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From Exclusion to Inclusion: Examining the Impact of Digital Banking Adoption on Financial Inclusion in Pakistan

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ABSTRACT

This research work focuses upon effect of adoption of digital banking upon financial inclusion pertaining to Pakistan, while also looking at the influence of digital literacy along with trust considered as driving indicators of adopting digital banking. Data was gathered quantitatively by utilizing a structured Likert scale instrument in the form of questionnaire from 100 respondents which included students and employees to capture perception on four constructs which are: Digital literacy, perceived security & trust, as well as digital banking adoption along with financial inclusion. Multiple regression analysis, correlation analysis, and a battery of diagnostic tests were utilized for analyses of obtained data. Study revelations conclude a positive correlation amongst digital banking adoption as well as financial inclusion along with trust ($p < .001$ & $p < .05$). These factors significantly predicted the financial inclusion amongst Pakistani respondents. This study concludes that by strengthening use of digital banking as well as promotion of digital literacy can serve as key corridors for promoting financial inclusion in Pakistan. Policy implications and suggestions are made for controllers, institutions dealing with finance along with educators.

Keywords: Digital Banking, Financial Inclusion, Digital Literacy, Trust, Pakistan, Technology Adoption, Mobile Banking

INTRODUCTION

Digital banking is becoming a critical pillar of the delivery of financial services in the modern world, and is witnessing significant technological progress that is changing the financial landscape. In both developed and developing countries, digital finance has transformed people's access, management and use of financial services, and is fundamentally changing the way financial services are delivered. In Pakistan, a country where traditional banking services have been unable to effectively serve the majority of the population, this change is especially crucial for achieving financial inclusion for the millions of people who lack access to formal banking systems.

Financial inclusion – the availability of affordable, accessible, and relevant financial services to all segments of society – has been identified as a key enabler of economic growth, poverty alleviation, and social development (World Bank, 2022; Demirgüç-Kunt et al., 2018). Financial inclusion is a key tool to promote investment in education, health,



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and entrepreneurship, and thereby help break the cycle of poverty and promote sustainable economic development, has long been a point of emphasis for the World Bank. The need for financial inclusion is more pronounced in Pakistan due to its huge population, high income inequality, and long-standing problems with providing formal financial services to remote and less served areas.

The challenge now is that digital banking has emerged as a transformative opportunity to help solve these longstanding gaps. Digital banking can transcend these geographical and infrastructure constraints by harnessing mobile technology, internet connectivity, and innovative financial platforms. Mobile wallets, branchless banking agents and internet banking portals have lowered transaction costs, streamlined account opening processes and brought financial services to the fore of a long list of people who were left out of the financial system (Ozili, 2018; Suri & Jack, 2016). These trends have been especially pronounced in Pakistan, where digital financial services usage has taken a huge leap over the last decade.

1.2 Digital Banking Landscape in Pakistan

Digital financial inclusion has seen significant progress in Pakistan, thanks to the development of new technology, supportive policies, and evolving consumer preferences. The State Bank of Pakistan (SBP) has played a pivotal role, enacting progressive policies and regulatory frameworks that have promoted innovation and consumer protection. The National Financial Inclusion Strategy (NFIS) 2024-28 has bold goals to achieve 75 percent financial inclusion by the end of 2028 and eliminate the gender gap in financial inclusion to 25 percent.

Recent statistics show just how serious Pakistan's digital transformation is. The Annual Payment Systems Review by the State Bank of Pakistan reported a 35 percent increase in digital payments in Pakistan. The total volume of digital payments rose from 76 percent in FY23 to 84 percent in FY24. By the first quarter of FY25, 87 percent of wholesale payments occurred via digital channels, and there was even more trust in digital payment systems. According to the latest Karandaaz Pakistan Financial Inclusion Survey (K-FIS) 2024, the share of digitally included population, in terms of bank accounts, mobile wallets, and non-bank financial institutions, has risen from 7 percent in 2014 to 35 percent in 2024. Mobile banking has become one of the main contributors to this growth, with transactions conducted through mobile banking applications exceeding 6.2 billion, representing an increase of 52 percent compared to the previous year; internet banking portals experienced 297 million transactions, which is 33 percent more than a year ago. Retail payments totaled Rs 612 trillion and 9.1 billion transactions in FY2024-25, of which digital channels made up 88 percent of all retail transactions. This astounding increase has been enabled by an extensive network of branchless banking agents, which currently has more than 651,672 agents across the country reaching out to underserved communities via their last-mile reach.

