Investigating the digital divide in South Africa as it relates to financial services

A dissertation submitted to the Faculty of Commerce, Law and Management, University of the Witwatersrand, in partial fulfillment of the requirements for the Degree of Master of Management in the field of Digital Business

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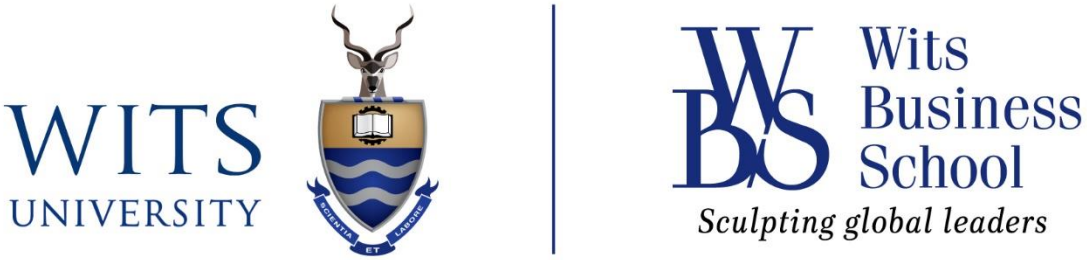

DECLARATION

I Anna Khumalo declare that this research project is my work which has been done after registration for the degree of Master of Management Digital Business at Wits Business School and has not been previously included in a thesis or dissertation submitted to this or any other institution for a degree, diploma, or other qualifications.

DEDICATION

The study is devoted to my late parents; my mother Mmanatshana Mohlala, and father, William Mohlala, they gave me the foundation of something they never experienced - “education”, you also could not witness my success because death defeated you. My husband, kids, and immediate family deserve my wholehearted, thank you.

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ABSTRACT

This study's aim falls on investigating the digital divide in South Africa. Grounded on the principles and assumptions of positivism, the study adopted the quantitative research approach to investigate the issue. Thus, a structured questionnaire was used to gather data from 211 South Africans: employed, unemployed, students, elderly, and disabled individuals. SPSS version 25 was used to analyze the data and both inferential and descriptive statistical analyses were performed. The results, therefore, revealed that South Africans generally possessed a strong grasp of digital skills, such as using mobile apps, installing mobile apps, completing online applications, and finding information online. However, some South Africans concerns regarding confidence in using banking apps or internet banking and the user-friendliness of banking services. Regarding, transaction monitoring, show positive experiences with daily banking transactions and investment growth, but there are mixed perceptions regarding banking products, monthly bills, electricity, lotto, and airtime transactions, proof of payments and statements, and product exploration and financial education. Drawing on these results, the study provided recommendations in three main categories: improving access and availability, enhancing user confidence and security, and promoting digital inclusion and innovation. These recommendations include enhancing banking infrastructure in underserved areas, reducing transaction costs and fees, strengthening data protection measures, improving user interfaces and experiences, providing financial education, fostering partnerships and collaborations, offering tailored solutions for different user segments, and launching public awareness campaigns. Implementing these recommendations can help bridge the digital divide, promote financial inclusion, and ensure a positive user experience with digital financial services in South Africa.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER ONE

INTRODUCTION

1.1 Statement of purpose

In this study, the digital financial services divide in South Africa is examined, along with the reasons that contribute to it. By allowing all individuals to take part in the changing financial landscape, it seeks to bridge the knowledge gap and promote inclusive digital financial services.

1.2 Research background

The financial sector plays a critical role in the development and growth of any economy. However, access to financial services has been a challenge for many in South Africa, particularly those living in rural and low-income areas (Chitimira & Ncube, 2020). The "digital divide" is the difference between how connected individuals are to the internet, how well-versed they are in using digital tools, and how they have access to those tools. It is this gap that keeps people and communities from fully utilising and profiting from financial services. Infrastructure, cost, digital literacy, and socioeconomic factors will all be examined in this study as potential reasons of the digital divide.

The impact of the digital divide on financial inclusion will also be examined, including how it impacts people's access to digital financial services, how much they rely on cash transactions, and how it keeps them out of formal financial institutions. To reduce the gap and enhance financial inclusion, the research will look at present policies and programmes. The findings will assist stakeholders in developing strategies and initiatives that address the digital divide and enhance financial inclusion in South Africa based on recommendations supported by evidence. A growing number of projects have been launched in South Africa recently with the goal of increasing access to financial services and goods (Beck, Senbet, & Simbanegavi, 2015). As a result of technology improvements and a rising need for financial inclusion, the financial environment in South Africa is

therefore fast changing (Beck, Senbet, & Simbanegavi, 2015). Although South Africa's financial industry is well-established, a sizable segment of the population remains unbanked or underbanked. A FinMark Trust analysis estimates that 11 million South Africans lack access to banking services, while a further 16 million are underbanked (Mugwaban, 2020). This underlines the need for creative payment solutions that may reach and assist these communities.

Given South Africa's high rates of mobile phone penetration, the adoption of digital payment technology is considered as a crucial facilitator of financial inclusion in that nation. A greater level of financial inclusion in South Africa may be made possible by the new payment technologies, such as mobile payments, blockchain, and digital identification. Due to its position as one of Africa's most developed economies and reasonably sophisticated financial infrastructure, the nation has a unique position in the context of payment systems. For instance, mobile payments have already made headway in South Africa, where more than 80% of the population uses their phones for financial transactions (Chironga, De Grandis & Zouaoui, 2017). Similar to this, South Africa's special contextual features—such as its comparatively sophisticated financial infrastructure and high rates of mobile penetration—make it a good case study for examining the potential of new payment technologies to promote financial inclusion.

The financial industry in South Africa is likewise going through a phase of fast consolidation, with established banking institutions facing more competition from fintech firms and other non-traditional companies (Abugre et al., 2022). Due to this, there is now more competition for customers, more innovation, and industry disruption. An intriguing case study for analysing the future of payments and financial inclusion may be found in South Africa's distinctive circumstances. In addition, South Africa has a sizable, diversified population with notable socioeconomic inequalities (Galvaan, 2015). This offers a chance to investigate the possible effects of payment technologies on a variety of people and communities and to create plans for resolving the particular issues that various demographic groups are now facing.

In South Africa, the financial industry also offers and poses possibilities and difficulties for financial inclusion. One the one hand, more financial services and products may be more accessible because of increasing competition and innovation. However, it may also increase consumer complexity and confusion, especially for individuals who are already disadvantaged or excluded from the financial system.

This study intends to further the dialogue on these topics both locally and globally by examining the future of payment and financial inclusion in South Africa. Consequently, the findings of this study will be useful not only for South Africa but also for other developing economies facing similar challenges in terms of financial inclusion. The findings of this study may also have implications for other countries and contexts facing similar challenges related to financial inclusion in the financial sector. The study will provide insights into the factors that may enable or hinder the adoption of these technologies and inform policymakers and stakeholders on strategies to promote financial inclusion in South Africa and beyond.

1.3 Research problem

In South Africa, the digital divide poses a significant obstacle to ensuring that all individuals have fair access to financial services. Disparities in digital access and adoption impede financial inclusion as the nation moves towards a technologically advanced environment, reserving the advantages of the developing financial ecosystem for a select group of people (Gronbach, 2017). In this study, the digital divide in financial services in South Africa is examined, along with the causes that contribute to it, its effects on financial inclusion, and potential solutions to close the gap.

The gap in access to and use of digital technology among various socioeconomic categories and geographic areas is referred to as the "digital divide" (Chirambo, 2018). The divide causes hurdles to entrance and utilisation of digital financial instruments, including mobile banking, digital payment platforms, and online financial services, in the context of financial services (Ofosu Mensah Ababio et al., 2021). Different factors, such

as income levels, educational backgrounds, geographic location, digital literacy, and the cost of technology, may have an impact on this difference.

This study aims to provide light on the size of South Africa's digital gap and how it affects efforts to promote financial inclusion. The study will identify underrepresented groups and vulnerable populations who are not included in the formal financial system by examining the adoption of digital financial services across a range of demographics.

Furthermore, governments, financial institutions, and fintech firms must comprehend how the digital divide affects financial inclusion. The research findings will guide the creation of inclusive financial solutions and targeted interventions that specifically meet the demands and difficulties experienced by marginalised groups online.

1.4 Research objectives

The primary objectives of this study were:

- To evaluate the digital divide in South Africa's financial services sector by comparing access to and use of digital financial instruments across socioeconomic categories and geographical areas.
- To examine the main causes of the digital divide and their effect to on financial inclusion in South Africa.
- To explore the effect of the digital divide on financial service accessibility and usage, with a specific focus on the consequences of excluding disadvantaged individuals from the formal financial system on their financial well-being.
- To examine and adapt effective programs and industry standards from other regions to close the digital divide and promote inclusive digital financial services in South Africa.
- To provide actionable recommendations for policymakers, financial institutions, and fintech firms to develop targeted financial interventions and inclusive solutions that address the challenges faced by digitally underprivileged groups in South Africa.

By attaining these goals, this study hoped to further knowledge of South Africa's digital divide and its effects on financial inclusion. It aimed to educate industry participants and policymakers on practical ways to close the gap and advance inclusive digital financial services, improving financial security and economic engagement for all South Africans.

1.5 Research question

The study, in line with the set objectives, sought to answer the following research questions:

- How does access to and use of digital financial instruments in South Africa's financial services sector vary across socioeconomic categories and geographical areas, and what are the implications for the digital divide?
- What are the main causes of the digital divide in South Africa, and how do they impact financial inclusion in the country?
- What are the consequences of excluding disadvantaged individuals from the formal financial system in South Africa due to the digital divide, and how does it affect their financial well-being?
- What effective programs and industry standards from other regions can be examined and adapted to address the digital divide and promote inclusive digital financial services in South Africa?
- What actionable recommendations can be provided to policymakers, financial institutions, and fintech firms in South Africa to develop targeted financial interventions and inclusive solutions that address the challenges faced by digitally underprivileged groups in the country?

1.6 Research hypothesis

The study sought to test the following null hypotheses:

i.) H_0. The adoption of innovative payment technologies does not positively impact financial inclusion in South Africa.

ii.) H_0. The digital payment systems do not lead to improved financial services delivery in South Africa.

1.7 Rationale of the study

A key component of sustainable economic growth is financial inclusion, which guarantees that all people and communities have access to suitable and affordable financial services. Achieving real financial inclusion is crucial for decreasing poverty, enabling economic growth, and developing social inclusiveness in South Africa's setting of persistent economic inequities. This study is very relevant for several important stakeholders and has wider ramifications for the financial system of the country.

i. **Decision and Policy-Makers:** Policymakers, regulators, and government organizations working on financial inclusion efforts will find the study's findings useful. Understanding how the digital divide affects people's access to financial services can help policymakers create interventions and policies that are based on solid research and that cater to the unique requirements of economically excluded groups. Targeted financial literacy initiatives, innovative regulatory frameworks, and financial product and service development incentives are a few examples of such policies.

ii. **Financial Institutions:** In order to provide customer-focused goods and services, banks and financial institutions must have a thorough awareness of the issues behind the digital divide. Financial institutions may provide unique, inclusive solutions that serve a wider consumer base by recognizing the problems encountered by neglected populations. In addition to increasing the institution's market reach and encouraging client loyalty, this strategy promotes the expansion of the financial industry.

iii. **Fintech Firms:** Fintech businesses are important for advancing financial innovation and increasing access to financial services. The findings of the research can help fintech businesses adjust their offerings to successfully cross the digital gap and target underserved areas.

iv. **Financial Services Consumers:** The research directly benefits financial services consumers, especially those who currently lack access from the financial system. Fintech companies may contribute to greater financial inclusion along with positive social impact by aligning their strategies with the unique needs of digitally excluded communities. The study can aid in empowering consumers by providing them with access to inexpensive, secure, and practical financial tools by eliminating barriers to the adoption of digital financial services. Increasing financial inclusion improves consumer financial management, lessens reliance on unregulated financial services, and helps the economy.

v. **Economic expansion and social inclusion:** The study has the potential to boost economic development and lessen income inequality in South Africa by encouraging financial inclusion. A more inclusive and fair society can result from increasing financial inclusion since it can boost investment, productivity, and quality of life.

Overall, the value of this research lies in its capacity to inform the policies and initiatives that South Africa's government will use to advance financial inclusion. The research seeks to build an enabling environment that supports inclusive economic growth, develops financial resilience, and improves the lives of all residents, resulting in a more equitable and successful country, by tackling the digital divide and its influence on the accessibility of financial services.

1.8 Delimitations of the research

The delimitations of this study include the focus on payment systems and their impact on financial inclusion in South Africa. The study will specifically examine the enabling role of payment systems in promoting financial inclusion within the context of South Africa.

Moreover, the study will be limited to the examination of payment systems that are currently available in South Africa and will not include the analysis of potential future payment systems that may emerge in the future. Additionally, the study will narrow the definition of financial inclusion to eliminate more general social and economic problems

like poverty and inequality that may have an influence on financial inclusion and instead concentrate entirely on the function of payment systems.

Finally, rather of focusing on the technical facets of payment systems, such as security protocols or encryption techniques, the research will instead examine how they affect financial inclusion in South Africa.

1.9 Definitions of key terms

The following essential terms will be utilized often in this study proposal:

i. Financial inclusion: This term describes the availability of formal financial services, such as banking, insurance, and credit, to both individuals and enterprises.
ii. Digital payments: These are forms of payment that depend on digital channels, including mobile phones, the internet, and other electronic devices, to start and finish transactions (Sahi et al., 2021).
iii. Mobile money: Also known as mobile wallets or other similar applications, is a type of digital payment that enables users to save, transmit, and receive money via their mobile phones (Sahi et al., 2021).
iv. Financial technology (FinTech): According to Gomber et al. (2018), this term describes the use of technology to offer financial services and products, such as payment systems, lending platforms, and investing tools.

In the context of digital currencies and other financial applications, blockchain refers to a distributed ledger system that enables safe, open, and unchangeable transactions (Jain et al., 2021).

1.10 Assumptions

Assumptions are beliefs that the researcher takes for granted, without necessarily verifying them. These beliefs can influence the research process and the results obtained

from it. In this study, there are several assumptions that could potentially influence the outcome of the research. These assumptions include:

i. Availability of accurate and reliable data: This assumption implies that the data collected and analyzed in this study is accurate and reliable. The study is dependent on the availability of accurate data from credible sources, and any inaccuracies in the data could affect the results of the study.
ii. Unbiased research process: The study assumes that the research process will be unbiased and objective, without any personal biases or preferences of the researcher or the respondents influencing the outcome of the study.
iii. Generalizability of findings: The study assumes that the findings will be generalizable to other similar contexts beyond South Africa. This means that the findings in South Africa could be applied to other countries and contexts, assuming similar conditions prevail.
iv. Adequate sample size: The study assumes that the sample size will be adequate to represent the population being studied. A small sample size could lead to skewed results that may not be representative of the population.

