

The Mediating Role of Digital Consumer Protection and Digital Financial Literacy with Mobile Money Adaptation and Financial Inclusion in Pakistan

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Abstract

This paper reconnoitred the mediating roles of digital consumer protection and digital financial literacy in the connection between mobile money adaptation and financial inclusion in Pakistan. This paper employs a Partial Least Squares Structural Equation Modeling (PLS-SEM) approach to analyze data from 412 respondents across Lahore, Peshawar, Rawalpindi, and Islamabad. The results highlight that digital financial literacy enhances the positive effects of mobile money adaptation on financial inclusion, while robust digital consumer protection mitigates risks associated with digital transactions. The paper is limited to Pakistan and specific digital financial services, suggesting the need for further research in other developing countries. The paper provides recommendations for policymakers to enhance digital financial ecosystems through targeted educational programs and stricter regulatory measures. This paper offers constructive insights into the roles of digital consumer protection and financial literacy in promoting financial inclusion, contributing to the broader discourse on digital financial services in emerging economies

Keywords Financial Inclusion, Digital Consumer Protection, Financial Literacy, Mobile Banking, Mobile Money, Digital Wallet

Introduction

With the popularization of the Internet and e-commerce, consumers' adaptation of mobile-devices, and the emergence of third era (3G) innovation, portable commerce (MCommerce) will undoubtedly become the best e-commerce. 3G technology was introduced in Japan in 2001 and supports rich media such as video clips, while second-generation (2G) technology only supports text. The central reason for the rapid growth of the mobile market is the speed of mobile Internet (M-Internet) as a communication medium, content services and business. Technological advances are rapidly changing all aspects and paths of our lives we spend money and use smart tools for banking services. Technology convergence and mobile phones has created new applications and opportunities. Providing Financial services banking-related with mobile devices is called ebanking. Many studies show that small and medium-sized businesses (MSMEs) constitute a large portion of the private division within both developing and developed countries. This has significantly contributed to poverty reduction and pecuniary growth in emerging countries

(Ayyagari et al., 2005). Business can be done cashless mostly. It is a business that achieves commercial printing transactions through sources such as credit cards and debit cards, money transfers and online purchases through electronic wallets, without using cash in a large economy.

Cashless transactions using information technology are supported and meet all the requirements by government of Pakistan. This movement is a rapid change. If we see the global changes in the market, it is obvious that people all over the world have become non-spending people. Experts, politicians, managers and especially economists around the world have advocated the transition from a rich financial market to a weak market cash. It seems that everyone benefits from this type of business more than carrying cash and moving in the market. Cashless transactions reduce the use of cash and cash while supporting electronic payment methods such as, internet banking, debit cards, credit cards, point of sale, phone banking and digital wallets. This business model has many benefits and large use of digital systems will prevent users from carrying huge sums of cash, thus lessening the dangers related with the utilize of cash. Governments and businesses will protect billions of rupees as they will not have to be pay costs related with cash administration. With the rise of digital payments, more work needs to be done; It will enhance the efficacy of services and business and reduce costs.

Infrastructure is available for companies without bank accounts; 34% of mobile users have wireless connection; but only 21% adults in Pakistan use financial related services. Pakistan is quickly getting to be a digital-first nation and is anticipated to be the fourth biggest digital economy by 2030 (Zafar, et al., 2021). Advance wallets are a new innovation with active users of 27.3 million and expanding 87% annually. Some of the major digital wallet players are Easypaisa, UPaisa, JazzCash, UBL Omni, Nayapay and Google Pay; mostly in business communications. Seeing current trends, the argument arises: How distant Pakistan can go without cash? (Zafar, et al., 2021). Although a free job has some problems, that can be resolved and the disadvantages can be overcome with the advantages. For example, lower-income people face of financial exclusion risk because they cannot access these financial services (M. A. Bayero, 2015), because mostly don't have access to cell phones or other mobile devices. Also their are people who are unaware of the presence of these facilities. \$1.5 million rupees Pakistan could save if people switch to the digital economy, Karachi starting alone (T. A. Saeed, 2019). Innovation has played a major part in the financial revolution, and 90% of the population is estimated to go cashless using digital payment methods.

Currently, only 10% of people in Karachi use these services (T. A. Saeed, 2019). State Bank of Pakistan announced that users have made a significant shift from cash payment methods to electronic payments. The large number of products and services offers and purchased through

various sites online such as Daraz, OLX, Pakwheels and Zameen.com are proof of people finds online services ease and turning to online services. Few of these sites also have electronic payment methods such as Upay or Jazzcash, which is the first choice of many people (N. Desk, 2019). People encounter some problems that affect their expectations when using digital payment methods. The four main problems are limited access to digital services, conflict between various services for customers, cybersecurity threats associated with digital payments, and finally the prohibition of making these services accessible to the public.

The use of mobile phones to perform banking and financial functions for, airborne.

remittances, utility, purchases and school fees, savings, and telephony refers to as Mobile money (IFC, 2011; Donovan, 2012). The proliferation and increased usage of mobiles in rural areas and the increase of fiscal agents (MMAs) have spurred increased spending. In the year 2009, worldwide there were more than 100 million users of mobile money (GSMA, 2015). Most developed nations have mobile money above bank accounts. As per the 2023 State of the Financial Market Report published by GSMA, there are 1.6 billion registered mobile payments worldwide; This figure increased by 13% compared to 2021. The report also stated that mobile money services are growing faster than expected and more mobile money users are being tracked by GSMA in all regions. The report also points out that although there is a healthy increase in developed regions, many large markets still have room for growth, with fewer jobs in developed regions. For example, India and Sub-Saharan Africa will account for nearly half of the world's new mobile subscriptions between 2022 and 2030.