But while these achievements are impressive, there are still challenges to address. The National Financial Inclusion Strategy (NFIS) 2024-28 recognises that although the financial inclusion journey is underway, there is much more to be done. Gender gaps, regional inequities, and lack of digital literacy remain a challenge to fully realize the potential of digital banking. Gender gaps are significant, with only 14 per cent of women using formal or digital financial services in Pakistan, indicating the need for specific interventions.

The overall economic and monetary conditions in Pakistan are also important determinants of financial inclusion results. Macroeconomic stability influences consumer confidence



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and institutional capacity to deliver digital financial services (Hanif et al., 2025). The dynamic relationship between economic and monetary variables in Pakistan has been established, and it has been found that macroeconomic factors significantly impact overall financial sector performance and consumer confidence in Pakistan (Hanif et al., 2025). The uncertainty has an adverse effect on consumer adoption of new financial technology, and the stability of the economy encourages investment in financial technology and developing financial trust.

Moreover, the reliability, transparency and leadership of financial service providers influence institutional trust of users (Paracha et al., 2022). The governance and regulatory frameworks are essential to building trust within digital banking systems. The studies indicate that trust-building mechanisms as communication transparency and service delivery consistency play a crucial role in gaining users' trust in digital platforms (Paracha et al., 2022; Bashir et al., 2020). The consumer protection and digital security provisions of the SBP regulatory framework have played a vital role in enhancing institutional trust and in making digital banking more popular.

1.3 Theoretical Foundations

To grasp what drives the adoption of digital banking, strong theoretical frameworks are needed. Davis' (1989) Technology Acceptance Model (TAM) offers a basic framework for studying the behaviors of technology adopters. TAM proposes that one of the most important factors that affect a person's intention to use and adopt a technology is perceived usefulness and the other factor is perceived ease of use. For digital banking, perceived usefulness is defined as the likelihood that users feel digital banking services improve their financial management and perceived ease of use as an indicator of how easy and accessible the digital platform is to use. The findings of empirical studies conducted in Pakistan have also confirmed the applicability of TAM as it has proven that these perceptions have a significant effect on digital banking adoption (Afshan & Sharif, 2016; Raza et al., 2017). The Unified Theory of Acceptance and Use of Technology (UTAUT) suggested by Venkatesh et al. (2003) is built on TAM with the addition of more factors such as social influence and facilitating conditions. This framework is pertinent in the context of Pakistan as social norms, peer pressure and infrastructural issues are important determinants of technology adoption. In recent studies, extended meta-UTAUT models have been used to study the adoption of mobile payments in Pakistan, with the addition of perceived risk and trust as dimensions to understand consumer behaviour in more detail.

Another theory that can provide insights is Diffusion of Innovation Theory (DIT) (Rogers, 2003), which focuses on technology adoption through a consideration of relative advantage, compatibility, and complexity. Digital banking services with clear benefits to traditional banking, embraced by their habits, and less complex are more likely to be widely adopted. All of these theoretical models indicate that a variety of factors, including perceived benefits, ease of use, social influences, and individual capabilities, can shape the adoption of digital banking.

The concept of psychological empowerment that is found to mediate the relationship between inclusive leadership and innovative work behavior (Hafeez et al., 2019) may also be relevant in the case of digital banking adoption. Digital financial tools and knowledge empower users, which increases the likelihood of their adoption and effective use of digital banking services. Likewise, the importance of trust on achieving positive outcomes has been proven in organizations where trustworthy leaders have been found to positively influence their followers' job satisfaction by communicating effectively (Bashir et al., 2020).

1.4 Research Gap and Rationale



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While there is increasing research on digital banking and financial inclusion, there are still some areas that need further research, especially within the context of Pakistan. Much of the current research has been devoted to macro-level variables (e.g., transaction volume, account penetration) and has neglected to examine variables at the micro level that affect an individual's decision to adopt. In the context of digital banking, digital literacy and trust are two constructs that are gaining ground as key factors in technology adoption, but are under-researched in Pakistan.

