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"Role of technology towards financial inclusion on SMEs in Pakistan"

By:

Shahzeb Dad ***01-321231-043***

Supervisor:

Rabia Umer

Department of Business Studies
Bahria University Islamabad

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Names of Student(s): Shahzeb Dad Enroll # 01-321231-043

Class: MBA (1.5)

Approved by:

_____

Rabia Umer

Supervisor

_____

Dr. Khalilullah

Internal Examiner

_____

Dr. Naeem Ullah

External Examiner

_____

Dr. Syed Haider Ali Shah

Research Coordinator

_____

Dr. Khalil Ullah Mohammad

Head of Department

Business Studies

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ABSTRACT

The aim of this research study implicates to identify and understand the influence of financial literacy and financial technology toward financial inclusion of SMEs in Pakistan. Financial inclusion has emerged as an essential component for anticipating economic development, especially in developing markets. This study gives a thorough review of trends in financial inclusion on SMEs through technology, focusing on its pivotal impact in developing markets. This study portrays a thorough review of trends in trends in financial inclusion through technology, focusing on its transformative impact in emerging markets. In recent years technological advancements have paved the way for innovative financial solutions, topping down usual barriers to access and bridging gaps in financial services. Digital wallets, blockchain technology, and mobile banking have emerged as crucial instruments for reaching previously marginalized groups with financial services. Digital wallets, blockchain technology, and mobile banking have all emerged as crucial instruments for reaching hitherto unreached groups of people with financial services. This analysis explores the major developments influencing financial inclusion in developing nations, emphasizing the role of technology as a facilitator. The emergence of mobile banking has revolutionized the financial services industry by enabling those with restricted access to traditional banking infrastructure to carry out financial transactions with ease. Due to its safe and practical way for users to send, receive, and save money, digital wallets have become more and more popular. Because of its decentralized and transparent structure, blockchain technology has made it easier to create cutting-edge financial products like cryptocurrencies and opened up new possibilities for financial inclusion. Nonetheless, issues still exist, such as worries about data security, legal frameworks, and the level of digital literacy of users. The assessment critically looks at these issues and looks at possible fixes to make sure that financial inclusion programs in emerging economies continue to flourish in a sustainable way. Furthermore, the COVID-19 epidemic has shown how crucial it is to have reliable and easily available financial systems. The assessment evaluates how the pandemic has affected the developments in financial inclusion, pointing out the vulnerabilities that have been made public as well as the chances to better integrate technology in handling economic shocks. This review adds to the growing body of knowledge about financial inclusion in emerging markets via technology. It provides insightful information for financial institutions, governments, and tech entrepreneurs looking to use technology to promote equitable economic growth by highlighting trends, obstacles, and possibilities.

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CHAPTER 1

INTRODUCTION

1.1 Background of the study:

Small and medium-sized businesses are crucial to the nation's economic development and progress. SME's promote wealth maximization, job possibilities, and innovation. However, a lot of SMEs have a hard time getting approach to financial resources and services, which might limit their ability to develop and survive. The availability and accessibility of financial products and services to individuals and enterprises, especially to those who are disadvantaged by the traditional financial system, is known as financial inclusion. Access to banking services, savings accounts, insurance, loans, and a host of other financial goods and services that can assist individuals and businesses in managing their money, making investments in the future, and minimizing risks is all part of financial inclusion. SMEs play an important role in creating employment and advancing the economy has already been acknowledged and extensively explored (Shofawati, 2019). Even with SMEs' critical role in economic development, scholars and policy makers continue to emphasize SMEs' financial inclusion. The problem is worse in developing nations because of a number of internal and external barriers that impede inclusion, including poor infrastructure, corruption, and technology limitations. Furthermore, constraints on both the supply and demand sides have a bigger effect on SMEs' financial inclusion (Blancher et al., 2019).

Technology has arisen as a powerful tool to stimulate financial inclusion for SMEs in Pakistan, offering innovative and smart solutions which can help SMEs to overcome traditional barriers in retrieving finance, managing resources and contributing to the broader economy. This study emphases on the role of technology in developing financial inclusion for SMEs in Pakistan, examining the impact in enhancing access to banking services, facilitating loans and credit, improving financial management capabilities, growing market openings, and driving overall growth and flexibility for small businesses.

Technology is changing the game for small and medium-sized businesses (SMEs) by offering digital banking, online credits, Payment solutions, and tolls for financial management. This shift is making it easier for SMEs to operate and engage with the financial system. With data analysis

block chain, and fintech revolution, and avoid barriers. This opens new avenues for growth and success.

Technology particularly rise of fintech is transforming how SMEs access financial services by opening doors to capital by offering alternative funding options like peer-to-peer lending and crowdfunding. These bypass traditional methods and use smart data analysis to assess creditworthiness. This means even businesses with limited credit history or guarantee can finally get the money they need to expand and grow (Disse & Sommer, 2020; Eca et al., 2021). Technologies like cloud accounting and mobile banking tools provide efficiency to SMEs in managing finance. They can track their expenses, send and receive payments, and access their financial data anywhere, anytime. This not only saves time, but also helps SMEs to make smarter financial decisions for the business (Shofawati, 2019).

Technology streamlines the financial process, so businesses can spend less time on paperwork and more time focusing on excelling in their business. Automated loan applications and digital record-keeping save both you and financial institutions money and time (Rasyid & Setyowati, 2017).

Michelle (2016) highlights the importance of digital financial services for the public, emphasizing its role in enhancing security and convenience compared to traditional methods like keeping cash at home or carrying it while traveling. She notes that digital finance involves various stakeholders Including banks, mobile operators, fintech service providers, regulators, agencies, retailers, and consumers. Michelle's research aimed to understand how digital finance impacts financial inclusion in Kenya's banking industry. Internationally, digital finance is recognized for its potential to reduce the expenditure of granting financial services, thus promoting financial inclusion (Asian Development Bank, 2016). Advanced account services are becoming increasingly crucial in bridging the gap between development and financial inclusion. The use of digital financial services has grown significantly, especially among individuals with little to no prior experience with formal financial services (Villasenor, Darrell & Lewis, 2015).

The growth of digital payment programs has provided a chance to connect low-income individuals with providers offering savings, credit, and coverage services (Radcliffe & Voorhies, 2012). Additionally, advancements in accounting services and market developments have created opportunities for people with limited financial management options and lower incomes (McKee, Kaffenberger & Zimmerman, 2015).

1.2 Problem Statement

In Pakistan, despite advancements in technology, significant portions of the population remain financially excluded, facing barriers to accessing conventional financial services. The role of technology in fostering financial inclusion has garnered attention due to its potential to overcome traditional obstacles. However, the extent to which technological interventions effectively address the multifaceted challenges of financial inclusion in Pakistan remains unclear.

Even with the growing accessibility of technology-based financial solutions, Small and Medium-Sized Businesses (SMEs) still encounter major obstacles when trying to use these services to improve their financial inclusion. Although most people agree that technology has the potential to help SMEs become more financially inclusive, little is known about the precise obstacles and limitations that SMEs face when attempting to use technology-enabled financial services in various settings.

The adoption of technology-driven financial solutions is hindered, for instance, by legal restrictions, restricted access to infrastructure, and low levels of digital literacy among employees and owners of SMEs (GSMA, 2020). Additionally, financial service providers face difficulties in efficiently reaching and servicing the fragmented SME market, particularly in developing nations.

In addition, there is a lack of detailed research that looks at how technological advancements like online lending, digital payments, and mobile banking affect numerous SME categories, such as microenterprises, women-owned companies, and businesses located in rural areas (World Bank Group, 2021). Designing focused interventions and legislative initiatives to support equitable access to financial services requires an understanding of the distinct effects that technology has on different kinds of SMEs.

Understanding the complex interactions between technology, market dynamics, regulatory frameworks, and firm-level factors that influence SMEs' access to and application of technology-enabled financial services is vital for tackling these problems. Through the process of identifying and resolving these problems, interested parties may create more potent plans for utilizing technology to advance financial inclusion and unleash the expansion potential of SMEs.

1.3 Research Gap

There is a noticeable lack of information about how Small and Medium Enterprises (SMEs) in developing nations effectively implement and adopt technology-driven solutions, especially when it comes to institutional and regulatory frameworks. This is true despite a growing body of knowledge on the role of technology in encouraging financial inclusion for SMEs. While a number of studies have demonstrated how technology can improve small and medium-sized enterprises' access to finance, there is still a dearth of empirical research that specifically looks at the obstacles and enablers that small and medium-sized enterprises face when adopting technology-based financial services in a variety of institutional settings.

For instance, while some research has looked at how regulations governing digital identity systems or branchless banking affect SMEs' adoption of digital financial services, a thorough analysis that takes into account how market structure, firm-level traits, and regulatory frameworks interact to influence SMEs' adoption of technology-enabled financial solutions is lacking (Demirguc-Kunt et al., 2020). Furthermore, while financial literacy and digital skills are frequently emphasized in the literature as being crucial for SMEs to successfully use technology-driven financial services, little research has been done to specifically look at the ways that financial education initiatives and capacity-building programs can improve SMEs' readiness and ability to adopt these services.