Access to financial services improves by action money for many persons who were outside from banks due to insufficient funds or long journeys to match the minimum deposit requirements for finally opening an account (Suri et al., 2013; Kikulwe, & Qaim 2014). Thanks to mobile money, families now send money from their mobiles without having to go to the bank in person or send money via mobile phone. Even its potential benefits, still mobile money is not accepted by households in rural developing countries. Credit is considered a key facilitator for revolutionized fintech and a great strategy for the usage to achieve the goal of World Bank's for global financial inclusion because it is changing rapidly and providing access to credit and savings (Koomson et al., 2020). Financial inclusion increased from 62% in 2014 to 69% in 2017 due to the increase in financing, specifically in developing nations (GSMA, 2018; Kunt et al., 2018). In addition to their ability to recognize mobile financial services and financial literacy are rapidly bridging the financial gap, including billions of people unbanked now have accessibility to mobile phones and are finding success in surging markets (Katakam, 2019). More importantly, mobile users numbers in the country increased by 20% year on year to 866 million. Similarly, the number of mobile

phones in these countries has increased by more than 1500%, from 4 people to 72 per 100 persons (GSMA, 2018). Despite this progress, still evidence of gender and rural disparities in travel spending (Kunt et al., 2018).

Furthermore, Gupta (2005) argued that mobile banking enables households to save and receive money, but barriers to widespread adoption such as communication problems, connectivity, competition, and digital literacy. The adaptation of smart-mobile money services is just not a technological revolution but also a socio-economic revolution that has the power to transform the financial ecosystem and empower the underserved. Heltz (2011) accentuated the prominence of mobile money in enabling people to save money efficiently and access uninterrupted financial services, paving the way for financial empowerment and further diversifying people.

Theoretical Background

The pedigrees of diffusion research can be drawn back to the work of Everett Rogers in the 1960s, and since then the theory has been widely used in research over the years. Innovation diffusion believes that four factors that influence the spread of new technologies: innovation, communication, opportunity and social (Sharma & Mishra, 2014; Alzaneen & Mahmoud, 2019). Rogers defines diffusion as “the way in which new changes spread over time through specific relationships among participants of a social network”. Stated in this definition communication, time, innovation, social organization are four main factors of innovation. Venkatesh (2003) reinterprets the leadership style of innovation diffusion method thinking (IDT) and representation of deviant behavior in TRA, and they are also identified by controlling for the perception of behavior that is directly affected by social influence. Innovation and diffusion are the main concepts of innovation diffusion theory, and time, innovation, social system, and diffusion are the four characteristics of diffusion (Rogers, 2002). Here this paper adopted the approach of Rogers (2003), who clearly shows that the biggest impact of innovation is the ability of customers to think about the features of the updated design, rather than isolating behavior from external objective observers' adoption. Five characteristics of innovation in his framework are the most influential: compatibility, relative advantage, complexity, observability and trialability. We only focused on three features: complexity, relative advantage, and compatibility, which are the most general themes in Rogers' model and have a strong relationship with innovation (Klein & Tornatzky 1982).

In an age where digital inclusion is critical to societal success, it is vital to understand the dis-similarities between consumer protection and information about digital, money and mobile payments (Musau et al. 2022). A wide body of literature, including analysis and empirical

research, demonstrates the importance of these factors in shaping financial behavior and promoting digital justice (Pramana et al., 2021). However, existing research often focuses on a single point and ignores the potential synergies and synergies between digital consumer protection and technology and financial information. In the Indian context, which is one of the fastest growing country in recent times, extensive research is being done on fintech and financial accounting in India. By filling this gap, this paper focused on understanding how digital consumer protection and financial literacy play an important role in influencing services. Fintech, especially mobile payments, is revolutionizing and involving finance, thus contributing to the success of digital justice.

This study used Diffusion of Innovations (DOI) theories to explore research gaps. Integrating these perspectives makes a significant difference by examining the interaction between technology acceptance, market availability potential, perceived value, and new expansion. This holistic approach provides a detailed understanding of the factors affecting technology and usage patterns, helping businesses and policymakers make informed decisions. Additionally, by using a quantitative model and focusing on Pakistan's unique socioeconomy, our study provided actionable information across context to guide policymakers, financial institutions, and educators in creating a unified digital economy. This study not only supports academic discourse, but also postulates positive results in strengthening financial literacy, enforcing effective consumer protection laws and promoting mobile solutions, ultimately supporting digital inclusion and economic growth.

Literature Review

Mobile money usage and adaption and financial inclusion

Mobilephone money services refer to the utilization of portable devices for retrieving and withdrawing financial services previously offered by typical financial institutions (Grzybowski & Mothobi, 2017). These services provide a place for transferring money and making payments. Mobile money is also called “branchless banking and mobile banking” (Birochi, Pozzebon and Dniz, 2012). In the past, customary banks and automated banking services such as ATMs and electronic banking were unable to meet customers' financial needs. While new technologies have improved availability and access of financial services, Internet connectivity has also facilitated the spread of mobilephone money services.

Following the year 2023 Digital Census, Pakistan has a population of 24.13 billion. Mobile phones are widely used in Pakistan. Highlights of digital usage and usage in Pakistan in early 2023 are as follows:

As of early 2023, 87.35 million of the populace consuming internet in Pakistan and the internet incursion rate is 36.7%.

January 2023, there were 71.7 million social apps users in Pakistan, accounts for 30.1% of the total populace.

Starting 2023, the total number of mobile phone connections in Pakistan is 191.8 million, which corresponds to 80.5%.

According to the World Bank 2023 report, 36.3% of the total is the population of Pakistan Of the approximately 110.9 million population without a bank account, 63% live in rural areas (World Bank, 2023). There is a consensus among policymakers on promoting financial services through financial inclusion (Anwar, 2013).

Currently, there are 10 mobile service providers in Pakistan offering various mobile money services: Easypaisa, UBL-Omni, Mobicash, Timepey, alfa, zindagi, sadapay, nayapay, Firstpay and Upaisa. Non-banking laws enacted by the central Bank of Pakistan in 2008 only licensed banks. Mobile banking is managed and supported by various companies model procedures with mobile operators (CGAP, 2013).