These assumptions are reasonable given the nature of the study, but they should be acknowledged, and their potential impact on the study should be considered. Any deviation from these assumptions could affect the validity and reliability of the research outcomes. Therefore, it is essential to ensure that these assumptions are kept in mind throughout the research process and their impact on the study carefully evaluated.

1.11 Research assumptions

Beliefs that the researcher takes for granted without necessarily proving them are called assumptions. These ideas may have an impact on both the study method and the findings. Several assumptions in this study can affect how the research turns out. These presumptions consist of:

i. Availability of correct and trustworthy data: According to this supposition, the information gathered and examined for this study is reliable and accurate. Since the study depends on correct data being available from reliable sources, any mistakes in the data might have an impact on the study's findings.
ii. Unbiased research process: The study assumes that the research process will be impartial and objective, without the researcher's or the respondents' own prejudices or preferences impacting the study's findings.
iii. Generalizability of findings: The study makes the assumption that the results will apply to circumstances outside of South Africa that are comparable. This implies that, assuming similar circumstances exist in other nations and situations, the findings in South Africa might be applied.
iv. Sufficient sample size: The research assumes that the sample size will be sufficient to accurately reflect the population under consideration. Results from a limited sample size could be biased and not accurately reflect the population.

Given the nature of the investigation, these hypotheses are valid, but they should be acknowledged and their possible effects on the study should be taken into account. Any departure from these presumptions may compromise the accuracy and dependability of the study findings. As a result, it is crucial to make sure that these assumptions are kept in mind and that the influence they have on the study is carefully considered throughout the research process.

1.12 Dissertation structure

This dissertation follows a six-chapter dissertation structure as described below:

Chapter one: Presents the main components of the study such as background of the study, problem statement, research objectives, and questions and the rationale of the study.

Chapter two: Reviews literature related to subject that was under investigation.

Chapter three: Details the methodology that was adopted to answer the research questions and achieve the research questions.

Chapter four: Presents and interprets the research results of the study: demographic and main research findings.

Chapter five: Analyzes and discuss the research results in comparison to the reviewed literatures.

Chapter six: Gives the conclusions and recommendations of the study drawing on the research results.

1.13 Chapter summary

This chapter presents the main components of the study, presenting the background of the study, problem statement, research objectives and questions. Therefore, the chapters provide a window into the study. The following chapter reviews related literature.

CHAPTER TWO

LITERATURE REVIEW & THEORETICAL FRAMEWORK

2.1 Introduction

The goal of this chapter is to provide readers a thorough overview of what is currently known about the causes of the digital divide and how it affects financial inclusion. Through this analysis, the researcher intends to create a theoretical and conceptual framework that will direct our research, offer insightful information to policymakers, and support the promotion of financial inclusion in South Africa. By developing a theoretical framework that considers many points of view, this study also aims to enhance our understanding of the gap in digital financial services in South Africa. As they create targeted efforts to expand financial inclusion and bridge the country's digital divide, decision-makers, scholars, and practitioners will utilise the framework as a guide.

2.2 Definition of topic and background discussion

The population of South Africa is diversified, with a range of economic levels and access to financial services. Despite having the most developed economy on the continent of Africa, many people still do not have access to financial services, especially those who live in rural regions (Ouma, Odongo & Were, 2017). The absence of established financial services is a serious impediment to South Africa's economic growth and development. But in recent years, the payment environment has swiftly changed as new payment methods and technology appear on a regular basis. According to Alaeddin et al. (2018), the payment industry is moving away from traditional payment methods like cash and credit card payments and towards mobile, internet, and digital wallets. Teng & Khong (2021) claim that this transition is fuelled by the rising use of cell phones, the expansion of e-commerce, and the requirement for financial inclusion.

According to Kim et al. (2018), "financial inclusion" refers to the availability of financial services to all people, regardless of their socioeconomic background. In South Africa, a

sizeable section of the population has a bank account, but they still pay in cash, especially in rural regions, which prevents them from using basic financial services. The South African government, which has put laws and regulations in place to encourage financial inclusion, has also acknowledged the significance of financial inclusion. For instance, the government introduced the "Financial Sector Charter" in 2005 with the goal of promoting the participation of historically underrepresented groups of people and communities in the financial sector (Chitimira, 2020). Shai, Molefinyana, and Quinot (2019) claim that this charter was updated in 2018 to include new goals for promoting financial inclusion, such as raising the proportion of people who have access to banking services and the proportion of black-owned businesses that receive funding from financial institutions. The realisation of financial inclusion is nevertheless hampered by obstacles, notably with regard to payment methods. The ability to engage in the formal economy and access a variety of financial services is made possible through payment systems, which are a crucial feature of financial inclusion.

In these conditions, the emergence of digital technology has altered the payment environment and financial inclusion in many nations, including South Africa. Many South Africans increasingly use mobile phones to access financial services, reflecting the fast expansion of mobile technology and other digital payment systems in recent years (Chigada & Hirschfelder, 2017). 90% of the population of South Africa, according to recent research, has a mobile phone, making it the country in Africa with the greatest mobile phone penetration (Pew Research Centre, 2020). In rural regions, where conventional banking services are frequently unavailable, mobile money services have proved particularly crucial. As a result, more individuals, especially those in rural regions, now have access to financial services.

Due to these developments in mobile technology, the financial sector has seen a considerable trend in the invention of payment methods. Customers may make payments via a number of channels, including mobile devices, laptops, or point-of-sale (POS) devices, thanks to the integration of numerous payment methods and systems into a single platform (Shaikh et al., 2023). The payment systems are anticipated to revolutionise the

payment sector, bringing customers more convenience while also increasing productivity and lowering costs. Despite these advancements, South Africa still has a long way to go before financial inclusion through digital payments is a reality.

As an illustration, Ferguson, Soutter, and Neubert (2019) note that the usage of digital payment systems in South Africa has presented new difficulties for policymakers and regulators. Regulation of digital payments and the defence of consumer rights are two major obstacles. There have been requests for stricter regulation to protect customers from fraud and other hazards in South Africa, where the "Payments Association of South Africa" (PASA) has been in charge of overseeing digital payments (Bowden et al., 2021).

The need to close the digital gap and guarantee that all South Africans have access to digital financial services is a further obstacle. Even though the usage of mobile technology has significantly expanded recently, many individuals still lack access to mobile phones or the knowledge and skills necessary to use digital financial services (Evans, 2018). Additionally, the development of financial services and technology has opened new doors for competition and innovation, but it has also sparked worries about data privacy and cyber-security.

Pieterse claims that when more financial transactions are made online in 2021, there is an increased danger of cyberattacks and data breaches, which might have negative effects on both individual customers and the financial system. In addition to these problems, the nation also has infrastructure, regulatory, and security challenges. The development of digital payment systems is hampered by the absence of infrastructure in some places, notably in rural regions. To combine innovation and consumer safety, it is difficult to regulate digital payment systems (Mavilia & Pisani, 2020). Due to the possibility of fraud and cybercrime, the security of digital payment systems is a significant concern.

This study aimed to investigate South Africa's innovative payment technology against this background. This study project, therefore, adds to the body of knowledge on payment systems and financial inclusion in academia, particularly regarding developing nations.

It will also give policymakers and practitioners information about the benefits and drawbacks of using digital payment systems to advance financial inclusion in South Africa. Overall, this study will deepen our understanding of the role that payment systems play in fostering financial inclusion and help to create more successful financial inclusion policies and strategies for South Africa.

2.3 Financial inclusion and its importance for developing economies

2.3.1 The role of financial inclusion in economic development

It is clear from the conversation that financial inclusion has been acknowledged as a crucial component of economic growth, particularly in developing nations where financial exclusion is frequently present. The provision of inexpensive and accessible financial services to all members of society, especially those with low incomes and small enterprises, is referred to as financial inclusion. It includes a variety of services, including credit, insurance, and payment services, and is viewed to boost economic development and eradicate poverty. Numerous research has also shown that financial inclusion and economic growth are positively correlated.

Through its effects on small enterprises, financial inclusion is one of the primary ways that it fosters economic growth (Ratnawati, 2020). Many developing nations rely heavily on small enterprises as an engine of economic growth, and access to capital is essential to both their survival and expansion. Financial inclusion gives small firms the financing they require to launch or grow their operations, which in turn generates jobs and stimulates the economy.

In addition, financial inclusion helps to lessen poverty. It makes it possible for people to save money and make plans for the future, which lessens their sensitivity to monetary shocks and aids in the development of assets. Additionally, having access to credit enables people to invest in businesses that generate money and raise their level of living. Additionally, financial inclusion benefits the whole economy.

In order to invest in infrastructure and other productive areas, for instance, it makes it easier to mobilise savings (Abraham & Schmukler, 2018). Higher productivity and faster economic growth follow from this. The rising usage of financial technology, such as electronic payment systems, can also aid in lowering transaction costs and boosting economic efficiency.

Despite the advantages of financial inclusion, several studies contend that there are still major obstacles to be cleared. The absence of financial infrastructure, particularly in rural regions, is one of the major obstacles to financial inclusion (Kim et al., 2018). It is challenging for citizens to get financial services in many developing nations since there aren't enough banks or ATMs. In addition, a lot of people lack the financial literacy abilities needed to make wise choices regarding financial goods and services. To guarantee that financial inclusion is inclusive and accessible to all members of society, all such difficulties and obstacles must be overcome.

2.3.2 Challenges to financial inclusion in developing economies

Economic growth must include financial inclusion, and numerous developing nations have achieved great progress in this area. People in these economies nevertheless face a number of obstacles that restrict their access to financial services. The absence of infrastructure, particularly in rural regions, is one of the main obstacles to financial inclusion in emerging countries. The capacity of financial institutions to reach rural places is hampered by the lack of access to power, the internet, and other necessities. As a result, many residents of these regions are not included in official financial systems. This issue has been cited in several studies as a major impediment to financial inclusion in emerging economies (Chen and Li, 2009; Allen et al., 2014).

The lack of financial knowledge among people in emerging nations is another significant issue. In these nations, a sizable portion of the populace is ignorant and has little knowledge of financial services and products. Their inability to interact with established financial institutions and make wise judgements is a result of their lack of financial

literacy. They continue to be denied access to conventional financial services as a result, which makes them more likely to rely on unofficial ones (Demirguc-Kunt and Klapper, 2012; Lusardi and Mitchell, 2014).

Financial inclusion in emerging economies is also severely hampered by inadequate regulatory frameworks and regulations. Numerous nations lack distinct legislative frameworks that support financial inclusion, and many of the current regulations are not properly put into practise. As a result, financial institutions could be hesitant to offer services in certain nations, and those that do might have a restricted selection of services. This issue has been cited in several studies as a major impediment to financial inclusion in emerging markets (Dabla-Norris et al., 2015; Beck et al., 2018).

Another key obstacle to financial inclusion in developing economies is the lack of access to credit. In emerging countries, small and medium-sized businesses (SMEs) frequently have limited access to formal finance, which makes it difficult for them to expand and generate jobs. In addition, discrimination against women and other marginalised groups while obtaining loans is a common occurrence. This issue has been cited in several studies as a major impediment to financial inclusion in emerging markets (Aterido et al., 2011; McKenzie and Woodruff, 2013). To achieve financial inclusion and advance economic growth in these nations, it is essential to address these issues.

2.4 The future of payment systems in South Africa

2.4.1 Trends in payment systems globally

Technology improvements and shifting customer tastes have caused a wave of upheaval in the payments business over the past several years. The development of digital wallets is one of the most important new developments in the payments sector. Consumers may keep and manage their payment card data in digital wallets, which are smartphone-based programmes that also let them make payments. Digital wallet use is rising in popularity, particularly among younger customers who are searching for simple and secure payment methods. Utilising biometric authentication is another new trend in the payments sector.

A procedure known as biometric authentication uses a person's distinctive biological traits, such as their fingerprints or facial features, to confirm their identification. To improve security and lower the risk of fraud, this technology is being employed in several payment systems, including mobile payments and ATMs.

Another new development in the payments sector is the application of blockchain technology. The distributed ledger technology known as blockchain enables safe and open transactions. By allowing quicker, more secure, and less expensive transactions, this technology has the potential to revolutionise the payments sector. The adoption of open banking is a further developing trend. A system called "open banking" gives third-party service providers access to financial data held by banks and other financial organisations. By facilitating the creation of fresh and cutting-edge payment solutions, this system has the potential to improve both the overall consumer experience and the level of competition in the payments sector.

The development of machine learning and artificial intelligence (AI) is a final new trend in the payments sector. Payment providers can better understand consumer behaviours and preferences by analysing large volumes of data using AI and machine learning. The consumer experience can be enhanced overall, and more personalised payment solutions may be created using this data. Given all this data, it is clear that the payments sector is undergoing a fast evolution spurred by both advancing technology and shifting customer tastes. Emerging developments in the sector, including as digital wallets, biometric authentication, blockchain technology, open banking, and the use of AI and machine learning, are set to have a big impact on how payments are processed throughout the world in the future.

2.4.2 The potential of new technologies & payment system innovations for financial inclusion

Technology is one means to attain financial inclusion, which has been a prominent subject in the development discourse. Financial inclusion in developing nations, particularly

South Africa, has the potential to change because of new technology and payment system advancements. The introduction of mobile money has revolutionised financial inclusion in underdeveloped nations. Banking services are now more accessible to the public thanks to the usage of mobile phones for transactions. As of December 2018, there were 866 million registered mobile money accounts across 90 countries, according to a GSMA research (GSMA, 2019). Mobile money is becoming more and more popular in South Africa, and there are several platforms available, including Instant money, cash transfer, and e-wallet. Through these platforms, consumers may use their mobile phones to send and receive money, pay bills, and access other financial services.

Another breakthrough that has the potential to revolutionise financial inclusion is blockchain technology. Without the use of middlemen, blockchain technology enables safe and transparent transactions. With the use of this technology, decentralised financial networks that are open to all users—including those without bank accounts—can be established. Several blockchain-based firms in South Africa provide unbanked people financial services. For instance, Wala is a blockchain-based financial network that gives those without access to traditional banking services banking services including savings, loans, and insurance.

Artificial intelligence (AI), which has the potential to revolutionise financial inclusion, has recently been a hotly discussed issue. People who cannot afford to pay for financial consultants can receive services and guidance from AI-powered chatbots. By giving users insights into their spending patterns, these chatbots can also aid in improved money management. Numerous businesses in South Africa are employing chatbots with AI to provide clients financial advice and services. For instance, the South African business FinChatBot provides consumers with AI-powered chatbots that can provide them financial guidance and services. Financial inclusion is another area where the usage of biometric technologies is growing in popularity. People can use their biometric information, such as fingerprints or face recognition, to access financial services.