In order to successfully advise policymakers, regulators, and development practitioners on how to create and carry out interventions that effectively harness technology to promote financial inclusion for SMEs in a variety of institutional contexts, it is imperative that this research void be filled. Through an improved knowledge of the complex interactions among regulatory frameworks, market forces, and firm-level elements that influence small and medium-sized enterprises' adoption of technology-based financial services, stakeholders can express more focused and situation-specific approaches to assist SMEs in utilizing and gaining the rewards of digital financial solutions.

1.4 Research Questions

1 How do SMEs utilize digital banking, mobile payments, and online lending for financial inclusion?

2 What is the impact of digital financial literacy on SMEs adaptation of technology driven financial services?

3 What outcomes result from technology enabled financial inclusion services for SMEs financial inclusion?

4 What challenges hinder integrating technology into financial inclusion strategies for SMEs?

5 How can policymakers improve financial technology and digital financial literacy initiatives for SMEs financial inclusion?

1.5 Research Objectives

a) To analyze the effect of technology on SMEs financial inclusion through digital banking, mobile payments, and online lending.

b) To examine how digital financial literacy influences SMEs adaptation of technology-driven financial services.

c) To measure the effectiveness of technology-enabled financial services in enhancing SMES financial inclusion.

d) To identify challenges and opportunities in integrating technology for SMEs financial inclusion strategies.

e) Develop actionable recommendations for policymakers and financial institutions to optimize financial technology and digital financial literacy initiatives for SMEs.

1.6 Significance of Study

Understanding the significance of exploring how technology fosters financial inclusion for SMEs in Pakistan is crucial for appreciating its profound impact on the nation's economic landscape and societal well-being. SMEs serve as vital engines of economic growth, contributing to job creation, innovation, and the diversification of Pakistan's economy. By leveraging technology to enhance SMEs' access to financial services, we unlock their potential to expand operations, boost productivity, and ultimately bolster GDP growth. This, in turn, translates into tangible benefits for poverty alleviation efforts, as increased access to credit, savings, and insurance empowers SMEs, particularly those owned by marginalized groups, to invest in their businesses, generate income, and elevate themselves out of poverty.

Moreover, embracing technology-driven financial inclusion facilitates inclusivity by reaching SMEs in remote or underserved areas, breaking down geographical barriers, and fostering their integration into the formal economy. This not only leads to a more equitable distribution of resources and opportunities but also promotes sustainable and inclusive development.

Furthermore, digital financial services offer SMEs enhanced efficiency in conducting transactions, reduced operational costs, and greater opportunities for innovation. By providing SMEs with access to mobile banking, digital payments, and online lending platforms, technology opens new avenues for financing and stimulates entrepreneurial activity within the sector.

Understanding the role of technology in SME financial inclusion has profound policy implications. Insights gained from this exploration can inform policymakers in crafting regulatory frameworks and interventions that create an supporting surroundings for the adoption of digital financial services. By designing targeted policies and incentives, policymakers can catalyze technological innovation and expand access to financial services for SMEs, thereby enhancing the competitiveness of Pakistan's SME sector in the global market. Studying the intersection of technology and financial inclusion for SMEs in Pakistan holds the key to unlocking their full potential, driving economic growth, and fostering inclusive development that benefits all segments of society.

1.7 Scope of studies

Analyzing how technology and financial inclusion interact with small and medium-sized businesses (SMEs) calls for a multidisciplinary approach that cuts across multiple fields. To evaluate the technological infrastructure's suitability for SMEs to implement digital financial services, researchers examine elements such as mobile and internet connectivity. They examine how well digital payment methods, such digital wallets and mobile money, work to provide SMEs with accessible financial services. Furthermore, the potential for fintech innovations like blockchain solutions and peer-to-peer lending to increase SMEs' access to financing is being investigated. To ensure compliance and consumer protection, regulatory frameworks are also examined in order to determine how they may help or hinder SMEs in their efforts to integrate technology into financial inclusion initiatives. The effectiveness of capacity-building programs, which include skills training and digital literacy programs, in enabling SMEs to use technology for financial inclusion is assessed. In addition, case studies and best practices are examined, with lessons learned from globally successful efforts. These initiatives' social and economic effects on SMEs—including the eradication of poverty and the creation of jobs—are carefully evaluated. To promote innovation and increase SMEs' access to financial services, the importance of collaborations between governments, financial institutions, and fintech companies is also

explored. In the end, researchers hope to provide concrete policy suggestions that will foster an atmosphere that makes it easier for SMEs to use technology to advance financial inclusion, hence advancing larger objectives of economic growth and poverty reduction.

1.8 Research Contribution

In exploring the role of technology in adopting financial inclusion for Small and Medium Enterprises (SMEs), this research aims to make various key contributions.

Firstly, it pursues to provide a subtle understanding of the specific challenges confronted by SMEs in accessing formal financial services in the context of developing economies. SMEs often encounter barriers such as limited guarantee, lack of credit history, and high transaction costs, which hinder their ability to secure financing from traditional financial institutions. By identifying and analyzing these challenges, the research aims to shed light on the unique needs of SMEs in the realm of financial inclusion.

Secondly, this study endeavors to examine the effectiveness of technological interventions, such as digital payment platforms, mobile banking, and alternative lending models, in addressing the financial inclusion gap for SMEs. By evaluating the effect of these technologies on improving access to credit, facilitating transactions, and enhancing financial management capabilities for SMEs, the research aims to provide actionable insights for policymakers, financial institutions, and technology providers.

Furthermore, this research seeks to explore the role of digital literacy and technological infrastructure in enabling SMEs to leverage digital financial services effectively. In many cases, SMEs may lack the necessary skills and resources to fully capitalize on digital finance solutions, highlighting the importance of capacity-building initiatives and investment in digital infrastructure. By inspecting the socio-economic factors that influence SMEs' adoption of technology-enabled financial services, the research aims to inform strategies for promoting inclusive and sustainable growth within the SME sector.

Finally, this study aims to contribute to the broader discourse on financial inclusion by highlighting the interconnectedness between technological innovation, economic development, and social empowerment. By fostering a more inclusive financial ecosystem that empowers SMEs to thrive

and contribute to economic growth, this research seeks to advance the goal of building more resilient and equitable societies.

Overall, this research seeks to provide constructive insights into the role of technology in encouraging financial inclusion for SMEs, with the aim of informing evidence-based policy interventions and fostering sustainable development outcomes.

1.9 Organization of Study

The first step in planning a study on how technology might help SMEs advance financial inclusion is creating an introduction that explains the significance of the topic, sets goals, and places it in the context of previous research. After that, a detailed assessment of the literature is conducted to identify research needs in the areas of financial inclusion, SME finance, and the impact of technology on financial services. The research design, including sample selection, data collection techniques, and ethical issues, are outlined in the methodology section. The following sections cover topics: evaluating the state of the technological infrastructure, investigating fintech solutions and the effectiveness of digital payment systems, assessing the regulatory landscape, evaluating case studies and best practices, and analyzing data analytics and credit assessment tools. The social and economic effects of technology-driven financial inclusion initiatives on small and medium-sized enterprises (SMEs) are critically assessed, and then policy recommendations and conclusions are provided, summarizing important findings and suggesting directions for further study. This methodical approach makes it possible to thoroughly investigate how technology might support SMEs' financial inclusion, providing information that is useful for both academic research and policy development.

CHAPTER 2

Literature Review

2.1 Overview of Literature

The backdrop to the issue under investigation in this thesis is thoroughly defined in Chapter 1, which also lays out the goals and objectives of the research. The first research goal is covered in this chapter, which also offers the theoretical framework for the investigation. It addresses the literature review for literature.

2.2 Digital Finance: Concept and benefits

2.2.1 Concept

According to professionals, digital finance states to be the provision of financial services via computers, smartphones, the internet, or cards that are associated to a trustworthy digital payment system. Likewise, digital finance is defined by a McKinsey report as "financial services delivered by mobile phones, the internet, or cards" (see Manyika et al., 2016: p.4) in (Ozili,2018). Gomber et al. (2017) in (Ozili, 2018) state that digital finance is the vast array of new financial products, financial enterprises, software related to finance, and innovative ways for customers to communicate and interact that are provided by FinTech corporations and creative financial service providers. Despite the lack of a universally accepted definition, most agree that digital finance refers to all goods, services, infrastructure, technology, and/or products that allow people and businesses to accept payments. Without having to contact the financial service provider directly or visit a bank office, savings and credit capabilities can be accessed online. The banking business in Europe has come to rely on the internet as an extensively accepted distribution channel. Both new and established banks are finding that the internet is more effective than other channels in this regard (Barbesino, Camerani, and Gaudino, 2005). (Ozili, 2018). Financial inclusion goals in developing nations and poverty reduction are the two main aims of financial services made available through digital platforms (United Nations, 2016; Ozili, 2018). Any digital financial service should ideally consist of three main elements: retail agents, a digital transactional platform, and the use of a device by both customers and agents most frequently a mobile phone—to do business using the digital platform in (Ozili, 2018). In order to use digital financial services (DFS), a user must have an active bank account that they own (or have permission from a third party to use), and they must have enough money in their accounts either in excess of their available balance

or with room for overdraft to make cash outflows or cash inflows through digital platforms like the internet, mobile devices, and personal computers (Ozili, 2018).

