to the growing literature on digital finance by addressing this gap in knowledge and empirically assessing the factors that may either strengthen or weaken the association between inclusive financial participation and technology use. To design strategies that help to realize the potential for FinTech innovation and, at the same time, create a long-term trust of users in place, there is an equal need for insights into these dynamics from both bank regulators and policymakers. Enhancing access to basic financial services for people, as well as businesses that are currently excluded from the mainstream banking system...is a major catalyst for economic development. This has been complemented by the FinTech revolution, which is disrupting the traditional financial system with innovative, affordable, and accessible tech-enabled digital financial services that are triggering a savings mobilization, credit generation, as well as investment pressure needed for poverty reduction and inclusive economic growth (Wewege et al., 2020)

Absolutely, indeed, FinTech has changed the stand-off, old banking system in the digital finance world and brought with it a cheaper and innovative financial ecosystem. This transformation multitude has a long-lasting influence on the financial inclusion landscape, especially in developing countries like Pakistan, where the majority of the population remains unbanked or under-banked by formal financial providers. However, the relationship between Fintech and Financial inclusion access is shaped by several intervening and contextual factors, particularly customer trust and the type of banking

institutions, Islamic and conventional. This study is based on three core theoretical frameworks: Diffusion of Innovation, Trust Theory, and institutional theory. This collectively helps explain the complex dynamics among the study's key variables: Fintech adoption (Independent Variable), financial inclusion (dependent variable), customer trust (mediating variable), and bank type (moderating variable) (Hartley et al., 2022)

Fintech adoption refers to the extent to which individuals and financial institutions embrace digital technologies such as mobile banking, digital wallets, peer-to-peer lending, and blockchain-enabled services. According to the Diffusion of Innovation (DOI) Theory (Rogers 2003). The adoption of technologies innovation id driven by factors such as relative advantage, compatibility, complexity, and trainability. In the context of this study, FinTech adoption is expected to directly contribute to financial inclusion by offering easier and more affordable access to financial services, especially for marginalized populations (Ediagbonya & Tioluwani, 2023)

Financial inclusion is defined as the ability of individuals and businesses to access affordable and appropriate financial services, including savings, credit, insurance, and payments. (Ozili, 2020b) The adoption of Fintech is hypothesized to positively influence financial inclusion by reducing operational cost, improving service delivery, and expanding financial services to the rural and unbanked population; however, this relationship may be influenced by how customers perceive the technology and the institutions offering it.

Customer trust plays a mediating role in the relationship between Fintech adoption and financial inclusion. Trust Theory emphasizes that in environments involving risk, such as digital banking, trust in technology. Institutional elements and data protection have a direct impact on whether people are likely to adopt and use these services over time. Trust is particularly important for Islamic banking, as adherence to Shariah law, ethics standards, and transparency adds another layer of customer expectation (Akhlaq & Asif, 2024). The nature of banks (Islamic or conventional) moderates the relationship. Shaping the nature and direction of the relationship between FinTech uptake and financial inclusion. Institutional theory is the most appropriate framework to consider this phenomenon. That accounts for institutional norms, regulatory frameworks, and societal expectations shaping organizational behavior(Risi et al., 2023)

**Background of the Problem**

Financial inclusion is accepted as a critical driver of economic growth, poverty alleviation, and social progress. Affordable financial services, including savings, credits, insurance, and payment systems, allow people and businesses to better manage their finances, develop investments for the future, and withstand economic shocks, but despite its importance, a large proportion of the population in developing countries, including Pakistan, is excluded from formal financial systems. Classical banking solutions are also unable to effectively enter rural regions, target those with low income, and provide Shariah complaints that coincide with the religious values of many inhabitants (Awan et al., 2023)

Introduction: Financial technology (Fintech) is offering a unique opportunity to close this gap. Utilizing digital platforms, mobile technology, and creative financial products, Fintech solutions can offer accessible, affordable, instant services to the underbanked and unbanked population. The Fintech ecosystem has started to gain momentum in Pakistan, driven by the likes of digital payment systems, branchless banking models, and mobile wallet services. As a result, while progress is being made, the challenges of ensuring that financial development translates into sustainable inclusion that is broad-based remain. Confidence of Customers as an Important Driver of Successful Fintech-Based Financial Inclusion. Fintech takes away personal interaction, which is the basis of relationships and institutional credibility in banking; online transactions are faceless. This creates distrust among users regarding the security of data, authenticity of transactions, and privacy, as well as shielding itself against unwarranted control. Possible users will never adopt emerging digital finance services without great trust. Slowing down the larger goal of financial inclusion (Aldboush & Ferdous, 2023).

Alternatively, trust differences between Islamic and conventional banks, a Shariah-based banking system that prohibits Riba, that lays stress on transparency, risk sharing, and moral characteristics. Such values might foster trust, particularly in religious conservative customers. On the other hand, conventional banks might count on their technology infrastructure and brand having complied with compliance regulations, not a religious perspective, to gain confidence. Understanding how trust affects Fintech adoption differently in these two banking models carries implications for the emerging practice of financial inclusion.

The link between Fintech and financial inclusion (Ediagbonya & Tioluwani, 2023) But there is this palpable “black hole” of (WHY- WHO Fintech adoption stimulates financial inclusion AND how), notably an intermediary customer trust. Furthermore, relatively little is known about these dimensions in a dual banking country such as Pakistan, where cultural, religious, and technological factors are interdependent. (Sanneh et al., 2024)

In light of the above, it is essential to study the mediating role of Fintech adoption in financial inclusion through customer trust, as well as whether this relationship varies significantly between Islamic and conventional banks. Trust is perceived as a main factor of the acceptance and use of FinTech, especially in the case of Islamic banking, as it comes to full fulfillment of customers' expectations, not just for technological quality, but also for Shariah. By addressing these lacunae, the study aims to conduct Research, studies, and analysis, particularly to seek the prohibition of Riba and optimum conditions leading with Fintech for promoting an inclusive financial system in Pakistan. (Qadri et al., 2025)

**Problem Statement**

Innovation in finance has reached a remarkable level among developed countries, including banking, insurance, and the capital market; however, the majority of people in many developing countries, particularly Pakistan, are still neglected by the formal financial sector. The share of banked population is just around 21% in Pakistan, and obstacles to financial inclusion remain (Demirgüç-Kunt et al., 2022). Fintech technology innovations, including mobile banking, digital wallet, and branchless banking, provide hopeful solutions in reducing transaction cost, expanding coverage, and increasing service efficiency, yet the existence of a technological solution does not determine its high usage or sustained use.

Increasing the volume of research to show that customer trust is a key construct facilitating FS adoption, and through it, its effect on financial inclusion (G. Okello, Candiya Bongomin, & J. M. Ntayi, 2020). With a digital financial environment dominated by platforms and interfaces rather than face-to-face human interaction, fears of data privacy and security are amplified. Without trust in the technology to secure their assets, the people will refuse to embrace it, therefore slowing down efforts toward inclusive finance development.

Furthermore, the dual banking system in Pakistan, consisting of Islamic as well as commercial banks, brings an additional level of confusion. Islamic banks adhering to Shariah principles of transparency, risk sharing, and prohibition of interest (riba) are often perceived as more trustworthy among religious customers (Jaradat & Oudat, 2025). Meanwhile, conventional banks may rely more heavily on their technological superiority, brand image, and regulatory compliance to build customer confidence. These differences raise important questions about how trust dynamics work between Islamic and conventional banks in the adoption of Fintech and the advancement of financial inclusion.

Existing research largely focuses on the direct relation between FinTech adoption and financial inclusion. Few studies have empirically explored how customer trust mediates the relationship, and even fewer have examined whether this mechanism operates differently across Islamic and conventional banking contexts, particularly in Pakistan (Ediagbonya & Tioluwani, 2023; Jena, 2025).

Moreover, the Pakistani market is unique with low levels of digital literacy gaps in infrastructure and inadequacy of the existing regulatory framework to regulate the digitally delivered financial services, as reflected by comparative studies conducted on FinTech challenges in Pakistan (State Bank of Pakistan 2022). These barriers highlight the importance of establishing strong and trust-based relationships with customers to promote the acceptance of Fintech Services.

