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**Title:** Building Trust in FinTech: How Data Security and Digital Literacy Drive Service Adoption

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## **Building Trust in FinTech: How Data Security and Digital Literacy Drive Service Adoption**

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### **Abstract**

The growth of Fintech and its integration into Pakistan's financial system have left many users insufficiently prepared to adopt digital financial services safely. This situation exposes consumers to data-security risks and may hinder Fintech adoption. Grounded in the Technology Acceptance Model, this study examined whether customer trust mediates the relationship between perceived data security and Fintech services adoption, and whether digital literacy moderates the relationship between data security and customer trust. Data were collected from 220 Fintech users through a self-administered questionnaire. The data were analyzed using SPSS to assess the relationships among data security, customer trust, digital literacy, and Fintech services adoption. The findings revealed that perceived data security positively influences customer trust and Fintech adoption. Customer trust positively affects the acceptance and use of Fintech services and significantly mediates the relationship between data security and Fintech adoption. However, digital literacy did not significantly moderate the relationship between data security and customer trust. The study recommends that policymakers and Fintech providers strengthen data-security frameworks and trust-building initiatives. Targeted interventions for less-educated, rural, and older users may support equitable adoption. Future research should investigate why the moderating effect was unsupported and examine other determinants of Fintech adoption in developing economies.

**Keywords:** Customer trust, data security, digital literacy, fintech adoption.

### **1. Introduction**

Financial technology, known as FinTech, incorporates many earlier technologies, which include blockchain, data analytics, and complex advisory services for financial decision-making (Batool et al., 2026). At its core, Fintech allows users to utilize vast quantities of structured data powered by Artificial Intelligence and machine learning algorithms, helping them deliver a solid, evidence-based overview for informed and logical decision-making (Jagtiani & John, 2018). Progress in Financial Technologies has transformed the concept of online banking from websites to mobile apps with rich features, such as fund transfers, bill payment, robot-advisors, and wealth management (Stewart & Jürjens, 2018). A recent decrease in the number of Bank branches is found from nearly 100,000 in 2009 to 79,974 by 2020 (Jafri et al., 2024), reflecting the shift to online financial services. FinTech adoption has increased from 16% in 2015 to 64% in 2019 among 27 countries (Huong et al., 2021). The expansion of FinTech stretches beyond the financial and banking industry, as it is now being adopted in other sectors such as telecommunications, airlines, and wholesale (Ejaz et al., 2025). These results come from the advantages of Fintech services that include real-time processing, available 24/7 at a low cost, making it beneficial for individuals and businesses (Hidayat-ur-Rehman & Hossain, 2025).

Concurrently, the FinTech industry is gradually growing in Pakistan, with the use of debit cards, credit cards, and ATM becoming widely adopted in commercial banking. Some FinTech services in Pakistan include mobile wallets, digital payments, mobile payment solutions, and investment networks (Rizvi et al., 2018). Mobile wallets, digital payments platforms, and branchless banking services such as EasyPaisa and Jazz Cash have offered low-cost and accessible financial solutions for the community (Qaiser & Fahad, 2024). These services remove the need for traditional bank visits, enabling individuals to perform transactions via mobile phones, which are crucial for populations in rural areas with limited facilities (Hidayat-ur-Rehman et al., 2026).

Despite these Fintech advancements, there is a significant divide between the availability of online financial services and a push towards ease of use; user confidence in such services remains a challenge. Significant barriers remain in the widespread adoption of Fintech within developing countries, such as Pakistan, where approximately 85% of the population still depends on cash-based transactions (Ashraf, 2026). Singh argues that despite these numerous benefits, the adoption rate among users is still low, primarily due to a trust deficit (Nayak et al., 2021). Continuous financial fraud in online banking poses a challenge for customers to build trust. According to a report by the Fraud Investigation Authority (FIA), 40% of the complaints received by FIA were related to financial fraud (Ahmad et al., 2025).

Trust is fundamental in developing customers' intent to use financial services, as there are critical data and very private information of the customers that can be revealed to online or offline risks, the Fintech services become vulnerable to fraud at their core. These risks make trust an important factor for Fintech firms (Stewart & Jürjens, 2018). Having access to a huge amount of customer data (financial or non-financial), it becomes very challenging for Fintech companies to avoid any malicious use of this data and ensure complete privacy. Therefore, protecting this data becomes a priority for Fintech companies (Le, 2023). Developing this belief in users that their data is safe with the company can lead to confident use of service related to online payments and purchases through Fintech platforms, which ultimately increases the trustworthiness of service providers (Bongomin et al., 2020). Hence, consumer trust remains a major bottleneck preventing full transition from cash-based to digital-first habits.