IFC (2018) also believes that mobile digital cash transfer technology is crucial to promoting universal access with. Important financial monetisation services, particularly for persons working in the undocumented economy, such as small, medium-sized, or micro enterprises. Jussila (2015) noted that mobile phone users and financial service providers are narrowing the loophole in reach to financial services through mobile money transfer services, especially for the unbanked operating in small businesses in developing countries. Rangarajan Group (2008) also stated that the usage of usurp technology like mobilephone money with low transaction costs can facilitate the spread of these services to faraway areas. Therefore, Kochhar (2010) argued that the use of technology creates a bough network that helps deliver banking business services to unbanked people, just like people flying over branches. On the basis of evidence, this study offers the following hypothesis:

H1: Mobile money usage and adoption positively affect financial inclusion

2.1.2 Mobile money adoption and usage and financial inclusion: the mediating role of digital consumer protection

Under CGAP report (2017), consumer protection is an important part of financial inclusion to certify that existing users of financial services benefit well and fairly in the marketplace, thereby increasing people's trust in financial services and their reliability. potential customers. From Caruana (2017) perspective the widespread utilization of technologies such as mobile money has upsurges the scale and number of cyber attacks which threaten the security

and privacy of digital phone consumers. Likewise, information of customers are vulnerable to cyber attacks, harming their trust in digital channels in the market. Njoroge (2016), and Mugambi (2017) stated that digital financial systems required customer protection to ensure customer security. Rowan & Mazer (2016) also argued that rivalry and consumer protection can go hand in hand because they time and again have the mission of escalating consumer welfare. Such as, transparent price rules can offers consumers shop around and thus encourage more competition in the marketplace.

Therefore, since this have the power to require better products and work with only service providers that shows good business practices, this became exceptional tools and collaborate to promote financial inclusiveness and good administration in the fintech ecosystem, specially in partner countries. The World Bank said protecting consumers using m-money make sures consumers have adequate figures when making decisions, using problem solving to prevent fraud by mobile money service providers and unauthorized persons. So we hypothesis that:

H2. Digital consumer protection positively mediates the relationship between Mobile money adaptation and financial inclusion.

2.1.3 Mobile money adoption and usage and financial inclusion: the mediating effect of Financial Literacy

DFL is a multiple conception that includes financial digital services and products knowledge, digital financial risk knowledge, and management knowledge, and awareness of rights of consumer and revision processes (Morgan et al., 2020). Similarly, Park (2011) suggested that three different aspects of digital literacy are associated with privacy-related online behaviors: knowledge of Internet use, knowledge of domestic practices, and current privacy perceptions.

The benefits of financial literacy as competent service are as follows: 1. To enable people to choose, use and utilize better service products and services that they need for proper financing and good financial planning. 2. Avoid uncertain investments and financial instruments 3. To understand the risks and benefits of financial facilities and products. The distribution and spread of Fintech services and products is increasing the impact of DFL as persons individually become financially liberated and controls their own financial planning, thereby turning to financial freedom and accounting. DFL also encourages the utilization of good services and offerings, at the same time warns them against digital frauds such as hacking and phishing (OECD, 2021) and promoting citizens to accept cashless transactions, as well as financial support (Ozili et al., 2018).

Digital financial literacy is important to help fintech achieve financial inclusiveness by motivating persons gaining skills and advice needed to become familiar with digital places (Wilson and Panos 2020). We contend that having skills of financial knowhow, budgeting,

analysis enables and empowers persons to develop DFL that is cost-friendly, supports the personal, and timely results (Suriseti and Khan, 2020) and thoughtful spending and financing. including. Thus, we believe that DFL provides oneself with the digital skills necessary to navigate the digital economy with ease and the intelligence and wisdom to make informed decisions, leading to long-term health. Based on the available data, the following mediation studies were developed.

H3. Digital Financial Literacy positively mediates the connection between mobile money utilization and adoption and financial inclusion.

2.2 Literature on Industry / Sector:

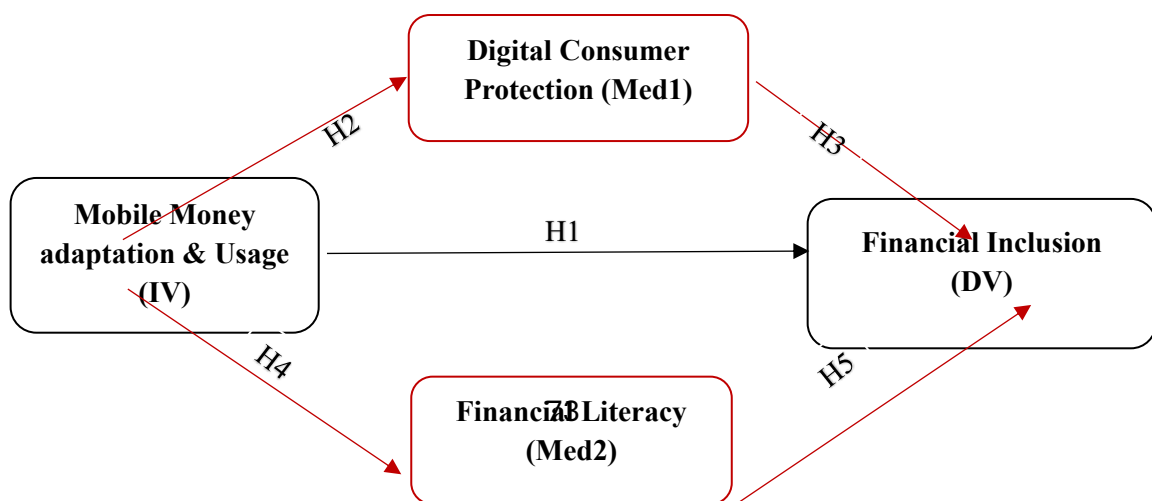
Small, micro, and medium-sized ventures are pondered at the foundation of the country. In Pakistan, small and midsize enterprises (SMEs) shape a significant portion of the Pakistani economy, contributing 40% of the country's GDP and 80% of the non-agricultural sector. Up to 90% Business enables employees to support their families. According to data from the State Bank of Pakistan, there are 121 IT companies, 31 banks, 30 electricity companies, 3 natural gas supply companies and 640 mineral water and beverages companies. For the quantitative analysis, we selected only active companies operating in the service sector who provides both financial and non-financial services.