Therefore, the primary issue that was targeted by this research is “a lack of knowledge on the mediating role of customer trust between Fintech Adoption and financial inclusion”, particularly in Islamic and conventional banking sectors in Pakistan. If not addressed, promoting financial inclusion using Fintech would remain inadequate or worsen the situation rather than rectify it. There is, however, a shortage of studies examining empirically how the trust of customers drives the fintech financial inclusion combination and its comparison between Islamic and conventional banks in Pakistan.

### **Purpose of the Study**

The central objective of this research is to explore the role of adoption of fintech technology (Fintech) towards financial inclusion amongst Pakistan’s banking sector having a particular focus on mediating role of customer trust and moderating effect of banks

type (Islamic vs conventional) Although global and regional interest in the application of fintech to include more segments by featuring them within access to financial services yet recent evidence has indicated that Pakistan remains behind other countries through fintech spread. This divide is particularly worrisome in the backdrop of Pakistan’s high proportion of unbanked population, low digital literacy, and religious diversity (Ahmed et al., 2025).

Recent studies have shown that, despite having easier access and being cheaper, the lack of customer confidence in the privacy of personal data, technical dependability, and institutional transparency still represents an impediment to the widespread adoption of fintech services (Ahmed et al., 2025).

As such, this study seeks to reveal if trust is used as a primary mechanism through which fintech is are influencing financial inclusion in Pakistan. Additionally, the study examines how this relationship varies between Islamic and conventional banks. The Pakistani banking market provides an interesting case to examine the contribution of religiosity in shaping value beliefs of customers and organizational practices, which impacts Fintech use. Fintech has revolutionized several functions of the legacy banking model, including online platforms, fast transactions, and broadened access to financial services (Agarwal, 2024). The study also makes a theoretical and practical contribution to the existing body of knowledge by providing context-specific understanding on how trust turns successful for fintech in enabling inclusive finance, guiding policy makers and banking institutions towards designing trust-enhancing fintech strategies catering to the Pakistani dual finance system and heterogeneous population.

### ***Research Questions***

The objectives of the research are guided by the following key questions

- ***RQ1: How does fintech adoption affect financial inclusion in the banking sector?***

This question explores the direct influence of fintech tools such as mobile banking apps and digital wallets. And online transactions are improving financial access, affordability, and usage, especially among the unbanked and underbanked segments of the population.

- ***RQ2: What role does customer trust play in the relationship between fintech adoption and financial inclusion?***

This question addresses the mediating variable, seeking to understand whether customer trust in

technology, data privacy, service reliability, and regulatory oversight determines how effectively fintech enhances financial inclusion.

- **RQ3:** *Does the impact of Fintech on financial inclusion differ between Islamic and conventional banks?*

This question investigates the moderating effect. The premise is that Islamic banks. Governed by Shariah principles, may have different dynamics of trust and service delivery compared to conventional banks, potentially influencing how fintech contributes to inclusive finance.

### ***Research Objectives***

The specific objective of this research is:

- To examine the effect of fintech adoption on financial inclusion in the Pakistani banking sector, particularly with reference to digital banking products and services such as mobile banking, branchless banking, and online financial applications
- To analyze the mediating role of customer trust in the relationship between fintech and financial inclusion.
- To investigate whether the type of banking institution, such as Islamic and conventional, moderates the relationship between Fintech and financial inclusion.

### **Significance of the Study**

This research has several implications for a range of audiences, including those in academia, financial institutions and the general public in developing countries such as Pakistan. By exploring this relationship between these variables: Fintech Adoption and Financial inclusion, with special reference to the mediating role of customers trust and moderating effect of bank types (Islamic vs conventional), this paper takes important steps towards understanding how digital finance can help improve access to financial services particularly among the marginalizes And unserved.

The theoretical contribution of this research has practical significance for Islamic banks and conventional banks operating in Pakistan, especially when coming up with empirical value propositions that are apt at accelerating the use acceptance behaviour of Fintech. Depending on the level of customer trust (it serves as a significant moderator), banks can improve their digital platforms and services to build user confidence in using them,

which will result in customers' acceptance and retention. For instance, for security reasons, being transparent can help banks to build stronger trust with customers and therefore support financial inclusion. Overall, the knowledge of how Fintech is going to affect Islamic traditional banking allows for this institution to develop segment-oriented strategies that include cultural and religious considerations, in a multi-cultural market such as Pakistan.

The significance and implications of this research are that it has implications for academia as well as society, by underpinning problems in Pakistan, a country confronted with the challenge of modernizing its banking with inclusive growth.

This chapter has developed the knowledge of how Fintech can be very much game game-changer in the context of financial inclusion, especially when it comes to Pakistan, where we observe the coexistence of both Islamic and conventional banking. To establish the objectives of the research questions and the motivation for focusing on mediating customer trust.

## **LITERATURE REVIEW**

Financial Inclusion is not only about access to financial services, but also the usage and quality of such services (via technology). This research also established that, as a result of the introduction of Fintech innovations like mobile banking, e-wallets, and digital payments, entry to financial systems for people living in remote areas or who are unbanked had been eased, offering them opportunities to join formal economic activity. Kumari adds weight to the argument by maintaining that Fintech can be an enabler for improving financial inclusion through a financial system that is inclusive, effective, and focused on the customer (Kumari, 2021)

(Pal et al., 2021) reviewing the blockchain role to facilitate the banking service by which granting a higher degree of transparency, efficiency, and trust. They found that blockchain eliminates intermediaries and transaction costs, thereby improving trust. But there are obstacles to adoption, including regulatory ambiguity and interoperability issues. The study emphasizes that technological enabler. Thus, their findings support the idea that Fintech innovations can significantly enhance financial inclusion. Financial technological (Fintech) has rapidly restructured how financial services are produced and delivered, lowering unit cost and enabling remote, digital

intermediation that can reach previously unbanked and underserved populations (Ozili, 2018)

Bongomin and Ntayi find that mobile money adoption and usage significantly promote financial inclusion, and that strong digital consumer protection mechanisms partially mediate this relationship by increasing users' confidence in the digital channel. They found that digital platforms enhance customer trust, financial literacy, and economic participation among previously excluded populations, thereby promoting inclusive growth (G. Okello Candiya Bongomin & J. Ntayi, 2020). Customer trust plays a vital mediating role between Fintech adoption and Financial inclusion, as trust determines user willingness to adopt and continuously use digital financial services. Studies show that higher trust in Fintech platforms significantly enhances the positive effect of technology in inclusive financial participation. (Dawood et al., 2022).

Financial technology (Fintech) has rewritten the rules of how FinTech services are produced and delivered by the digitalization of core processes and enabling remote intermediation. Fintech lowers unit cost and removes physical barriers that previously excluded large segments of the population (Gomber et al., 2018). This structural change, driven by mobile wallets, agent networks, and algorithmic credit scoring, creates a practical route for formally including people who were previously unreachable by branch-based banking (Óskarsdóttir et al., 2019). Empirical evidence supports the utility of these theoretical advantages in tangible micro-level benefits. Econometric evidence shows that the adoption of Fintech payments at the household level increases access to payment. Credit and savings products, in a formal manner, can reduce consumption inequality by integrating financially excluded households into formality (Jena, 2025). This set of papers highlights that the impact is not only technological, but also socio-economic. Fintech alters patterns and welfare consequences when adoption spreads beyond the poorer or isolated class (Gancarczyk et al., 2022).

The growing literature identifies customer trust (and related constructs such as perceived security and service quality) as a central mediator that explains why access alone does not always generate inclusion. Multiple recent empirical papers find that trust increases the likelihood that users will move from trial to regular use of Fintech services, and that improvement in perceived security and service

quality amplifies the positive effect of Fintech adoption on actual financial inclusion outcomes. In short, trust technological possibilities in sustained financial behavior change (Simatele, 2024).

Comparison between banking models and national context shows that Fintech → inclusion pathway is moderated by institutional and product design differences. Different studies comparing Islamic and conventional banking contexts and Pakistan-focused research on Fintech adoption reveal adoption gaps and varying customer concerns (sharia compliance, product design, and regulatory clarity) that alter how effective Fintech translates into inclusion across bank types. These findings imply that bank type and regulatory support change FinTech's inclusionary impact. (Idrees & Ullah, 2024)

Fintech creates the technical possibilities for wider inclusion, empirical work demonstrates real gain where adoption is substantial, trust mediates whether access becomes habitual use, and bank type context moderates the size and direction of effect (Mugamba, 2024). Yet gaps remain specifically in longitudinal evidence on sustained inclusion after initial adoption, finer measurement of trust as a multi-dimensional mediator, and comparative field studies that directly test Islamic vs. Conventional bank pathways in the same national setting, which motivates the current study's focus on Fintech adoption (IV), financial inclusion (DV), customer trust (mediator), and bank type (moderator).