Earlier studies, such as Abdul-Halim et al. (2022), have suggested that trust and adoption of FinTech services are significantly influenced by customers' perceptions of data security. That is why data security has turned out to be an imperative feature in developing customer trust in Fintech services, as it can minimize the perceived risk associated with digital financial services. When users are aware of online risks such as data breaches and privacy concerns, there is a chance of increased use of Fintech platforms with confidence (Chaudhary, 2024; Ogunleye et al., 2024). Having digital knowledge enables users to secure sensitive financial information and also accentuates the credibility of FinTech companies in prioritizing their security measures in the top rankings (Idayani et al., 2024; Khan et al., 2025).

Among many dimensions of adoption of Fintech, cyber security, data regulation, transaction reliability, digital literacy, and cultural habits are important. By implementing cyber security protocols, Fintech companies can build trust by protecting their customers' data, which may encourage users to adopt Fintech services (Karangara & Manta, 2024). Thus, adding security protocols and reducing the downtime of transaction reversals can stimulate trust of end users to adopt fintech services. The majority of online purchases originating on digital platforms are made using mobile wallets such as JazzCash and EasyPay. The government and industry believe that between 60 and 80 percent of all online payments are still made with physical cash at the time of delivery (Younus et al., 2023). This is because people don't really believe in payments and are afraid of getting what they pay for. They prefer to use cash on delivery for online purchases because of these concerns about trust and delivery of their products (Administration, 2026).

The current study investigates the role of data security in Pakistan's adoption of fintech services; this is important because users disclose sensitive information such as credit card numbers, bank account information, and personal identity numbers. Trust is important because customer trust is the belief that technology will live up to expectations. This relationship is moderated by digital literacy, which increases Fintech adoption by giving users the ability to identify data breaches and comprehend fraud, hence decreasing their vulnerability and boosting their confidence when using Fintech services.

Research conducted by Li et al. (2020) suggests that Fintech services are an important function in facilitating household consumption through various intermediary variables, such as online lending, digital payments, and online shopping. However, the rise of FinTech advancements highlights the

growing need for digital literacy. When users are digitally literate, they are more inclined to leverage available resources and support systems, leading to a higher propensity toward adoption (Amnas et al., 2023). Digital competence not only strengthens personal data protection but also ensures that it contributes to a stronger and more inclusive digital financial ecosystem (Fundira et al., 2024). Users with adequate digital literacy are able to recognize phishing attempts, understand the complex settings, and get to know which information should be kept private and which should be shared. In Pakistan, 54% of people are unable to identify phishing emails, and 30% reuse weak passwords across multiple accounts and share accounts with their families and friends (Parvez, 2025). These behaviors create serious issues in data privacy and give cybercriminals a chance to attack their accounts easily. When users are unable to manage their accounts from cybercriminals, they either avoid using Fintech or become victims; both outcomes hinder Fintech services adoption (Umbach et al., 2023).

Despite its importance, digital literacy has not been sufficiently addressed as a moderator of data security (Al Doghan & Mirzaliev, 2024a, 2024b). This oversight presents a critical limitation in understanding how digital literacy influences customer intention towards FinTech adoption, particularly among developing countries, such as Pakistan, that face an extensive digital literacy gap. Security measures perceived differently by users with varying levels of digital literacy. Literate users use different protocols, such as biometric security, strong passwords, and two-factor authentication, to protect data, while users with low literacy are unable to do such things to protect their personal data.

Furthermore, data security has been demonstrated as a factor promoting Fintech services adoption (Dwivedi et al., 2019). The pathways through which trust mediates this relationship remain under-explored. Data security and adoption have not been directly linked; instead, data security first builds trust, which then influences consumer behavior towards FinTech services adoption. Therefore, this study addresses this gap by examining how data security influences FinTech adoption through the mediating role of customers' trust, while digital literacy serves as a moderating variable; the research provides theoretical clarity and practical guidance for stakeholders. This problem is conspicuous in Pakistan, where concerns about data security are great, and the level of digital literacy differs significantly. Findings from other markets don't apply to Pakistan due to differences in regulatory and cultural attitudes towards technology (Jamil, 2021).