Financial services can be offered to those who lack identifying documents or other kinds of identification using this technology. To provide identity documents to residents, the South African government has put into place a biometric identification system dubbed the "Home Affairs National Identification System" (HANIS). Financial services can be offered to those without other forms of identification using this approach.

Overall, some of the advancements that may be leveraged to offer financial services to the unbanked include mobile money, blockchain technology, artificial intelligence (AI), and biometric technology. To overcome these obstacles and encourage the adoption of new technologies and payment system innovations for greater financial inclusion, policymakers and financial institutions must collaborate. These obstacles include a lack of infrastructure, low levels of literacy and numeracy, and regulatory barriers.

2.5 Analytical framework

2.5.1 Theoretical framework

The theoretical framework provides the underlying concepts and theories that guide research. In this study, the theoretical framework is anchored on the diffusion of innovation theory and the technology acceptance model. These theories provide a basis for understanding how innovations in payment systems are adopted and accepted by users.

2.5.1 The diffusion of innovation theory

Innovation diffusion theory explains that the characteristics of innovation are the mode of innovation diffusion, with the characteristics of innovation determining the successful use of technology. Not all products have the same chances of consumer acceptance. Some products can become popular in just one night, while others take a very long time to reach consumers or fail to gain widespread acceptance at all.

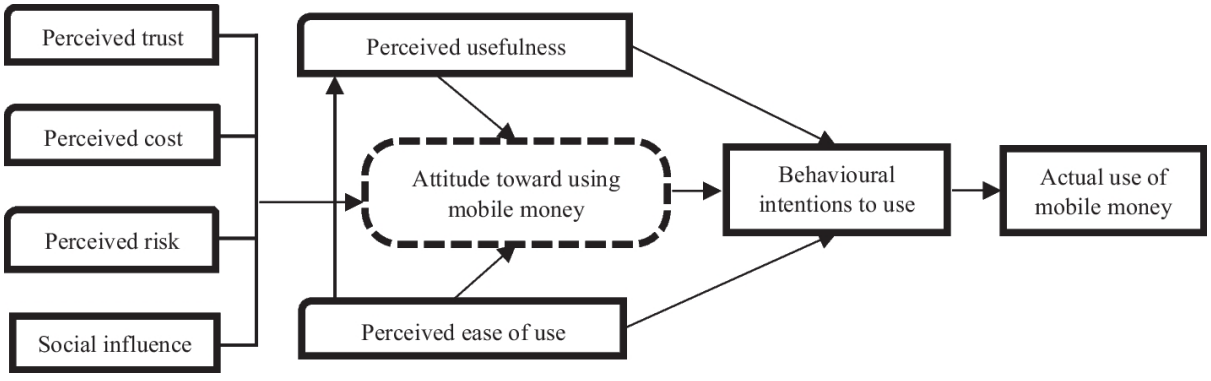
The diffusion of innovation theory, developed by Rogers (1995), explains how innovations are disseminated and adopted in a society. The theory postulates that

innovation adoption is a process that involves different stages, including knowledge, persuasion, decision, implementation, and confirmation. The theory also identifies different types of adopters, including innovators, early adopters, early majority, late majority, and laggards. These adopter categories differ in their characteristics, including risk-taking propensity, degree of exposure to media, and degree of social interaction.

The theory suggests that innovations diffuse through society in an S-shaped curve, with adoption starting slowly, picking up speed, and eventually plateauing as the innovation becomes mainstream. The diffusion of innovation theory provides a framework for understanding the stages of adoption and the characteristics of different types of adopters. Studies have applied these theories to understand the adoption and diffusion of payment innovations. For example, a study by Magsamen-Conrad et al. (2015) applied the diffusion of innovation theory to understand the adoption of mobile payment systems. The study found that users' risk-taking propensity, social influence, and perceived compatibility with existing systems influenced the adoption of mobile payment systems.

2.5.2 Technology acceptance theory Using Technology acceptance theory influence factors influencing the use of digital payment technologies

Figure 2.1 Conceptual framework



Source: (Davis, 1989)

The technology acceptance model (TAM) was developed by Davis (1989) to explain how users perceive and adopt new technologies. The model posits that perceived usefulness (PU) and perceived ease of use (PEOU) are the two key determinants of technology adoption. PU refers to the degree to which a technology is perceived to be beneficial in achieving a specific goal, while PEOU refers to the degree to which a technology is perceived to be easy to use.

TAM suggests that users are more likely to adopt a technology if they perceive it to be useful and easy to use. These two theories provide a theoretical foundation for understanding how payment innovations are adopted and accepted by users. The technology acceptance model provides insight into the factors that influence users' adoption of new technologies.

Another study by Alalwan et al. (2017) applied the technology acceptance model to investigate the factors influencing the adoption of mobile banking in Jordan. The study found that perceived usefulness, perceived ease of use, and trusts in the technology were key factors influencing the adoption of mobile banking. Perceived usefulness - is a measure of how much people think adopting mobile money services would improve their productivity, convenience, or money management. Access to financial services in remote locations, the speed and security of transactions, and the ease of mobile payments in comparison to other options are all factors that can affect perceived usefulness.

Perceived ease of use- This relate to how people think using mobile money services is simple. The user interface's simplicity, the accessibility of user-friendly features, and how simple it is to comprehend and use the mobile money platform are all elements that might affect how easy to use something is seen to be.

Attitude towards- This indicates how people view and feel about utilizing mobile money services overall. It is affected by things like perceived utility, perceived usability, individual experiences, and societal impact. Perceived utility, perceived usability, attitude

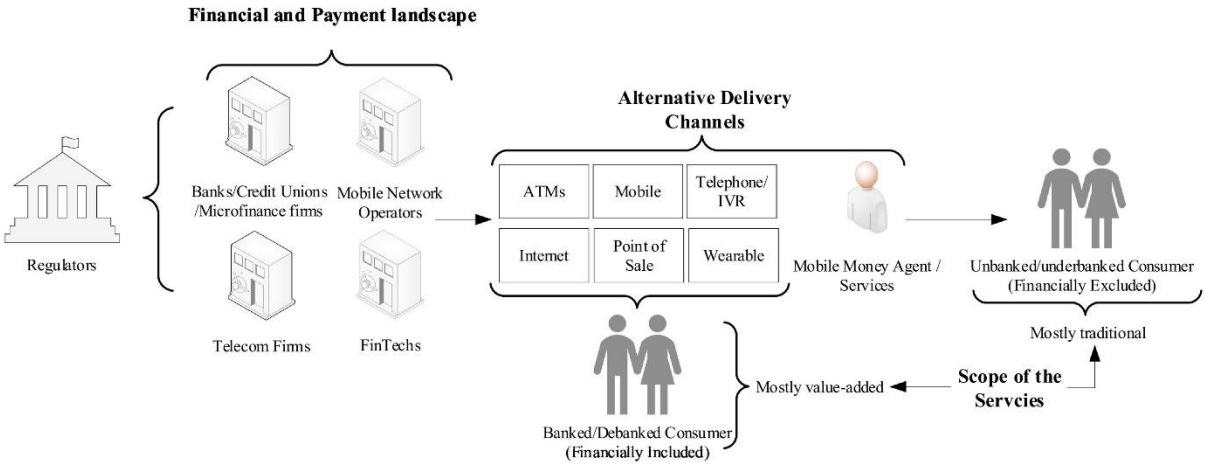
toward use, and outside variables including societal norms, peer pressure, and trust in the service provider all have an impact.

These factors can be considered by TAM to help pinpoint the main factors influencing and impeding the uptake of digital money services. To increase the perceived value and usability of mobile money platforms, it can also serve as a design and development guide.

Overall, the diffusion of innovation theory and the technology acceptance model provide a theoretical foundation for understanding the adoption and acceptance of payment innovations. These theories have been applied in previous studies to investigate the factors that influence the adoption of different payment systems. This study will use these theories as a basis for developing a conceptual framework for understanding the adoption of innovative payment technologies in South Africa.

2.5.3 Conceptual framework

To address digital divide in financial service, the below framework focuses on the following key aspect:



The mobile money ecosystem.

The conceptual framework provides a structure for understanding and analysing the research problem. It is an important aspect of research, as it helps to define the key concepts and variables that are central to the study. One of the key concepts in the conceptual framework is financial inclusion. Financial inclusion is defined as the availability and access to financial products and services for all individuals, including those who are underserved or excluded from traditional financial institutions.

The World Bank defines financial inclusion as "the ability of individuals and businesses to access useful and affordable financial products and services that meet their needs: transactions, payments, savings, credit, and insurance—delivered in a responsible and sustainable way" (World Bank, 2018).

Financial inclusion is important for economic growth and development, as it provides individuals and businesses with the tools they need to save, invest, and grow their assets.

Another key concept in the conceptual framework is payment systems. Payment systems are the mechanisms that enable the transfer of funds between parties. Payment systems can be cash-based, such as physical currency or checks, or electronic, such as credit cards, mobile payments, or digital currencies.

Payment systems are evolving rapidly, driven by technological innovation, regulatory changes, and shifts in consumer behaviour. The payment systems with other financial services, such as banking and insurance, is creating new opportunities for financial inclusion.

Infrastructure: This entails making sure that everyone has access to affordable and dependable internet connectivity as well as the hardware devices (such as laptops or smartphones) needed to access digital financial services. Broadband coverage can be increased, especially in disadvantaged areas, and incentives or subsidies can be offered to make equipment more affordable.

Affordability and accessibility: All people, regardless of socioeconomic level, should have access to cheap financial services. This can entail lowering transaction costs or providing low-cost banking solutions to people with tight budgets. The availability of digital financial services in a variety of languages and their user-friendliness for people with various degrees of digital literacy can also be improved.

Trust and security: To close the digital gap, developing trust in digital financial services is essential. Effective customer assistance, transparent policies, and strong security measures can help achieve this. them' worries can be reduced and the adoption of digital financial services encouraged by educating them on recommended practices for online security and preserving their personal and financial information.

Partnerships and collaboration: To close the digital divide, it is necessary for governments, financial institutions, technology companies, and non-profit groups to work together. Public-private collaborations can be used to pool resources and conduct projects to close the digital gap in financial services.

Monitoring and evaluating: It's crucial to continuously assess the success of programs designed to close the digital divide in financial services. To make sure that efforts are focused and successful, this can assist identify gaps, evaluate the impact of interventions, and make required improvements.

Digital literacy and skills: It's crucial to offer training and education programs to people who lack understanding or confidence in using digital financial services, to increase their digital literacy and abilities. Basic computer proficiency, knowledge of online security and privacy, and familiarity with digital banking and payment platforms are a few examples of what this can include.

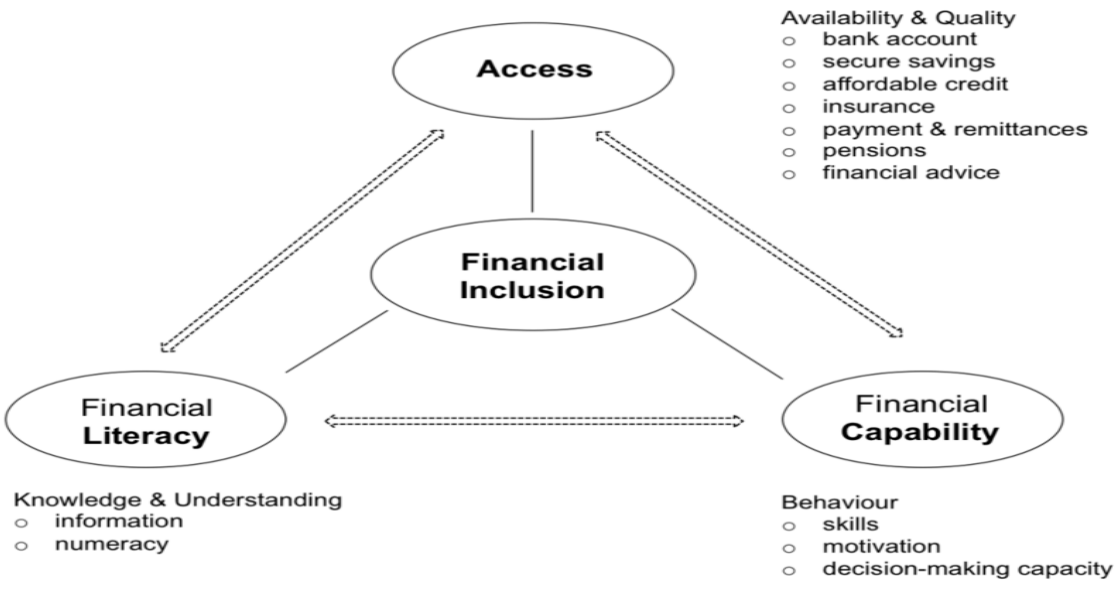
Regulation- Regulation plays an important role in shaping the development of payment systems and financial services. Effective regulation can help to ensure the safety and soundness of the financial system, protect consumers, and promote competition and innovation. However, regulation can also create barriers to entry and limit the availability

of financial services, particularly for underserved populations. The conceptual framework will consider the role of regulation in enabling financial inclusion and promoting innovation in payment systems.

The digital divide in financial services may be closed, and everyone can benefit from digital financial inclusion, by putting in place a thorough framework that takes these factors into account.

Technology has the potential to improve the accessibility and affordability of financial services, particularly in developing countries where traditional banking infrastructure may be lacking. Mobile payments, for example, have emerged as a key driver of financial inclusion in Africa, where mobile phone penetration is high but traditional banking services are limited (Mbiti & Weil, 2011). The use of blockchain technology and digital currencies may also provide new opportunities for financial inclusion by reducing transaction costs and increasing the speed and security of payments. The study hypothesises the following considering the conversation that has just been had.

Figure 2.2: Innovative payment technologies and financial inclusion

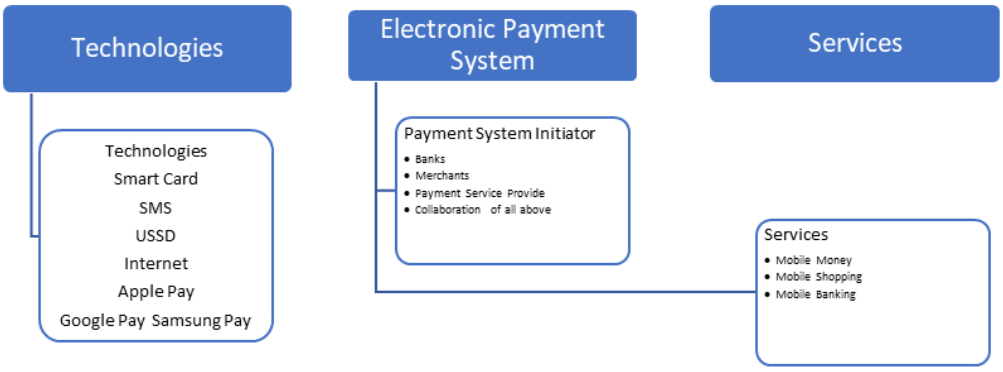


Source: (Markus Pauli 2019)

Innovative payment technologies will increase financial inclusion in South Africa because they will make it easier and more convenient for people who have traditionally been denied access to traditional banking services. The use of cutting-edge payment methods might broaden South Africa's financial inclusion. Innovative payment technologies have arisen as a viable remedy to deal with the problems of financial inclusion in the nation because of the expansion of the digital economy and the accessibility of mobile phones.