### **Theoretical Orientation for the Study**

In this study, there are three well-established theories from the foundation of the conceptual framework: Diffusion of Innovation (DOI) Theory. Trust Theory and Institutional Theory. These theories support the relationships among the independent variables. (Fintech Adoption), the mediating variable (customer trust), the moderating variable (bank types: Islamic & conventional), and the dependent variable (financial inclusion). The integration of these theories ensures that the model is theoretically grounded and provides an appropriate explanation for the dynamics of Fintech and its effect within the Pakistani banking sector.

#### ***Diffusion of Innovation (DOI)***

Proposed by: Everett Rogers (1962)

The diffusion theory explains how, why, and at what rate new ideas and technologies spread within a society or organization. According to Rogers (2003), explains how new technologies spread through populations. In the context of this study, Fintech

Adoption is viewed as an innovation that must be adopted by banking customers to achieve Financial inclusion. (Wolf, 2022)

- **Relative advantage:** customers will adopt mobile banking or e-wallets if they perceive clear benefits over traditional banking.
- **Compatibility:** Fintech solutions are more likely to be adopted when they align with customers' lifestyles, income level, or religious values.
- **Complexity:** if Fintech platforms are perceived as difficult to use (especially by less literate or rural users), adoption may be hindered.
- **Trialability & Observability:** services that allow experimentation and visible results, which help promote adoption.

Thus, the DOI theory supports the hypothesis that Fintech Adoption (IV) positively influences financial inclusion (DV) in the Pakistani context.

### Relevance to the study

This theory supports the relationship between Fintech adoption and financial inclusion. As banks adopt and implement FinTech innovations such as mobile banking, digital wallets, branchless banking, and AI-driven financial services, they provide easier, broader access to financial services for the unbanked and underbanked population. DOI theory explains why some banks adopt FinTech more quickly than others and how such adoption enhances financial inclusion over time. (García-Avilés, 2020).

### Trust Theory

Proposed by: McKnight and Chervany (2001)

Trust theory explains how individuals develop trust in technology-based systems. It includes elements like trusting beliefs (for example, competence, integrity, and benevolence) and trust intentions, which influence users' willingness to engage with technology platforms.

There are two dimensions of trust relevant to this study:

#### **1. Technological trust (Behavioral)**

- Users assess the reliability, security, and usability of Fintech services
- If they believe digital platforms are secure and efficient, they are more likely to adopt and use them regularly.

#### **2. Shariah-Based Trust (Ethical/Religious)**

- In Islamic banks, customers are also evaluated to determine whether the services comply with Shariah principles, such as Riba-free transactions, etc.

- A FinTech solution that is technologically reliable but lacks Shariah compliance may be rejected by devout Muslim customers

Thus, trust mediates the adoption-inclusion link differently for both Islamic and conventional banks, making it crucial to treat trust as a multidimensional construct of the study.

### Relevance to the study

Fintech services involve digital transaction data sharing and reduced face-to-face interactions. Trust became a critical factor in user adoption. In Islamic banking, this is even more significant because customers often seek an ethical, secure, and Shariah-compliant financial system. If customers trust FinTech services offered by banks, they are more likely to use them, which in turn promotes financial inclusion (Ediagbonya & Tioluwani, 2023).

### Institutional Theory

Proposed by: Richard Scott (2004)

Institutional theory gives another perspective to study how institutions, such as banks, are shaped by norms, values, and rules of their environment. It also reminds us that organizational behavior is determined not only by technical efficiency but also by social and cultural legitimacy. The different institutional environment (regulatory system, religious values, and market practices) leads to diverse behaviors and strategies.

Institutional theory claims that there are expectations, rules, and values that act on organizations (banks) in addition to their internal cognitive frameworks. As shown in our study, Bank types (Islamic and conventional) are used as moderators.

#### **1. Islamic Banks**

- Operates under dual institutional pressures: regulatory compliance and Shariah compliance.
- New Fintech services must be approved by Shariah advisory boards, which may delay adoption.
- However, the religious legitimacy of Islamic banks often enhances customer trust. Offsetting slower innovation.

#### **2. Conventional Banks**

- More flexibility in Fintech adoption due to fewer ethical constraints.
- Typically adopt innovations faster, like AI, blockchain payments, etc.
- Build trust based on brand reputation and technological competence, not religious compliance.

Hence, Institutional theory explains how organizational environment influences the speed, nature, and effectiveness of Fintech adoption, moderating its impact on financial inclusion.

**Relevance to the study**

Islamic and conventional banks operate under distinct institutional logics. Islamic banks must comply with Shariah principles and often face additional layers of governance and analysis. This affects their approach to FinTech adoption, the design of digital services, and the promotion of financial inclusion. Institutional theory provides a basis for understanding how the type of bank moderates the effect of FinTech on financial inclusion (Marei et al., 2023).

**Table 1:** Theories supporting the framework

Theory	Support	Variables	Hypothesis
DOI	Causal link	<i>Fintech adoption → financial inclusion</i>	H1
TRUST Theory	Mediation	<i>Customer trust (mediator b/w fintech and financial inclusion)</i>	H2
INSTITUTIONAL Theory	Moderation	<i>Bank types (used as moderator)</i>	H3

**Definition of Financial Inclusion (Dependent Variable)**

Financial inclusion encompasses access, usage, quality, and availability of financial products and services provided to both individuals and enterprises in the economy, especially to those who use them less often or are not part of the formal banking system. It is not only about access to financial systems, but it is also about active participation and use that helps improve economic well-being and lessen inequality. In underdeveloped countries, improving financial inclusion is an imperative objective, and technology plays a pivotal role in promoting this inclusion. The dependent variable, in this study, is financial inclusion, as it would be predicted by Fintech adoption and mediated by customer trust (Melnik, 2024)

***Dimension 1: Access and Ownership***

This dimension is about having access to basic financial services, like being banked. The paper underscores the need for decreasing geographic economic and technology-based barriers to entry into the formal financial system (Menberu, 2024)

***Dimension 2: Usage and Participation***

Financial inclusion is more than access; it also includes active and effective use of financial services. That means it's available, not just to be involved in saving, borrowing, or transacting digitally, but, for that matter, engagement.

**Definition of Fintech Adoption (Independent Variable)**

Fintech adoption relates to banking institutions' use of technology in performing services and reaching more consumers. It is a transition of people from the conventional banking system to a digital mechanism that involves mobile banking, e-wallets, and online transactions, along with AI-based offerings. In these studies, Fintech adoption is the independent variable influencing financial inclusion.

***Dimension 1: Technological Access and Infrastructure***

This is the dimension that constitutes the building blocks for FinTech and covers internet connectivity, mobile penetration, and the availability of a digital banking platform. It shows how much individuals and institutions can access FinTech tools (Ozili, 2020a)

***Dimension 2: Service Delivery and Innovation***

This is about how Fintech breakthroughs improve bank efficiency, cut costs, and put customers' needs first. Automation, machine learning, and digital engagement also provide banks with the capability to seek customers with a variety of needs.

**Definition of Customer Trust**

Customer confidence is a term that describes the trust customers feel in and rely on financial institution operations with respect to digital finance services' safety, reliability, and integrity. In FinTech, trust is a middle pivot affecting user intention to adopt and continue using digital financial channels. It reflects trust in system security and confidence that the institution will protect user interests.

The new research is the latest in a long line of studies examining how tech security innovations like encryption and biometric authentication can affect trust in money services when it comes to consumer behavior. These innovations to solve these issues and to increase the trust between criminals (Aldboush & Ferdous, 2023)

***Dimensions: Perceived security & technological assurance***

This factor measures the users' perception of the sincerity and safety built by financial institutions in their internet products. It covers the efficacy if information security measures and an organization's capability to protect user data.