2.2.2 Digital finance

This is the setting up of a arrangement of financial and monetary benefits that are managed and delivered utilizing mobile or web technologies in conjunction with a team of experts (Peake, 2012). (Michelle, 2016). Per World Bank (2015), as stated in (Michelle,2016), computerized money-related services refer to the use of cutting-edge technologies (web, mobile communication technology) to access financial processing and carry out fiscal transactions. Therefore, the concept of "digital financial services" often refers to the sophisticated technology that can be used to deliver financial services to many suppliers and recipients. The adoption of digital remote methods, such as electronic financial transfers, mobile money, card payments, and e-money, can make this possible (Asian Development Bank, 2016). (Michelle, 2016). Saving money, obtaining access to credit and protection, and executing transactions using leading-edge channels like cell phones, cards, PCs, tablets, and so forth are the main goals of computerized financial services, or DFS (Martin et al., 2016). (Michelle, 2016). In times of need, consumers can obtain money from distant family members, friends, and business associates thanks to digital financial payment products, which lowers the chance that they would ever experience poverty in the first place (Klapper, ElZoghbi & Hess, 2016). (Michelle, 2016). In comparison to maintaining money at home or traveling with money, innovative budgetary services, such as flexible cash, provide consumers with better accommodations, security, and protection (Villasenor, Darrell & Lewis, 2015) in Michelle (2016). Additionally, computerized back plays a crucial role for small businesses since it provides them with electronic payment systems, safe budgetary items, and the ability to compile a financial history (Mujeri, 2015). (Michelle, 2016). This is the setting up of a combination of financial and monetary benefits that are managed and delivered using mobile or web technologies in conjunction with a team of experts (Peake, 2012). (Michelle, 2016). Per World Bank (2015), as stated in (Michelle,2016), computerized money-related services refer to the use of cutting-edge technologies (web, mobile communication technology) to access financial administrations and carry out budgetary transactions. Therefore, the concept of "digital financial services" often refers to the sophisticated technology that can be used to provide financial services to many providers and recipients. The adoption of digital remote methods, such as electronic financial transfers, mobile money, card payments, and e-money, can make this possible (Asian Development Bank,

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2.2.3 Benefits

There are several benefits to digital finance. For example, since about 50% of individuals in the developing world currently own a mobile phone (WorldBank, 2014), digital finance can result in amplified financial inclusion, the spread of financial facilities to non-financial industries, and the expansion of basic facilities to individuals (Ozili, 2018). Secondly, digital finance has promised to offer secure, convenient, and reasonably priced financial services to underprivileged people in developing nations (CGAP). Millions more impoverished clients could benefit from a shift from cash-primarily based transactions to formal digital economic transactions on safe digital structures thanks to current improvements in the accessibility and affordability of digital financial services globally (CGAP). Three, digital finance aims to increase the gross domestic product (GDP) of digitalized economies by granting individuals and small, medium, and large firms' easy access to a variation of financial products and services (including credit facilities). This can increase collective expenditure, which raises GDP levels. More financial intermediation and economic stability can result from digital finance, benefiting consumers as well as the local economy in which they live with their families. Four, the performance of banks can benefit over the long run from innovation in digital finance. In (Ozili, 2018), Scott, Van Reenen, and Zachariadis (2017) investigate how the application of SWIFT—a network-based technology infrastructure and set of standards for global interbank telecommunication—affects bank performance. They investigate 6848 banks across 29 European and American nations. They discover that: (i) the adoption of SWIFT has a considerable long-term impact on profitability; (ii) small banks are more affected by

these profitability effects than major banks; and (iii) there is a notable network effect on performance. Five, governments also gain from digital finance because it offers a platform to support increases in overall spending, which in turn leads to higher tax collection from an increase in the amount of financial transactions (Manyika et al., 2016) in (Ozili, 2018). Sixth, regulators of the financial and monetary systems stand to gain from the widespread use of digital banking since it can drastically cut down on the flow of counterfeit or bad money, among other things. Customers can also profit from digital finance by having more influence over consumers' personal finances, their capacity to make and receive payments quickly, and their ability to make swift financial decisions (Ozili, 2018). In summary, digital finance ought to improve the well-being of people and businesses with executive bank accounts and enough money in them to execute a variety of financial activities. However, only if the cost of providing digital financial assistance is minimal or zero will the predicted benefits of digital banking be completely realized (Ozili, 2018).

2.3 Digital financial literacy

Digital financial literacy must be included in pertinent financial data due to the range of up-to-date digital financial goods and services. Online transactions have replaced traditional methods of making financial transactions since the COVID-19 epidemic broke out. For this reason, developing one's digital financial literacy abilities is essential to carrying out financial transactions successfully. According to earlier research Alliance for Financial Inclusion (AFI), 2021; Lyons & Kass-Hanna, 2021; Morgan et al., 2019; Tony & Desai, 2020), digital financial literacy is a multifaceted notion that encompasses both financial and digital literacy. DFL is described as "financial literacy in digital financial technology" by Setiawan et al. (2022).

Five dimensions were used by Morgan et al. (2019), Tony and Desai (2020), and Lyons and Kass-Hanna (2021) to define digital financial literacy, On the other hand, AFI (2021) conceptualized digital financial literacy using three dimensions. The dimensions given in the literature are comparable to one another. All studies have, in reality, integrated information, practical expertise, and self-defense. Knowledge is the ability to understand the many digital financial services and products that are available (AFI, 2021; Lyons & Kass-Hanna, 2021; Morgan et al., 2019; Setiawan et al., 2022), such as online banking and digital wallets (Lyons & Kass-Hanna, 2021). Possessing the knowledge or expertise to use digital financial goods or services is known as practical

knowhow. The capacity to recognize hazards associated to digital financial transactions and be aware of one's own self-defense mechanism against such risks is known as self-protection.

Digital financial literacy is yet being measured in its beginning, even though there are established standards for financial literacy. Furthermore, DFL and its measurement have only been the subject of a few numbers of investigations (Setiawan et al., 2022; Tony & Desai, 2020). While Setiawan et al. (2022) evaluated the connection between Digital financial literacy and financial management activities including saving and spending behavior, Tony, and Desai (2020) investigated the effect of Digital financial literacy on financial inclusion in India. Subjective measurements of digital financial literacy were used by Setiawan et al. (2022) using the multi-dimensions described by Morgan et al. (2019). In the meanwhile, a list of multidimensional indicators was provided by Lyons and Kass-Hanna (2021) as a foundation for creating digital financial literacy measurement questionnaires.

2.4 Financial inclusion: Concept and Benefits

2.4.1 Concept

"Digital approach to, and the use of, conventional financial services by the omitted and underserved population" is how the CGAP identifies digital financial inclusion (CGAP, 2015) in (Ozili, 2018). To date, at least 80 nations (GSMA, 2014) have introduced novel digital financial services through mobile phones and related devices (Ozili, 2018). The goal of these initiatives is to persuade millions of impoverished consumers to exclusively utilize digital financial services relatively than cash-based transactions. The premise behind the digital financial inclusion process is that the underprivileged and/or excluded groups have official bank accounts and require digital access to do simple financial operations from a distance. Should the marginalized and underprivileged populace comprehend and are able to be influenced of the proposed advantages of digital financial inclusion, According to Ozili (2018), a positive digital financial inclusion program should be custom-made to the needs of the underprivileged and excluded population and should be provided reliably at a cost that is both reasonable for clients and bearable for providers.

2.4.2 Financial inclusion

This states to the idea that access to and usage of an adequate suite of financial services by households and businesses is vital for progress since it can both improve the lives of low-income families and spur financial program (IDB, 2015) in (Michelle, 2016). Budgetary integration also

suggests that customers have easy access to recognized financial services like bank and store accounts, credit, installment payments, and protection, and that they are aggressively and successfully using these resources to fulfill their unique needs (Klapper, El-Zoghbi & Hess, 2016). (Michelle, 2016). On the other hand, financial deepening refers to the expansion or modification of the pool of financial services that are particularly altered to meet the needs of the public at all levels (Bharat, 2014). Expanding financial inclusion has an influence on many development goals (IDB, 2015; Michelle, 2016) and goes well beyond financial depth.

2.4.3 Financial inclusion in Pakistan

Pakistan has made financial inclusion a national priority, surpassing the progress of many other nations. Support for the creation of microfinance banks was initiated in 1990, and after receiving official approval, the banks finally opened for business in 2001. In 2008, Pakistan was the pioneering nation among other nations to use branchless banking. It was the institutions' initial move toward providing digital financial services, but in 2015, the national financial inclusion strategy was approved, which increased support for the initiative. Only 16% of adults worldwide had bank accounts at the time of approval, and only 11% of women held bank accounts, making this one among the lowest levels of financial inclusion in history (Rusmussen, 2018). Furthermore, official financing for housing, agriculture, and SMEs was at an all-time low. As a result, the State Bank of Pakistan devised the national financial inclusion strategy after consulting with many parties, including banks, associations, donor agencies, and departments of the federal and local governments. By 2020, half of the mature population should have admission to financial services, according to the policy adopted by the central bank of SBP. Furthermore, the primary goal of the national financial inclusion plan is to expand lending to priority sectors including SMEs and the agriculture sector and to promote digital financial services to attain universal financial inclusion (NFIS, 2017).