Digital literacy is a new key factor that has become an important factor in the adoption of digital banking (Raza et al., 2017; Afshan & Sharif, 2016). Research shows that the digital literacy rate is low, which is becoming a major barrier to adoption, especially in poor and rural communities. Overall, 26 per cent of Pakistani adults are financially literate, a rate that is significantly lower than the average of 35 per cent for all other countries in the region, S&P Global said. A phenomenological study on barriers to digital financial inclusion revealed that 90 percent of the respondents were financially illiterate and 80 percent of them were not aware of the new e-payment systems, which hampered the adoption of digital financial services. The importance of digital literacy to not only the initial uptake but also to positive interactions with digital financial services should be explored further (Khatri & Idrees, 2025; Morgan et al., 2019).

Another critical aspect impacting digital banking adoption is trust. When security issues and privacy threats are ubiquitous, confidence in the reliability, security and credibility of digital banking platforms becomes a critical concern (Gefen et al., 2003; Kim et al., 2009). The importance of trust in digital banking adoption has been established in Pakistan, as privacy issues and institutional reliability have emerged as key barriers (Afshan & Sharif, 2016). Recent studies have studied the relationship between trust beliefs and trustworthiness and the relationship between them and relationship quality on the generation of mobile banking intentions; others have studied the determinants of trust that influence the intentions to adopt FinTech. The relationship between the adoption of mobile money and financial inclusion outcomes has also been examined with the mediation of digital consumer protection and the mediation of digital financial literacy. Pakistan's digital financial services landscape is dynamic, with rapidly changing technology and regulatory frameworks, highlighting the importance of having timely primary research on user attitudes and behaviors.

Moreover, the majority of the studies focus on these constructs individually without a significant number of studies focusing on the direct links between digital literacy, trust, digital banking adoption, and financial inclusion from the perspective of financial users as a whole. This study fills these gaps by employing empirical analysis to explore the relationships between digital literacy, perceived security and trust, digital banking adoption and financial inclusion among consumers in Pakistan, which reflects their current perspective on financial services in the current digital banking environment.

Finally, understanding the adoption and the effects of digital banking on financial inclusion needs to be understood in the broader economic context in which these developments are taking place. Macroeconomic stability, monetary policy, and economic growth dimensions greatly affect the supply and demand sides of digital financial services. The study has shown that in Pakistan, the economic variables have a dynamic relationship with the monetary variables and that the macroeconomic conditions have a significant impact on the performance of the financial sector and confidence of the consumers (Hanif et al., 2025). When the economy is uncertain, consumers are not as likely to switch to new financial technologies, whereas when the economy is stable, consumers are more likely to invest in digital infrastructure and build trust in financial institutions that will adopt new



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technologies.

SBP's regulations have been a key element in fostering institutional trust and promoting digital banking usage, as they focus on consumer protection and digital security. The SBP's Quarterly Payment Systems Review (QPR) for Q1-FY25 has underscored the progress Pakistan has made toward becoming a cashless and digitally inclusive economy, highlighting the country's rapid digital payment adoption and infrastructure development.

1.5 Significance and scope:

This study builds upon the existing body of literature by providing new empirical evidence of the impact of adoption of digital banking on financial inclusion in Pakistan, particularly focusing on the behavioral enablers (digital literacy and trust) which play a significant role that influences adoption behavior in the Pakistani context. This research sheds light on the critical factors influencing a person's ability to access financial services through the use and access to digital banking, while highlighting and capturing the general association found by previous research between technology use and financial access.

This study's results have implications and relevance for many stakeholders. The outcomes can help guide policy and regulatory measures that can encourage adoption of digital banking and drive financial inclusion agendas, such as those of the State Bank of Pakistan and the Ministry of Finance. The study offers insights for financial institutions and FinTech companies on the attitudes and challenges of users that can help in product development, marketing plans, and customer engagement strategies. The results highlight the need for digital and financial inclusion initiatives for people to participate meaningfully in the digital economy, particularly for educators and development organizations.