Therefore, there is a need to examine trust as a mediator and digital literacy as a moderator in the relationship between data security and FinTech adoption, specifically in Pakistan. Addressing this gap will clarify adoption mechanism and provide insights for Fintech industry and policymakers. The Objective of this study is to establish trust as an important factor in acceptance of online financial services and determine how digital literacy can enhance consumer trust.

## **2. Literature Review**

Understanding financial technology requires applying theories related to technology adoption. The technology acceptance model (TAM) was developed by Davis (1989) to investigate how an individual's behavior and beliefs are affected by external factors. Previously, TAM identified two factors that affect a person's behavior toward the adoption of technology: perceived usefulness and perceived ease of use. These elements have been demonstrated to positively impact behavior and readiness to accept new technologies, particularly when data is secure and technology is easily accessible.

On the contrary, Luarn and Lin (2005) have criticized the TAM for being too narrow; they argued that TAM mainly focuses on two elements only while ignoring other variables that are effective in FinTech. To address this gap, they proposed extending (TAM) by adding two asset components (trust and cost-related factors). Their research concluded that trust has an indirect impact on an individual's behavior to adopt technology. However, limited information and awareness regarding data security and protection mechanisms have been identified as a major problem for slow adoption. Wang et al. (2003) proposed that TAM should be used only as a base framework and extended it by data security and user protection concerns.

Additionally, Luarn and Lin (2005) emphasized data security vulnerabilities, especially those associated with data transmission, and that digital literacy improves Fintech adoption by giving consumers the tools they need to successfully access and comprehend digital platforms. Greater

adoption rates result from people becoming more adept at using Fintech services and more open to interacting with new technology (Batoool et al., 2026). As a result, this study added digital literacy as a moderating element in the TAM model.

Building on above arguments and following extensions proposal by Stewart and Jürjens (2018), the current research explore the elements affecting individual's behavior and attitude towards Fintech services adoption in Pakistan by extending TAM model to include data security and trust consistent with prior research (Rizvi et al., 2018), the model assumes data security influence FinTech services adoption indirectly through trust, while digital literacy moderate this relationship.

### **2.1 Data security and Fintech Services Adoption link**

Data security is essential to FinTech services adoption because of its reliance on digital platforms for online transactions. ISO/IEC 27002 (2013) defines data security through the CIA trade: confidentiality, integrity, and availability of data. These principles secure data from unauthorized access, ensure data accuracy, and maintain availability and accessibility as needed. These principles help to protect sensitive data, which increases the attention of individuals towards more financial technology (Roy et al., 2017). Security concerns are stronger while doing online transactions (Reichheld & Scheffer, 2000) because of the absence of face-to-face interaction. Users feel greater risk and uncertainty while using online FinTech services, but stronger data security reduces this risk and uncertainty (Pavlou, 2003). In Fintech institutions, robust data security mechanisms strengthen customers' confidence, which leads to adoption. This statement is supported by Nayak et al. (2021), that data security significantly influences FinTech adoption. Hence, the proposed hypothesis is below:

**H<sub>1</sub>:** *Data security is positively associated with Fintech services adoption.*

### **2.2 Data Security and Consumer Trust**

Past studies found that data security plays a vital part in affecting consumer behavior (Stewart & Jürjens, 2018). For example, Pavlou (2003) found that the only way to reduce the risk associated with online transactions is to increase security. Strong security or improved security procedures can aid service providers in gaining customers' trust (Qaiser & Fahad, 2024). Roh et al. (2024) used models including the Theory of Reasoned Action (TRA) and the information system success model (ISSM) to examine the Fintech sector and customer trust in China. According to his research, the two most important elements influencing consumer trust are perceived security and privacy. If consumers' perceptions of security and privacy improve after a data breach, they can begin to trust digital platforms' goods and services (Ahmad et al., 2025). Strong security and privacy are the critical factors in restoring consumers' trust in Fin-Tech services. Roh et al. (2024) support these points by highlighting cognitive trust, as a consumer's decision derived from their evaluation of online transaction security leads to rational trust-building behavior, ultimately fostering consumer trust. Supporting this view, Hwang et al. (2021) shows that high data security and service quality enhance privacy perceptions and customer satisfaction, which turn into loyalty and facilitate trust building. When consumers perceive strong data security controls, they engage in reasoned judgment that the FinTech service is reliable and safe, thereby high data security strengthening trust among customers. Based upon this notion, the proposed hypothesis is as below:

**H<sub>2</sub>:** *Data security is positively associated with consumer trust.*

### **2.3 Consumer Trust and Fintech Adoption**

Trust is the belief consumers build with the use of financial services as how much they can risk sharing information online. Within Fintech services adoption, trust is the backbone that has an impact on users' inclination to take part in financial services through digital platforms (Roh et al., 2024). Similarly, Han et al. (2024) concluded in their study that it is basically trust in online platforms that leads to an enhanced adoption rate. Similarly, Ullah et al. (2026) research on fintech services revealed similar results regarding the perceived trustworthiness of FinTech providers and how it influences users' attitudes toward the adoption of mobile banking apps.

In addition, Amnas et al. (2023) also highlighted that trust is the central Fintech services adoption. They also pointed out that if companies are able to enhance their trustworthiness, they are likely to gain a competitive advantage in Fintech services. In another empirical study by Jafri et al. (2024), trust has a significant impact on Fintech services' adoption. They also suggested that further research should be conducted in other countries to develop further insight into the dynamics of adoption. These

earlier studies highlighted that trust is essential for boosting FinTech adoption. Therefore, the proposed hypothesis is as follows:

***H<sub>3</sub>: Customer trust is positively associated with Fintech adoption.***

## **2.4 The Mediating Role of Consumer Trust**

On the foundation of the extended Technology Acceptance Model (TAM), an individual's internal cognitive and socio-emotive states motivate the behavioral responses. These internal states can be activated by some external environmental signals that surround an individual (Davis, 1989; Dwivedi et al., 2019). Utilizing the TAM model within the research context necessitates empirically examining the mediating role of consumer trust in the connection between data security and the adoption of FinTech services. Data security functions as an external system characteristic that builds up consumer trust, which eventually facilitates the adoption of FinTech services. Trust is a significant factor that helps shape consumer behavioral outcomes, such as loyalty, commitment, and adoption rate (Hwang et al., 2021). Moreover, with the domination of digital services, studies indicate how consumers' choices and usage of online transactions are positively influenced by enhanced trust (Hu et al., 2019). Likewise, in financial decision-making, especially regarding Fintech services, trust is crucial, as users need to feel safe about their personal and financial data (Jagtiani & John, 2018). In this context, we can propose:

***H<sub>3</sub>: Consumer trust mediates the relationship between data security and Fintech services adoption.***

## **The Moderating Role of Digital Literacy**

Digital Literacy is the ability to access, evaluate, share and understand information using digital technologies. (Tsai et al., (2017). A digitally literate person is able to embrace the advancements of internet technologies by acquiring skills, knowledge, awareness and competencies that increase the financial well-being of the users (Hamilton & Hakro, 2025). Acknowledging its importance, Raisah and Rahagi (2024) emphasize how digital literacy distinctly shapes digital behavior. This ability not only enhances individual attention towards the adoption of technology but also enables them to feel more in charge of choosing the digital platforms (Al Doghan & Mirzaliev, 2024a). There is limited literature that highlights the importance of digital literacy on cybersecurity. However, digital literacy is one of the significant factors to help individuals choose digital services. Individuals with digital literacy are inclined to consider aspects like evaluating cybersecurity through two-factor authentication and secure password methods, which are essential for safeguarding sensitive financial data. (Amnas et al., 2023). Knowledge of cybersecurity plays a pivotal role in reducing the risks associated with online transactions, as with more knowledge, users are less prone to becoming a target for phishing scams, identity theft, and fraudulent activities (Shabbir et al., 2026). Ullah et al. (2026) found that, while general financial skills influence adoption mainly through perceived utility, digital literacy bridges the gap between direct and indirect links to intention to adopt through perceived ease of use. Users with comfortable ICT skills can easily navigate the interfaces of the platform, which greatly increases the willingness of users to use mobile banking and m-payment services.