Theoretical framework/schematic diagram

The theoretical framework was developed after analysis and consists of three structures or stages. The first level consists of independent variables (mobile money usage and adaptation) and dependent variables (financial inclusion). The second is based on one mediator i.e., Digital Consumer Protection. In the third stage, the role of financial literacy in mediating the Mobile money adaptation & usage and Financial inclusion examined.

Therefore, in this model, there are three assumptions that lead the individual variable (IV) to the dependent variable (DV) using two mediators. Additionally, the framework also includes one direct hypotheses and two indirect hypotheses, as shown in Figure 1

Figure 1



Hypothesis

- H1: Mobile money adoption and usage positively affect financial inclusion
- H2: Digital consumer protection positively mediates the relationship between mobile money adoption and usage and financial inclusion.
- H3: Digital consumer protection has a positive impact on financial inclusion.
- H4: Digital financial literacy positively mediates the relationship between mobile money adoption and usage and financial inclusion.
- H5: Digital financial literacy has a positive impact on financial inclusion.

Methodology

Research Approach

3.1. Research Approach

This study is theory-based and hypothesis testation. Begins with Epistemology which means a clear standard for consistency and recognition in relevant field of knowledge is required and should be consistent, even based on the credibility of the relevant field. In this study, the assumptions in relevant were tested through hypotheses. The model used in this study includes one dependent variable (financial inclusion) and one independent variable (mobile money adoption & usage) and two mediating variables (digital consumer protection and financial literacy). The model is based on DOI theory which is often used as a deductive method. It builds on existing theories and empirical evidence, creates a unified model, and then tests its validity through empirical research. Theories and hypotheses are created in the form of relationships between dependent and independent variables and then tested using statistical tools. Once all these processes are completed, results shown indicate whether the assumptions has been accepted or rejected. The deductive approach was adopted in this study.

This study used a survey method to determine hypotheses and used a cross-sectional time frame to accumulate data. In this study, a cross-sectional study is used to produce data on more than one variable at the same time. Time constraints are the reason for conducting cross-sectional research.

Population and sampling and justification

The data collection strategy identifies the type of data needed, interviewees, time, location, and methods. This study is based on primary and demographic data of commercial cities, Peshawar, Lahore, Rawalpindi and Islamabad. Populations can be further classified according to their areas of interest. This study targeted all employees working at private or public sector management

levels. The minimum position for the private sector is officers/team lead to executive heads; in the public sector, we targeted BPS 16 and above. In an article published in The Nation newspaper on 31st January 2024, there are 61.3 million m-wallet holders in Pakistan also reported by JazzCash they have 44 million m-wallet account holders with 11 million active users (Haroon, D. January 31, 2024). Since it is impossible to examine every point in the population, a representative of the population is selected from the sample to represent the entire population. Using the Qualtrics software we determine 385 samples at a margin of error of 5% and a confidence level of 95% are adequate for analysis. We contacted public and private sector officials in Peshawar, Lahore, Rawalpindi and Islamabad to seek their responses. These cities are capital and major business cities with urban populations with diverse socio-economic backgrounds.

Stratified sampling is used for a practical reason to consider the availability of data from JazzCash regarding the number of m-wallet holders, potentially beneficial to use a probability sampling technique, such as stratified random sampling. This method implicates the population into subgroups (strata) because of pertinent characteristics (e.g., geographic location, age, gender), and then randomly participants selection from each subgroup. This make sures that each subgroup is adequately represented in your sample, more accurately representing the entire populations.

Data Collection

This study used test and survey methods to publish a questionnaire to obtain quantitative data for data analysis to answer questions to be formulated, goals to be achieved, and testing hypotheses. Data was collected from individuals as the unit of analysis as this study targeted all employees working atleast management levels in the private or public sector. For the private sector minimum position was supervisors to directors and in the public sector we have targeted officers of BPS 16 and above. As these individuals have adequate income sources and education levels to understand the mobile-based technology apps for banking and financial transactions. These unique socioeconomic characteristics shape the research unit of analysis (Sekaran, 2021).

Analysis of Data

Analysis of data in this study was carried out using the standard deviation of partial least squares (PLS) and structural equation (SEM) method. This analysis of statistics is chosen for its many benefits (Hair et al., 2011; Kock, 2012). Firstly, PLS-SEM is apt for models where there are constructs that cannot be directly measured and measurement error is seized into account. Second, analysis of SEM was performed for simultaneous experiments, similar to the sample used in this research. Third, SEM (PLS) allows component-based model estimation using small sample sizes. Variation-based SEM was used because this study was an extension or exploratory of an

existing theory. This study presents different concepts from the perspective of nature. Additionally, the usage of SEM is based on differences as it does not rely on multiple suppositions, such as that complete data does not require multiple distributions. Data analysed using PLS didn't need to be distributed normally as no specific distribution is assumed. It can use nominal, ordinal, categorical data, ratio, and interval data. This study used interval scale measure, with 5-point Likert scale to capture the responses from strongly agreed to strongly disagree with the statement.

Results and findings

Analysis of results

The results are obtained from the analysis of 412 valid responses to the sample data. This chapter concludes the testing measurement model along with reliability analysis. Convergent and discriminant validity analysis is also part of this chapter. There is a discussion on the structural model, mediation effect and findings.

Testing Measurement Model

The link between the constructs and the indicator variables is depicted in the measuring model. The model of reflecting measurement is used in the proposed study, and it is designed to assure the accuracy and reliability of build measurements. Resulting the creation of a measurement model, convergent validity, discriminant validity, and reliability, these three components are evaluated and tested one by one.