This study covers the Pakistani consumers who have different levels of digital banking experience, including student and employee students who reside in urban and semi-urban areas. A structured questionnaire was adopted to gather data from a sample of 100 respondents, across digital literacy, perceived security and trust, digital banking adoption, financial inclusion measures. The generalizability of the findings is limited due to the small sample size and sampling methodology, but the results do offer insights into the user behaviour and serve as a foundation for further study on digital finance in Pakistan.

1.6 Research Gap

Literature evidence although emphasized banking digitally as well as financial inclusivity, various areas and gaps still exist especially pertaining to Pakistani context. The majority of research focuses on macro-level indicators and pays less attention to the micro-level behavioral factors, like digital literacy and trust. In addition, existing studies examine these constructs separately, with fewer literature investigating a direct connection between them from a user characteristics angle. In addition, the lack of up-to-date studies based on primary data to look into user attitudes amidst changing digital financial environment pertaining to Pakistan is also a drawback.

1.7 Research Objectives

The study pursues three primary objectives:

1. Examination of influence that digital banking will have upon financial inclusion pertaining to Pakistan.
2. Examination of influence that digital literacy will have upon adapting digital banking pertaining to Pakistan.
3. Examination of influence that trust will have upon adapting digital banking pertaining to Pakistan.

1.8 Research Questions

- RQ1: Will there be an influence held by digital banking upon financial inclusion pertaining to Pakistan?



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- RQ2: Will there be an influence held by digital literacy upon financial inclusion pertaining to Pakistan?
- RQ3: Will there be an influence held by trust upon financial inclusion pertaining to Pakistan?

1.9 Significance of the Study

The research endeavour builds on previous research by presenting new empirical evidence focused upon link amongst digital banking adoption and financial inclusion in Pakistan. Previous literature established the overall relationship between technology use and financial access, but this study puts into focus key behavioral enablers that are crucial to influencing adoption behavior in a Pakistani context: digital literacy and trust. The findings can inform not only policy makers, controllers, but also the financial institutions in shaping interventions to stimulate uptake of digital banking and additional financial inclusion objectives.

1.10 Scope of Study

The research endeavour focuses upon the impact held by digital banking upon financial inclusion pertaining to Pakistani context specifically focusing on digital literacy along with digital trust as intermediate variables. Data was gathered from respondents who were 100 in number, inclusive of students and employees, using a structured questionnaire of varying levels of digital banking experience. Given the capacity limitations, sample of study is not a general representative of Pakistani population but the results do give an insight into user behaviour and provide a foundation for further research into digital finance in Pakistan.

Literature Review

Theoretical Foundations of Digital Banking Adoption

Numerous theories pertaining to systems of information along with information technology adoption research that can explain adoption of electronic banking amenities. Technology Acceptance Model (Davis, 1989) signify two prospects that are perceived usefulness as well as perceived ease influence technology adoption, the relationship between the two is examined. This model has been broadly utilized to explain digital banking behaviour, where consumers will make the switch to banking in digital world when people find it helpful as well as easier to use.

The Unified Theory of Acceptance and Use of Technology which serves as an extension to the model mentioned above which highlights the predicting role of interpersonal influence along with conditions that are facilitating (Venkatesh et al., 2003). Social norms, lack of infrastructure, and different levels of technology use, as in a developing country context such as Pakistan, are especially important. Perceived usefulness, convenience, ease of access can be considered as factors of importance while risk perception and distrust are found to be the barriers, which are confirmed in Pakistan (Afshan & Sharif, 2016; Raza et al., 2017).

In addition, Diffusion of Innovation Theory (Rogers, 2003) provides additional insights on digital banking adoption by emphasizing relative advantage, compatibility and complexity as factors affecting decision making especially when adopting digital banking, providing more explaining power pertaining to Pakistani context in digital finance.

Digital Banking Adoption and Financial Inclusion

Achieving fiscal inclusivity has been considered a vital goal in terms of policy development (World Bank, 2022) and is the focus of this study. Structure which is traditional in terms of banking has restricted geographical reach specifically in growing economies, which is why banking done digitally can be a needed inclusion in finance (Ozili, 2018; Demirgüç-Kunt et al., 2018).