The World Bank Group's Global Findex Report 2017 states that throughout a two-year period, the percentage of account holders increased from 13 to 21% due to SBP's implementation of several national financial inclusion plan initiatives, including the Asaan (simple) Mobile Account Scheme and the establishment of Asaan accounts. Additionally, to support small and medium-sized businesses SBP has initiated a financial inclusion and infrastructure project in Pakistan, targeting women entrepreneurs and SMEs. The SBP allocated banks and development financial institutes

(DFIs) financial targets in 2016, which the institutes successfully met. Nevertheless, financial institutions still have until 2020 to meet the aim of Rs 1 trillion. According to research, there is a significant demand for Islamic finance among SMEs. Approximately 25% of SME population does not have access to any financing capability because they prefer Islamic financing that adheres to Shariah principles (Rasheed and Siddiqui, 2018). To increase financial inclusion, SBP has set financing targets for Islamic banks; nonetheless, it has been noted that these banks are less likely to lend to small and medium-sized businesses. Islamic banks were required to reach the Rs 65 billion funding objective for SMEs by December 2017, but as of now, only a portfolio of Rs 42 billion has been disclosed. In a same vein, the aim for 2018 was Rs 88 billion, with Rs 31 billion recorded as unresolved financing for Islamic SME. By December 2020, an increase of Rs 199 billion is anticipated from Islamic banks in the portfolio of SME lending (SBP, 2018).

Data indicates that financial inclusion progress is not up to par despite several initiatives. Figure 1 from the World Bank's 2017 Findex illustrates the slow progress of financial inclusion in Pakistan, as the proportion increased by only 8% between 2014 and 2017, in contrast to neighboring countries like Bangladesh and India. The newest Blancher et al., (2019) IMF report on financial inclusion in the Middle East and Central Asia highlights Pakistan's continued lowest percentage of male and female users of financial accounts among other emerging nations, suggesting that not much has changed in the country.

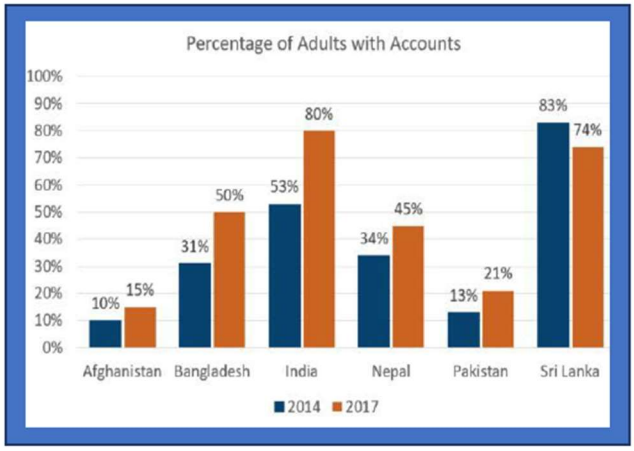

Figure 1 – Percentage of Adults Accounts 2014-2017 World Bank Findex, (2017)

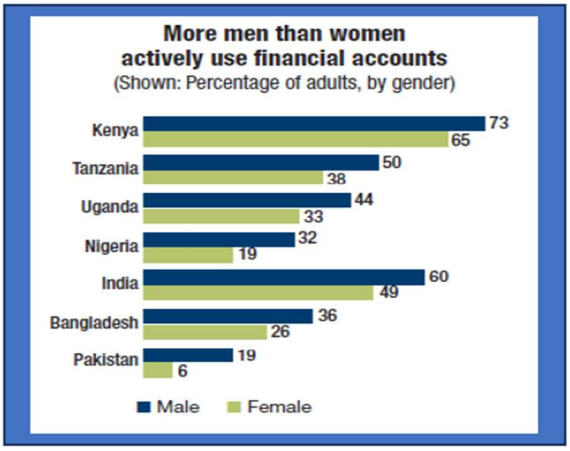

Figure 2 – Adults Population using Financial Account IMF, (2019)

Nonetheless, Figure 2 illustrates the predominance of male account holders, a trend that is evident in practically all emerging nations. Comparably, the SME sector continues to struggle with

funding, with Pakistan having the lowest average share of SMEs globally—roughly 7% of total bank loans. Even though State bank of Pakistan has announced several programs and initiatives under the national financial inclusion strategy to provide formal financing to SMEs, financial institutions' performance has not been particularly noteworthy. Figure 3 of the research by Blancher et al. (2019) on the worldwide financial inclusion of SMEs illustrates Pakistan's current financial facilitation status.

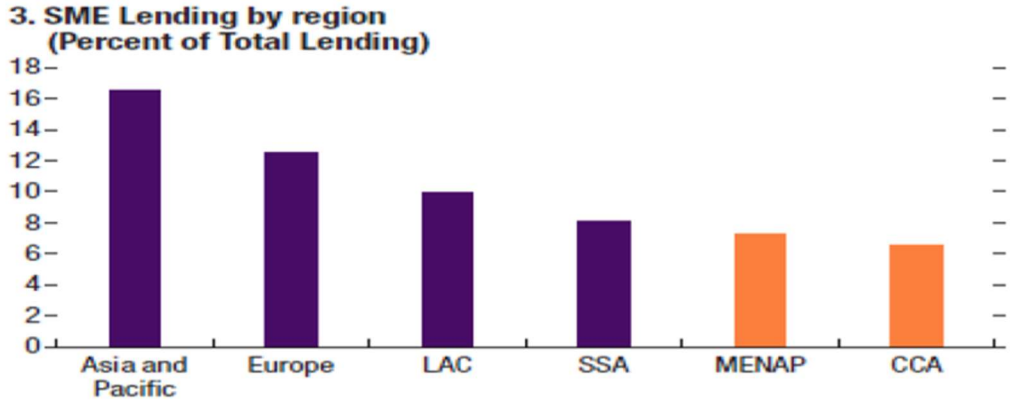

Figure 3 – SME lending by region (LAC= Latin America and Caribbean; SSA= Sub-Saharan Africa; MENAP=Middle East, North Africa, Pakistan, and Afghanistan; CCA= Caucasus and Central Asia)

Source: Blancher et al., (2019)

According to the IMF analysis, by bridging this financing gap for SMEs, emerging nations can boost their economic development by 1%. Additionally, by assisting SMEs in becoming financially integrated, employment rates can rise, possibly adding 16 million jobs by 2025. Larger loan extensions to SMEs are advised since they help banks better spread their lending portfolios and risk coverage, both of which eventually support financial stability.

In their research, Rasheed and Siddiqui (2018) discovered that Pakistani financial institutions pay little attention to the SME sector; as a result, SMEs turn to informal financing to meet their financial demands. Notwithstanding a number of drawbacks, they believe that informal financing is preferable due to its lower restrictions, lack of paperwork, and rapid and simple access. Additionally, Rasheed, Siddiqui, and Chaudhry (2019) talked about how Islamic banks may support the financial growth of SMEs by facilitating their operations. The survey found that a sizable number of SMEs were interested in Shariah compliance services and products for their

company's financial requirements. In addition, there are international and national organizations dedicated to promoting financial inclusion that place a strong emphasis on digitization and assert that the availability of digital financial services is what drives broad growth in developing nations.

2.4.4 Benefits

Digital financial inclusion offers several advantages. According to IFC (2017), Manyika et al. (2016), and Ozili (2018), digital financial inclusion can improve banks to cut costs by decreasing banking hall lineups, lowering physical paperwork and credentials, and maintaining fewer bank branches. Many depositors can quickly transfer banks thanks to digital financial inclusion, which puts burden on banks to offer excellent services or risk losing customers to competitors. Digital financial inclusion, according to monetary and financial system regulators, also plays a key role in lowering high rates of inflation in emerging and impoverished nations (GPFI, 2016) and in lowering the amount of physical cash in circulation (Ozili, 2018). When people and businesses have a reliable digital platform to access money in your bank account and conduct financial transactions, digital financial inclusion can help them both (CGAP, 2015; Ozili, 2018). If get into Digital trading platforms – mobile phones, PCs, and related devices—is inexpensive or nonexistent for the poor, the predicted the benefits of digital financial inclusion can be fully realized (Ozili, 2018).

2.5 Fintech Providers: Concept and Benefits

2.5.1 Concept

Ozili (2018) defines "Fintech" as "financial technology," which is the provision of banking and financial facilities using pioneering technical innovation driven by computer programs and procedures. Fintech service providers are individuals or businesses that use online or offline technology platforms to provide new financial services or improve the conveyance of existing financial services. To be considered a Fintech provider, a provider must ideally use technology (online or offline) to reduce the number of obstacles that users of financial facilities must overcome to obtain financial services, or to enhance the delivery of financial services. The technology used by some self-described Fintech providers, yet does not, in practice, significantly lower the obstacles problems customers face when applying for and receiving financial services. For this reason, it is debatable whether these people or businesses should be referred to as "Fintech," and in some countries, the discussion about whether to stop calling them is still ongoing. FinTech

enterprises hold a significant position in the digital financial sector. In the financial services industry, fintech companies are starting to appear. These companies aim to complement or even compete with banks in providing services to their clientele. Customers are switching from bank providers to non-bank providers due to the drawn-out procedure of expect to receive a loan from the management company, even though some Fintech companies in the real world offer financial services at a higher cost than banks do. For example, it is rare for a customer to come into a bank on Monday and seek a £70,000 loan to receive the entire loan amount asked; this phenomenon is explained by the fact that bank regulators and banks must take a long time to determine whether a potential borrower qualifies for a loan due to internal risk management protocols (Ozili, 2018). Although the cost of obtaining financial services from non-banking service providers is high, people and businesses with inconsistent or poor income nevertheless favor using these providers, many of whom are not currently subject to regulation in developing markets and the majority of African nations. Lastly, the diversity of Fintech enterprises is mainly dependent on the online and offline technology that is available. Payday loan, instant check cashing, and associated services are a few examples of Fintech companies. Lastly, there may be ramifications for financial stability and inclusion from the actions of Fintech providers. (Ozili, 2018).