Reliability Analysis

Firstly the aspect of measurement model is the study of reliability, which involves composite reliability, outer loadings, and Cronbach alpha. The desirable cutoff value for outer loadings is expected to be higher than 0.7 and if each item's values are higher than this threshold, the value is acceptable. The acceptable outer loading values is 0.5 for all constructs which shows measurements are acceptable for the minimal standards. Furthermore, the average items are closer to and higher than the essential rates of 0.7 and 0.8. (Wong, 2013; Hair et al., 2016). In addition, composite reliability is tested in this thesis, even though the lowest cut-off value for composite reliability is 0.7, which is excellent for reliability analysis above this threshold value (Ringle et al., 2018). The results showed that all characteristics had appropriate Cronbach's alpha and composite reliability values, which were above than the criterion, i.e., about 0.70. (Hair et al., 2011). Similarly, Cronbach alpha has also been accessed accordingly. The results showed outer loading values for all items eligible for the minimum criteria, that is, more than 0.5 (Wong, 2013; Hair et al., 2017). In this paper, the values of Cronbach alpha range from 0.897 to 0.920 which is suitable. The overall result of reliability analysis is shown in given Table II.

Table I: Instrument validity and reliability test.

Outer Loadings

	FI	DCP	FL	MM
FI1	0.799			
FI2	0.854			
FI3	0.737			
FI4	0.794			
FI5	0.814			
FI6	0.846			
FI7	0.814			
FI8	0.753			
DCP1		0.780		
DCP2		0.790		
DCP3		0.802		
DCP4		0.778		
DCP5		0.792		
DCP6		0.754		
DCP7		0.803		
FL1			0.755	
FL2			0.772	
FL3			0.870	
FL4			0.737	
FL5			0.803	
FL6			0.788	
FL7			0.815	
MM1				0.788
MM2				0.786
MM3				0.806
MM4				0.810
MM5				0.850
MM6				0.803
MM7				0.801
MM8				0.826
Composite reliability (rho_c)				
	0.935	0.919	0.922	0.938
Cronbach's alpha				
	0.920	0.897	0.901	0.925
Average variance extracted (AVE)				
	0.644	0.618	0.628	0.655
Composite reliability (rho_a)				
	0.923	0.898	0.903	0.926

Convergent Validity Analysis

Cross-loadings and combined loadings had used by many scholars from different disciplines to prove convergent validity in the measurement model. The loadings in the combined loadings and cross-loadings originate from an unrotated matrix structure, whereas the cross-loadings come from an oblique-rotated pattern matrix; as a result, the loadings are always between -1 and 1 in the combined loadings and cross-loadings (Kock, 2020a). For reflective latent variables, the loadings should be above, and the cross-loadings must be low. Recommended two criteria's for establishing if a measurement model has adequate convergent validity are: (1) Loadings should be 0.5 or above, and (2) Associated P values with the loadings must be less than 0.05 (Kock, 2013; 2020). Additionally, cross-loadings must be below. The Average Variance (AVE) is the convergent validity matrix, with a cutoff criterion of 0.5 (Fornell and Larcker, 1981; Ringle et al., 2018). All constructs have value above the cut-off criterion which is 0.5 (Table 4.2). Therefore, it is confirmed that constructs have convergent validity. Table 4.2 shows the constructs' AVE value. As can be seen from Table 2, all results of fit model and quality index are good, meeting all requirements so that the analysis can proceed.

Table II: Convergent Validity Analysis

Items	VIF
FI1	2.457
FI2	3.117
FI3	1.983
FI4	2.420
FI5	2.446
FI6	4.156
FI7	3.978
FI8	2.444
DCP1	2.300
DCP2	2.267
DCP3	2.305
DCP4	2.158
DCP5	2.413
DCP6	1.798
DCP7	2.581
FL1	2.090
FL2	2.101
FL3	2.973
FL4	1.744
FL5	2.157
FL6	2.072
FL7	2.293
MM1	2.678

MM2	2.351
MM3	2.536
MM4	2.366
MM5	3.238
MM6	2.602
MM7	2.690
MM8	2.496

Constructs	Average Variance Extracted (AVE)	Collinearity Statistics
		VIF
Digital Financial Inclusion	0.644	2.875
Digital Consumer Protection	0.618	2.260
Digital Financial Literacy	0.628	2.204
Mobile Money Adoption & Usage	0.655	2.620

Discriminant Validity Analysis

The final component is discriminant validity in the measurement model. Similarly, it is measured through the following three methods:

Fornell-Larcker Criterion

Cross-Loadings

Heterotrait-Monotrait Ratio (HTMT)

Fornell-Larcker Criterion

The square root of the AVE for each component must be above the coefficients of correlation among the factor under consideration and other factors, according to (Fornell and Larcker 1981). In comparison to other constructs and indicators, discriminating validity evaluation assures that reflective constructs and indicators have excellent correlations (Hair et al., 2016). As shown in table 3, the outcomes of the Fornell Larcker criteria demonstrate that all of the values are within an acceptable range, indicating that the model is discriminately valid.

Table: III: Fornell and Larcker Criterion

	CP	DFL	FI	MM
CP	0.801			
DFL	0.768	0.809		
FI	0.755	0.764	0.863	
MM	0.769	0.789	0.799	0.831

Construct	Square Root of AVE	Highest Correlation
Digital Financial Inclusion (FI)	0.802	0.764 (with DFL)

Digital Consumer Protection (CP)	0.786	0.769 (with MM)
Digital Financial Literacy (DFL)	0.793	0.768 (with CP)
Mobile Money Adoption & Usage (MM)	0.809	0.799 (with FI)

Cross-Loadings

Discriminant validity has also been accessed using cross-loadings analysis. Outer loadings indicator's on a construct should be larger than all of its cross-loading of other constructs, according to (Nunkoo and Gursoy, 2013). The consequence of cross loadings is that all of the outer loadings for items in a construct are bigger than their cross-loadings, implying that discriminant validity is further supported. The cross loadings of all structures are shown in the following table 4 for the current investigation. The table shows the associations between the item and the latent construct in detail.