Numerous studies that looked at the effect of cutting-edge payment technology on financial inclusion provide weight to this idea. The use of mobile money services enhanced financial inclusion in several developing nations, including South Africa, according to World Bank research. According to the report, mobile money services have increased access to financial services, particularly for the underprivileged and those residing in rural regions. Mobile money services have significantly aided in fostering financial inclusion in Africa, according to a separate report by the "International Finance Corporation" (IFC). The growing usage of mobile phones in South Africa has sped up the adoption of cutting-edge payment methods. Instant money and E-wallet are two examples of mobile money services that have been introduced to the nation and have become popular with the unbanked populace. The usage of mobile phones for financial transactions climbed from 28% in 2015 to 37% in 2018, according to the FinScope South Africa 2018 Survey. The poll also showed that the low-income population used mobile phones for financial transactions most frequently, suggesting that cutting-edge payment technology may help the unbanked become more financially included.

Figure 2.3: Payment systems and financial services



Source: Researcher

By generating new prospects for financial inclusion, payment systems and financial services can completely transform the financial sector. According to this supposition, customers would benefit from better financial goods and services because of the integration of payment systems with financial services. The research supports this claim by demonstrating how the fusion of payment and financial services may boost access to financial services and promote greater financial inclusion. Utilising data analytics to enhance customer experience and risk management is one of the main advantages of payment system and financial sector convergence. Financial institutions may modify their goods and services to better suit the demands of their consumers by using data analytics to better understand their needs and preferences. By offering clients more individualised and pertinent financial goods and services, this might promote financial inclusion.

The capacity to provide cutting-edge financial goods and services is another advantage of payment systems and financial services. For instance, in many developing nations, mobile banking and payment systems have completely changed how consumers access financial services. Financial inclusion has expanded because of mobile payments allowing previously unbanked people to access financial services including savings and loans. The expenses associated with financial transactions can also be decreased with the convergence of payment systems and financial services.

Typical banking services may not be accessible to low-income people, and typical financial services are sometimes pricey. Convergence between payment systems and financial services can assist to lower these costs, increasing the accessibility and affordability of financial services for a wider range of people.

Overall, by offering customers more individualised and pertinent financial products and services, lowering transaction costs, and offering new and innovative financial products and services, the convergence of payment systems and financial services has the potential to significantly improve financial inclusion.

2.6 Chapter summary

This assessment of the literature looked at cutting-edge payment technology as a tool for financial inclusion in South Africa. The study focuses on the importance of financial inclusion for economic growth, obstacles to financial inclusion in developing countries, global payment system trends, and the promise for financial inclusion offered by emerging technology and payment system advances. The theoretical and conceptual frameworks pertinent to the topic were also included in the review.

Two hypotheses were implied considering the evaluated material. According to hypothesis 1, the deployment of cutting-edge payment technology would improve South Africa's financial inclusion. Numerous studies that demonstrate how new payment technologies like mobile money and digital wallets have helped other nations become more financially inclusive corroborate this idea. The research also emphasises how these technologies may improve underserved and unbanked groups in South Africa's access to financial services.

Regarding the second hypothesis number two, customers will receive better financial goods and services because of payment systems and financial services. This theory is predicated on the knowledge that financial services and payment systems will give financial institutions new chances to provide consumers with innovative and specialised

financial goods and services. The literature also emphasises how this innovation has the potential to boost competition, save costs, and expand financial access.

Based on the knowledge that financial inclusion is a multifaceted term that includes access, usage, quality, and effect, the conceptual framework for this study was developed. The framework also acknowledges that payment systems, which offer secure, reliable, and effective ways to conduct financial transactions, are essential for facilitating financial inclusion. The framework recognises infrastructure, goods and services, and rules and policies as the three essential components of payment systems. To attain the objective of financial inclusion, it is necessary for players in the public and private sectors to work in concert on these connected factors.

Overall, the two hypotheses developed for this study are supported by the literature evaluation, which offers evidence in this regard. Financial inclusion in South Africa may benefit from the adoption of cutting-edge payment technology as well as from the innovation of payment systems and financial services. The conceptual framework offers a helpful framework for comprehending the intricate and multifaceted nature of financial inclusion and the function that payment systems play in making it possible. The results of this literature evaluation will help to guide the study's approach and advance knowledge of innovation's potential for South Africa's payment systems in the future.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The research approach used for this study is covered in this chapter. The study's methodology was quantitative, descriptive, and positivist. The best tactic was determined to be a survey. As the most suitable research tool, a questionnaire was used. Questionnaire development, administration, collection, coding, cleaning and analyzing are highlighted. Target population, sample and sampling techniques are also provided. Instrument reliability and validity are also provided. Study limitations, elimination of bias and ethical considerations. This study aspires to contribute to the current body of knowledge in this subject by using a systematic and robust research process to uncover important insights concerning the future of payment systems in South Africa and their influence on financial inclusion. Measures will be taken to overcome any constraints and problems to ensure the reliability and validity of the findings. The external and internal validity of the study will be preserved as quality assurance measures, boosting the credibility and applicability of the findings. The participants' rights and confidentiality will be carefully considered considering ethical issues. This study aspires to contribute to the current body of knowledge in this subject by using a systematic and robust research process to uncover important insights concerning the future of payment systems in South Africa and their influence on financial inclusion.

3.2 Research design

In this study, cross-sectional surveying was the method of choice for the research plan. A cross-sectional analysis of people's attitudes, behaviors, and behaviors about payment systems and South Africa at a certain time was utilized as the study's methodology (Wang & Cheng, 2020). For several reasons, we decided to perform cross-sectional research. It first allows for the investigation of many factors and how they interact within the given situation. Researchers can learn more about people's payment practices, the availability

of financial services, how often they use such services, and the barriers to financial inclusion by surveying a statistically significant portion of the population. This paradigm enables a thorough investigation of the existing environment and the variables affecting financial inclusion.

A cross-sectional survey approach is practical for examining research issues since it allows for the simultaneous collection of data from several sources. It enables us to compare individuals from varied socioeconomic backgrounds, ages, and races. Multiple viewpoints enhance the study's technique and produce conclusions that are more reliable and applicable (Leung, 2015). The analysis of the effects of convergence and technical improvements on people's usage of financial institutions and their capacity to obtain banking services is another application for which the cross-sectional survey technique is ideally suited. It enables the gathering of information on people's opinions of and interactions with regional payment systems and financial inclusion indicators. With the use of the paradigm, payment methods, financial inclusion, and people's economic well-being may all be better understood.

Additionally, the researcher employs a few strategies to solve the language and comprehension barrier. For instance, a pilot test with a small sample of participants who represent the desired responders is carried out before the survey is given to the target audience. The survey questions and instructions were subjected to a pilot test in order to discover any linguistic or comprehension concerns. To guarantee clarity and understandability, the appropriate adjustments must be made based on the input from the pilot test. Additionally, all survey instructions and questions will be written in plain and basic English. Avoiding jargon, technical terminology, and complicated phrase constructions that might mislead participants will be the main goal.

3.3 Research philosophy

Zikmund and Babin (2012:103) state that the phenomenological philosophy understands human experiences are “inherently subjective and are determined by the contexts in

which people live. There is no universal or objective truth in phenomenology, there is subjectivity.

Sekaran and Bougie (2013:29) state that the positivist philosophy "science and scientific research is seen as the way to get to the truth". A positivist researcher is interested on phenomena that can be observed and objectively measured.

For this study a positivist (quantitative) philosophy was adopted as the researcher sought to determine Innovative payment technologies as an enabler of financial inclusion in South Africa

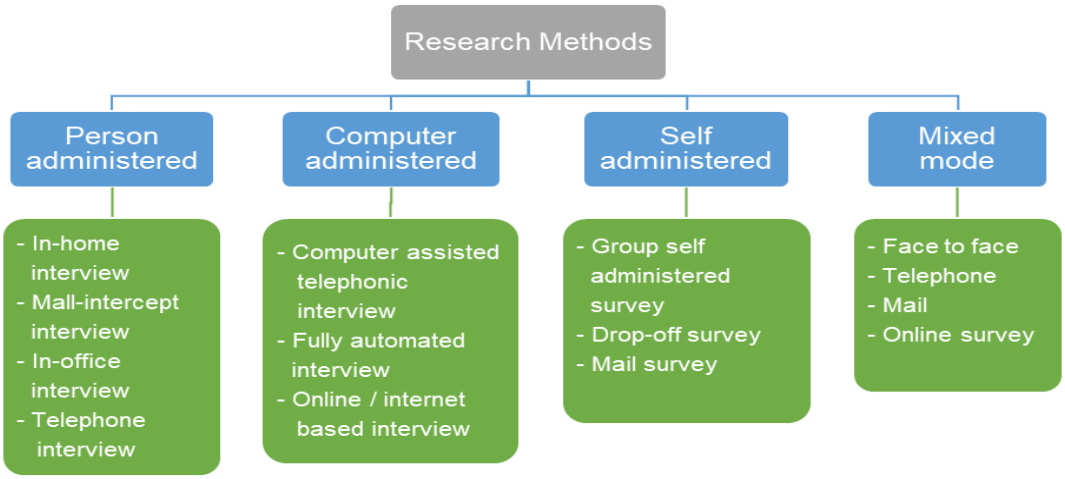
3.4 Research strategy

This section will focus on the research strategy that will be adopted for this study.

3.4.1 Positivist research strategy

- **Surveys:** "involve collecting data from a large number of respondents using a predesigned and structured questionnaire" (Burns and Bush, 2010:266). (Burns and Bush, 2010:270-294) also provide the following four basic survey methods:

Figure 3.1: Four survey methods



Source: Burns and Bush (2010:270-294)

3.4.2 Phenomenological research strategy

- **Interviews:** Easwaramoorthy and Zarinpoush (2006:1) depict an interview as a conversation wherein one person asks questions and the other one answers the questions. there are structured and unstructured interviews and these are conducted face to face, telephonically and through computer assistance (Sekaran and Bougie, 2013:118-119):
    - ❖ **Structured interviews:** asking questions whose order and content is predetermined (Sekaran and Bougie, 2013).
    - ❖ **Unstructured interview:** questions are not prepared in advance.
    - ❖ **Semi-structured interviews:** a combination of structured and unstructured types (Easwaramoorthy and Zarinpoush (2006).
- **Focus groups:** "a discussion conducted by a trained moderator among a small group of participants in an unstructured and natural manner" (Malhotra, Birks and Wills, 2012:224).
- **Case study:** "an intensive study about a person, a group of people or a unit which is aimed to generalize over several units" (Gustafsson, 2017:2).

A survey was adopted for this study as it is a positivist quantitative method "used to collect descriptive data" (Malhotra, 2012:216). This method was chosen to provide an all-encompassing view of the future of payments in South Africa, which is crucial for the country to enable financial inclusion. Quantitative methods, such as surveys, analysis of transaction data, and statistical models, can be used to gather and analyse information on societal shifts in payment practises and indicators of financial inclusion.

3.5 The research instrument

Sobrepena and Paliparan (2011:1-28) identifies a host of research instruments used to collect data and questionnaire was adopted in this study:

- **Questionnaire:** A questionnaire is “a structured technique of data collection that consists of a series of questions, written or verbal, that a respondent answer” (Malhotra, 2012:332). “Questionnaires are generally designed to collect large numbers of quantitative data” (Sekaran and Bougie, 2013:147).
- **Case study:** qualitative description of aspects of a thing or traits of a person.
- **Observation:** data is perceived through the five senses, sight, touch, hear, taste and smell. Observation is suitable to determine behaviour of respondents without asking respondents directly” (Sekaran and Bougie, 2013:130).

A questionnaire structured questions was adopted for this quantitative, descriptive, positivist survey. “To collect quantitative primary data, a researcher must design a questionnaire” (Malhotra, 2012:357).

A questionnaire with predetermined questions was used as the data collector for this investigation. The questionnaire was created after a comprehensive analysis of the relevant literature, measuring scales, and research. There were many phases of development to assure the reliability and validity of the instrument. First, researcher did a literature search to identify relevant theoretical frameworks and empirical factors. The review served to inform the development of pertinent research questions and the selection of essential questionnaire components. The survey questions were designed to elicit crucial information, such as the participants' demographics, their use of payment technologies, their views on financial inclusion, and their opinions on the future of payment systems.

The completed survey includes both short answer and open-ended questions. Likert scales, multiple choice, and yes/no questions are all examples of closed-ended question types. The answers to these questions can be used as raw material for statistical tests. Participants can give more in-depth and complex replies to open-ended questions, allowing researchers to acquire qualitative data.

Because it provides a systematic and standardised approach to collecting data on participants' experiences, perceptions, and attitudes (Sovacool, Axsen, & Sorrell, 2018)

regarding the future of payment systems and financial inclusion in South Africa, the structured questionnaire used as the research instrument is appropriate for the study's aims. The research questions and hypotheses are considered when developing the questionnaire items, guaranteeing that the information gathered is pertinent to the study's aims. Data collection, data input, and data comparison are all streamlined because to the use of a structured questionnaire, which also helps researchers better understand and apply their results.

3.5.1 Questionnaire construction

Malhotra (2012:351-352) provides the following questionnaire design checklist:

Table 3.1: The questionnaire design checklist

Step 1: Specify the information needed
Step 2: Specify the type of interviewing method
Step 3: Determine the content of individual question
Step 4: Overcome the respondent's inability and unwillingness to answer
Step 5: Decide on the question structure
Step 6: Determine the question wording
Step 7: Arrange the questions in proper order
Step 8: Choose the form and layout.
Step 9: Reproduce the questionnaire
Step 10: Pretest the questionnaire.

Source: Malhotra (2012:351-352)

The above questionnaire design process checklist was adopted for this study as questions flowed from the stated research problem, were aligned to the research objectives and flowing from the literature review. The questionnaire used was divided into two sections:

- **First section:** had five biographical questions addressing age, gender, educational level, occupation, and service.

- **Second section:** was divided into three subcategories addressing the three research objectives:
    - ❖ **Objective 1:** had seventeen questions aimed at establishing the knowledge of payment innovation in South Africa. The questions are divided into five categories, communities' attitudes towards digital/ innovation payments, customer satisfaction.
    - ❖ **Objective 2:** had nineteen questions aimed at establishing whether communities have the technologies and payment financial literacy needed. The questions are divided into three categories, technology use, financial education alignment and accessibility of technology.