2.5.2 Benefits

There are advantages to conducting business with Fintech companies, claims Ozili (2018). Even while federally insured banks can offer their clients offer the same financial services cheaper than fintech companies there are still rationales why people would depend on Fintech suppliers. One way that Fintech providers might help low-income people handle their daily financial commitments is by offering faster financial services with a smoother procedure. Two, since Fintech companies don't manage deposits like banks do, it follows that they will be subject to fewer regulations (or none in some countries). This lighter regulatory load allows Fintech companies to concentrate on enhancing their financial technology and intermediation capabilities while minimizing, when feasible, better service to clients. Three, traditional lending institutions and Fintech providers can collaborate to save operating expenses and enhance the caliber of the latter's intermediation efforts. While Fintech providers' financial technology can add worth to the operations of the conventional borrowing organizations they partner with, especially "Progress" in Online Marketing, partnerships with outdated loaning organizations can benefit Fintech providers become maintainable over time. Four, compared to banks and other lenders some Fintech providers

are better able to offer small loans or fast emergency funding to people with low and lower incomes. This is since conventional banks and other offering institutions are not required to provide extra funds to anyone, and any request for extra funding at one of these institutions must go through the standard procedures for credit risk valuation, which may be too time-taking for those who require emergency funds immediately. This puts some Fintech companies in a stronger position to offer people with middle-class and lower-class incomes emergency funds in small sums at higher interest rates. Five, technology may be able to make things more convenient. By offering users constant access to these services from any area where they have Internet access, fintech companies operating through online platforms can electronically give users more convenience. This makes it possible for Fintech companies to help customers not need to visit a banking facility in order to complete financial transactions (Ozili, 2018).

2.6 Theoretical Framework

2.6.1 Pecking order theory

Pecking order theory (POT) served as the foundation for this investigation. It is well recognized that this notion has anything to do with a firm's capital structure. Myers and Majluf founded it back in 1984. The theory's basic premise is that SMEs take into account their financing source when making choices in order to avoid having an impact on performance. According to the notion, consideration would be given to internal financing sources first to external financing sources. Any profit that is reinvested in the company is stated as the internal foundation of finance; debt and equity are described too as the external source of finance. Therefore, the idea suggests that before thinking about raising loans or owning shares, SMEs should think about their retained earnings.

According to this idea, SMEs' capabilities should be carefully taken into account before utilizing any financial technology in relation to research. This context interprets "ability" to mean the enterprise's purchasing power as well as its capacity to tolerate any heat that may follow from its use (Agelyne & Musau, 2021). Network problems can cause problems for SMEs using point-of-sale (POS) systems. For example, a customer's money transfer may not be processed promptly or may not be received. The foundation of this approach is financial technology, which should take these difficulties into account before moving further.

This theory applies well to SMEs and has very reasonable assumptions. Its shortcomings haven't stopped it from being criticized, though. First off, SMEs may not always benefit from the

established hierarchy of financial sources (Agelyne & Musau, 2021). In other words, circumstances might occur when retained earnings are completely available, but the business chooses to borrow money. As a result, the theory's hierarchy isn't always relevant. In a similar spirit, the theory fell short of providing a precise definition of SMEs so that the hierarchy of sources of financing could be applied with more clarity.

The Pecking Order Theory is applicable to this research since it clarifies the reasoning SMEs possess while making decisions. That is, prior to using any technology, they take into account their financial capacity in terms of their ability to make purchases and their capacity to withstand any pressure that may arise from their choice. According to the hypothesis, SMEs prioritize their retained revenues over their ability to issue debt and subsequently pay dividends to additional shareholders when making decisions. As a result, this theory explains how financial technology and SMEs' performance are related, with SMEs' success being driven by their demand for financial inclusion. In other words, SMEs buy financial technology as a result of financial inclusion, which eventually boosts their productivity.

2.6.2 Diffusion of innovation theory

Diffusion of Innovations (DOI) theory was proposed by Rogers (1995) in (Michelle, 2016) to define how innovations might spread among many users over a given length of time and through various channels (Sarker & Sahay, 2004). The Diffusion of innovation theory investigates the mechanisms by which novel views are transmitted from current generation to the next. The diffusion of innovation theory explains that innovations are continuously shared among people who have the same social values through a variety of channels (Echchab & Hassanuddeen, 2013). (Michelle, 2016). The purpose of the dispersion of innovation hypothesis is to explore the factors changing update Information progress highlights by examining the rate, mode, and causes for the spread of new developments (Monyoncho, 2015) in (Michelle, 2016).

2.6.3 Theory of financial innovations

Silber (1983) proposed the theory of financial innovation in Michelle (2016) and is based on the notion that the main driver of financial inclusion (Li and Zeng, 2010) is the benefit expansion of foundations connected to money. According to this theory, the main ideas for innovation arise from the negative aspects of the financial market, which often include misinformation, office costs and clearing costs. (Błach, 2011). (Michelle, 2016). The theory states that financial innovations

can take the form of completely novel solutions or merely conventional ways of offering the newest advancements, increasing firms' liquidity and attracting more applicants because of their qualifications in the given scenario (Ionescu, 2012) in (Michelle, 2016).

2.7 Conceptual framework

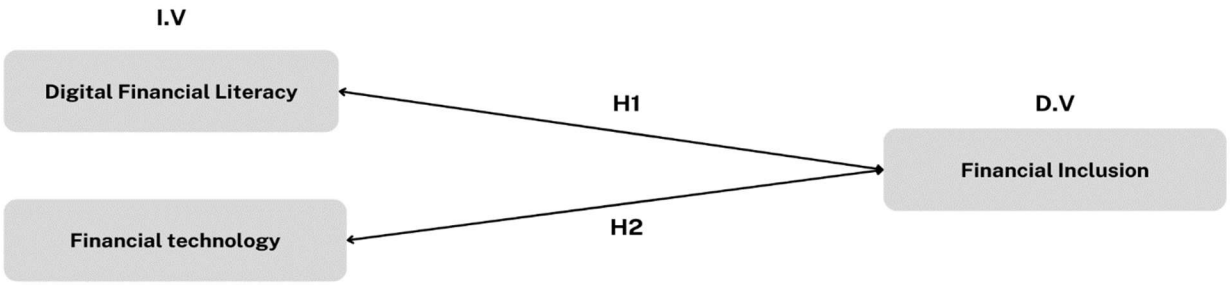

Figure 1. Conceptual framework

2.8 Research Hypothesis

Following are the research hypothesis of the study:

H1: There is a positive relationship between digital financial literacy (DFL) and SMEs Financial inclusion (FI).

H2: There is a positive impact of financial technology (FT) on financial Inclusion (FI).

CHAPTER 03

Methodology

3.1.Introduction

This research methodology specifies the strategy to be followed to explore the connection between digital financial literacy, financial technology and financial inclusion on SMEs in Pakistan. In this chapter, the procedure for collecting and analyzing data has been discussed. By emphasizing on philosophy, unit of analysis, population frame, sample size, data collection, data analysis, and other factors, it also looks at the relationship between digital financial literacy, financial technology and financial inclusion on SMEs. This chapter also covers the measurement of study variables.

3.2.Research Design

A research design is a strategy that defines the procedures to follow in order to collect and evaluate the necessary data. In essence, a study design states to the methods used by researchers to collect data, analyze it, and offer suggestions based on their findings (Mackey and Gass, 2015). A research study may employ qualitative, quantitative, or mixed approaches among other methodologies. A method known as qualitative methodology measures the feelings and experiences of a person. On the other hand, quantitative methodology is a type of technique that looks at statistical differences between variables. On the other hand, quantitative methodology is defined as a type of technique that examines both the participants' sentiments and the statistical differences across variables (Kumar, 2019). Current study has adopted qualitative research design because of its dependence on secondary data.

3.3.Sample size

The study sampled 200 questionnaires from employees of small and medium enterprises (SMEs) in Pakistan. The sample included SMEs from eight main sectors: Chemicals, Construction, Food Producers, Electrical Fittings, Sanitary Fittings, Gas Appliances, Home Appliances and Wooden Furniture.

Industry Sector	Total No. of Questionnaires Selected for Sample
Chemicals	10
Construction	15
Food Producers	25
Electrical Fittings	35
Sanitary Fittings	33
Gas Appliances	25
Wooden Furniture	22
Home Appliances	35
Total	**200**

3.4.Research Approach and Strategy

As discussed earlier this research includes mainly five sections. The study employed a survey design with descriptive research. The information gathered for this study includes variables that impact the degree of financial inclusion. Because the information gathered was factual, the researcher decided to utilize a questionnaire to gather study data. According to Sugiyono (2013), a survey is a data collection method that requires participants to answer written or oral questions. A survey is a data collection tool that asks questions respondents to complete written questions concerning factual facts in order to get information. This study's questionnaire is closed, meaning that the responder only needs to select the response once it has been supplied. There were forty items on the study's questionnaire. A Likert scale was used to gauge the researchers' answer, with 1 on behalf of strongly disagree and 5 representing strongly agree. It also provides details on the firm's internals i.e. Business performance and business environment and external i.e. infrastructure and competitors indicators.