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Evidence from around the world tells us that digital finance lowers transaction costs, and drives reach and financial access (Suri & Jack 2016). The increased adoption of mobile wallets and branchless banking has helped to grow the digital financial transactions considering Pakistan (State Bank of Pakistan, 2023). Local empirical studies also found a direct positive link amongst digital banking and financial inclusion, with active digital banking user having a higher likelihood of using these services for payments along with accounts' saving (Khan & Khattak, 2024; Ahmed et al., 2024).

However, financial inclusion in Pakistan with digital banking is incomplete. Income differentials and geographic and demographic gaps in not only the accessing but also the use of financial services which are digital as it remains and focuses upon a notion that mere access to digital financial services is not enough without digital literacy and trust.

H1: Digital banking adoption has a positive effect on financial inclusion in Pakistan.

Digital Literacy and Digital Banking Adoption

Literacy in terms of digital context refers to capability in terms of utilizing digital technology, like a smart phone and a computer, for accessing financial services has been gaining importance as one of vital factors pertaining to adopting digital banking particularly in developing countries (Raza et al., 2017; Afshan & Sharif, 2016). Low digital literacy is a big challenge, especially in lower-income and rural populations in Pakistan.

Studies show that those with better digital literacy are more likely to be digitally banked because they are more technically proficient and knowledgeable about digital tools. On the contrary, digitally less literate users tend to struggle more with digital banking interface, which is likely to limit adoption. In addition, improved digital literacy lowers risk aversion and boosts confidence of users, thereby increasing the adopting rate of digital banking (Morgan et al., 2019).

The literature in recent times supports digital financial having a viral role in not only the frequency but also extent of use of digital financial services, beyond the initial adoption (Khatri & Idrees, 2025). The higher the literacy level, the more people tend to resort and adopt these services in digital bankings.

H2: Digital literacy has a positive effect on digital banking adoption in Pakistan.

Trust and Digital Banking Adoption

Trust is another crucial and important factor to consider when the security and privacy concerns are high (Gefen et al., 2003) because it is the confidence that the digital system is reliable, secure and credible that influences acceptance in digital banking (Kim et al., 2009). In Pakistan, trust in service providers and concerns about data security have consistently been found to be amongst notable most factors which influence adopting digital banking (Afshan & Sharif, 2016).

Trust is found to lower the perception of risk as well as elevate acceptance of digital technology, as shown in empirical evidence throughout the world. Since digital banking transactions deal with sensitive financial information, user trust in the platform is critical for the adoption to take place. Systemic trust in DFIs is also influenced significantly by institutional indicators, including regulatory environment provided by Pakistan's State Bank.

H3: Trust in digital banking has a positive effect on digital banking adoption in Pakistan.

Methodology

Research Design

This study is a quantitative type of cross-sectional research utilizing positivist philosophy is utilized where constructs are objectively measured by a valid survey instrument, and pre-specified hypotheses are tested by statistical procedures. Research



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endeavour is relying upon primary data obtained through structured questionnaire.

Population and Sample

The target segments are people in Pakistan who are or can be customers of digital banking. Because of the practical limitations on the study, such cost as well as time reduction, with convenience sampling utilized comprising finally a number of 100 students and workers. The sample was not probabilistic but it covered demographic characteristics in relatively wider range that are pertinent to digital banking behavior in an urban-to-semi-urban community in Pakistan.

Data Collection Instrument

A self-administered, structured questionnaire was crafted based on literature focused on instruments assessing our construct of interest. The questionnaire had two sections:

Items are Likert scale items with selecting options for respondents ranging from “1 = Strongly Disagree to 5 = Strongly Agree” and are divided over four constructs: Digital Literacy (6 items), Perceived Security and Trust (6 items), Digital Banking Adoption (6 items), and Financial Inclusion (5 items), for a total of 23 items.