3.5.2 Administration of the questionnaires

This study used the person administered and self-administered methods. Communities both in rural areas were interviewed in their homes. No costs were incurred as all those who were interviewed share the same location with the researcher. The self-administered method used the drop-off survey. Some paper-based questionnaires were given to the respondents to complete on their own.

3.5.3 Collection of questionnaires

For the drop-off survey the researcher collected the questionnaires at the respondents' work and home.

3.6 Target population

Burns and Bush (2010:364) define a population as "the entire group under the study as defined by research objectives". Malhotra (2012:369) defines a target population as "the collection of elements or objects that possess the information the researcher seeks and about which the researcher will make inferences".

For this study the target population consists of 200 employed and unemployed individuals.

3.6.1 Sampling

"A sample is a subset of the population that suitably represents the entire group" (Burns and Bush, 2010:366). The sample size is determined using Krejcie and Morgan (1970) table. As the population is 200 various from community members. From

Zikmund and Babin (2012:322-331) provide the following two broad groups of sampling techniques:

- **Probability sampling:** every element has a fixed and known chance of being selected. Probability sampling has the following techniques:
  - **Simple random sampling**: each element has a known and equal chance of being selected.
  - **Systematic sampling:** random starting point is used to choose a sample and then picking every element in succession from the sampling frame.
  - **Stratified sampling:** two-step process dividing the population into subpopulations and then randomly choosing sample elements from them.
  - **Cluster sampling:** another two-step process dividing the population into mutually exclusive clusters and then cluster groups are randomly selected.
- **Nonprobability sampling:** elements have no known chance of being selected. Nonprobability sampling has the following techniques:
  - **Convenience sampling:** the researcher considers his or her convenience when selecting a sample.
  - **Judgmental sampling:** the researcher uses his or her judgement to purposively select a sample.
  - **Quota sampling:** a two-stage technique involving the establishment of quotas of population elements and then conveniently or judgmentally selecting the sample elements.
  - **Snowball sampling:** respondents are initially selected randomly and they then refer the subsequent respondents.

Participants were chosen using a convenience sampling method. Convenience sampling refers to the practise of collecting data from people and institutions that are easy to reach (Zoellner & Harris, 2017). Key informants, specialists, and decision-makers in the payment sector who can contribute insightful information and knowledge to the study will be sought out. For the convenience sample, participants will be for people or groups with extensive knowledge of financial inclusion initiatives, payment systems, and related subjects. Financial institutions, payment service providers, regulatory organisations, trade groups, and government entities may potentially have representation in this group.

The use of convenience sampling is preferred because it allows for quick and easy access to persons who have the required knowledge and experience. This kind of sampling provides for a more narrow and detailed investigation of the study issue (Busebaia & John, 2020). The results from this sample may not, however, be generalizable to the total South African population involved in financial transactions.

3.7 Data analysis

Data analysis, in research, entails the process of cleaning, inspecting, transforming, and modeling data in order to discover useful information, and draw conclusions (Malhotra *et al.*, 2012). Thus, the process it involves applying various statistical and computational techniques to uncover patterns, relationships, and trends within datasets. Therefore, using SPSS Version 26 statistical analyses were performed. The researcher performed both inferential and descriptive statistical analyses to uncover patterns and relationship between the studied variables. Pearson correlation tests were done to test the research hypothesis. Descriptive statistics, on the other hand, were employed to depict frequencies, central tendency and variability or dispersion (Sekaran and Bougie, 2013:282). Frequencies were depicted using frequency tables and percentages. Central tendencies were illustrated by using the mean and variability was depicted by using standard deviation.

3.8 Validity and reliability

The section below deals with instrument validity and reliability.

3.8.1 Validity

Sobrepena and Paliparan (2011:29-30) provides the following meaning of validity and its types: Validity is a measure of how well a scale "measures what it is intended to measure".

- **Construct validity:** "addresses the question of what construct or characteristic the scale is measuring" (Malhotra et al., 2012:436)
- **Content validity:** "consists of a subjective but systematic evaluation of the representativeness of the content of a scale for the measuring task at hand." Malhotra et al. 2012:436)
- **Criterion validity:** tests whether a scale delivers as expected relative to criteria selected as meaningful (Malhotra et al., 2012:436)

3.8.2 Reliability

Malhotra et al (2012:433-435) has the following meaning and types of reliability:

Reliability is concerned with whether "a scale produces consistent results if repeated measurements are made on the characteristic".

- **Alternative / parallel forms of reliability:** constructing two equivalent forms and measure the same respondents at two different times.
- **Test-retest reliability:** identical sets of scale items are administered to the respondents at two different times under similar circumstances.
- **Internal consistency reliability**: testing the internal consistency of a set of items where several items are added up in order to get a total score for the scale.
- **Split-half reliability:** scale items are divided into two halves and the halves are correlated.

This study adopted Cronbach's alpha value to measure internal consistency reliability. This measures the extent to which individual questions hang together. The more they hang together, the more likely that the questions measure the same thing (Maree, 2010).

Table 3.2: Cronbach alpha interpretation

Cronbach alpha	Internal consistency
$0.9 \leq \alpha$	Excellent
$0.8 \leq \alpha < 0.9$	Good
$0.7 \leq \alpha < 0.8$	Acceptable
$0.6 \leq \alpha < 0.7$	Questionable
$0.5 \leq \alpha < 0.6$	Poor
$\alpha < 0.5$	Unacceptable

Source: Montshiwa and Moroke (2014:355)

3.9 Limitations of the study

The three major limitations to this study were the time provided for the study, the convenience non -probability sampling employed and unemployed and the scarcity of journal articles dedicated to this study. The researcher had to use a fair amount of internet articles as the field is newer and academic sources are still scarce. No inferences can be established from this study as a result.

3.10 Elimination of bias

Sekaran and Bougie (2013) provide the following areas as being susceptible to bias in research:

- **Questionnaires:** researcher explained the questions consistently to different participants. The researcher used two different survey techniques, face to face interviews and self-administered surveys. Leading, loaded, sensitive and socially desirable questions were not included in the questionnaire.

3.11 Ethical considerations

According to Sekaran and Bougie (2013:13) "ethics in business research refers to a code of conduct or expected societal norms of behavior while conducting research".

3.11.1 Ensuring participants have been given informed consent

Informed consent according to Bryman (2012) comprises respondents' understanding and voluntary willingness to take part in the study. The respondents were informed of who the

researcher was, how the study came about, what the study sought to fulfil.

3.11.2 Ensuring no harm comes to participants

Participants were informed that participation in the study is voluntary. Participation will not expose the participants to any harm. Participants can withdraw from the study at any moment if they so desire.

3.11.3 Ensuring confidentiality and anonymity

No names were divulged. Participant names were never requested and even those the researcher knew; their names were kept anonymous. Responses were kept confidential and were used only for the purposes of this study.

3.11.5 Ensuring that permission is obtained

Permission to conduct this study was obtained from respective authorities.

3.12 Chapter summary

This chapter provided the research methodology that was adopted for this study together with reasons for the choice. The research designs were highlighted and the descriptive one was adopted. The study followed a positivist philosophy and the reason for that was provided. The survey was the strategy of choice and the questionnaire a chosen research instrument. Survey methods and a questionnaire design process checklist were also provided. Questionnaires will be administered personally, and some will be dropped-off for self-administration. Responses will be analyzed for frequency, central tendency and dispersion. Population, sample size and sampling techniques were identified. Instrument validity and reliability were also discussed. Study limitations, elimination of bias and ethical considerations was also attended to.

CHAPTER FOUR

PRESENTATION OF RESULTS

4.1 Introduction

This chapter presents the results of the study derived from the data collected through a structured questionnaire. The results are divided into two major categories: demographic results and main results. The main results directly relate to the research objectives set primarily for comprehending and potentially addressing the identified research problem.

4.2 Questionnaire response rate

A total of 288 questionnaires were sent to the respondents; thus, the questionnaire response rate is presented in Table 4.1 below.

Table 4.1: Questionnaire response rate

Description	**Number**	**Percentage of total**
Questionnaires distributed	288	100%
Returned questionnaire	283	98.2%
Unreturned questionnaires	5	1.7%
Partially completed questionnaires	72	25%
Valid questionnaires	**211**	**73.3%**

The questionnaire response rate is presented in Table 4.1 above. Out of the 288 questionnaires sent, 283 were returned to the researcher, accounting for 98.2% of the total. Only five questionnaires (1.7%) were not returned to the researcher. Also, 72 questionnaires (25%) were partially completed, showing that not all questionnaires were fully answered. After excluding the partially completed questionnaires, 211 questionnaires emerged valid, giving the study a 73.3% questionnaire response rate. These valid questionnaires, therefore, were used for the analyses. The response rate and

questionnaire distribution give insights into the participation and engagement levels of the respondents, which is considered in interpreting the study's results.

4.3 Reliability test results

The researcher tested the reliability of the research instrument used to collect data. The results thereof are presented in Table 4.2 below.

Table 4.2: Cronbach alpha test

Construct	**Items**	**Cronbach's Alpha**
Digital skills	5	0.89
Digital financial services features	4	0.79
Digital transaction monitoring	7	0.88
Access to digital financial services	3	0.76
Digital financial service adoption	10	0.86
Overall	**29**	**0.83**

The Cronbach's Alpha coefficients presented in Table 4.2 reveal the internal consistency and reliability of the measurement scales used in the study. The digital skills construct, consisting of 5 items, had a high level of internal consistency indicated by a Cronbach's Alpha index of 0.89. Similarly, the constructs of digital transaction monitoring (seven items) and digital financial service adoption (10 items) revealed high internal consistency with coefficients of 0.88 and 0.86, respectively. The construct of digital financial services features (four items) showed a reasonably good level of internal consistency with an index of 0.79. Meanwhile, the construct of access to digital financial services (three items) highlighted a moderate level of internal consistency with a coefficient of 0.76. Overall, when considering all 29 items together, of the questionnaire, the measurement scales demonstrated good internal consistency and reliability with a Cronbach's Alpha index of 0.83. Therefore, the results show that the items within each construct are coherent and

reliable measures, giving the researcher confidence in the meaningfulness and accuracy of the study's data.

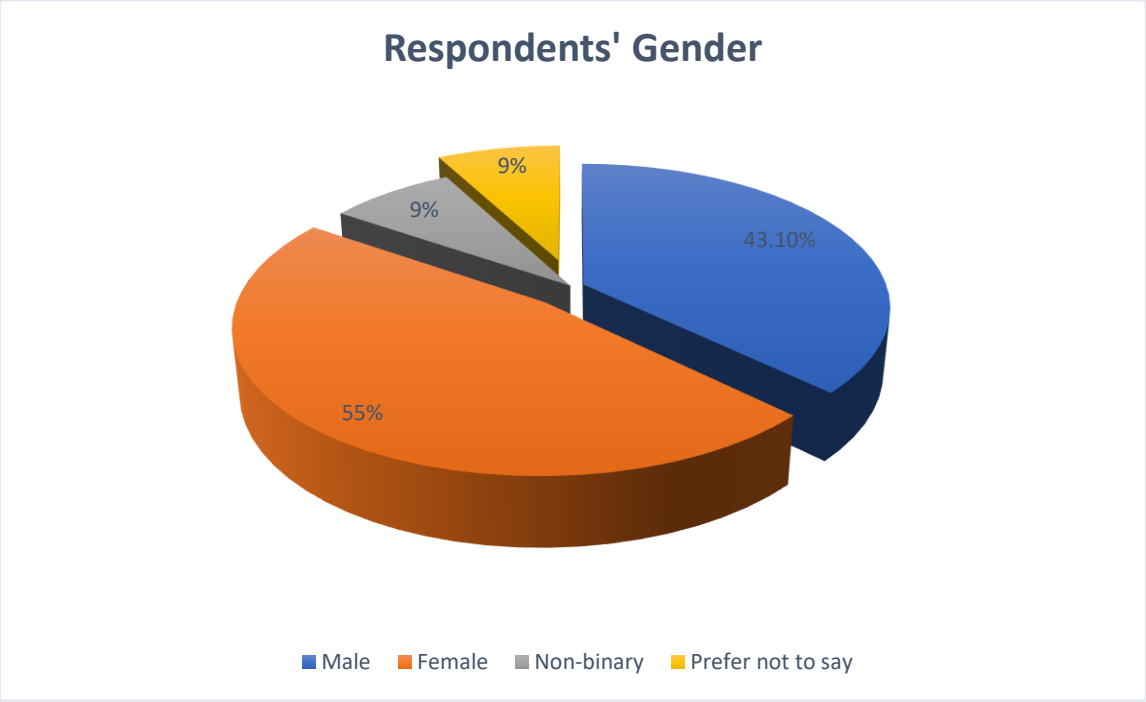
4.4 Demographic results

To ensure the reliability of the data and its relevance to the research objectives, the researcher initially collected information on the demographic status of the respondents. This step was assumed crucial in assessing the reliability of the main results. The results from these inquiries are presented below.

4.4.1 Respondents' gender

Respondents were asked to reveal their gender. The results pertaining this enquiry are presented, in Figure 4.1, below.

Figure 4.1 Respondents' gender



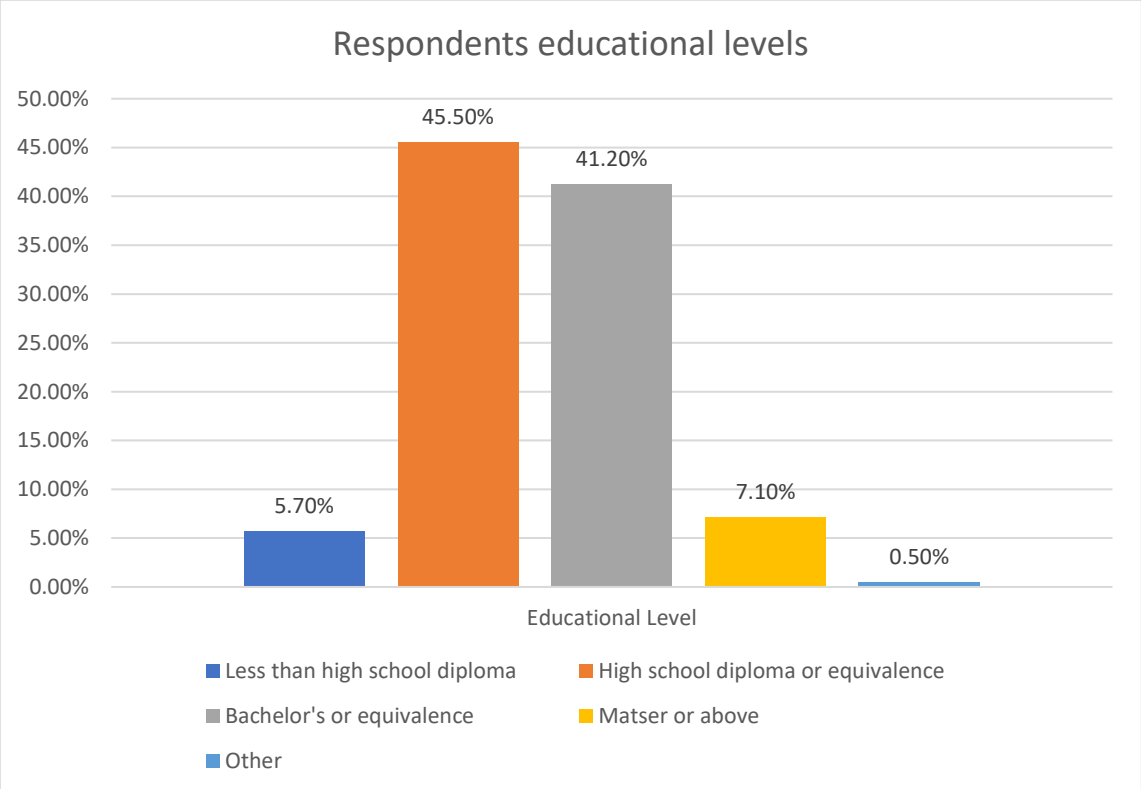
The results on the respondents' gender inquiries reveal that among the 211 respondents, 55% identified as female; 43.10% identified as male; 9% identified as non-binary, and

9% preferred not to disclose their gender. These results reveal gender distribution among the respondents, highlighting the diverse composition of the sample. Understanding the gender demographics of the respondents, therefore, contribute to a comprehensive analysis of the data and ensures that the research findings are inclusive and representative.