3.5.Analysis on characteristics of respondents

Participants will be asked to fill out surveys designed to measure characteristics such as hours worked, monthly income from work, and the number of employees to whom people answer yes. This information will be used for analysis to regulate the impact of digital financial literacy and use of financial accounting.

3.6.Analysis on respondents Responses

This study used descriptive analysis to describe and analyze the characteristics of freedom and progress. It is a summary or interpretation of the original data from the survey completed by research participants. Definition of financial literacy and the evolution of fintech to measure financial literacy based on a five-point scale chart such as (5-1/5 - 0.8).

3.7.Measurement of the variables

In this section, we will discuss the main variables used in the study. As mentioned before, SME surveys collect information on various topics related to the company's internal and external performance indicators. However, in this study, we obtained indicators regarding SMEs' access to finance, digital financial literacy, banking, sales and technology, and their stable characteristics. We present the following description of the indicators used in the study.

3.7.1. Mobile banking

Each and every financial institution customer has a mobile phone for personal use and information sharing. Because of the electronic banking system, mobile phones have improved the effectiveness and efficiency of e-banking in the banking industry. Emeka, Gabriel, and Gideon (2019) defined mobile banking as “banking using a mobile phone.” In other words, mobile banking is a type of banking where customers use their phones to automatically get notifications about changes to their accounts. These modifications might be made to the bank account through a functional text messaging system, or they could take the form of a debit or credit to the bank account.

Updates on their bank accounts are more likely to be sent to customers who use mobile phones. Updates related to credit or debit cards, pin modifications, bill payment, mobile network recharge, and other services may be among them. Mobile phones can make payments thanks to the inbuilt SIM (smart) card, which stores user data. It also makes sense that using mobile banking without the need for additional hardware like card readers, point-of-sale terminals, or modems is advantageous. Usman (2020) predicts that there will be further advancements in mobile banking content in the near future. It is possible to pay for parking, tickets, and phone recharges with mobile devices. Nowadays, the majority of banks provide SMS Banking, an active mobile banking service.

Numerous research conducted both domestically and abroad (Ali, 2018; Uwalak & Eze, 2020; Faiz & Samson, 2021; Hauwa, Shazida & Abdul-Hakim, 2016; Sanni, 2016; Vincent, Caroline &

Kemboi, 2016; Maina & John, 2019 the purpose of these studies; Munyoki, 2015; Mohammed, 2019; Lydiah & Josphat, 2021; Jean, 2017) was to understand the relationship between mobile banking and business performance. According to the studies the researcher had access to, none of the studies in this study were specifically conducted in Pakistan and examined the performance of SMEs there. The goal of this study is to close the noted gap.

3.7.2. Point of Sales and performance of SMEs

Point of sale, or POS, is a term that is commonly used by small, medium, and large-scale enterprises alike. A point-of-sale (POS) is a automatic device that can handle credit and debit financial transactions, according to Usman (2020). Any business may easily purchase a point-of-sale (POS) device to use ATM cards for transactions. Woldie, Hinson, Iddrisu, and Boateng (2018) defined POS as a device that documents business transactions involving two or more parties.

Asare and Sakoe (2015) define point-of-sale (POS) as a device that accepts payments from customers using a debit or credit card at retail outlets. Point-of-sale (POS) systems are frequently used in retail settings to transfer money from a customer's bank account to the bank account of the store outlet and vice versa. The device confirms that the consumer has enough money in their account to finish the transaction (Monyoncho, 2018). Among other benefits, using POS increases sales volume, customer service, and the potential for speedy payments at the POS. The use of electronic payment methods will benefit all parties involved.

POP, or point of purchase or checkout, is another name for POS (Usman, 2020). He continued by defining POS, as the name would imply. That is, the location where a card and an electronic device are used to complete a transaction. Using a POS terminal, a salesperson-accessible interface controls the selling process (Bello, 2015). A point-of-sale (POS) computerized system facilitates the creation and printing of transaction receipts, in addition to documenting sales for both commercial and tax purposes. In order to enhance customers' experiences at checkout counters, point of sale systems (POS) are equipped with additional hardware such as cash drawers, scanners, touch displays, and receipt printers.

Numerous research papers have examined point of sale systems as a component of financial inclusion. The impact of electronic point-of-sale systems on the operational effectiveness of hotels in Nakuru County was investigated by Lawi (2019). Omotayo and Dahunsi (2015) concentrated on the elements influencing Nigerian commercial organizations' adoption of point-of-sale (POS)

terminals. Njenga and Ismail (2017) evaluated the influence of electronic POS on supply chain performance in the retail industry in Kenya. Adoption of POS systems is determined by Marijn, Roel, and Ronal (2011). Ojeda (2017) investigated POS systems in the beverage and food sector. According to the information the researcher had at hand, none of the studies examined the relationship between POS adoption and performance of SMEs in Pakistan.

3.7.3. Digital Financial Literacy Programs

The numerous innovative digital financial services and solutions make DFL an essential component of pertinent financial data. Online transactions have replaced traditional methods of making financial transactions since the COVID-19 epidemic broke out. For this reason, developing one's DFL abilities is essential to carrying out financial transactions successfully. According to previous research (Alliance for Financial Inclusion [AFI], 2021; Lyons & KassHanna, 2021; Morgan et al., 2019; Tony & Desai, 2020), digital financial literacy (DFL) is a multifaceted term that encompasses financial literacy. DFL is described as "financial literacy in digital financial technology" by Setiawan et al. (2022).

3.7.4. Access to Finance

From a conceptual standpoint, financial services comprise the fundamental services provided by different financial institutions within a particular economy. Savings, credit facilities, insurance services, and many more are among the services offered. According to Agelyne and Musau (2021), financial facilities are a part of the financial system that provide a range of financial goods and services, such as financial products, services, and credit instruments. The majority of commercial banks in Nigeria used to limit their branch network to established urban areas. During that period of financial isolation, not many banks have expressed interest in the rural parts of the nation. According to Junaidah (2016), a number of banks were discouraged from building such branches at that time due to their declining financial performance. Instead, they were advised to expand their services to rural regions and guarantee that their financial services will always be available.

Technology and the industrial revolution have made this possible (Mule, Wafula, & Agusioma, 2021). All commercial financial institutes realized it easier to always guarantee the ongoing provision of their financial services and locations as a consequence of the ongoing innovation and developments in the banking sector. A few instances of the different technologies that guarantee the availability of financial services include online banking, mobile banking, ATMs, and point of

sale systems. The ongoing availability of financial services made possible by the aforementioned technologies has given SMEs a competitive edge in the business sector with regard to their performance. Additionally, consumers are more likely to be satisfied when SMEs use different technologies to grow the availability of financial services. Since the financial system in the Nigerian economy established the cashless policy, the majority of clients have adopted it. Financial services as a part of financial inclusion have not been the subject of many research (Marus, Fabian, Constant, Abanis and Glber, 2020; Odeo and Ibrahim, 2018; Bassey, Amenawo and Enyeokpo, 2017). None of these studies, although, looked at the performance of SMEs in Pakistan or the accessibility of financial services in a comprehensive manner. This study aims to fill up this gap in literature.

3.8.Reliability Test

A reliability test evaluates a tool or measuring device's consistency and stability. It is important to ensure that research instruments are reliable since this speaks to the degree to which the instrument yields trustworthy and consistent data. These are a few typical kinds of dependability tests that are applied in studies. In this study, the reliability of the questionnaire was checked once using Cronbach's Alpha on SPSS. If the assessment of Cronbach's Alpha is greater than 0.60 it means the questionnaire is reliable.

3.9.Normality test

A statistical method for assessing whether a dataset has a normal distribution is called a normality test. The normal distribution is a proportional distribution with a bell-shaped curve. Sometimes termed a Gaussian distribution or bell curve. If the normality test shows a significant level greater than 0.05, then the data set is normally distributed.

Because many statistical techniques and analyses, including parametric tests like t-tests and ANOVA, require that the data are regularly distributed, normality tests are crucial. These parametric tests might not be applicable and additional non-parametric tests would be required if the data greatly depart from a normal distribution.

3.10. Multicollinearity Test

Multicollinearity technique is used to measure whether the regression model is verified by the correlation between independent variables or not. If the independent variables are correlated with

each other, The variable whose correlation value between independent variables is equal to zero if the independent variables are associated with one another.

3.11. Multiple Linear Regression Test

A statistical method called multiple linear regression is used to examine the association between various independent variables and one dependent variable. It is used to determine the association between independent variable and the dependent variable whether variables are positive or negatively related to each other and to forecast the value of dependent variable if the value of independent variable increase or decrease.

The formula is as follow:

Y= a+B1X1+B2X2+e

Whereby:

Y= Financial Inclusion

a= Constant

B1, B2 = Independent variables

X1= Digital financial literacy

X2= Financial Technology

E= error

3.12. F Test

This test is used to evaluate the probability of the regression model that has been made. This test is carried out by contrasting the F table and F count values. It calculates the F table's degree value, the significance level used is 5% with degree of freedom is k-1 and Denominator is n-k. where k is numbers of variables and n is number of respondents.