***Dimension 2: Reliability and consistency in service delivery***

This dimension involves the quality of financial services performance over time. It is indicative of the organization's continuity of business and meeting its

promises, which leads to trust over the long term (Ediagbonya & Tioluwani, 2023).

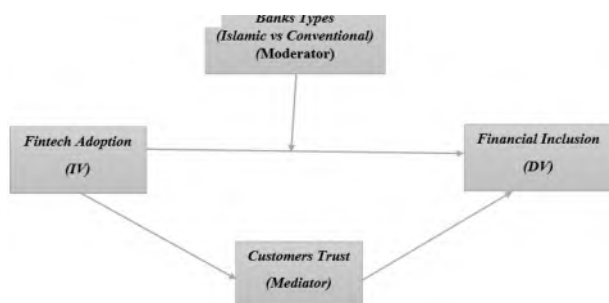
**Definition of Bank Types (Moderating Variable)**

Bank types, Islamic and conventional banks, are two broad categories of banks that operate on different principles and models. Islamic banking is consistent with Shariah-Compliant rules and does not allow interest (Riba), promoting ethical finance and profit and loss sharing. Commercial banks use interest-based lending and profit-maximizing incentives.

In particular, in our study, the type of bank is a moderating variable that might have an influence on both the intensity and direction of association between FinTech adoption and financial inclusion. Islamic and Islamic Banking, Differences in Shariah-Based Factors. The adoption characteristics and nature of FinTech solutions might differ between Islamic banks and conventional banks because of differences in the regulatory guidelines, customer demand for excellent performance patterns, core values (ethical considerations) that the operational model makes banking operation, Dimensions of Shariah Compliance, and Ethical Considerations (Andespa et al., 2024)

The development relates to the Shariah-compliant aspects of Islamic banks' operations and financial products. This encompasses the adherence to ethical standards and refraining from prohibited practices that may affect the uptake of a few desired Fintech solutions. This dimension focuses on the disparity in operating procedures of Islamic and regular banks, specifically their means to interact with customers and adopt technology. It weighed such aspects as product lines, customer service models, and the digital platform penetration.

**Theoretical Framework/Conceptual Model**



6/15/2026 Figure 1: Theoretical Framework

**Hypothesis Development**

**Hypothesis 1**

In the digital era, FinTech adoption is one of the important enablers of financial inclusion and accessibility in financial services, especially in

developing economies like Pakistan, which includes a significantly large portion of the population being unbanked. Fintech refers to services such as mobile banking, e-wallets, peer-to-peer transfer, and blockchain solutions that make financial services more accessible for the underserved and remote population. The shift from traditional banking to digital platforms significantly reduces barriers such as physical distance (Diener & Špaček, 2021), Documentation requirements and high transaction costs. The Diffusion of Innovation (DOI) theory by Rogers (2003) provides a theoretical framework to understand how such technological advancements are adopted by individuals and communities. The theory identifies five key characteristics: relative advantage, compatibility, complexity, trialability, and observability that influence the rate of adoption of innovations.

In the context of FinTech, these attributes are evident in the convenience and cost-effectiveness of digital tools compared to the conventional banking system. For example, mobile banking is highly compatible with users' lifestyles in rural and low-income areas, offering the relative advantage of time and cost savings. As people perceive these tools to be easy to use, beneficial adoption increases. As adoption spread, more individuals gained access to digital accounts, credit savings, and transaction platforms, thereby improving financial inclusion. This is all the more powerful in countries where traditional banks do not exist or are out of reach. The omnipresent use of FinTech has a knock-on effect on access to financial inclusion, which in turn leads to higher economic participation and ultimately inclusive growth. In view of this logic and the DOI framework, a strong positive association between Fintech Adoption and Financial inclusion can be deduced.

**H1:** Fintech adoption has a positive impact on financial Inclusion.

**Hypothesis 2**

In the digital finance service, trust is affecting how people behave in an online setting, especially services demanding high-risk information such as private detail and, without a face-to-face meeting. According to trust theory, individuals would be more willing to adopt and use new technology if they trust the tool as well as the entity providing it. Trust drives down perceived risk and promotes a belief that the technology will function as advertised to safeguard personal/financial information, and deliver quality of service (Frost, 2020)

In the context of the adoption of Fintech, Customer Trust is more than a side product: it has become a central lever that determines whether digital finance can achieve its objective of increasing financial inclusion. Trust is all the more important to accelerate the adoption of fintech services in developing markets such as Pakistan, where low levels of literacy and trust in technology it makes trust building an uphill journey. If the customer has the perception that fintech solutions are transparent, secure, ethical, and user-friendly, their trust toward those platforms increases, which results in frequent usage without fear. The trust leads to greater use of financial products and related services, which in turn facilitates the adoption of such products and services, leading to financial inclusion. Especially in Islamic banking, trust adds another dimension that is essentially religious as the customer has not only to trust technically but also Shariah-compliance and ethical conduct (Frost, 2020). This study includes Customer trust as a mediating variable for a deeper investigation into how fintech adoption leads to meaningful financial access. It is proposed based on the trust theory and theoretically justified by its mediation role over the adoption of technology as well as long-term users' commitment.

**H2a:** *Fintech adoption has a positive impact on customer trust.*

**H2b:** *Customer trust has a positive effect on financial inclusion.*

**H2c:** *Customer trust mediates the relationship between Fintech adoption and financial inclusion.*

### **Hypothesis 3**

The impact of Fintech adoption on financial inclusion does not necessarily have the same magnitude among all financial institutions. Variation in the institutional background, especially as regards what sort of bank, such as Islamic and non-Islamic religiously based, can play a key role in improving Fintech influence to improve financial access. This phenomenon is also consistent with institutional theory. This indicates that an organization not only has internal strategies, but also external environment pressure (cultural norms, religious community, legal limits, and regulatory expectations).

Such institutional pressure in the case of Islamic banking is adherence to Shariah rules, which also dictate the bank's systems as well as types of financial products. Implementation of Fintech in Islamic banks often requires additional vetting by the Shariah advisory board to ensure compliance with

Islamic law. This extra regulatory and ethical scrutiny may result in slower technology adoption. Limited product innovation and cautious integration of digital platforms, however, Islamic banks often enjoy a higher level of customer trust due to their ethical positioning and religious alignment, which can still positively impact financial inclusion even with slower technological progress.

As composes conventional banks operate with more flexibility and respond dynamically to technological advancements. These institutions may be especially prevalent in urban and digitally literate populations; thus, in line with institutional theory and recent empirical evidence, this study proposes that the Bank types (Islamic and conventional) moderate the relationship between Fintech adoption and financial inclusion. (Idrees & Ullah, 2024; Kharrat et al., 2024)

**Hypothesis 3:** *H3 Bank types (Islamic and conventional) moderate the relationship between Fintech adoption and financial inclusion.*

## **RESEARCH METHODOLOGY**

As the study seeks to investigate cause-and-effect relationships between variables, a systematic and deductive strategy is employed. The data collection process is based on primary data collected through self-administered questionnaires from bank clients of Islamic and conventional banks. The Application of structural equation modelling (SEM) is warranted based on the complicated relationship between latent variables and the test for both direct and indirect effects.

### **Research Methodology**

This section describes the general methodology applied to study the effect of fintech adoption on financial inclusion as a mediating variable using customer trust and bank type as moderators. The instrument is organized to fit the goals of this study and is designed for validity, reliability, and generalization. The design answers questions of philosophy in terms of collecting and analyzing data, including a certain stance that a researcher brought to the study (e.g., objectivity) and methodological decisions made to ensure that validity and reliability need adequate attestation.

### **Research Philosophy**

The philosophical foundation of this study is based on positivism, which assumes that reality is objective and can be observed and measured through empirical evidence. Positivism supports the use of quantitative

data and statistical tools to test hypotheses and establish causal relationships among variables.