4.4.2 Respondents' educational level

The respondents were required to indicate their highest educational levels. The results pertaining this enquiry are presented in Figure 4.2 below.

Figure 4.2: Respondents' educational level



The study results presented in Figure 4.2 above show that of the total respondents, 5.7% had less than a high school diploma, 41.2% had a bachelor's degree or equivalent, 45.5% possessed a high school diploma or equivalent, 7.1% had a master's degree or higher, and

0.5% had qualifications classified as "other." These results, therefore, provide an overview of the educational attainment levels of the respondents.

4.4.3 Respondents' other characteristics

The study gathered data from different types of South African citizens and the results of characteristics of the respondents from which the data was gathered is presented below.

Table 4.3: Diverse sample

Category	Number	Percentage
Employed individuals	95	45%
Unemployed individuals	70	33.2%
Elderly individuals	15	7.1%
Students	21	10%
Disabled individuals	10	4.7%
Total	**211**	**100%**

The results on Table 4.3 above, on other significant characteristics of the sample, provide insights into the distribution of individuals within different categories. Among the respondents, 45% were employed individuals, representing the largest group. Unemployed individuals took 33.2% of the sample, while 7.1% were elderly individuals. Students comprised 10%, and disabled individuals were 4.7% of the sample. These results show the diverse composition of the population under investigation, reflecting the varied age groups, employment statuses, and disability statuses within the study's scope.

4.5 Main results

The following are the main results of the study that offer a close understanding of the issues surrounding digital divide in South Africa. Solutions to addressing the identified

digital divide issues in South Africa are therefore informed by the results presented in the following text.

4.5.1 Digital skills

The study sought to seek answers on the digital skills South Africans possess in relation to the digital divide issues that keeps existing across the country. Therefore, six distinct questions were paused, and the results are presented in Table 4.2 below

Table 4.4: Digital skills

Digital skills	**Not at all true**	**Not so true**	**Neither true nor untrue**	**Mostly true**	**Very true**	**Mean**
Knowing how to install mobile apps	0.5%	1.9%	-	14.2%	83.4%	4.41
Knowing how to use mobile apps	-	0.9%	1.9%	20.4%	76.3%	4.45
Knowing where to click on webpages	0.5%	0.9%	1.9%	23.7%	72.5%	4.46
Knowing how to complete online applications	0.5%	1.4%	-	24.2%	70.6%	4.36
Knowing how to find information online	0.5%	0.9%	2.4%	22.7%	73%	4.39

The results of the digital skills survey show varied insights into the level of proficiency in various digital skills across the respondents. Looking at the percentages, it is evident that most of the respondents expressed a high level of competence in the surveyed digital skills. In the case of knowing how to install mobile apps, only a small percentage (0.5%)

highlighted that it had difficulties in installing mobile app, while the majority (83.4%) reported they had no issue in installing the apps. Similar patterns can be observed for other skills such as knowing where to click on webpages, knowing how to use mobile apps, knowing how to complete online applications, and knowing how to find information online. These results imply that the surveyed respondents generally possess a strong grasp of digital skills, as indicated by the high percentages of mostly true and very true responses. The mean scores support this interpretation, with all digital skills scoring above 4 out of 5. This indicates a high average level of agreement with the statements, supporting the overall proficiency of the respondents in the surveyed digital skills.

4.5.2 Digital financial services features

The study also investigated issues around digital financial service features with the goal of finding out if respondents had a good view and experience of the features. The results are presented below.

Table 4.5: Digital financial service features

Digital financial services features	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**	**Mean**
Smartphone usage for daily banking transaction	2.4%	0.9%	3.8%	28.4%	60.7%	
Confidence in using banking app or internet banking	67.85	25.6%	-	4.3%	1.4%	3.72
User-friendliness of banking	59.7%	28.6%	7.6%	1.9%	0.9%	3.61
Trust in the positive impact of bridging the digital divide	1.9%	2.8%	19.9%	37.4%	37.4%	3.95

Table 4.4 above presents study's results from a study on digital financial service features and the respondents' perceptions of these features. The results indicate the respondents' experience with digital financial services features. Regarding smartphone usage for daily banking transactions, a majority of respondents (60%) strongly agreed, while 28% agreed, suggesting a positive experience of this practice. In terms of confidence in using banking apps or internet banking, a significant proportion (67.85%) strongly disagreed, implying a low level of assurance in navigating these platforms. The study also reveals that a majority (59.7%) disagrees that banking services are user-friendly, although a notable minority (1.9) agrees. Finally, the findings show that a significant portion of the participants (37.4%) both agreed and strongly agreed with the positive impact of bridging the digital divide in financial services.

4.5.3 Transaction monitoring

The study examined how respondents use mobile apps or the Internet in monitoring their transactions. Table 4.5 below shows the results of the study concerning this enquiry.

Table 4.6 Transaction monitoring

Transaction monitoring	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**	**Mean**
Daily transaction	0.5%	1.4%	5.3%	31.3%	61.5%	4.81
Investment growth	33.5%	40.4%	18.2%	1.9%	5.9%	3.59
Banking products	2.4%	8.1%	14.4%	31.6%	43.3%	4.72
Monthly bills	0.5%	4.8%	5.3%	27.5%	61.8%	4.87
Electricity, lotto and airtime	1.0%	1.9%	43%	27.8%	65.1%	4.91
Proof or payments and statements	0.5%	4.9%	6.8%	25.9%	62%	4.61

Product exploration and financial education	30.1%	40.7%	19.6%	7.2%	2.4%	3.51

The results, presented in Table 4.5, shows the level of agreement or disagreement regarding the use of mobile apps or internet banking for transactions monitoring. The results reveal interesting insights into various aspects of digital transactions. Notably, a significant majority of respondents strongly agree (61.5%) with using digital platforms for daily transactions, indicating a high level of reliance and acceptance on internet banking or mobile apps for day-to-day financial activities. However, the majority of respondents actually disagreed (40.4%) with using digital platforms for investment growth showing a level of reservation or skepticism in entrusting investments to online platforms. The results further demonstrate positive sentiment towards digital banking products (43.5%) and the convenience of managing monthly bills (61.8%). Additionally, respondents show a favorable inclination towards using digital platforms for Lotto, electricity, and airtime transactions (65.1%), as well as for proof of payments, statements, and other related activities (62.0%). Moreso, respondents expressed disagreement (40.7%) with regards to product exploration and financial education suggesting a need for improvement or better user experiences in these areas. These contrasting experiences reveal the nuanced nature of consumer attitudes towards digital transactions and emphasize the importance of addressing concerns and providing robust solutions to foster wider acceptance and trust.

4.5.4 Access to digital finance services

The study further aimed to investigate the degree of access respondents had to financial service using digital platforms in South Africa. An enquiry on this matter was made and the results of it are presented in table 4.6 below.

Table 4.7: Access to digital finance services

Access to digital finance services	**Strongly Disagree**	**Disagree**	**Neutral**	**Agree**	**Strongly agree**	**Mean**
Easy access to transact on digital platforms anywhere	49.3%	17.5%	-	30.3%	1.9%	2.91
Easy access to transact on digital platform anytime	1%	8.7%	-	40.1%	50.2%	4.52
Availability of digital services to offer quick transaction processing	48.3%	32.3%	-	20.2%	3.3%	3.12

The results, as presented in Table 4.6, indicate that most of the respondents disagreed on two notions: there is easy access to transact on digital platform anywhere; and digital services offer quick transaction processing in South Africa. 49.3% of the respondents strongly disagreed, and an additional 17.5% disagreed, that one transacts on digital platform regardless of where they are in South Africa, suggesting that a significant portion of the respondents did not find it easy to access digital platforms for transactions anywhere. Similarly, 48.3% of the respondents strongly disagreed, while 32.3% disagreed, indicating that most of the respondents did not perceive digital services to be readily available for quick transaction processing. These results show the challenges faced by individuals in South Africa when it comes to accessing digital finance services, suggesting a need for improvements in terms of convenience and availability. Conversely, a substantial majority of 40.1% agreed, and 50.2% strongly agreed that they had easy access to transact on digital platforms anytime, indicating a positive perception of accessibility in this aspect.

4.6 Digital financial service adoption

Various questions related to digital financial service adoption were paused and the results therefore are presented below.

4.6.1 Transaction methods

Respondents were asked to highlight the payment methods they often use in making transactions in South Africa. The results of the study, pertaining this inquiry, revealed the following.

Table 4.8: Transaction methods

Transaction/payment method	Frequency	Percentage
Cash	58	27.5%
Debit/cheque card	59	28%
Mobile payment	14	6.6%
Online banking transfer	77	36.5%
Total	208	98.6%
Missing	System	3%
Total	211	100%

The study examined the transaction methods commonly employed by respondents in South Africa. The results, as shown in Table 4.7 above, highlight that online banking transfers were the most prevalent method, accounting for 36.5% of the respondents, followed closely by debit or cheque cards at 28%. Cash transactions constituted 27.5% of the responses, while mobile payments were the least utilized, representing only 6.6%. The lower adoption rates of cash and mobile payments suggest a gradual shift towards electronic forms of payment.

4.6.2 Factors influencing choice of transaction method

Factors behind choice of transaction methods across the engaged South Africans were at the core of the rationale of the study. As such, the results pertaining these factors are presented, in Table 4.8, below.

Table 4:9 Factors behind the choice of transaction method

Factors	**Frequency**	**Percentage**
Convenience	140	66.4%
Security	32	15.2%
Cost-effectiveness	18	8.5%
Rewards or benefits	18	8.5%
Peer influence	2	0.9%
Total	210	99.5%
Missing	Missing	1%
Total	211	100%

The frequency and percentage of factors, in Table 48 above, reveals factors that influence the choice of transaction/payment method across the South Africans. The most significant factor reported by respondents was convenience, with a frequency of 140 (66.4% of respondents) and a valid percentage of 66.7%. Security was also a crucial consideration, with a frequency of 32 (15.2% of respondents) and a valid percentage of 15.2%. Other factors, such as cost-effectiveness and rewards/benefits, had similar frequencies of 18 (8.5% of respondents) and valid percentages of 8.6%. Peer influence had the lowest frequency of 2 (0.9% of respondents) and a valid percentage of 1.0%.

4.6.3 Openness to adopting new transaction methods

The results regarding the openness of respondents to embracing new payment technologies in the future are presented in Table 4.9 below.

Table 4.10: Openness to adopting new transaction methods

Response	Frequency	Percentage
Yes	5	2.4%
Yes, if it offers significant advantage over current method	11	5.2%
Undecided	12	5.7%
No, I prefer traditional banking method	101	47.9%
No, I have concerns about security and privacy	82	38.9%
Total	211	100%

The results from Table 4.9 reveal the respondents' openness to adopting new transaction methods. Among the respondents 2.4% expressed a clear willingness to embrace these methods, while 5.2% were open to adopting them if considerable benefits were offered. A total of 5.7% respondents remained undecided. On the other hand, a majority of 47.9% preferred to remain traditional banking methods. Concerns about security and privacy were revealed by 38.9% as reasons for not embracing new payment technologies. In a nutshell, the findings indicate a small proportion of enthusiastic adopters, a moderate level of openness with conditions, and a significant number of respondents favoring traditional methods or expressing concerns about security and privacy.

4.6.4 Challenges faced in accessing financial services

Table 4.1 below presents the study's results on challenges respondents face in accessing financial services in South Africa.

Table 4.11: Challenges faced in accessing financial services

Challenge	Frequency	Percentage
Lack of banking infrastructure	42	19.9%
Insufficient financial literacy or understanding	18	8.5%
High fee or transaction cost	98	46.4%
Difficult in meeting eligibility requirements	41	19.4%
Total	199	94.3%
Missing	System	12%
Total	211	100%

The study examined the challenges faced by respondents in accessing financial services. The results revealed varied results. Firstly, 19.9% of respondents reported facing challenges due to a lack of banking infrastructure in their area. Additionally, 8.5% of respondents indicated that insufficient financial literacy or understanding posed obstacles. High fees or transaction costs were identified by 46.4% of respondents as the most significant challenge in accessing financial services. Lastly, 19.4% of respondents highlighted difficulties in meeting eligibility requirements. These findings highlight the various barriers that individuals encounter when attempting to access financial services,

including lack of financial literacy, limited infrastructure, high costs, and eligibility requirements.

4.6.5 Concerns over adopting new transaction technologies

The results pertaining the concerns respondents had regarding adopting new transaction technologies are presented in Table 4.11 below.

Table 4:12 Concerns regarding adopting new payment technologies

Concerns	**Frequency**	**Percentage**
Security and fraud risks	144	68.2%
Privacy	21	10%
Technical issues or compatibility with devices	26	12.3%
Limited customer support or assistance	18	8.5%
Total	209	99.1%
Missing	System	2%
Total	**211**	**100%**

Table 4.11 summarizes the concerns expressed by respondents pertaining the adoption of new payment technologies. It shows that the most prevalent concern among respondents was related to security and fraud risks, with a frequency of 144 (68.2% of respondents). Privacy concerns were also a main issue, with 21 respondents (10.0%) expressing worry in this regard. Technical issues or compatibility with devices were identified as a concern by 26 respondents (12.3%). Lastly, limited customer support or assistance was a concern for 18 respondents (8.5%). These findings highlight the key concerns that individuals

have when considering the adoption of new payment technologies, including privacy, security, technical issues, and customer support.