3.13. Coefficient of Determination Test

A statistical metric called the coefficient of determination, or simply "R^2" is used to evaluate the regression model's goodness-of-fit. It indicates the percentage of the dependent variable's variation that the model's independent variables account for.

Here's how it is calculated:

R^2 = SSR/SST

Where:

SSR = Sum of squared difference between projected values and the mean of dependent variable.

SST = Total sum of squared difference between the actual value and the mean of dependent variable.

3.14. T Test

This test is used to measure the importance of relationship between independent and dependent variables in the linear regression model, the independent variable moderately has an effect on the dependent variable. The significance level is 5%.

CHAPTER 04

Analysis and discussion of results

4.1.Overview of research Methodology

This chapter describes the data collected for the Designed questionnaire for Pakistani SMEs and processed through SPSS to answer the research questions. The results and findings of the financial technology, Digital financial literacy and financial inclusion on SMEs in Pakistan are introduced in classified structure and afterward interpreted. In this part, the researcher discussed the examination of variables using descriptive statistics, Reliability test, Normality Multicollinearity, Multiple linear regression, F test and T test among the variables. Also, the research discoursed, the results and their interpretation of whether the independent and dependent variables are related. Moreover, do the independent variables influence the dependent variables or not? This chapter examines the relationships between the variables.

4.2.Reliability Test

Variables	Cronbach's Alpha	Finding
Digital financial Literacy (X1)	0.833	Reliable
Financial Technology (X2)	0.943	Reliable
Financial Inclusion (Y)	0.871	Reliable

Table 1. Reliability Test results

Thes outcomes of the reliability test on the variables of Digital financial literacy, financial technology and financial inclusion on SMEs shows that all of the variable has a reliability value greater than 0.60 which means that all the used variables for the research are consistent.

4.3.Normality test

A statistical technique called the Kolmogorov-Smirnov test is applied to ascertain if a sample is representative of a certain distribution, such the normal distribution. Using the Kolmogorov-Smirnov test, normality is evaluated by comparing the test statistic to a critical value.

In this instance, a p-value of 0.402 for the Kolmogorov-Smirnov test indicates that there is a 40.2% probability of detecting a test statistic as severe as the one obtained, or even more extreme, if the data were taken from a normal distribution.

If the p-value is less than the significance 0.05 we reject the null hypothesis, which means that the data significantly diverge from a normal distribution.

4.4.Multicollinearity Test

Regression analysis uses the Variance Inflation Factor (VIF) as a measure to assess the degree of multicollinearity. When predictor variables in a regression model have a strong correlation with one another, this is known as multicollinearity.

In Multicollinearity test the Variance inflation factor (VIF) is 1.163, which indicates that there is very little multicollinearity between the independent variables in the regression model. Generally, A Variance inflation factor below 10 is considered acceptable, suggesting that there is no reason to be concerned about multicollinearity.

Variables	VIF	Results
Digital Financial Literacy (X1)	1.163	No multicollinearity
Financial Technology (X2)	1.163	No multicollinearity

Table 2. Multicollinearity test Results

Interpretation:

- VIF < 5: very low multicollinearity.
- 5 ≤ VIF < 10: This indicates considerable multicollinearity, which, depending on the situation, may be problematic.
- VIF ≥ 10: Denotes strong multicollinearity, implying that more research or corrective action would be required.

Regression analysis benefits from the predictor variables in your regression model being substantially independent of one another, as indicated by our VIF of 1.163. We may move forward with confidence knowing that multicollinearity in our model is not a major problem.

4.5.Multi Linear Regression Test

Multi linear regression test is used to examine the association between independent variables (Digital financial literacy, financial technology) on dependent variables (Financial Inclusion). The multiple linear regression equations attained in this study are:

Y = 16,334 + 0.94X1 + 0.224X2

The Multiple linear equation can be described as 1. The anticipated value of financial inclusion when both Digital financial literacy and financial technology are zero is represented by the intercept of 16,334. This figure represents the baseline level of financial inclusion in the absence of any predictor factors. It is a constant term. 2. The coefficient of 0.94 for Digital financial literacy indicated that each unit increase in digital financial literacy, financial inclusion has expected to increase by 0.94 units, holding financial technology constant. 3.the coefficient associated with financial technology is 0.224 which suggests that keeping all the other variables constant, for one unit increase in financial technology, financial inclusion is expected to increase by 0.224 units. A positive coefficient means that there is a positive connection between the variables. Increase in one variable will cause increase in other.

4.6.F Test

F-test is used to examine how well two nested linear regression models fit together. It establishes if a model's fit is considerably improved by the addition of variables. In regression analysis, the F-test is frequently used to evaluate the regression model's overall significance.

ANOVA[b]

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	1112.882	2	556.441	33.001	0.000
Residual	2883.325	171	16.862		
Total	3996.207	173			

Table 3. F Test Results

Based on the data above, the amount of variance in the dependent variable that the regression model explains is shown by the regression sum of squares (1112.882). The dependent variable's

variation is substantially explained by the predictor-based model. Any traditional significance threshold (e.g., 0.05) at which the regression model is statistically significant is shown by the very low p-value (0.000) that is linked with the F-value of 33.001. Consequently, the dependent variable is significantly impacted by at least one of the predictors.

The unexplained variance in the dependent variable after the predictors in the model have been taken into account is represented by the residual sum of squares (2883.325). This reflects that the independent variable used in the research is a real justification of dependent variable and also shows that the model is reasonable to use.

4.7.Coefficient of determination test

The coefficient of determination test is employed to determine if an independent variable can adequately explain a dependent variable.

Model	R	R Square	Adjusted R Square	Std. Error
1	0.528	0.278	0.27	4.10628

Table 4. Coefficient of determination results

From the results of the test shows, the coefficient correlation R^2 This calculates the linear relationship's strength and direction between the independent variable(s) and the dependent variable. In this instance, a moderately positive correlation between the variables is shown by R= 0.528.

The percentage of the dependent variable's deviation that can be accounted for by the independent variable or variables in the model is denoted by the coefficient of determination (R^2). In this case, $R^2 = 0.278$ indicates that the independent variables in the model account for around 27.8% of the variation in the dependent variable.

The number of predictors in the model is taken into account when calculating the adjusted coefficient of determination (ACD). It penalizes adding predictors that aren't needed and don't enhance model fit. The adjusted R^2 in this instance is 0.270, which is somewhat less than R^2, suggesting that the number of predictors has no discernible impact on the model fit.

Standard error is an estimate of the standard deviation of the mistakes in the dependent variable's prediction, or the standard error of the estimate. It offers a gauge for how well the regression model predicts things. The standard error in this instance is 4.0628, which is the mean difference between the observed and model-predicted values. Therefore, it can be said that the independent variables of 27.8% (financial technology and digital financial literacy) may explain financial inclusion. whereas additional issues not covered in this study account for the remaining amount.

4.8.T Test

This test determines if the independent variables in the regression model have a statistically significant partial impact on the dependent variable.

Model		Unstandardized Coefficient		Standardized Coefficient			
		B	Std Error	Beta	t	Sig.	T table
1	(constant)	16.344	3.136		5.212	0.000	
	X1	0.094	0.039	0.167	2.387	0.018	1.65381
	X2	0.244	0.039	0.442	6.305	0.000	1.65381

Table 5. T Test Results

These are the regression coefficients for each predictor variable, sometimes referred to as beta coefficients. With all other variables held constant, they show the alteration in the dependent variable (Financial Inclusion) for a one-unit change in the predictor variable. In this instance.

For the intercept, the coefficient is 16.344, for digital financial literacy the coefficient is 0.094 and for financial technology is 0.244.

Standard error is an illustration of the standard error linked to every estimate of a coefficient. It gauges how accurate the coefficient estimate is. Here, for the intercept the standard error is 3.136, for Digital financial literacy is 0.039 and standard error for financial technology is 0.039.

The standardized regression coefficients, also referred to as beta weights or beta coefficients, are these. For a one standard deviation change in the predictor variable, they show the change in the dependent variable (Financial inclusion) in standard deviation units. Here, for Digital financial literacy the beta is 0.167 and for financial technology is 0.442.

This is the t-statistic for every estimate of a coefficient. It calculates the coefficient estimate's significance. Here, the constant intercept the t-value is 5.212, for digital financial literacy the t-value is 2.387 and for financial technology is 6.305.

The p-value for every evaluation of a coefficient. Under the null hypothesis that the real coefficient is zero, it shows the possibility of identifying the coefficient estimate or something more extreme. Here, for the constant intercept the p-value is 0.000 this indicating that it is statistically significant, for digital financial literacy the p-value is 0.018 which is statistically significant and for financial technology is 0.000, indicates that is statistically significant as well.