The Philosophy underpinning this study is positivism, which believes in the objectivity of reality and can be observed or measured through empirical evidence. Positivism advocates of positivism argue that if you follow the scientific method, then research should use quantitative data and statistical techniques to test hypotheses, build theories, and determine cause and effect among variables. Positivism provides a logical basis for conducting the research systematically and objectively. By adopting a positivist stance, the researcher maintains a detached and neutral position, allowing the data to speak for itself without influence from subjective interpretations. This enhances the scientific rigor and reliability of the study, making the finding more generalizable to a broader population

### ***Research Approach***

This study employs a deductive approach, which is appropriate for testing theoretical propositions through empirical observation. The deductive approach starts with the development of a hypothesis based on existing theories, in this case DIO, trust theory, and Institutional theory, and proceeds to confirm or refute these hypotheses. The deductive approach aligns with the objective of the study, which includes examining the direct effect of Fintech adoption on financial inclusion, as well as the mediating and moderating effects of customer trust and bank type, respectively. This approach enables the researcher to apply a general theoretical framework to a specific context (for example, the Pakistani banking sector) and to analyze empirical data to validate the proposed conceptual model. The deductive reasoning process supports structured research design, facilitates statistical analysis, and provides clarity in interpreting results of all, which are essential for drawing valid conclusions in a study of this nature.

### ***Methodological Choices***

This research adopts a quantitative mono method approach, utilizing a structured questionnaire as the sole instrument for data collection. The quantitative method is chosen because it allows for objective measurements of variables and the application of statistical techniques to test hypotheses and analyze relationships among constructs.

Quantitative research is particularly suitable for this study due to its focus on examining the cause-and-effect relationship between multiple variables. Through the use of a self-administered questionnaire

distributed to customers of Islamic and conventional banks, the study aims to collect numerical data that can be analyzed using SEM via smartPLS

The mono-method choice ensures consistency in data collection and analysis, minimizes the researcher's bias, and enhances the reliability of the results. BY focusing exclusively on quantitative data, the study maintains a clear and focused methodological path that aligns with its positivist philosophy and deductive

### ***Research Strategy***

The research method employed in this study was quantitative, using a survey technique to collect data from the customers of Islamic and conventional banks in Pakistan. ...” So the reason for an Open-ended question is that it allows for structured responses which can be tested statistically to examine the hypothesized links between Fintech adoption, Financial inclusion, and consumer trust. The survey technique also embedded the empirical nature of the study, thus broader generalization of findings for the banking sector in Nigeria could be made.

### ***Time Horizon***

Given the time constraints and scope of the study, a cross-sectional time horizon has been adopted. Data was collected at a single point in time, allowing for a snapshot view of customer perception and behaviors regarding Fintech usage, financial inclusion, and trust in the banking sector. This approach is suitable for examining the existing relationship between the study variables without the need for long-term observation.

### ***The Purpose of the Research***

The purpose of this research is primarily explanatory, as it aims to identify and analyze the relationship between Fintech adoption and financial inclusion, with customer trust acting as a mediating variable and bank types as a moderating variable. The study seeks to explain how and to what extent Fintech initiatives influence financial inclusion in the context of Islamic and conventional banks, thereby providing empirical evidence to inform policy and strategy decisions in the financial sector.

### ***Data Collection and Data Analysis***

The methodological approach guides the researcher about the data collection and analysis. Reliability and Validity of the collected data at this stage contribute significantly to the study. (Taherdoost, 2021).

### ***Industry Setting***

Industry refers to the sector involved in the production and provision of goods and services to the public, government, or other entities. In this study, the industry

setting is the banking sector of Pakistan, which includes both Islamic and conventional banks. The banking industry plays a crucial role in the country’s economic development by providing financial services that facilitate savings, credit, and payments.

This research examines the effect of Fintech adoption on financial inclusion in the banking industry, particularly between Islamic banks and conventional banks. The research aims to determine if the intermediating role of customer trust in this relationship varies by bank type, Islamic versus conventional, and if this impact is being moderated. The study will be based on a quantitative research design, and data will be collected using structured questionnaires from the customers of Islamic and conventional banks. The primary discovery is that Fintech adoption plays an important role in financial inclusion, and such a relationship will be much stronger when mediated by customer trust. The relationship is also different for Islamic and conventional banks, which emphasizes DOI (Diffusion of innovation), institutional theory, and trust relationship in financial services adoption. The study makes a contribution to the literature by providing an integrated framework that mixes innovation, trust, and institutional perspective in the context of Islamic and conventional finance.

**Population**

A population consists of all members of a defined group that the researcher is interested in studying. Clearly defining the population is essential to ensure the relevance and applicability of research findings.(Kharrat et al., 2024). For this study, the population comprises customers of Islamic and conventional banks in Pakistan who are users of Fintech-enabled services, including mobile banking, internet banking, and electronic payment platforms. These customers are the primary users of Fintech (Financial technology innovation) and thus provide the necessary insights into the effectiveness of Fintech adoption in enhancing financial inclusion.

**Sampling**

Sampling is the process of selecting a subset of individuals from the population to participate in the study. It is used to make data collection manageable and to allow inference about the larger population. This study uses a purposive sampling technique, a non-probability sampling method where participants are chosen based on specific characteristics in the case of bank customers who actively use Fintech services. The

sample size is determined based on Sekaran & Bougie’s (2016) recommendations, which suggest a sample of approximately 384 respondents for a population larger than 100,000 to ensure statistical reliability and generalizability.(Kharrat et al., 2024)

The data was gathered through self-administered questionnaires, both online and offline, from a wide range of demographics in different parts of Pakistan. This strategy is intended to obtain a sample that would optimally be analyzed by SEM.

**Measurement and Scales**

**Table 2** Measurement Scales

Variables:	Some Indicators:	Source	Measurement scales
<b>Fintech Adoption</b>	My bank provides up-to-date Fintech services (e.g., mobile app, digital wallets & internet banking, etc.)	(Tun-Pin et al., 2019)	5-point Likert scale
<b>Financial inclusion</b>	My bank actively promotes the use of Fintech tools like mobile banking, online transactions, and digital wallets.	(Salman et al., 2024)	5-point Likert scale
<b>Customer trust</b>	I trust my bank’s digital platform to protect my information. The Fintech services are reliable. My bank handles my data responsibly.	(Zhang et al., 2023)	5-point Likert scale
<b>Bank Type</b>	Based on customer account type: coded as 1= Islamic Bank, 2=Conventional Bank.	Self-reported	

Measurement The act of assigning numbers or labels to characteristics of people, objects, events, or other phenomenon (variables) Qualitative measurements vs. Quantitative Measurement Classification and categorization Nominal- Labels only Ordinal- Order Interval Equal distance Numerical Ratio QM allows statistical analysis -QM (quantitative measurement) Allows for data reduction process form large number to smaller number without compromising information Qualitative measurements that have intervals feel like ratios but not Multiplication is meaningful Depths used on scale Likert Types Scales For more see Stevens 1946 & Analyzing and interpreting continuous data PowerPoint Presentation by Dr A.J.(parenthesis are mine) Precise measurement of the variables is critically important for validity and reliability of research results. In this study, the key constructs are Fintech adoption (IV), Financial inclusion (DV), customer confidence (mediating), and bank type as a moderating variable. Each variable is measured using established scales and adapted from prior validated research to ensure consistency and credibility.

- Fintech adoption: This variable is measured through a multi-item scale capturing customers’ usage frequency, perceived usefulness, and ease of use of fintech services. The items are adapted from previous studies. This focuses on technology acceptance models.
- Financial Inclusion: Financial inclusion is measured using items that assess customers’

access to banking services, usage of financial products, and affordability. The scale is based on a framework used by the World Bank (2018) and recent empirical studies in financial inclusion research

- Customer trust: is measured using a validated scale that examines confidence in the banks' reliability, integrity, and security in providing Fintech services. This scale draws from prior research and subsequent studies focusing on trust in financial services.
- Bank Types: As a moderating variable, bank type is coded categorically to distinguish between Islamic and conventional banks. Based on the customer's account type.

All scales use a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). To capture the degree of agreement with each statement. This scale is widely accepted for its simplicity and effectiveness in measuring attitudes and perceptions. Before the main data collection, a PILOT test will be conducted to assess the reliability and validity of the scales in the context of Pakistani banking customers. Cronbach's Alpha will be calculated to ensure internal consistency of each scale, with values above 0.70 considered acceptable (Adamson & Prion, 2013).

**Pilot Study**

A pilot study was conducted with a sample of 30 active bank users who actively use Fintech services in Pakistan. The purpose of the pilot test was to:

- Evaluate the clarity and readability of questionnaire items.
- Test the reliability of the measurement scale using Cronbach's Alpha.
- Identify any ambiguities or redundancies in items.
- Ensure contextual appropriateness for both Islamic and conventional bank users.