4.6.7 Factors that increase trust in new digital banking

Below, in Table 4.12, are results that speak to the factors that would increase South African's trust in new digital banking technologies.

Table 4.13: Factors that increase trust in new digital banking

Factors	Frequency	Percentage
Strong encryption and security measures	131	62.1%
Regulatory oversight and consumer protection	23	10.9%
Clear and transparent terms and conditions	17	8.1%
Verified authentication processes	39	18.5%
Total	210	99.5%
Missing	System	1%
Total	211	100%

The factors that respondents believe would increase their trust in new digital banking are presented in Table 4.12 above. It highlights that 62.1% of respondents (131 individuals) identified strong encryption and security measures as a factor that would enhance their trust. Clear and transparent terms and conditions were identified by 8.1% of respondents (17 individuals), while 18.5% of respondents (39 individuals) emphasized the importance of verified authentication processes. Additionally, 10.9% of respondents (23 individuals) mentioned regulatory oversight and consumer protection as a trust-building factor. These findings highlight the key factors that contribute to building trust in new digital banking services, such as security measures, regulatory oversight, transparent terms, and reliable authentication processes.

4.6.8 Digital payment systems and technologies

The study sought to test two distinct null hypotheses regarding digital payment systems and technologies in South Africa:

> ***Hypothesis 1****: H_0. The adoption of innovative payment technologies does not positively impact financial inclusion in South Africa.*
>
> ***Hypothesis 2:*** *H_0. The digital payment systems do not lead to improved financial services delivery in South Africa.*

4.6.8.1 Adoption of innovative payment technologies and financial inclusion

A Pearson correlation test was performed to test the first hypothesis with an aim of either confirming or refuting the relationship between innovative payment technologies and financial inclusion in South Africa. The results of the test are presented in Table 4.13 below.

Table 4.13: Pearson correlation test's result on hypothesis one

		Innovative payment technologies	**Financial inclusion**
Innovative payment technologies	Pearson Correlation	1	.521**
	Sig. (2-tailed)		.000
	N	**211**	**138**
Financial inclusion	Pearson Correlation	.521**	1
	Sig. (2-tailed)	.000	
	N	**211**	**138**

The results of the Pearson correlation test on Hypothesis 1, which states that the adoption of innovative payment technologies does not positively impact financial inclusion in South Africa, indicate a significant positive correlation between innovative payment technologies and financial inclusion. The correlation coefficient between the two variables is .521 ($p < .001$), highlighting a moderate positive relationship. These results

contradict the hypothesis, indicating that the adoption of innovative payment technologies is associated with higher levels of financial inclusion in South Africa.

4.6.8.2 Digital payment systems and financial services

A Pearson correlation test was also performed to test Hypothesis 2 that, "*The digital payment systems do not lead to improved financial services in South Africa."* The results pertaining this test are presented in Table 4.14 below.

		Digital payment systems	**Financial services**
Digital payment systems	Pearson Correlation	1	.734**
	Sig. (2-tailed)		.000
	N	**211**	**138**
Financial services	Pearson Correlation	.734**	1
	Sig. (2-tailed)	.000	
	N	**211**	**138**

The results of the Pearson correlation test on the second hypothesis, which suggests that digital payment systems do not lead to improved financial services in South Africa, reveal a strong positive correlation between digital payment systems and financial services. The correlation coefficient between the two variables is .734 ($p < .001$), indicating a significant and robust positive relationship. These findings contradict the hypothesis, providing evidence that digital payment systems are indeed associated with improved financial services in South Africa.

4.7 Chapter summary

The focus of the chapter falls on presenting the results of a study conducted to address the digital divide related issues in South Africa. The chapter begins by presenting the questionnaire response rate, indicating that out of 288 questionnaires distributed, 211 were deemed valid for the analyses. It then presents the reliability test results, showing the internal consistency and reliability of the measurement scales used in the study. The

chapter further provides demographic results, including the educational levels, gender distribution, and other characteristics of the respondents. Lastly, it presents the main results of the study, focusing on digital skills and digital financial service features, highlighting the respondents' proficiency and perceptions in these areas.

CHAPTER FIVE

DISCUSSION OF THE RESULTS

5.1 Introduction

The previous chapter presents the results of the study. This chapter, therefore, discusses these results in relation to the reviewed literature, showing how the study's results align, vary or conflict with the current body of knowledge on digital divide. The chapter discusses both the demographic and main results of the study.

5.2 Questionnaire response rate

The study got a questionnaire response rate of 73.3%. According to Bryman (2012) a questionnaire response rate of 70 and above percent is good for proceeding with data analysis as it ensures reliable results. Accordingly, Sekaran and Bougie (2013) highlight that a good questionnaire response rate shows the respondents' willingness to participate in the study and the researcher's efforts in making a study possible. Considering that the study achieved a good response rate of 73.3% the researcher, as advised by Bryman (2012), the researcher proceeded with analyzing the data.

5.3 Cronbach alpha test

The researcher could not manage to proceed with data collection without testing the reliability of the questionnaire used to gather data. The Cronbach alpha test performed shows that the research instrument was reliable as it had an overall Cronbach alpha index of 0.83. Montshiwa and Moroke (2014) maintain that a Cronbach alpha coefficient of $0.8 \leq \alpha < 0.9$ is good, indicating a high level of internal consistency and reliability among the items within a measurement scale. The researcher used the structured questionnaire to collect the data knowing that it was a reliable instrument that ensures the rigor of the study.

5.4 Demographic results

Prior to collecting and analyzing data relating to the study's research objectives, the researcher was first interested on looking into the respondents' demographic profile. In particular, the researcher collected data on respondents' gender, educational level and other characteristics.

5.4.1 Respondents' gender

It was shown that the study's respondents were of all genders: male, female, and non-binary. This means that the study's results were inclusive and representative. Sovacool *et al.* (2018) advises that collecting data from all genders is important because it recognizes that individuals of different genders may have distinct perspectives and experiences contributing to a more nuanced understanding of the social dynamics being studied. Zoellner and Harris (2017) maintain that engaging all genders, in a study, helps to avoid stereotyping and gender bias. Thus, not considering certain genders' views and experiences in a study perpetuate gender inequalities and reinforce existing biases. Therefore, by engaging respondents of all genders, the study acknowledges and accounts for these diverse perspectives, enhancing the relevance and validity of the research results.

5.4.2 Respondents' educational levels

The results of this study were drawn on respondent of different levels of education: diploma; bachelor's, master's and other. Busebaia and John (2020) explore multiple reason why it is important to engage respondents with some education in research. Firstly, educated respondents usually possess a higher critical thinking skills and level of knowledge which contribute to more informed responses. Thus, respondents' educational background equips them with the ability to understand concepts and engage in thoughtful discussions, enhancing the quality of data collected. Additionally, educated respondents may have specialized experiences that are relevant to the study, providing unique insights. Their participation, therefore, can contribute to a more comprehensive understanding of

the topic. Moreover, involving educated respondents can enhance the validity and credibility of the study, as their input carries weight due to their educational backgrounds. Heeding the advice, the researcher engaged respondents who had some educational background.

5.4.3 Other characteristics

The study engaged respondents with a diverse range of characteristics such as student status, employment status, age, and disability, which, as Teng and Khong (2021) and Shaikh *et al*. (2023) agree, are highly valuable for examining the digital divide in South Africa as it relates to financial services. By engaging respondents with different employment statuses, the study explored how access and adoption of digital financial services vary among the employed, unemployed, and student populations. As Alaeddin *et al*. (2028) observes this shed light on potential inequalities and challenges faced by specific groups, such as the unemployed or students, in accessing financial services digitally. Additionally, including elderly individuals in the study allowed for an examination of how age influences digital financial service usage and whether there are generational differences in adoption rates. Moreover, involving respondents with disabilities provided insights into the accessibility of digital financial services and highlights any potential gaps or challenges faced by individuals with disabilities. Overall, the inclusion of these diverse characteristics in the study's respondents enabled a comprehensive analysis of the digital divide in South Africa concerning financial services, helping identify areas for improvement and the formulation of targeted solutions to bridge the gap.

5.5 Main results

This study aimed to investigate the digital divide in South Africa as it relates to financial services. Thus the study explored digital skills South Africans possess; the availability and accessibility of digital financial services in South Africa across the country; how South African monitor financial transactions on digital platforms; and digital financial services adoption in South Africa. Therefore, factors behind digital divide and challenges

faced in accessing and using digital financial services in South Africa were examined. Mostly importantly, the study tested two distinct hypotheses. The first hypothesis seeks to test whether the adoption of innovative payment technologies has a positive impact on financial inclusion in South Africa. The second hypothesis aims to test whether digital payment systems contribute to the improvements of financial services in South Africa.

5.5.1 Digital skills South Africans possess

The study provides a comprehensive understanding of the digital skills possessed by South Africans in the context of digital financial services. The study revealed a varied range of insights into the respondents' proficiency levels across different digital skills. For instance, the results show that only a few people have minimal difficulties in installing mobile apps, while most people have strong ability to use mobile apps, navigate webpages, complete online applications, and find information online. These results, therefore, suggest that South Africans possess a solid foundation of digital literacy, which is vital in engaging with digital financial services effectively. These results agree with Chitimira (2020) who argued that regardless of the challenges South Africans generally exhibit a high level of proficiency in the digital skills. The study's results further highlight the potential for promoting financial inclusion through the utilization of existing digital competencies and shed light on the readiness of South Africans to leverage digital platforms for financial transactions. This means that, as Teng and Khong (2019) recommend, the study's results underscore the significance of building upon these skills to foster broader access to and adoption of digital financial services, thus empowering communities and individuals to enhance their financial well-being in the digital era.

5.5.2 Digital financial service features in South Africa

The study highlights the South Africans' experiences and attitudes towards various aspects of digital financial services. Firstly, regarding smartphone usage for daily banking transactions, the study's results show that mots South Africans have a positive experience and acceptance of this practice. This confirms Beck *et al.* (2015) who establish that utilizing smartphones for banking activities is widely embraced and considered

convenient by most South Africans. However, when it comes to confidence in using banking apps or internet banking, the study reveals that a substantial proportion of South Africans experience a low level of assurance in navigating these platforms. This, therefore, implies the need for improving security measures, user interfaces, and user education to enhance users' trust and confidence in digital banking services. Furthermore, the study shows that some digital banking services are not user-friendly, indicating perceived complexities and challenges in accessing and utilizing digital financial services. These results emphasize the importance of improving intuitive and user-friendly interfaces to ensure accessibility and ease of use for a wider audience. On a positive note, the study confirms a positive impact of bridging the digital divide in financial services, highlighting the recognition of the potential benefits of digital inclusion efforts. These results square perfectly with Gronbach (2017) and Chirambo (2018) who establish improving digital financial platforms enhances the quality and delivery of financial services.

5.5.3 Transaction and payment monitoring using digital platforms in South Africa

One notable observation is that a significant majority of South Africans use digital platforms for daily transactions, indicating a high level of acceptance and reliance of internet banking or mobile apps for their day-to-day financial activities. This implies most South Africans have embraced the accessibility and convenience offered by digital platforms for routine transactions. Gronbach (2017) and Ofosu *et al*. (2021) made similar observation. However, it is interesting to note that the study's results show a considerable number of South Africa does not use digital platforms for investment growth, showing a level of reservation or skepticism when it comes to entrusting investments to online platforms. This finding emphasizes the need for service providers to address concerns related to transparency, security, and trust in digital investment platforms to foster greater confidence among South Africans. These results, however, are at loggerhead with Chirambo (2018) who points out an alarming increase of South Africans using digital platforms for investment growth. The results also show a positive sentiment towards digital banking products and the convenience of managing monthly bills, indicating that

South Africans find value in utilizing digital platforms for these purposes. Moreover, it was shown South Africans have a favorable inclination towards using digital platforms for electricity, Lotto, and airtime transactions, as well as for activities like proof of payments and accessing statements. This implies the convenience and efficiency offered by digital platforms in facilitating these transactions. However, the study picked discontent with regards to financial education, calling for a need for improvement or better user experiences in these areas. These results, as Kim *et al.* (2018) found out, underscores the importance of providing user-friendly interfaces, educational resources, and personalized recommendations to empower South Africans in making informed financial decisions and exploring diverse financial products.

5.5.4 Access to digital financial services

Not all South Africans confirmed the ease of accessing digital platforms for transactions anywhere in the country. This shows that some citizens face challenges in accessing digital financial services in different locations. While these results agree with Chironga *et al.* (2017), they conflict Ferguson *et al.* (2019) who maintains that digital financial service are accessible from anywhere across South Africa. Some South Africans do not find digital financial services to be readily available for quick transaction processing. These results hint the existing challenges and limitations in terms of availability and convenience of digital financial services in South Africa. These results clearly underscore the need for improvements to ensure that South Africans access and utilize these services seamlessly across the country. On a positive note, the study also shows that a substantial number of South Africans had easy access to transact on digital platforms anytime. This demonstrates that there is a positive perception of accessibility in this aspect among South Africans. However, the overall results highlights that there is room for improving the accessibility and convenience of digital financial services to meet the needs and expectations of individuals in South Africa. Accordingly, Mugwaban (2020), Shaikh *et al.* (2023), and Gronbach (2017) recommend financial service providers in South Africa to improve the accessibility of their digital sites and applications.

5.5.5 Transaction methods South Africans use

The study's results shed light on the prevalent transaction methods South Africans use. The study shows that online banking transfers were the most widely used method, followed closely by debit or cheque cards. Cash transactions were also a significant portion of the responses, while mobile payments had the lowest adoption rate. These results suggest a gradual shift towards electronic forms of payment, with online banking transfers and debit/cheque cards being the preferred choices for most South Africans. These results agree with Mugwaban (2020) who identified cash, bank transfers and mobile payment as main modes of transaction in South Africa. The lower adoption rates of cash and mobile payments further show the ongoing transition towards digital payment solutions, highlighting the potential for increased digital financial inclusion in the country. Overall, these results underscore the importance of improving mobile and improving payment options to further enhance the convenience and accessibility of digital transactions for South Africans.

5.5.6 Factors behind the choice of transaction method in South Africa

The overwhelming emphasis on convenience as the one of the most significant factors reflects the increasing demand for user-friendly and seamless transaction experiences. The study reveals that South Africans, like many individuals globally, as also established by Shai *et al.* (2019), seek convenient services when conducting financial transactions, favoring methods that align with their busy lifestyles. These results reinforce the importance of digital platforms and mobile applications that offer ease of use and accessibility. The study also shows that the prominence of security as a crucial consideration highlights the growing concern and awareness around data breaches and fraud in the digital transactions. This implies that South Africans prioritize trust and safeguarding their personal and financial information, opting for transaction methods that maintain user confidence. Furthermore, the relatively lower reported frequencies for factors such cost-effectiveness, peer influence and rewards suggest that while these considerations are not insignificant, they may be secondary in comparison to convenience

and security. These results, as Bowden *et al*. (2021) observe, emphasizes the need for service providers to prioritize seamless user experiences and data protection while also exploring innovative ways to offer incentives, competitive pricing, and personalized recommendations.