4.9.Discussion

4.9.1. The Effect of Digital financial literacy on financial inclusion

The degree of financial inclusion is positively and notably impacted by the financial literacy variable, according to the findings of a partial test (t test) on the literacy variable. This is consistent with the findings of the descriptive analysis, which demonstrate how financial literacy influences financial inclusion and how SMEs in the Pakistan with high financial literacy also have high levels of financial inclusion. The findings of this study states that community financial inclusion would come after financial literacy. The availability of financial services and products should be a source of assistance for communities that are already familiar with financial service providers and adept at using them access to financial institutions, goods, and services in order to enable individuals to get financing and support the growth of small and medium-sized enterprises. Stated differently, financial inclusion will be impacted by high levels of financial literacy among SME players. The findings of earlier research by Hutabarat (2018), which showed that a person's use, comprehension, and consumption of financial goods and services increased with their level of financial literacy, also corroborate the findings of this study (financial inclusion). poor levels of financial literacy are correlated with poor levels of financial inclusion, according to study by Atkinson and Messy (2013). Furthermore, research conducted by Cardinal (2017) exist. Sohilauw (2018), Moreover, Bire, et al. (2019) assert that financial inclusion is directly and significantly impacted by financial literacy. This study, however, denies the findings of a study by Bongomin et al. (2016), which found no clear association between financial inclusion and financial literacy.

4.9.2. The Effect of Financial Technology on Financial Inclusion

The financial technology variable has a positive and substantial impact on the degree of financial inclusion, according to the findings of a partial test (t test) on the variable. This is constant with the findings of the descriptive analysis, which demonstrate how financial technology influences financial inclusion and how well-utilized financial technology is by SMEs in Pakistan, which is correlated with high levels of financial inclusion.

OJK (2017), who said that one of the factors promoting greater national financial inclusion is the growing usage of financial technology, supports the findings of this study. The financial industry will enter the digital era as a result of technology's introduction. especially in light of the fact that a large number of individuals nowadays own smartphones, which might serve as a means for facilitating public access to financial technology.

The findings of this investigation are further corroborated by earlier research carried out by Muzdalifa (2018) He asserts that the growth of financial inclusion in SMEs was aided by the existence of several financial technology businesses. Financial technology is becoming a part of many things, not just helping to finance company capital. Examples of these include digital payment systems and financial agreements. Additionally backed by Demirgüc-Kunt and Klapper (2013), who claim that the introduction of E-Money validates how innovation may significantly alter how individuals do financial activities in an effort to promote financial inclusion. Furthermore, research by Ozili (2018) indicates that financial inclusion in both developed and developing nations is positively impacted by digital finance through Fintech companies.

The findings of this study, however, conflict with Fitriani's (2018) research, which found that low public financial literacy prevents financial technology from having a positive impact on financial inclusion. Additionally, Christanal (2017) asserts that financial inclusion is not affected, either entirely or partially, by financial literacy or the usage of financial technology products.

CHAPTER 5

Conclusion and Recommendations

5.1.Overview of Conclusion

In this chapter, the thesis presents the purpose of research, research methods, and research findings. It unfolds through the accompanying segments: study outline, a summary of findings, hypothetical implications, managerial-implication, and recommendations for future research.

The study's findings have led to the following recommendations, which the government, SMEs advocates, and university researchers can consider: The government must undertake initiatives to increase literacy, including teaching people about financial terms, outlining the advantages of each financial product and service, and offering appropriate financial management training. These initiatives must be carried out in collaboration with banks and businesses that offer financial goods and services. Regulations protecting users of digital financial services should be created or completed, as the usage of these services is expanding quickly in Pakistan. in order for consumers to trust this service better and stay away from online financial technology company fraud. SMEs actors can invest time in learning more about complex financial terms, the advantages of various financial products and services, attending training sessions or seminars on finance or the development of SMEs, and utilizing sophisticated technology to advance their businesses. One example of this is the ability to conduct cashless transactions, which are facilitated by the use of suitable financial technology. Lf This study is restricted to financial technology and digital financial literacy for academic scholars. Despite this, the Financial Services Authority believes that digital financial literacy has an impact of financial inclusion. Comparing digital financial literacy to public financial inclusion, however, still shows a significant disparity. It is believed that more academic study will be able to identify the reasons contributing to the discrepancy in the degree of digital financial literacy to financial inclusion.

5.2.Practical Implications

FinTech, or financial technology, and digital financial literacy have a lot of real-world applications for improving small- and medium-sized businesses' (SMEs) financial inclusion. First off, digital financial literacy gives SME owners and staff members the information and abilities to use digital financial services, such online lending platforms and mobile banking, opening up a greater array

of financial goods and services to them. Since FinTech solutions frequently have cheaper transaction costs and fees than traditional banking services, this empowerment helps to save expenses. Digital solutions also help SMEs become more efficient and convenient, automate tedious work, and simplify financial processes all of which free up time for SMEs to concentrate on their core competencies and expansion plans. FinTech solutions also provide SMEs with additional access to finance and credit through alternative financing models and digital lending platforms, which encourages innovation and company growth. FinTech solutions' improved risk management skills also help SMEs be more resilient to external uncertainties and financial hazards. FinTech also makes it possible for SMEs to compete with bigger firms in international marketplaces and cross-border transactions, which encourages market development and globalization. In general, FinTech and digital financial literacy enable SMEs to get beyond conventional obstacles to financing, attain sustainable growth, and support prosperity and economic progress in the digital era.

5.3.Limitation of the study

Like other research studies conducted previously has a limitation, the current study has also some limitations. In the current study, the research has only taken one county of South Asia (Pakistan) to predict the explanatory power of theories used in the study i.e. Pecking order theory, Diffusion of innovation theory, and Theory of financial innovation. Researchers can reconstruct this review by comparing developed countries firms with non-developed countries firm. The study only considered two types of independent variables digital financial literacy and financial technology.

5.4.Future Recommendations

Researchers can duplicate this study in various countries with cultures or settings not the same as the South Asian region to observe and reinforce the generalizability and objectivity of the study. In the future, the other types of financial variable also be considered for further enhancement of the above study. For further enhancement of the current study more independent variables can be used i.e. Cost of financial services. Furthermore, studies should look at how SME owners and staff accept and use digital financial services, as well as the attitudes, perceptions, trust, and perceived advantages and disadvantages of adopting new technologies that impact decision-making.

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7. Appendix: Questionnaire

1. To what extent do you agree that financial technology has improved access to financial services for SMEs?	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
2. How confident are you that digital financial literacy positively impacts the financial inclusion of SMEs?					
3. To what extent do you believe that digital payment solutions have facilitated financial transactions for SMEs?					
4. How important do you think digital financial literacy is for SMEs to access credit and financing?					
5. To what degree do you perceive that FinTech solutions have reduced barriers to entry for SMEs in the financial market?					
6. How much do you agree that digital financial literacy enhances SMEs' ability to manage cash flow effectively?					
7. To what extent do you think digital financial literacy contributes to SMEs' competitiveness in the market?					
8. How much do you agree that FinTech innovations have increased financial resilience among SMEs?					

9. To what degree do you believe that digital financial literacy enables SMEs to make informed financial decisions?					
10. How much do you agree that FinTech solutions have expanded market opportunities for SMEs?					
11. How confident are you that digital financial literacy empowers SMEs to negotiate better terms with financial institutions?					
12. To what extent do you think FinTech has enhanced the efficiency of financial transactions for SMEs?					
13. How important is digital financial literacy in promoting financial inclusion among underserved SMEs?					
14. To what degree do you perceive that FinTech adoption has led to cost savings for SMEs?					
15. How much do you agree that digital financial literacy fosters trust and credibility for SMEs in the financial market?					
16. To what extent do you believe that FinTech has increased access to international markets for SMEs?					
17. How confident are you that digital financial literacy reduces the					

likelihood of financial fraud and security breaches for SMEs?					
18. To what degree do you think FinTech solutions have simplified accounting and bookkeeping processes for SMEs?					
19. How important is digital financial literacy in attracting investment opportunities for SMEs?					
20. To what extent do you perceive that FinTech has improved the speed and efficiency of loan approval processes for SMEs?					
21. How much do you agree that digital financial literacy encourages entrepreneurship and innovation among SMEs?					
22. To what degree do you believe that FinTech solutions have expanded financial services tailored to the needs of SMEs?					
23. How confident are you that digital financial literacy enables SMEs to access government grants and incentives more effectively?					
24. To what extent do you think FinTech has facilitated partnerships and collaborations among SMEs and financial institutions?					

25. How important is digital financial literacy in fostering financial inclusion for women owned SMEs?					
26. To what degree do you perceive that FinTech has improved access to insurance products for SMEs?					
27. How much do you agree that digital financial literacy promotes sustainability practices among SMEs?					
28. To what extent do you believe that FinTech has enhanced financial education and awareness among SME owners?					
29. How confident are you that digital financial literacy improves SMEs' ability to navigate regulatory compliance requirements?					
30. To what degree do you think FinTech solutions have increased transparency and accountability in financial transactions for SMEs?					
31. How important is digital financial literacy in overcoming language and literacy barriers for SMEs?					
32. To what extent do you perceive that FinTech has reduced geographical constraints for SMEs in accessing financial services?					
33. How much do you agree that digital financial literacy fosters financial					

independence and self-reliance among SMEs?					
34. To what degree do you believe that FinTech has enabled SMEs to diversify their sources of funding?					
35. How confident are you that digital financial literacy promotes financial inclusion for marginalized and vulnerable groups within SMEs?					
36. To what extent do you think FinTech has improved financial reporting and transparency for SMEs?					
37. How important is digital financial literacy in promoting ethical and responsible financial practices among SMEs?					
38. To what degree do you perceive that FinTech has facilitated peer-to-peer lending and crowdfunding for SMEs?					
39. How much do you agree that digital financial literacy reduces the digital divide among SMEs?					
40. To what extent do you believe that FinTech has empowered SMEs to access tailored financial products and services?					

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