The sources of scales are explained below:

Construct	No. of Items	Scale Source
Digital Literacy	6	Venkatesh et al. (2003); Ullah et al. (2022)
Perceived Security & Trust	6	Gefen et al. (2003); Yousafzai et al. (2010); Flavian et al. (2006)
Digital Banking Adoption	6	Davis (1989); Venkatesh et al. (2003); Bhattacharjee (2001)
Financial Inclusion	5	World Bank Global Findex (2021); Sarma & Pais (2011)

Table 1: Measurement Constructs and Scale Sources

Data Type

The data comprised mostly of ordinal Likert scale responses that were taken directly from respondents. This makes it primary data in contrast with secondary data which is the data which is collected by other researchers or organizations for other research purposes (e.g., SBP reports, World bank Findex databases). Primary data can be used to directly measure individual-level perceptions and behaviors, which were in coherence with research questions of this research endeavour.

Analytical Framework

1. The data were analyzed by the following techniques:
2. Descriptive Statistics for each construct.
3. Reliability Analysis
4. KMO test and Bartlett's Test of Sphericity are used to check the suitability of the factor analysis.
5. Single Factor Test (Harman's Single Factor Test): Common Method Bias Check.
6. Correlation Analysis.
7. Multiple Regression Analysis: OLS regression.
8. Diagnostic Tests: Normality (Jarque-Bera, Shapiro-Wilk), heteroskedasticity (Breusch-Pagan), autocorrelation (Durbin-Watson, Breusch-Godfrey), multicollinearity (VIF), model specification (Ramsey RESET).

Results

Reliability Analysis and Descriptive Statistics

Alpha reliability value was utilized to test internal consistency of each construct,



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which was set at 0.70, as acceptable in the social sciences literature (Nunnally, 1978).

Table 2 highlights these along with descriptives.

Construct	Items	Cronbach's Alpha	Mean	Std. Dev.	Result
Digital Literacy	6	0.867	4.042	0.749	Reliable
Perceived Security & Trust	6	0.801	3.425	0.672	Reliable
Digital Banking Adoption	6	0.880	3.990	0.780	Reliable
Financial Inclusion	5	0.744	3.816	0.741	Acceptable
Overall Scale	23	0.918	—	—	Highly Reliable

Table 2: Reliability and Descriptive Statistics

The internal consistency of the instrument was determined by Cronbach's Alpha (0.50 -- 0.70 = acceptable; 0.70 -- 0.90 = high) which exceeded the accepted threshold. The overall scale alpha was 0.918, reflecting very good scale reliability for all 23 items. When considering descriptive statistics, it is found that Digital Literacy has higher levels ($M = 4.042$) which indicates general capacity of respondents in thinking that they are digitally literate. Digital Banking Adoption follows closely ($M = 3.990$), suggesting that the sample has a relatively high level of digital banking adoption. Perceived Security and Trust is somewhat lower ($M = 3.425$), and Financial Inclusion is at 3.816, indicating that for respondents security concerns are a moderately unresolved issue.

KMO, Bartlett's Test, and Common Method Bias

The suitability of data before regression analysis was checked by KMO measure of sampling adequacy and Bartlett's Test of Sphericity. Common method bias (Podsakoff et al., 2003) was also checked using the Harman Single Factor Test.

Test	Value	p-value	Result
KMO Test	0.848	—	Good sampling adequacy
Bartlett's Test of Sphericity	1329.365	0.000**	Factor analysis suitable
Harman's Single Factor Test	38.07%	—	No serious common method bias

Table 3: KMO, Bartlett's Test, and Common Method Bias

The KMO value is 0.848 (Kaiser, 1974), suggesting good sampling adequacy. Bartlett's Test is also deemed significant ($p < 0.001$), indicating that the matrix of correlations is not an identity matrix and therefore factor analysis is valid. From Harman Single Factor Test, first factor revealed only 38.07% of the variance, which is less than the 50% threshold which suggests that common method bias is not a major problem within this study.

Correlation Analysis

Pearson correlation results are shown in Table 4.

Independent Variable	Correlation (r)	p-value	Result
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Digital Literacy	0.651	0.000**	Strong positive significant
Perceived Security & Trust	0.366	0.000**	Moderate positive significant
Digital Banking Adoption	0.688	0.000**	Strong positive significant

Table 4: Correlation Analysis with Financial Inclusion

Positive and significant relationships are seen between all three independent variables and financial inclusion. Digital Banking Adoption has the highest positive correlation while Digital Literacy has the next highest correlation. Perceived Security and Trust are moderately positive correlated. The results of these findings support the initial testing of all three research hypotheses.