Participants were encouraged to provide feedback on item wording and questionnaire format. Based on the feedback, minor revisions were made to improve clarity and alignment with the local banking context.

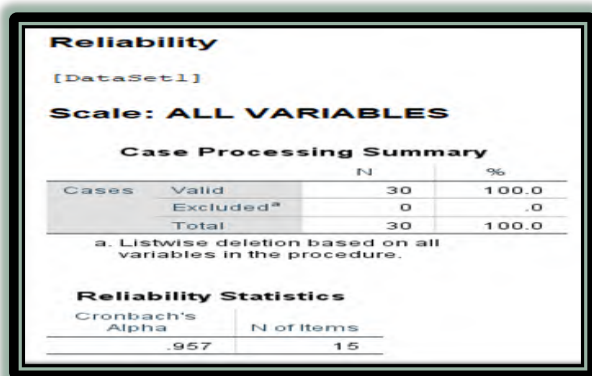


Figure 2 Pilot Study results

A pilot study was conducted on a sample of 30 active users of Fintech in Pakistan to evaluate the clarity and reliability of the measurement instrument, which was assessed using Cronbach's Alpha in SPSS. The results revealed a Cronbach's Alpha coefficient of 0.957 across 15 items, indicating an excellent level of internal consistency. This confirms that all items were well-correlated and measured the intended constructs reliably. Based on participant feedback, minor wording revisions were made to enhance clarity and contextual appropriateness for both Islamic and Conventional users.

**Estimation Model**

$$H1 : FI - \beta o + \beta 1FA + \epsilon \dots \dots \dots (1)$$

$$H2: CT - \alpha o + \alpha 1FA + \epsilon 1 \dots \dots \dots (2)$$

$$FI - \beta o + \beta 1FA + \beta 2CT + \epsilon 2 \dots \dots \dots (3)$$

$$H3: FI - \beta o + \beta 1FA + \beta 2BT + \beta 3(FA \times BT) + \epsilon \dots \dots \dots (4)$$

- Where:
- FI = Financial Inclusion
- FA = Fintech Adoption
- CT = Customer Trust (mediator)
- BT = Bank Type (moderator: Islamic = 1, Conventional = 0)
- FA × BT = Interaction term representing moderation
- βs = path coefficient estimated by SmartPLS
- ε = Error Term

**Estimation Techniques**

The paper used Partial Least Squares-Structural Equation Modeling (PLSSEM) as the principal estimation method to find out the proposed relationships involving Fintech Adoption, Customer trust, financial inclusion, and Bank Type. PLS-SEM was chosen for its ability to accommodate complex models with mediating and moderating effects, non-normal data distribution, and sample sizes of relatively small to medium samples (Sarstedt et al., 2021). The model was estimated using SmartPLS, which provides an enhanced ability for model estimation, bootstrapping, and path analysis. PLS-SEM is a variance-based technique, which primarily seeks to ensure that the degree of explained variance in the dependent constructs is maximized (Hair et al., 2019). When the purpose of the research is to predict and develop theory, instead of confirmatory purposes, it is better than covariance-based SEM (Henseler et al., 2015). Furthermore, PLS-SEM is applicable for models with both reflective and formative constructs, like the one in use in this study, i.e., multi-dimensional constructs such as Fintech Adoption and Financial Inclusion (Sarstedt et al., 2020).

The PLS-SEM estimation procedure comprises two phases: the measurement (outer) model and the structural (inner) model (Hair & Alamer, 2022). The reliability and validity of the outer model were evaluated. Such analysis shall consist of testing the indicator (outer loading > 0.70) internal consistency reliability by means of Cronbach’s alpha and composite reliability (CR > 0.70), testing Convergent Validity by using Average Variance Extracted (AVE > 0.50), and Discriminant Validity via Heterotrait-Monotrait (HTMT) ratio (< 0.85) as prescribed in the method (Henseler, 2017).

For mediation, the indirect effect of Fintech Adoption on Financial inclusion via Customer trust was tested using the bootstrapping approach, as recommended by (Preacher & Hayes, 2008). Mediation was confirmed when both the indirect path (FA→CT→FI) and the total effect were statistically significant. The moderating effect of Bank Type (Islamic vs conventional) was analyzed using an interaction term (FA × BT). The significance of the moderation effect was determined by examining changes in R<sup>2</sup> and the significance level of the interaction path (Fassott et al., 2016). Thus, the overall estimation model can be expressed as

$$FI = \beta_1(FA) + \beta_2(CT) + \beta_3(FA \times BT) + \epsilon$$

Where FI denotes the Financial Inclusion. FA represents the Fintech Adoption, CT is customer trust, and BT indicates the bank type in this model. This model captures both direct and indirect effects as well as the conditional influence of bank type, thereby providing a comprehensive understanding of FinTech’s role in promoting financial inclusion in Pakistan’s Dual banking system.

**DATA ANALYSIS AND DESCRIPTION**

***Data Screening and Preparation***

The data for this study were collected through both online and offline questionnaires. An online survey was developed using Google Forms and distributed through digital platforms, while printed copies were also shared in selected banking areas to reach respondents who preferred manual participation. In total, over 400 responses were received from clients of Islamic and Conventional banks who actively use Fintech services. After thorough screening and cleaning, a total of 375 valid responses were finalized for analysis. Among these, approximately 200 respondents who use Islamic bank services, among these, approximately 140 were customers of

conventional banks, and about 50 respondents used both Islamic and Conventional banking services.

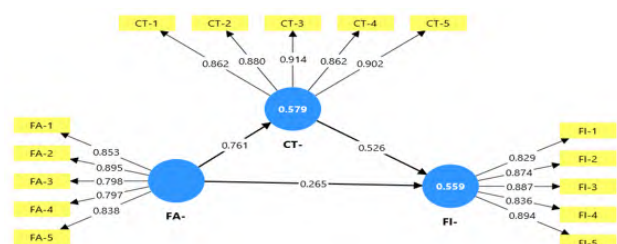
The data screening process involved checking for missing values. Incomplete responses, outliers, and data inconsistencies. Questionnaires with substantial missing or inconsistent information were excluded to ensure data reliability. Univariate outliers were detected using standardized z-scores, and cases with values exceeding ±3.29 were removed from the data sheet. Normality tests were conducted by examining skewness and kurtosis values, which were within acceptable limits ±2, confirming approximate normality appropriate for smart PLS analysis

Additionally, the dataset was examined for multicollinearity using the Variance Inflation Factor (VIF) values, which were below 5, indicating that there is no multicollinearity issue present among the variables. Thus, the final dataset of 375 responses was deemed clean, consistent, and statistically suitable for further analysis.

***Respondent Profile and Information***

The Majority of respondents (71.1%) belonged to the 21–30-year age group, followed by 13.4% who were under 20 years old. 10.3% between 31-40 years and 5.2% who were above 40 years. This distribution indicates that most Fintech users are young adults, reflecting the higher adoption rate of digital financial tools among the younger population. In terms of education, the majority of respondents (59.1) held a Bachelor’s degree, while 22% had a Master’s degree. Around 7.8% had completed Matric, and another 7.8% had Intermediate education. A very small proportion (0.4%) held PHD or professional qualifications such as ACCA and Chartered Management Accounting. These results show that Fintech adoption is relatively higher among individuals with higher educational levels. Out of 375 respondents, almost (47.1%) reported using Islamic banks, while 39.4% is using conventional banks, and almost 13.5% used both Islamic and conventional bank services.

***Measurement Model Assessment (Conventional Banks)***



**Figure 3 Measurement model assessment; CB**

This model confirms a partial mediation, as both direct and indirect paths are significant. In simple terms, “FinTech adoption not only improves financial inclusion directly but also indirectly by building customer trust. For conventional banks, customer confidence in the technology system is critical; the more trustworthy the system, the more customers become financially active.