Table: IV: Cross Loadings

	DCP	FI	FL	MM
DCP1	0.780	0.574	0.547	0.541
DCP2	0.790	0.660	0.563	0.580
DCP3	0.802	0.608	0.517	0.562
DCP4	0.778	0.688	0.673	0.620
DCP5	0.792	0.632	0.592	0.631
DCP6	0.754	0.691	0.701	0.682
DCP7	0.803	0.661	0.536	0.700
FI1	0.699	0.799	0.658	0.699
FI2	0.684	0.854	0.788	0.845
FI3	0.543	0.737	0.587	0.638
FI4	0.673	0.794	0.716	0.728
FI5	0.683	0.814	0.668	0.688
FI6	0.691	0.846	0.736	0.707
FI7	0.662	0.814	0.692	0.729
FI8	0.645	0.753	0.680	0.650
FL1	0.518	0.601	0.755	0.689
FL2	0.562	0.642	0.772	0.717
FL3	0.711	0.768	0.870	0.764
FL4	0.547	0.656	0.737	0.682
FL5	0.662	0.718	0.803	0.722
FL6	0.596	0.638	0.788	0.709
FL7	0.576	0.753	0.815	0.725
MM1	0.604	0.699	0.650	0.788
MM2	0.628	0.710	0.669	0.786
MM3	0.550	0.693	0.753	0.806
MM4	0.651	0.682	0.739	0.810
MM5	0.683	0.720	0.752	0.850
MM6	0.639	0.727	0.719	0.803
MM7	0.638	0.693	0.740	0.801

MM8	0.706	0.818	0.810	0.826
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Heterotrait Monotrait – Ratio of Correlations

Finally, using HTMT Ratio process, another way was employed to ascertain the discriminant validity of the constructs. According to Henseler and Sarstedt (2015), the most cautious threshold values of the HTMT ratio and related confidence interval to verify discriminant validity are 0.9 and 1, respectively. As shown in table 5, all the HTMT values in this study are less than the threshold values of 0.9 and 1.

Table: V: HTMT Ratio

	CP	DFL	FI	MM
CP				
DFL	0.788			
FI	0.818	0.824		
MM	0.836	0.755	0.849	

Structural Model

The structural model investigates the statistical significance of all trajectory coefficients between exogenous (dependent) and endogenous (independent) variables (Hair et al., 2016). PLS-SEM method and bootstrapping techniques used and p-values path coefficients or t-values to determine the significance of structural correlations (Hair et al., 2017). The structural model tells us how well the theoretical model predicts the anticipated directions. The significance value, coefficient of determination (R²), and effect size (f²), were obtained to assess the structural model in the present study.

Two methods were used to test the hypotheses. Firstly, we checked the direct effect of mobile money adaptation & usage on digital financial inclusion. Second, when the direct effect was considerable, we conducted second test to establish the mediating effect of digital consumer protection, and digital financial literacy in the liasion between mobile money adaptation & usage and digital financial inclusion.

Hypothesis Testing/ Testing Direct Relationships

The path coefficients/direct effects and their significance values are graphically exhibited in Figure 1 and also shown in the table 4.6.

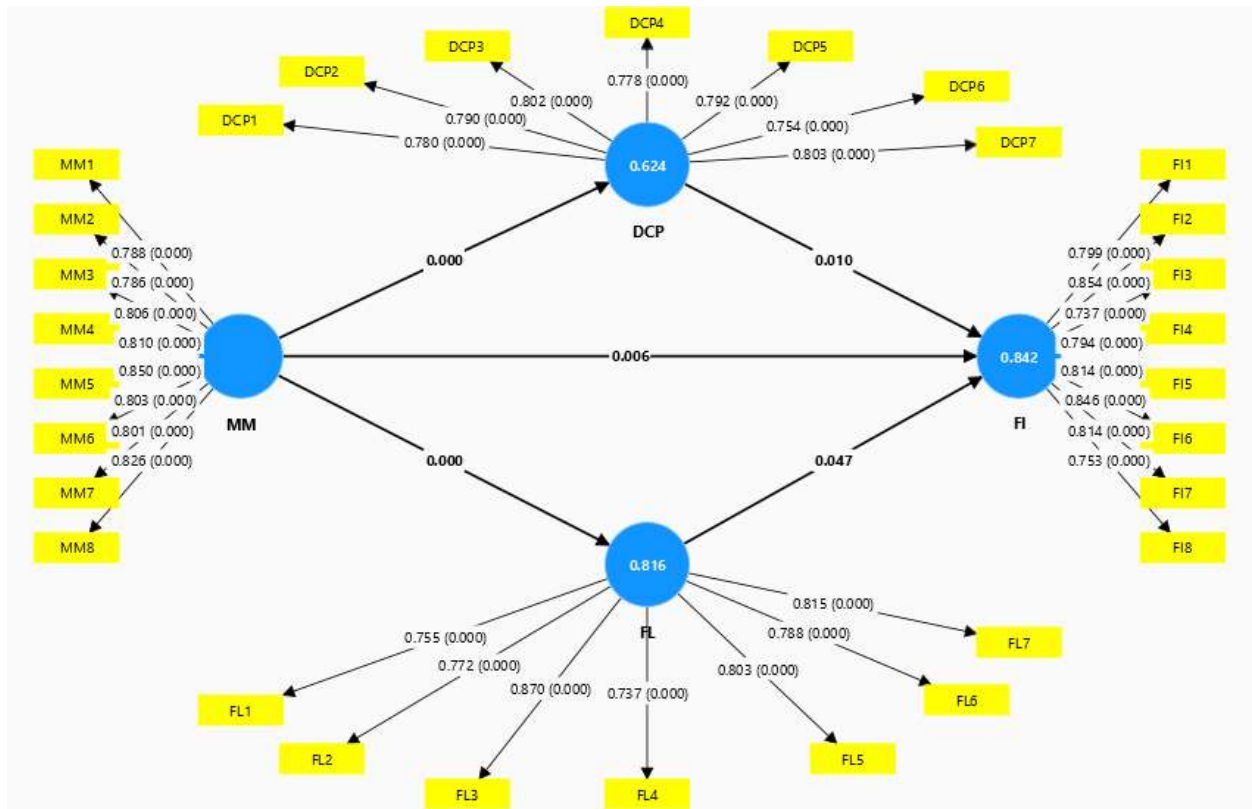


Table VI: Path coefficients/Direct effects of Independent Variable on Dependent Variable

Path Coefficient (β) and t -values

By using the bootstrapping method, we were able to measure the model's path coefficients, t-value, and p-values. 5000 is regarded as the minimal sample size for bootstrapping (Hair Jr et al., 2017). The direct effect of one construct, which is expected to be the reason of another variable that is expected to be the result, is shown by the coefficient method. Since path coefficients are estimated by correlation, path coefficients are standardized. Beta depicts that how much dependent variable financial inclusion is affected by the change in independent variable. These numbers were computed using SmartPLS' bootstrap function on 5000 samples. The table below contains the model's values.