Multiple Regression Analysis

Multiple regression using Ordinary Least Squares (OLS) was performed to estimate the effects of digital literacy, perceived security and trust and digital banking adoption on financial inclusion simultaneously. Table 5 shows the regression coefficients and Table 6 shows the model fit statistics.

Variable	Coefficient B	Std. Beta	t-statistic	p-value	Result
Constant	0.535	—	1.559	0.122	Insignificant
Digital Literacy	0.256	0.258	2.345	0.021**	Significant positive
Perceived Security & Trust	0.159	0.144	1.928	0.057*	Weakly significant
Digital Banking Adoption	0.427	0.450	4.168	0.000**	Significant positive

Table 5: Multiple Regression Coefficients (Dependent Variable: Financial Inclusion)

Statistic	Value
R ²	0.530
Adjusted R ²	0.515
F-statistic	36.09
Prob. (F-statistic)	0.000**
Observations	100

Table 6: Regression Model Summary

The regression model is statistically significant overall ($F = 36.09$, $p < 0.001$), and explains 53.0% of the variance in financial inclusion ($R^2 = 0.530$). This means that this study is a cross sectional study of behaviour and has good explanatory power.

The strongest and statistically most significant predictor is Digital Banking Adoption (H1) with a β of 0.450, t of 4.168 and p of <0.001 . After controlling for all other variables, a change of 1 unit in digital banking adoption is correlated with a change of 0.427 units in financial inclusion. This revealed that actual adoption of digital banking in the areas such as bill payment, fund transfer, and using digital wallet directly creates financial inclusion.

The second most significant predictor ($\beta = 0.258$, $t = 2.345$, $p = 0.021$) is related to the Digital Literacy and is consistent with Hypothesis 2. Higher digital literacy helps better



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familiarize themselves with digital platforms, make informed financial choices, and thus become more active in formal financial services.

Perceived Security and Trust is only marginally significantly correlated ($\beta = 0.144$, $t = 1.928$, $p = 0.057$), and thus only marginally supports Hypothesis 3. The direction is positive, but the impact is just outside the 0.05 significance limit, indicating that in this sample, trust is not a primary driver in the short-term adoption to inclusion journey, likely because the respondents had already come to accept and normalise the most basic of security perceptions through habitual digital banking use.

Multicollinearity Diagnostics

Multicollinearity between predictors was examined by looking at the Variance Inflation Factor (VIF) values.

Variable	VIF	Result
Digital Literacy	2.478	No multicollinearity
Perceived Security & Trust	1.142	No multicollinearity
Digital Banking Adoption	2.376	No multicollinearity

Table 7: Variance Inflation Factor (VIF) Results

There are no values of VIF in this model that are greater than the critical value of 5 (Hair et al., 2014), indicating that multicollinearity is not a problem. Predictor variables can be regarded as independent of the regression equation.

Regression Diagnostic Tests

To validate the OLS assumptions and making the results robust, a comprehensive set of regression diagnostic tests is carried out.

Test	Statistic	p-value	Result
Jarque-Bera Test	Normality 4.823	0.090	Residuals approximately normal
Shapiro-Wilk Test	0.971	0.025**	Slight normality deviation
Breusch-Pagan Test	3.846	0.279	No heteroskedasticity
Durbin-Watson Test	1.621	—	Acceptable autocorrelation range
Breusch-Godfrey Test	2.961	0.085*	Weak autocorrelation indication only
Ramsey RESET Test	1.903	0.171	Model specification acceptable

Table 8: Regression Diagnostic Tests

The Jarque-Bera test ($p = 0.090$) suggests that residuals are reasonably normally distributed. The Shapiro-Wilk test yields a p value of 0.025, which is a marginal deviation, but is common for $n = 100$ and does not significantly affect the regression estimates for samples of this size as shown in the robustness of the OLS regression (Wooldridge, 2012).