Furthermore, Gilbert and Gilbert (2025) found that digital consumers value security more than convenience; thus, service providers need to adopt transparent security protocols, inform users about fraud prevention, and foster customer trust with strong authentication methods to reduce the adverse effects of cybersecurity threats on fintech acceptance (Stojanović et al., 2021). Moreover, digital literacy and cybersecurity awareness are vital in reducing adoption hesitance, as knowledgeable consumers can more effectively manage digital threats (Raisah & Rahagi, 2024). Hence, the proposed hypothesis is below:

***H<sub>5</sub>: Digital literacy moderates the relationship between data security and consumer trust, such that the relationship becomes stronger when the digital literacy is high.***

## **2.5 Theoretical Framework**

The underlying theory for the current research is TAM presented by Davis, 1989 which is founded on two fundamental principles, i.e. ease of use and perceived usefulness. While the TAMs effectively explain the early user acceptance in the standard IT environment, financial technology presents a unique structural feature; high risk, transactions with unknown people and a lack of physical

interaction. As a result, the extended TAMs incorporate digital literacy as a precursor of user perception and consumer confidence as a critical boundary condition or mediator.

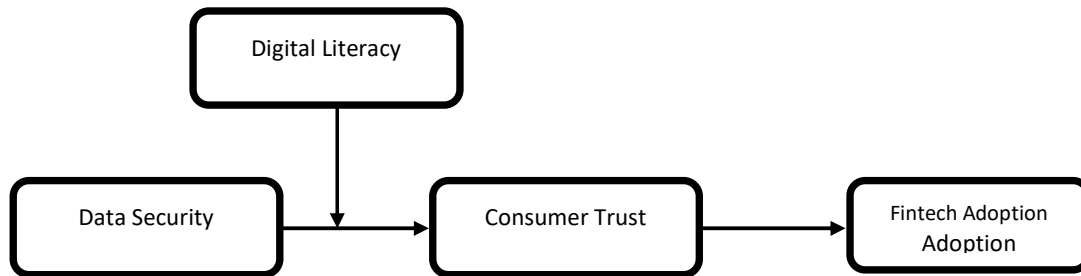


Figure 1. Conceptual Framework

### 3. Research Methodology

#### 3.1 Research Design

The research was designed as a cross-sectional study. Population included general Fintech users, including merchants, students, and household users. The population for this study comprised individuals across Pakistan who were familiar with FinTech services. For data collection, convenience sampling was employed. The final sample size consisted of 220 individuals who provided complete responses to the survey questionnaire. The data were collected using a structured questionnaire through an online form. The study's questionnaire was created using scales that had already been developed & tested. Each scale's items have been rated on a 5-point Likert scale that ranges from “strongly disagree” to “strongly agree”.

#### 3.2 Measures

A six -item scale was used to measure data security, with the items taken from a scale developed by Stewart and Jürjens (2018). A four-item scale that was adapted from Hu et al. (2019) was used to measure consumer trust. A three-item flow FinTech services adoption was developed based on Hu et al. (2019). In this study, the digital literacy was measured with a four-item scale developed by Al Doghan and Mirzaliyev (2024a).

### 4. Results

The responses of google forms were collected in Excel File. The data was cleaned and exported to SPSS for analysis. The statistical analysis conducted on this data included descriptives, correlation and regression. The results are presented in following Tables which include descriptive statistics, correlation and regression analysis.

#### 4.1 Descriptive Analysis

The descriptive statistics included means, Standard Deviation, scale reliability and the correlation matrix. Results for each variable are presented in table 1. All correlations above 0.10 were significant at p value less than 0.5 (2- tailed). The means for Attitudes towards data security 3.85 (SD = 0.621), consumer trust 3.58 (SD = 0.704), fintech services adoption 3.74 (SD = 0.732).

**Table 1.** Descriptive statistics: Means, Standard Deviations, Correlations and Reliability

| Variable | Mean | SD  | DS    | CT    | FSA    | DL |
|----------|------|-----|-------|-------|--------|----|
| DS       | 3.82 | .67 | 1     |       |        |    |
| CT       | 3.76 | .71 | .58** | 1     |        |    |
| FSA      | 3.91 | .63 | .42** | .49** | 1      |    |
| DL       | 3.88 | .69 | .53** | .68** | .460** | 1  |

Note. N=100; Alpha Reliabilities are given in parentheses. Correlation is significant at the 0.01 level (2-tailed). DS= data security, CT=Consumer trust, FSA=fintech services adoption, DL=Digital literacy

#### 4.2 Bivariate Correlation Analysis

The correlation analysis shows that Data Security is positively correlated with Consumer Trust ( $r = .58$ ,  $p < .01$ ), indicating that respondents who perceive stronger data security also report higher trust. Consumer Trust has the strongest correlation with FinTech Adoption ( $r = .68$ ,  $p < .01$ ), supporting its proposed mediating role. Digital Literacy is moderately associated with Data Security ( $r = .42$ ), Consumer Trust ( $r = .49$ ), and FinTech Adoption ( $r = .46$ ), which is consistent with its role as a moderator. The highest correlation (.68) is below the commonly used multicollinearity threshold of .80, suggesting that discriminant validity and multicollinearity concerns are minimal.