Table VII: Hypothesis Testing

	Hypothesis	B	t-value	P	Decision
H1	MM → FI	0.135	3.513	0.000	Accepted
H2	MM → DCP → FI	0.088	2.666	0.008	Accepted
H3	MM → FL → FI	0.120	1.990	0.047	Accepted

H1: Mobile money adoption and usage positively affect financial inclusion

The tables shows that a significant and positive relationship between mobile money adaptation and financial inclusion i.e. there is increase in financial inclusion when the individual has more adaptation to mobile money apps with ($\beta=0.135$, $t=3.513$, $p=0.000$). Thus, the hypothesis is accepted.

H2: Digital consumer protection positively mediates the relationship between mobile money usage and adoption financial inclusion

The results in the table 4.7 shows that digital consumer protection positively mediates the connection of mobile money usage and adoption and financial inclusion with ($\beta=0.088$, $t=2.666$, $p=0.008$). Thus, the hypothesis is accepted.

H3: Digital financial literacy positively mediates the relationship between mobile money usage and financial inclusion.

In case of H3 financial literacy with mobile money adaptation and financial inclusion, the t-value is less than 1.996 at a p-value of 0.047. As the p-value is less than 0.05, while the t-value does not exceed the critical threshold for acceptance of H3, the p-value suggests evidence to accept H3. Therefore, in this situation, the evidence from the p-value leads to acceptance of H3, despite the tvalue falling short of the critical threshold.

Explanatory Power of the Model - R²

R-Square values show explanatory power of the model. R-square values must be in between 0 and 1. Higher prediction accuracy is demonstrated by values near to one, and vice versa. R-square value of 0.842 in this model showed a highest predictive accuracy of financial inclusion.

Table. VIII: Predictive accuracy test of dependent variable

No	Dependent Variable	R ²
1	Financial Inclusion	0.842

Effect Size f²

A little effect is shown by the FL f² value of 0.080, and medium influence by MM the f² value of 0.172, and DCP the f² value of 0.204, in relation with dependent variable FI (Cohen et al., 1998). The findings indicate that mobile money adaptation and digital consumer protection have a moderate impact on financial inclusion. The impact of financial literacy with financial inclusion however, is minimal. The table below displays the model's outcomes.

Table. IX: Effect size f-square on dependent variable FI

No	Constructs	f ²	Effect size
1	MM	0.172	medium

2	DCP	0.204	medium
3	FL	0.080	small

Table. 4.10 Total Effect

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics	P values
CP -> FI	0.330	0.342	0.159	2.079	0.038
DFL -> FI	0.279	0.278	0.148	1.884	0.046
MM -> CP	0.485	0.852	0.053	1.982	0.000
MM -> DFL	0.484	0.877	0.037	2.361	0.000
MM -> FI	0.387	0.873	0.034	2.684	0.000

Mobile Money Usage & Adoption (MM) significantly stimulates Digital Consumer Protection (CP) with (O = 0.485, p = 0.000), Digital Financial Literacy (DFL) with (O = 0.484, p = 0.000), and Digital Financial Inclusion (FI) (O = 0.387, p = 0.000). Additionally, CP positively impacts FI with (O = 0.330, p = 0.038), while DFL also shows a positive relationship with FI (O = 0.279, p = 0.046). The strong and significant path coefficients and p-values indicate that MM plays a critical role in enhancing CP, DFL, and FI, highlighting the prominence of digital financial services in fostering financial inclusion in Pakistan

Discussion and Implications

Discussion

We are living in a world where everyday new advancements are being made. In the field of finance, technology is also being developed which is referred to now as FinTech. This Fintech industry is full of different technology and one of the important dimensions in mobile payments which are online payments using the internet or smartphone via different service providers. This study aimed to achieve the objectives of finding determining factors of the adoption of these mobile payments. This study proposed three hypotheses one independent variable, two mediators and a dependent variable for which data was collected from Pakistani citizens of Lahore, Peshawar, Rawalpindi and Islamabad working in public or private sectors of age 20 to 65, both male and female and having education from matric to PhD.

There are 412 responses, with the majority being female and the number of female respondents being 54%. According to the second age characteristic, most respondents 121 were between the ages group of 36 & 45, with 95 respondents between the ages of 25 & 35, and 83 respondents between the ages of 18 & 25 and 65 respondents between the ages of 46 & 55. and 48 respondents were beyond 55. Third, people with various educational backgrounds were investigated, and the majority of respondents were graduates or higher, indicating that education

influences people's attitudes regarding financial literacy, technology, and contentment. 49% of people had Masters or above degrees and 32% had professional certification ICMA /CA / ACCA. Fourth, different position levels of respondents were also studied, majority of the respondents 36% were officers, 22% were team leaders, 19% were manager or unit heads, 15% were directors, and 8% were executive heads. It was determined that those with lower position levels lean more towards technology than those with higher position levels.

Theoretical Implications

The theoretical implications of this study are important because it shows the interaction between the benefits of mobile phones and changes in their use, consumer protection, information about digital financial literacy, and inclusion. One of the main offerings of this study is the use of digital consumer protection as a mediator of Mobile money adaptation & usage and financial inclusion relation. From fintech context, such as mobile money adaptation and use, the theoretical framework needs to be changed to take into account the importance of protecting people who use digital products as a suitable means of financial inclusion. The paper also confirms that trust, perceived security, and knowledge are important factors for influencing people's decision to use fintech's such as mobile platforms. This study demonstrates the instrumental protection of digital consumers and digital financial literacy, suggesting that policies and regulations can increase the impact of fintech on financial inclusion. Current assumptions about the use of fintech need to be changed to take into account the impact of regulatory support for the protection of digital consumers in the fintech sector. This study offers future researchers the opportunity to delve deeper into theoretical components and improve existing methods to enhance capturing the complexity of fintech-driven financial inclusion.