The Breusch-Pagan test shows that there is no evidence of heteroskedasticity ($p = 0.279$), which indicates that the variance of the residuals is uniform for all observations. The Durbin-Watson statistic (1.621) is within reasonable limits and the Breusch-Godfrey test provides a weak indication of autocorrelation ($p = 0.085$) which is not statistically significant at the 5% level. The Ramsey RESET test ($p = 0.171$) suggests that the model specification is adequate and there is no functional form misspecification.

Together, these diagnostic statistics validate and support the OLS regression model.



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Hypothesis Summary

Hypothesis	Statement	Result
H1	Digital banking adoption has a positive effect on financial inclusion in Pakistan.	Supported ($p < 0.001$)
H2	Digital literacy has a positive effect on digital banking adoption.	Supported ($p = 0.021$)
H3	Trust in digital banking has a positive effect on digital banking adoption.	Weakly Supported ($p = 0.057$)

Table 9: Hypothesis Testing Summary

Conclusion

Respective research endeavours looked at what makes people in Pakistan use banking and how it affects their financial services' access. We explored perception of digital technology, trust in digital banking and the part digital technology is playing in causing an increase in access of people to fiscal services. Data collection was carried out from 100 persons. Used a strong analysis method to draw the following conclusions.

Digital banking is a vital enabler of such access for Pakistanis. On average, customers who use banking for payments, transfers and everyday financial tasks are much more likely having access to services of finance which are formal, as evident by our analysis. It is in coherence with other studies conducted both indigenous and global. It demonstrates importance these digital platforms hold in order to include a greater number of people into such services related to finance.

People can benefit in ways when we consider this digital banking. Such as it lets them easily pay their dues, money transfer and balance inquiry. This is a benefit to people in terms of control over finances and choices.

It is important to know how to use technology in order to access these services of finance and use banking digitally. Digital banking platforms enable people with digital skills to easily access a broader range services to facilitate decision making in terms of their financial matters. This indicates that more attention should be given to teaching skills to ensure more people can access financial services in Pakistan.

For example, users with the familiarity of digital banking systems are capable of making money transfers to friends as well as family, and view their account balances automatically. This will help them to better control their finances and make choices.

Trust in banking platforms is linked to accessing financial services but its effect is not very strong. This could be because that a majority of the population in our study is young, urbanized and educated, and thus, feel secure using banking. But even in their early stages of digital banking adoption, people still need trust.

This is a good result for a study of this magnitude, explaining 53% of how people use services. Examined all the assumptions and tests. They say that our model is trustworthy and exact. Study revelations have propositions for both the policy makers as well as practitioners, in Pakistan's digital financial ecosystem.

Recommendations

- Expand Financial Literacy Programs: Pakistan's State Bank along with responsible financial ministry and related institutions should allocate funds for financial literacy programs. They should target areas, women and poor people. They can



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collaborate with schools, colleges and universities for the training of digital skills. This will contribute to the banking initiation usage.

- Improve Regulatory Trust Infrastructure: SBP should build consumer protection for financial services. They should ensure that there are mechanisms to settle any conflicts and policies to discourage fraud. They also need to educate people on banking security. This will aid in their confidence in banking.
- Improve Digital Infrastructure: Access to good Internet and cheap smartphones required for banking. Enhance Internet in -urban and rural communities. They can also provide subsidies for devices to low income households.
- Make Banking Digital User Friendly: User Interfaces of said platforms, considering JazzCash, Easypaisa along with Raast, should be user-friendly. They should have a language support of Urdu. This will aid persons in their first experience of using banking.
- Educate Users on Security: Financial institutions should inform users about security measures such as OTP verification and biometric authentication. They should describe how user data is safeguarded. This will make it easier for people's banking trust.
- Create Products for Low Income People: Financial service providers should develop products for people with low income. They should provide -savings accounts, low cost remittances and credit facilities. Such products should be available in wallets.
- This study only had 100 respondents, students and employees. Further studies are needed that involve individuals from varying socio-cultural backgrounds such as elderly, rural areas.
- The findings from the present study can be utilized in future studies utilizing PLS-SEM or to examine a link amongst digital banking adoption and inclusion.
- Longitudinal research can be helpful to monitor banking use along with impact that banking holds on financial inclusion over time.

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