#### 4.3 Regression Analysis

Linear regression analysis was conducted to test the proposed hypothesis. Regression analysis of  $H_1$  determined the main effect of Attitude towards data security on fintech services adoption, while  $H_2$  determined the effect of Attitude towards data security on customer trust.  $H_3$  determined the effect of customer trust on fintech services adoption.

**Table 2. Direct Effects**

| Hypothesized Links                               | $\beta$ | SE    | t    | p      | Decision  |
|--------------------------------------------------|---------|-------|------|--------|-----------|
| Data Security → Consumer Trust                   | 0.412   | 0.054 | 7.63 | <0.001 | Supported |
| Digital Literacy → Consumer Trust                | 0.286   | 0.049 | 5.84 | <0.001 | Supported |
| Consumer Trust → Fintech Adoption                | 0.521   | 0.057 | 9.14 | <0.001 | Supported |
| Data Security → Fintech Adoption (direct Effect) | 0.193   | 0.061 | 3.16 | 0.002  | Supported |

The findings indicate that customer trust ( $\beta = 0.412$ ,  $SE = 0.054$ ,  $t = 7.63$ ,  $p < .001$ ) and Fintech adoption ( $\beta = 0.193$ ,  $SE = 0.061$ ,  $t = 3.16$ ,  $p = .002$ ) are significantly positively impacted by data security. Additionally, customer trust is substantially impacted by digital literacy ( $\beta = 0.286$ ,  $p < .001$ ), and Fintech adoption is significantly predicted by consumer trust ( $\beta = 0.521$ ,  $p < .001$ ). As a result, all proposed direct linkages are validated. The models' significant explanatory power is demonstrated by the predictors' ability to account for 56.3% of the variance in Fintech adoption ( $R^2 = 0.563$ ) and 48.7% of the variance in consumer trust ( $R^2 = 0.487$ ).

#### 4.4 Mediation Analysis

Linear regression analysis was performed to test the mediating role of Customer trust between Attitude towards data security and FinTech Services Adoption. Attitude towards Data security served as an independent variable and FinTech Services Adoption as a dependent variable in the analysis.

**Table 3. Mediation Analysis**

| Effect                         | $\beta$ | Boot SE | 95% Boot CI    |
|--------------------------------|---------|---------|----------------|
| Indirect Effect (DS → CT → FA) | 0.215   | 0.038   | [0.145, 0.294] |

Data security has a favorable and significant indirect impact on Fintech adoption through consumer trust ( $\beta = 0.215$ , Boot SE = 0.038, 95% CI [0.145, 0.294]). This link is considerably mediated by customer trust because 0 is not included in the confidence interval. The findings suggest partial mediation because the direct impact of data security on Fintech adoption is still substantial. Since the confidence interval does not include zero, the mediation effect is significant.

#### 4.4 Moderation Analysis

Consumer trust is significantly improved by the relationship between data security and digital literacy ( $\beta = 0.174$ ,  $p < .001$ ). This result suggests that the positive correlation between consumer trust and data security is strengthened by digital literacy. At low ( $\beta = 0.134$ , 95% CI [0.072, 0.208]), average ( $\beta = 0.215$ , 95% CI [0.145, 0.294]), and high ( $\beta = 0.308$ , 95% CI [0.218, 0.407]) levels of digital literacy, the conditional indirect effect is substantial. The upward-sloping conditional-effect curve indicates that

as digital literacy rises, the indirect impact of data security on Fintech adoption through customer trust gets stronger. In general, more digitally literate consumers are better able to identify and assess data-security precautions, which boosts consumer confidence and, as a result, increases Fintech adoption.