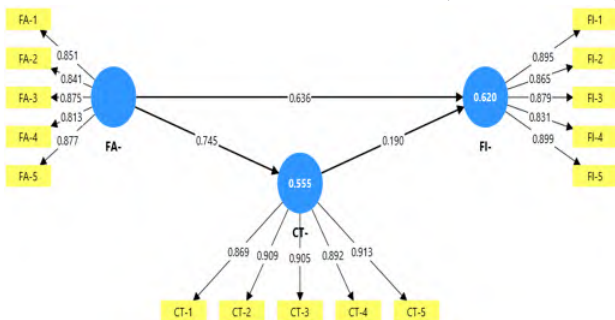
**Structural Model (Conventional Banks)**

**Table 3 Path coefficient CB**

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
CT->FI-	0.526	0.514	0.115	4.564	0.000
FA->CT-	0.761	0.760	0.050	15.197	0.000
FA->FI-	0.265	0.277	0.099	2.674	0.008

- Fintech Adoption has a strong and significant positive effect on customer trust.
- Customer trust significantly influences Financial Inclusion
- Fintech Adoption also has a direct effect on financial inclusion.
- This pattern indicates a partial mediation of customer trust between Fintech adoption and financial inclusion

**4.5 Measurement Model Assessment (Islamic Banks)**



**Figure 4 Measurement model assessment IB**

This model demonstrates a partial mediation with a dominant direction effect. In simple words, “Fintech tools in Islamic accessibility and convenience, with customer trust playing a supporting but weaker role.” Islamic banking customers are confident in Shariah compliance by default, and trust acts less as a mediator compared to conventional banks.

**4.6 Structural Model (Islamic Banks)**

**A. Path Coefficient**

**Table 3 Path coefficient – IB**

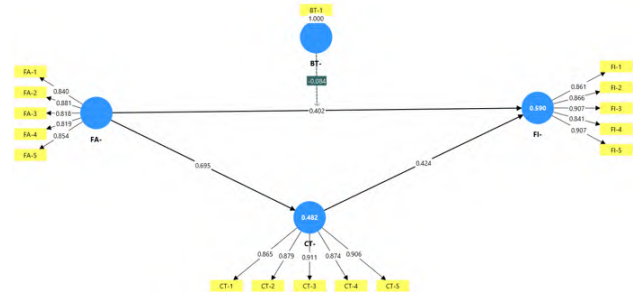
	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
CT->FI-	0.190	0.195	0.117	1.619	0.000
FA->CT-	0.745	0.745	0.044	17.110	0.000
FA->FI-	0.636	0.631	0.096	6.637	0.000

- Fintech adoption has a strongly significant positive influence on customer trust.
- Customer trust has a weak but significant impact on financial inclusion.

- Fintech adoption has a strong direct effect on financial inclusion.

This pattern suggests partial mediation, with the direct effect of (FA→FI) being stronger than the mediated effect (FA → CT →FI).

**4.7 Measurement Model Assessment (Moderator Bank Type)**



**Figure 5 Measurement model assessment moderator**

This model shows that Fintech adoption enhances the customer trust and financial inclusion across both bank types (Islamic and conventional) does not significant change the strength of this relationship in simple words “Fintech’s Positive impact on Financial inclusion is consistent across both Islamic and conventional banks in Pakistan’s Dual banking system “ This Fintech innovation (like mobile apps, online transfer and e-banning ) are equally effective in both system showing that customer value technology’s benefits more than the Banks’s type.

**Hypothesis 1**

**Results from Smart PLS**

**Table 4 Hypotheses 1 results**

Relationship	Beta values	t-values	p-values	Decision
FA→FI (Conventional)	0.265	2.674	0.008	Supported
FA→FI (Islamic)	0.636	6.6637	0.000	Supported
FA→FI (Moderation)	0.402	5.147	0.000	Supported

The findings confirm that Fintech adoption significantly enhances financial inclusion across all models for Conventional Bank, beta shows a moderate but meaningful influence, while in Islamic bank bet value shows a much stronger impact, implying that digital innovations such as mobile banking, e-wallets, and instant transfers are major enablers of accessibility and inclusion.

In both systems, Fintech helps customers overcome geographical and procedural barriers by offering fast, affordable, and transparent financial services.

**Comparison with Previous Studies**

- (Del Sarto & Ozili, 2025) found that Fintech platforms significantly drive inclusion in

developing economies by lowering transaction costs and bridging access gaps.

- (Etudaiye-Muhtar et al., 2024) Highlighted Fintech’s strong correlation with inclusive finance growth across Sub-Saharan Africa
- (Raza et al., 2024) Identified Fintech adoption as a key driver of financial inclusion in Pakistan’s Dual banking system
- (Alam et al., 2025) reported that Financial Technology ecosystems enhance financial inclusion through digital transformation
- (Kou et al., 2021) similarly found that mobile banking money adoption directly improves financial inclusion in emerging markets.

So, my result also supports H1, confirming that adoption has significant and positive effects on financial inclusion across both Islamic and conventional banks.

**Hypothesis 2**

*Table 6 Hypotheses 2 Testing results*

Relationship	Beta values	t-values	P-values	Decision
FA→CT(Conventional)	0.761	15.195	0.000	Supported
FA→CT(Islamic)	0.745	17.110	0.000	Supported
CT→FI (Conventional)	0.526	4.564	0.000	Supported
CT→FI (Islamic)	0.190	1.619	0.000	Supported
FA→FI (Conventional)	0.265	2.674	0.008	Supported
FA→FI (Islamic)	0.636	6.637	0.000	Supported

Fintech adoption has a strong positive influence on customer trust in both models, especially among Islamic customers who perceive Fintech platforms as Shariah-compliant and secure. Trust, in turn, has a weaker positive effect in Islamic banks compared to conventional banks.

This demonstrates partial mediation, meaning Fintech enhances inclusion both directly and indirectly through customer trust. Customers who trust digital financial platforms are more likely to engage in digital payments, online savings, and formal banking services.

***Comparison with Previous Studies:***

- (Liébana-Cabanillas et al., 2022) found that trust is a major determinant of Fintech usage, leading to stronger financial participation
- (Abbas et al., 2025) showed that trust mediates Fintech adoption and customer loyalty, similar to your Finding of partial mediation.
- (Raza et al., 2024) confirmed that trust significantly mediates the relationship between Fintech and financial inclusion among Pakistani users
- (Sijabat, 2024) found that trust is crucial in customer willingness to adopt mobile financial technology in emerging economies.

H2a, H2b, and H2c are fully supported. Fintech adoption improves trust (H2a), trust enhances inclusion (H2b), and trust partially mediates the relationship between Fintech and inclusion (H3c).

Trust thus serves as a psychological enabler that strengthens users' acceptance and long-term engagement with the digital financial system.

**Hypothesis 3**

*Table 5 Hypothesis 3 results*

Relationship	Beta values	t-values	P-values	Decision
BT × FA × FI	-0.094	1.846	0.065	Not supported

The interaction term between bank type and Fintech Adoption is insignificant, which suggests that bank type does not significantly alter the fintech-Financial inclusion relationship.

Fintech impact remains consistently positive across both Islamic and conventional banks. Customers from either system preview Fintech tools such as mobile banking, e-wallets, and digital transfers, similarly focusing more on convenience and security than the bank's religious orientation.

The insignificant interaction between bank type and fintech adoption indicates that Fintech’s positive influence on financial inclusion is uniform across Islamic and conventional banks, as customers in both systems prioritize convenience, accessibility, and security over religious orientation.

***Comparison with Previous Studies***

- (Baeshen, 2023) found that Fintech impacts inclusion similarly in Islamic banks and Conventional Banks across the dual banking system
- (Banna et al., 2022) noted that shared regulatory frameworks minimize differences between bank types in digital adoption outcomes.
- (Bashir, 2024) also found a minimal moderating effect of bank type in Pakistan’s context.

H3 is not supported. The effect of Fintech adoption on financial inclusion is consistent across both Islamic and conventional banks, suggesting that Fintech innovations have universal benefits regardless of the banking model.