Practical Implications

This study has several insinuations for financial institutions, fintech service providers, and policymakers. Firstly, fintech companies need to ensure that users trust. This means that open communication, greater security, and better customer support will help build trust among customers. Secondly, investment in improving the user interface, reliability and speed of services is very beneficial in improving the quality of services, which is important for user retention. Security is huge these days. Consistently updating users on security information and educating them on how to protect their information can help reduce users' concerns. All about building trust. Third, institutions and policymakers should take measures to improve people's digital financial literacy. Fintech firms can encourage reading by providing tips and educational matters on their platforms in new and interactive ways. Third, policymakers will also nub on setting clear policies and procedures and making the transparent process regulation; This can increase trust

and influence fintech to meet people's financial needs. Specific strategies to improve digital financial literacy, especially among underserved units, can be a game changer. Finally, fintech firms, legislators and regulators should pay attention to the development of fintech sites. Regular analysis of user experience, security measures and performance of digital reading services will maintain the positive results of the strong development of fintech in the field of computing finance.

Limitations and Future Scope of this Study

The study, despite offering valuable insights, is constrained by the absence of a definitive list of mobile payment customers. It is imperative for future research to account for the distinctive environment in Pakistan, differing from regions like India, in terms of economic, regulatory, and technological factors. To enhance future investigations, a combination of quantitative and qualitative research methods should be considered, alongside exploring additional fintech services beyond mobile payments such as AI bots, robo-advisors, peer to peer lending. Moreover, expanding the sample size will bolster the generalizability of findings and deepen the fintech impact understanding on financial practices in Pakistan.

Conclusions

This study determined the connection among digital financial literacy and financial accounting regarding consumer protection, mobile money spending and usage, with data gathered from MSMEs acting as intermediaries in Lahore, Peshawar, Rawalpindi and Islamabad. Therefore, this study shows that protecting digital consumers has an important role in discussions about mobile money use and financial inclusion. These finding supports H2 of this study. Ensuring that consumers are adequately informed about making financial decisions to avert bigoted practices by service providers means they should be able to use the recovery process to resolve conflict between mobile money platforms. Additionally, laws may exist to protect consumers, but they must be enforced and violators must be severely punished. Additionally, this paper shows that digital financial literacy has a profound impact on adaptation of mobile money & usage in relation to financial inclusion. This is the same in H3. In fact, a higher level of digital financial literacy empower persons with the requisite skills and knowledge to effectively utilize mobile money services. This empowerment enhances access to financial tools, enabling individuals to participate actively in the formal financial system. Lastly, Reliability analysis was employed as a criterion for determining whether primary data was trustworthy or not, i.e. the quality of data utilised for research analysis. The correlation matrix described the link between dependent and independent components, and empirical data demonstrated that the variables had a substantial and positive association. Regression analysis was performed, and three hypotheses were investigated.

According to empirical research, all these factors have a substantial and positive link with financial inclusion.

Appendix – I Questionaries

Dependent Variable: Financial inclusion

Scale on financial inclusion was developed by Beck et al., (2006) and refined by (Ardic et al., 2011); (Cihak et al., 2012)

DV	Financial inclusion	SA	A	N	D	SD
FI1	FinTech services have expanded my access to financial products and services.					
FI2	FinTech services have increased my ability to save and invest my money.					
FI3	FinTech adoption has made it easier for me to send and receive money.					
FI4	FinTech services have improved my ability to access credit and loans.					
FI5	The level of services provided by mobile money apps are satisfactory.					
FI6	The cost incurred in mobile money transactions are affordable.					
FI7	The Fintech telecom networks are reliable.					
FI8	Mobile money transactions are less time consuming.					

Mediating 01: Digital Consumer Protection

Malady (2016) refined by Park & Mercado (2018)

MED1	Digital Consumer Protection	SA	A	N	D	SD
CP1	I feel secured in using the mobile money apps					
CP2	I'm not worried to use mobile money because of its safety.					
CP3	The existing laws are effective to protect mobile money users against fraud.					
CP4	I believe that the associated risk with mobile money is minimal					
CP5	My details are easily identified by the mobile money system if a fraudster uses it					
CP6	I can easily stop a wrong mobile money transaction.					
CP7	It is easy to get all the useful information about the mobile money.					

Mediating variable 2: Digital Financial Literacy

The scale of digital financial literacy was initially developed by Hilgert & Hogarth, (2003).

MED2	Digital Financial Literacy	SA	A	N	D	SD
DFL1	I am knowledgeable about the various features and functionalities of fintech apps.					
DFL2	I am aware of the potential risks and security measures associated with using digital payment systems.					
DFL3	I know how to troubleshoot common issues related to digital financial transactions.					
DFL4	I am familiar with the terms and concepts related to digital financial service such as savings, borrowings, investments					
DFL5	I have knowledge about return on assets and return on equities					
DFL6	I have a knowledge about interest rate					
DFL7	I have a knowledge about bonds and mutual funds					

Independent variable: Mobile Money Adaptation

The scale on mobile money adaptation from Aker (2013) and refined by Suri and Jack (2016); (Okello et al., 2018).

IV	Mobile Money Adaptation	SA	A	N	D	SD
MM1	Mobile money apps helps me to perform my transactions in privacy					
MM2	Mobile money apps is helpful in the management of my transactions					
MM3	Access to mobile money apps speeds my transactions					
MM4	I use mobile money apps because it is available 24 hours daily					
MM5	I carry little cash around because I use mobile money apps					
MM6	I prefer to use mobile money apps instead visitng of banks					
MM7	I'm concerns with the costs incurred in using mobile money apps					
MM8	The registration process for mobile money services is easy					

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