**Table 4. Moderation Analysis**

| Moderator                           | $\beta$         | p              | Interpretation                                                                                                 |
|-------------------------------------|-----------------|----------------|----------------------------------------------------------------------------------------------------------------|
| Digital Literacy                    | 0.174           | <0.001         | Digital literacy significantly strengthens the positive relationship between data security and consumer trust. |
| <b>Conditional Indirect Effects</b> |                 |                |                                                                                                                |
| Digital Literacy Level              | Indirect Effect | Boot 95% CI    |                                                                                                                |
| Low (-1 SD)                         | 0.134           | (0.072, 0.208) |                                                                                                                |
| Mean                                | 0.215           | (0.145, 0.294) |                                                                                                                |
| High (+1 SD)                        | 0.308           | (0.218, 0.407) |                                                                                                                |

These results indicate that the indirect effect of data security on FinTech adoption through consumer trust becomes stronger as digital literacy increases (see Figure 2).

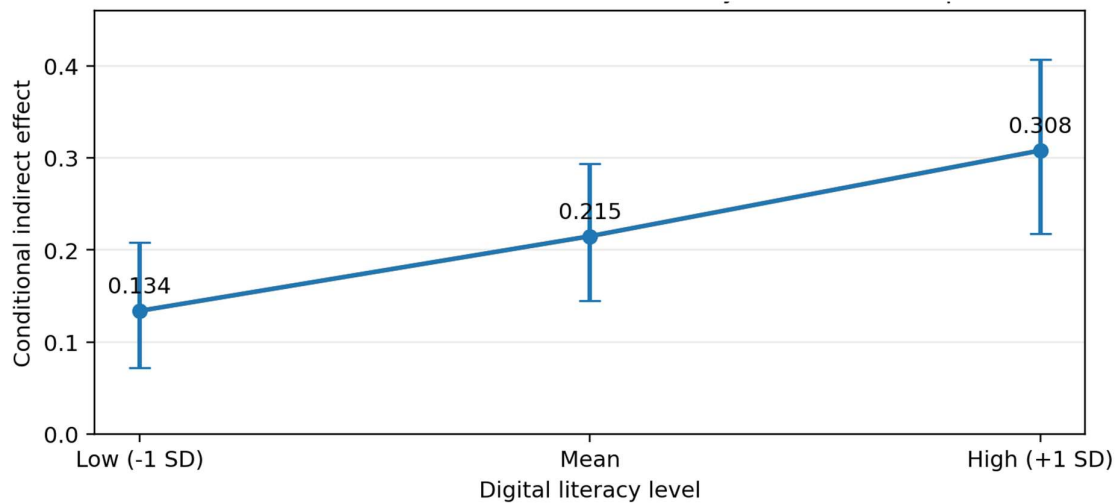


Figure 2. Interactional Plot

## 5. Discussion and Conclusion

### 5.1 Findings

This study was designed to investigate the impact of Data security (DS) on FinTech services adoption, considering the mediating role of customer trust, and the moderating effect of digital literacy. Following is a table of hypotheses.

**H1:** The results prove a significant and positive relationship between data security and FinTech Services Adoption. Hypothesis 1 is fully supported ( $\beta=0.193$ ,  $P<0.001$ ) proving that when consumers are exposed to data security, presumably, they shall have more intent to adopt the product or service. The results validate findings of earlier studies that data security can help to drive FinTech Services Adoption in consumers. In the FinTech institutions robust data security mechanisms strengthen customers' confidence, which drives services adoption. This statement is supported by the research of Chaudhary (2024), that data security significantly influences FinTech adoption.

**H2:** The link between data security and trust was supported ( $\beta=0.412$ ,  $P<0.001$ ), confirming a significant and positive relationship between the two variables. A higher level of data security enhances consumer confidence towards digital platforms. This study supports prior studies, emphasizing the role of Data security in shaping consumers' trust in online platforms. Ogunleye et al. (2024) emphasize that data security increases customer trust by providing stronger passwords and two-factor authentication, which are perceived as more trustworthy than traditional firms. Consumers believe that fintech services with more security are reliable and trustworthy, leading to higher adoption (Roh et al., 2024).

**H3:** The relationship between customer trust and Fintech adoption was fully supported ( $\beta = 0.52$ ,  $P<0.001$ ). It supported the prediction that consumers are more likely to accept services if they feel they can trust them. This study is also in line with previous studies, including Lou and Yuan (2019), which reported that the degree of perceived trustworthiness is positively correlated with the adoption of their services. Lee and Koo (2015) found that when consumers perceive online services by a company as trustworthy, they are more likely to be satisfied with them and therefore more likely to buy products from them.