***Comparison Between Islamic and Conventional Banks***

*Table 8 IB & CB comparison*

Dimension	Islamic Banks	Conventional Banks
Fintech Adoption → Fintech Inclusion	Strong direct effect (β=0.636)	Moderate direct effect (β=0.265)
Fintech Adoption → Customer Trust	Strong (β=0.745)	Strong ((β=0.761)
Customer trust → Financial Inclusion	Weak (β=0.190)	Strong ((β=0.526)
Mediation of trust	Partial Weaker	Partial stronger
Moderation by bank type	Not significant	Not significant
Explanatory power (R <sup>2</sup> FI)	44.3%	52.9%
Customer behavior	Faith and ethics-driven	Technology and performance-driven

The comparative results show that both Islamic and conventional banks are on a similar trajectory toward digital transformation. While Islamic banks exhibit stronger direct technological influence, conventional banks rely more on trust-building mechanisms to promote inclusion. Fintech adoption thus emerges as a universal enabler of financial inclusion, bridging religious institutional and operational divides that convergence of both systems in Fintech utilization reflects Pakistan's progress toward a unified, accessible, and technology-driven banking environment where inclusion is no longer determined by bank type but by the efficiency, reliability, and trustworthiness of digital financial solutions.

According to the results of this research, Islamic banks perform slightly better than conventional banks in promoting financial inclusion through Fintech adoption. Financial inclusion is stronger in Islamic banks as compared to conventional banks ( $\beta=0.636$  in Islamic weather  $\beta=0.265$ ), indicating that Islamic banks effectively utilize digital technologies to reach unbanked and underbanked customers. Although customer trust plays a stronger mediating role in conventional banks. The overall inclusion outcome is higher for Islamic banks due to their customers' built-in trust in Shariah compliance and ethical operation. Therefore, this study concludes that Islamic banks have a more effective and direct relationship between Fintech adoption and financial inclusion, demonstrating that faith-based confidence, when combined with technological advancement, produces a greater inclusion with technology alone. Although the moderating effect of bank type was insignificant, the results show that Islamic banks slightly outperform conventional banks in promoting financial inclusion through Fintech. This indicates that while both systems benefit equally from Fintech, Islamic bank's shariah complaint and trust-based approach enhances inclusion more effectively, even the moderating hypothesis was not supported.

## CONCLUSION

This study successfully fulfilled all its stated objectives by examining the role of Fintech adoption in enhancing financial inclusion, identifying the moderating effect of customer trust and evaluating the moderating effect of bank type in Pakistan. Data collected from 375 respondents, including 229 users of Islamic and 198 users of conventional banks, and almost 50 of them were those who were using both

Islamic and conventional bank services. Data was analyzed with the help of SmartPLS structural equation modelling. The Results generally supported the proposed hypothesis and shed new light on how Fintech is pushing for financial inclusion in Pakistan's dual banking system.

Furthermore, the result supports H1, which suggests that Fintech adoption positively and significantly affects financial inclusion. Increased or enhanced use of mobile banking, internet banking, and digital payments makes financial services more accessible and used. Fintech alleviates the transaction process and lowers barriers for the unbanked population to accessing financial services. These results are in line with the contributions of (Ahmad et al., 2021; Ozili, 2024). The insight on Fintech for inclusion from improved accessibility and real efficiency. Results also confirmed the hypothesis H2a, H2b that Fintech adoption has a strong effect on customer trust, which in turn significantly improves financial inclusion. Fintech platforms contribute to user trust in Islamic and conventional banks through their technological reliability, transparency, and security. Trust also avails in traditional banks as a psychological factor that contributes to the adoption of digital financial services. In Islamic banks, trust also exists through Shariah compliance, which is a religious trust, so technology facilitates more of being convenience rather than becoming core in terms of trust.

H3c, the mediation effect results revealed that customer trust partially mediates the relationship between Fintech adoption and financial inclusion. This also means that Fintech increases inclusion not only via instruments/services, which build trust towards members of institutions, but also indirectly. These results are consistent with (Jafri et al., 2024; Melnyk, 2024), where trust of customers acted as a medium for the digital services and usage behaviors. The results associated with H3 indicate that bank nature does not have a positive and significant effect on the relationship between Fintech and financial inclusion. This indicates that the effect of Fintech is consistent on banks, whether Muslim or traditional. So the function of technology to encourage inclusion seems site-independent rather than institution-specific. Otherwise, both models of banking enjoy the same features of digital transformation, due to the strong stance and support in terms of regulation from the SBP. In general, findings support Fintech adoption as an entrepreneurial force of financial inclusion in

Pakistan's dual banking system. While Islamic banks show a stronger direct correlation between the adoption of Fintech and financial inclusion, conventional banks rely more on trust intermediaries. Taken together, these systems argue that digital transformation fills the institutional voids and propels Pakistan toward financial inclusion.

### ***Implications of The Study***

This paper is a significant contribution to academic literature and policy discussion. It enhances knowledge about how Fintech affects financial inclusion, and shows that trust and institutional context play a crucial role in shaping digital financial behavior.

#### ***Theoretical Implication***

This research is based on three core theoretical frameworks:

The DOI Theory is the theory that explains how financial technologies spread among users. These results validate the power of Fintech tools on adoption and inclusion if they are being viewed as useful, easy to use, and accessible. An approach to the study of trust involving technology and institutions. The study also provides evidence for the partial mediating role of customer trust. A conversion is needed for fintech adoption to become financial interaction in real-life. Last but not least, our model relies on institutional theory to further explain the mediating role of organizational structures. The findings suggest that Islamic banks and conventional banks have different philosophies. The forces from Fintech are not different that much between the two banking systems. So that's donated to the institution. Hence, this study also adds to the theory and dissemination of knowledge about Fintech adoption and inclusiveness. Innovation trust and institutional context are combined according to an empirical Companion-function model.

#### ***Practical Implications***

This work has no practical implications for banking practitioners, regulators, and policy-makers.

For banks: Banks need to support ongoing digital innovation, including through an app that can be easily used and available service. These measures will not only increase the confidence of customers, but also ensure that the overall theme to drive financial inclusion is well addressed."

For Islamic Banks: Islamic banks should embrace Shariah-Compliant Fintech such as Islamic mobile wallets, online zakat payment systems, and AI-based

advisors. These advancements can also assist in attracting and retaining faith-based customers, as well as promoting financial inclusion.

For Traditional Banks: Traditional banks would have to pursue a trust-promoting approach, such as transparency, strong data privacy, and customer service. Their FI outcome is stimulated by customer trust.

For Policymakers and Regulators: The State Bank of Pakistan and the Department of Financial Innovation should formulate digital banking policies. They need to facilitate the Islamic and conventional FinTech interoperability. In addition, they need to consolidate the cybersecurity framework.

By following these suggestions, indeed, both banking systems will be able to make Fintech a durable engine of Financial and economic expansion.

### ***Limitations and Future Directions***

Despite attaining desired goals, there are certain limitations of this study.

First, the sample size consists of 375 respondents, which, though it may be statistically adequate, could not represent the wide financial population of Pakistan. It is possible to have a larger regionally diverse sample that provides higher generalization.

Secondly, it is suggested to use both a quantitative survey to provide structure in relation to detailed information from qualitative interviews, as suggested by Patterson et al. (1994), for future research studies seeking to better understand financial behavior.

Third, this study concentrated on the Fintech adoption, customer trust, and financial inclusion. The only way would be to integrate, in the future, financial literacy, perceived ease of use, regulatory, and service quality in order to have a full-scale understanding.

Fourth, as the problems and issues of Fintech are constantly changing, research should capture emerging innovations, such as blockchain banking, open banking, and artificial intelligence. Those are poised to revolutionize trust in the financial space.

Finally, the moderation by Bank type was limited to categorical comparison. Comparison. Further research could use multi-group SEM to test demographic moderators such as gender, income, or digital literacy, etc.

### ***Concluding Remarks***

In short, this study concludes that FinTech adoption acts as a significant driver of access to finance in Pakistan's DBS. Fintech eliminates access barriers to financial services, creates trust, and removes

institutional restrictions between Islamic and Conventional Banks. The findings support that customer trust partially mediates the Fintech inclusion relationship, and banking type was not found to significantly moderate such a relationship. Comparing the two systems, we find that Islamic banks exhibit a more direct inclusiveness effect, given the trust broadly placed on Shariah. While traditional banks depend on technology-made trust to promote financial inclusion. Both banking models contribute, together, to a digital-enabled financial ecosystem. This brings Pakistan one more step towards its membership.

This study indeed suggests that Fintech is much more than just technological progress. But a means of social upheaval giving rise to fairness, trust, and empowerment in the system that governs money. By leveraging Fintech and customer-centric designs, both traditional and Islamic banks can build a more inclusive, credible, and resilient future of finance in Pakistan.

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