**H4:** Mediation analysis verified that customer trust acts as a mediator between data security and fintech adoption. The indirect effect ( $\beta=0.21$ ), CI [0.145, 0.294], and  $P<0.001$ , indicating that DS influences FinTech Services Adoption not only directly but also indirectly through enhanced customer trust. Trust is the major element that shapes consumers' behavioral outcomes, such as loyalty and intention to adopt (Al-Sharafi et al., 2025; Chaudhary, 2024). In addition, studies have shown that in the current digital world, trust is a major contributing factor in online transactions among consumers of financial services (Su & Wang, 2025; Wang et al., 2023). Moreover, trust is central to financial decision-making, especially when it comes to the intent to use FinTech services, as users need to feel confident in their personal and financial information in order to adopt Fintech services (Davinson & Silience, 2014).

**H5:** Digital literacy significantly strengthens the positive relationship between data security and consumer trust. The higher digital literacy, the stronger the relationship between data protection and customer trust (Ejaz et al., 2025). The beta value ( $\beta=0.174$ ) indicates the significance of digital literacy in our proposed model.

## 5.2 Implications

### 5.2.1 Research implications

This study is an important contribution to understanding how people are using financial technology. With respect to technology acceptance in financial services, being technologically savvy is crucial, especially when it comes to the use of financial services. Digitally literate people not only influence the use of technology but also help to ensure that people trust financial services provided by fintech companies, knowing that their data is safe. The study examined the link between data security and customer confidence, which will help us understand why people trust fintech services. This new idea is a very important one. More research is needed to understand how digital literacy, data security and customer confidence interact.

### 5.2.2 Practical Implications

The findings of the study can help fintech companies create programs that teach people more about technology, which can help them understand fintech services better. This is especially important for people who do not have a lot of money and might be scared to use financial services because they are concerned about security. The study can also help people who make policies understand how important it is to make sure everyone has access to services. Fintech services can help people trust and use financial services more and this can also help the economy grow. By addressing the suggested implications, fintech can not only enhance user engagement and trust but also contribute to greater investment efforts that could boost economic development.

## 5.3 Limitations & Future recommendations

Among various limitations, the findings of this study may not be generalizable to other countries due to variations in culture, education & social systems. Secondly, the data was gathered using convenience sampling techniques, which provides a good representation, but with respect to fintech users, a more purposive sampling may reap better results. Thirdly, this study was conducted on a cross-sectional design, meaning data were collected at a single point in time. This restricts the ability to conclude cause-

and-effect relationships or long-term behavioral trends. Additionally, while demographic variables were included in the analysis, they showed significant effects in ANOVA, and future studies could benefit from exploring more detailed analysis segmentation. Lastly, due to time and resources, the study relied solely on structured questionnaires for data collection. This method may limit the depth of insights compared to mixed-method approaches such as interviews or focus groups.

Researchers can develop further insight into this topic by modifying some variables in the UTAUT model. Also, researchers should consider using a longitudinal research design, where user responses are tracked over time. This would provide better insights into how the impact of data security and trust develops in the long term, instead of just capturing a snapshot at one point in time. Third, future research could also explore other moderating variables that might influence the relationship between DS and customer trust. For example, financial literacy or cybersecurity awareness. Using qualitative methods may also provide useful insights on the subject in future studies.

#### 5.4 Conclusion

In this research, variables such as customer trust (CT), data security (DS), that influence the intention to adopt Fintech, using the TAM model, were analyzed. Progressing the standard technology acceptance model was an important objective of this research to remove any TAM constraints by including data security and trust as key elements in the adoption and use of FinTech. It is also essential to go beyond the standard TAMs, as this only emphasizes perceived utility and perceived ease of use, both of which tend to ignore the barriers to the uptake of FinTech. The result, supported by regression analysis, confirms that the DS and CT are a solid basis for the adoption of FinTech. Importantly, these two factors have a major impact on the adoption of FinTech, while the latter has a significant impact on CT. Based on the results, five hypotheses were proposed, with the main obstacles to FinTech innovation being data security issues and lack of customer confidence. Data security and customer confidence in FinTech should therefore be effectively addressed. FinTech innovators should improve the security of their products and their online reputation in order to increase the confidence of their customers. Through workshops, magazines, guides and advice, customers can be educated and informed about the benefits of FinTech, including its data security measures and benefits.

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