5.5.7 Openness to new transaction methods across South Africans

The gives insights into South Africans' openness to adopting new transaction methods. The study reveals a range of attitudes across the South Africans. Least of South Africans showed a clear willingness to embrace other new transaction methods; however, those who were open to adoption had certain conditions. These results conflict with Teng and Khong (2021) who show that South Africa do not hesitate to embrace new transaction methods. The study also show that a considerable number of South Africa preferred to stick with traditional banking methods. Their concerns on adopting new transaction methods centers on security and privacy issues. These findings highlight the importance of addressing security concerns and fostering trust to drive adoption. Overall, the results indicate a nuanced landscape with varying levels of openness, suggesting the need for education, awareness, and robust security measures to promote the adoption of new transaction methods among South Africans.

5.5.8 Challenges faced in South Africa in accessing digital financial services

The study provides valuable insights into the challenges faced by South Africans in accessing digital financial services. The study shows a range of challenges that individuals encounter in their pursuit of financial services. Firstly, there is a lack of banking infrastructure in some areas in South Africa. Gronbach (2017) made similar observations. Additionally, the study confirms insufficient financial literacy or understanding as a barrier, suggesting the need for educational initiatives to empower individuals in navigating and utilizing digital financial services effectively. These results align with Ferguson et al. (2019) who insisting on the need to improve financial literacy in South Africa. High fees or transaction costs emerged as a prominent challenge was also highlighted to be the most significant challenge. These results, as Shai *et al.* (2019) reveal,

emphasizes the importance of affordable financial services to ensure accessibility for all individuals. Lastly, difficulties in meeting eligibility requirements were identified as a challenge by a substantial proportion of respondents, indicating the need for inclusivity and flexibility in eligibility criteria. Overall, the study highlights the multifaceted nature of challenges faced by South Africans in accessing financial services, encompassing infrastructure limitations, financial literacy gaps, affordability concerns, and eligibility requirements.

5.5.9 Hypotheses one and two

The study was grounded on two distinct hypotheses. First, the study seeks to test the impact innovative technologies on financial inclusion in South Africa. Second, the pursues to test the influence of digital systems on financial service delivery in South Africa. A discussion of the study's results pertaining these hypotheses is given in the following discourse.

5.5.9.1 The impact of innovative payment technologies on financial inclusion in South Africa

The first null hypothesis the study sought to test was: *"The adoption of innovative payment technologies does not positively impact financial inclusion in South Africa."* The results of the Pearson correlation test on Hypothesis reveal a significant positive correlation between these variables. The findings highlight that there is a moderate positive relationship (correlation coefficient of .521, $p < .001$) between the adoption of innovative payment technologies and financial inclusion. Therefore, these results contradict the null hypothesis, which assumed that the adoption of innovative payment technologies does not positively impact financial inclusion in South Africa. The significant positive correlation suggests that as individuals utilize and adopt innovative payment technologies, their access to and participation in financial services improve. As Kim *et al.* (2018) establish this can be attributed to the accessibility, convenience, and efficiency that innovative payment technologies provide, enabling individuals to overcome traditional barriers associated with financial inclusion. Therefore, the results

further imply that by embracing these technologies, individuals can access a wider range of financial services, such as mobile payments, digital banking, and online transactions. This, in turn, enhances their financial capabilities, promotes economic participation, and fosters greater financial resilience. The results, just like that of Bowden *et al*. (2021), underscore the potential of innovative payment technologies as a powerful tool for driving financial inclusion in South Africa. Thus, by leveraging the transformative potential of these technologies, South Africa can make significant strides towards a more accessible and inclusive financial ecosystem, empowering individuals and promoting economic growth and stability for the nation.

5.5.9.2 The influence of digital payment systems on financial service delivery in South Africa

The second null hypothesis the study aimed to test was, "*The digital payment systems do not lead to improved financial services delivery in South Africa."* The results of the Pearson correlation test on the second hypothesis, show a strong positive correlation between these variables. The correlation coefficient of .734 ($p < .001$) indicates a significant and robust positive relationship. These result lead to the rejection of the null hypothesis, which proposed that digital payment systems do not lead to improved financial services in the country. Therefore, the results provide compelling evidence that digital payment systems are, in fact, associated with enhanced financial services in South Africa. This suggests that the adoption and utilization of digital payment systems contribute to the delivery of improved financial services to South Africans. These results agree with Ferguson *et al*. (2019) who found out that digital payment systems have the potential to enhance efficiency, accessibility, and effectiveness in the provision of financial services. Gronbach (2017) also concludes that by leveraging the advantages of digital payment systems, such as scalability, convenience, and cost-effectiveness, financial institutions can reach a wider population, particularly those in underserved areas, and offer a broader range of services. This can include mobile money transfers, digital banking, online transactions, and other innovative financial solutions. Overall, these results highlight the transformative impact of digital payment systems on the

delivery of financial services, emphasizing the importance of embracing and advancing digital technologies in the financial sector of South Africa.

5.10 Chapter summary

The chapter discusses the results of a study on the digital divide in South Africa's financial services sector. In particular, the chapter compares the study's results with existing literature and assessing the questionnaire response rate and reliability. The chapter further discusses the demographic profile of the respondents, emphasizing the inclusion of all genders and respondents with varied educational levels and characteristics. The main results of the study are discussed, including insights into the digital skills possessed by South Africans and their experiences and attitudes towards digital financial services. The chapter highlights the need for improvements in security, user interfaces, and user education to enhance trust and confidence. It also discusses the challenges faced in accessing digital financial services. Overall, the provides a comprehensive understanding of the study's findings, their alignment with existing literature, and their implications for addressing the digital divide in South Africa's financial services sector.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6. Introduction

This chapter presents the conclusions and recommendations of the study. The conclusions and recommendations of the study were drawn on the results of the study discussed in the previous chapter. Before presenting the study's conclusion, the chapter gives a summary of each chapter, and summarizes the key research findings from the literature review and primary research study.

6.1 Summary of the chapters

The study has six chapters which are summarized below:

Chapter one: provides an introduction to the study on the digital financial services divide in South Africa and its impact on financial inclusion. The chapter begins by revealing the importance of the financial sector in any economy and the challenges faced in accessing financial services in South Africa, particularly low-income and rural areas. The chapter further explains the concept of the digital divide, which entails the gap between individuals' access to and proficiency in using digital tools and the internet. The problem statement emphasizes that this divide hinders people and communities from fully benefiting from financial services, identifying cost, infrastructure, digital literacy, and socioeconomic factors as potential reasons for the digital divide. Therefore, the chapter highlights the study's aims which was to examine challenges and programs, provide recommendations based on evidence, and assist stakeholders in developing strategies to bridge the digital divide and enhance financial inclusion in South Africa. The chapter concludes by stating that the study's results will be valuable not only for South Africa but also for other developing economies facing similar challenges in terms of financial inclusion.

Chapter two: The chapter highlights that financial inclusion, which covers providing accessible and affordable financial services to all members of society, especially those with low incomes and small enterprises, is crucial for reducing poverty and fostering economic growth. The chapter reinforces that financial inclusion supports economic development by facilitating access to capital for small enterprises, creating jobs, and stimulating the economy. Additionally, the chapters reveal that financial inclusion enables individuals to save money, and invest in income-generating businesses, contributing to poverty alleviation. However, the chapter also acknowledges that challenges such as limited financial literacy, lack of financial infrastructure, inadequate regulatory frameworks, and restricted access to credit hinder financial inclusion in developing economies. Lastly, the chapter explores emerging trends in payment systems globally, including, biometric digital wallets, authentication, blockchain technology, open banking, and the use of artificial intelligence and machine learning, which have the potential to enhance financial inclusion and transform the payments sector in South Africa and around the world.

Chapter three: The chapter provides a comprehensive overview of the research approach, design, philosophy, strategy, and instrument used in the study. Thus, the chapter shows that the study was anchored on a quantitative, descriptive, and positivist methodology. As such, the method chosen for data collection is a survey, and the process of questionnaire development, administration, collection, coding, cleaning, and analysis was also explained. The chapter also discusses the target population, sample size, and sampling techniques employed. It emphasizes the importance of instrument reliability and validity. Furthermore, the chapter addresses study limitations, bias elimination, ethical considerations, and the preservation of internal and external validity. The chapter emphasizes on the research philosophy adopted (positivist) and the research strategies (survey and interviews) used in the study. Overall, this chapter provides a detailed and systematic account of the research methodology employed in the study, aiming to contribute to the understanding of payment systems and financial inclusion in South Africa.

Chapter four: The chapter presents the results of a study conducted to address the digital divide related issues in South Africa. Therefore, the chapter starts by presenting the questionnaire response rate, indicating that out of 288 questionnaires distributed, 211 were deemed valid for the analyses. It then presents the reliability test results, showing the internal consistency and reliability of the measurement scales used in the study. The chapter also provides demographic results, including the educational levels, gender distribution, and other characteristics of the respondents. Finally, it presents the main results of the study, focusing on digital skills and digital financial service features, highlighting the respondents' proficiency and perceptions in these areas.

Chapter five: Taking from where chapter four left off, the chapter discusses the results of a study on the digital divide in South Africa's financial services sector. In particular, the chapter compares the study's results with existing literature and assessing the questionnaire response rate and reliability. The main results of the study, in this chapter, were discussed, including insights into the digital skills possessed by South Africans and their experiences and attitudes towards digital financial services. The chapter highlights the need for improvements in security, user interfaces, and user education to enhance trust and confidence. It also discusses the challenges faced in accessing digital financial services. Overall, the provides a comprehensive understanding of the study's findings, their alignment with existing literature, and their implications for addressing the digital divide in South Africa's financial services sector.

Chapter six: The chapter marks the end of this study, pressing the conclusions and recommendation drawing on the study’s results.

6.3 Main results of the study

The study aimed to investigate the digital divide in South Africa as it relates to financial services. The study’s main results pertaining this aim are therefore presented below. Thus, main result from the literature review and main results from the primary study:

6.3.1 Main results from the literature review

The study's first hypothesis was, *"The adoption of innovative payment technologies does not positively impact financial inclusion in South Africa."* Regarding this hypothesis, the literature review provides valuable insights into the impact of innovative payment technologies on financial inclusion in South Africa. Several studies such as Evans (2018), Bryman (2012), Sovacool *et al.* (2018) reveal the positive relationship between the adoption of innovative payment technologies and financial inclusion. For instance, studies such as Zoellner and Harris (2017), and Chitimira (2020) show that, the introduction of mobile money has revolutionized financial inclusion by making banking services more accessible to the public through mobile phones. It was also emphasized across literature such as Bryman (2012), Teng and Khong (2021) and Shaikh *et al*. (2023) that blockchain technology has also shown potential in establishing decentralized financial networks that can serve unbanked individuals. Therefore, these findings suggest that the adoption of innovative payment technologies has a positive impact on financial inclusion in South Africa. However, it is important to note that across studies, Gustafsson (2017), Alaeddin *et al*. (2018), Bowden *et al.* (2021) there are still challenges to overcome, such as infrastructure limitations, low levels of literacy and numeracy, and regulatory barriers. Policymakers and financial institutions, therefore, need to collaborate to address these challenges and promote the adoption of innovative payment technologies to further enhance financial inclusion in the country. Therefore, grounded on the evidence provided in the literature, it can be argued that the null hypothesis stating that "The adoption of innovative payment technologies does not positively impact financial inclusion in South Africa" is not supported by the findings, as innovative payment technologies have demonstrated a positive impact on financial inclusion in the country.

The study's second hypothesis was, "*The digital payment systems do not lead to improved financial services delivery in South Africa."* Pertaining this hypothesis, the literature review suggest that digital payment systems have the potential improve the delivery of financial services and enhance financial inclusion in the country (Gustafsson, 2017; Ferguson et al., 2019; Kim et al., 2018; Sovacool *et al.,* 2018). For instance, different

studies such Busebaia and John (2020), Ferguson *et al.* (2019) mobile money has revolutionized financial inclusion by making banking services more accessible to the general public through the use of mobile phones for transactions. Consequently, this has resulted in a significant increase in the number of registered mobile money accounts across the country. Additionally, Zoellner and Harris (2017) and others also shows that blockchain technology has the potential to establish decentralized financial networks that are open to all users, including those without bank accounts. These findings demonstrate that digital payment systems can promote financial inclusion and enhance financial services delivery in South Africa. Therefore, the null hypothesis can be rejected based on the evidence found in the literature review.

6.3.2 Main results from the primary study

Before testing the study's hypothesis for the study's results, the study investigated various issues related to digital divide in South Africa including digital skills South Africans possess; digital financial service features; factors behind digital divide; and challenges faced in accessing and using digital platforms in South Africa. Principal results pertaining these facets of digital divide in South Africa are presented below.

The study sought to explore digital skills South African possess. The study, therefore, offered insights into the digital skills possessed by South Africans in the context of digital financial services. The results indicate that most South Africans possess a strong ability to navigate webpages, use mobile apps, complete online applications, and find information online. These findings suggest that South Africans possess a solid foundation of digital literacy, which is crucial for effectively engaging with digital financial services. The study also highlights the potential for promoting and improving financial inclusion by leveraging these existing digital competencies, emphasizing the readiness of South Africans to utilize digital platforms for financial transactions. Therefore, these results underscore the significance of building upon these skills to foster broader access to and adoption of digital financial services, empowering communities and individuals to enhance their financial well-being in the digital era.

The study also examines South Africans' experiences and attitudes towards digital financial services features. Many South Africans, as the study's results reveal, have a positive acceptance of using smartphones for daily banking. However, some lack confidence in using banking apps or internet banking platforms. Therefore, improved user interfaces, security measures, and user education are needed to enhance trust and confidence. Challenges in accessing and utilizing digital banking services were also identified, highlighting the importance of user-friendly interfaces for broader accessibility. Enhancing user confidence, promoting digital inclusion and improving accessibility were therefore recommended to enhance the quality and delivery of digital financial services in South Africa.

The study further aimed to examine the most digital platforms South Africans use for daily transactions. The study indicated a high level of reliance and acceptance on mobile apps and internet banking. However, the study revealed a hesitation when it comes to using digital platforms for investment growth, highlighting concerns about transparency and security. It was also revealed that South Africans have a positive sentiment towards digital banking products and find value in managing monthly bills digitally. However, there is a need for improvement in financial education and user experiences. Providing user-friendly interfaces and educational resources is crucial for empowering South Africans in making informed financial decisions.

It was also part of the study's aim to examine the level of access South Africans have to digital financial services. The study, therefore, reveals that some South Africans face challenges in accessing digital financial services in different locations, indicating limitations in convenience and availability and convenience. However, a considerable number of South Africa have easy access to transact on digital platforms anytime, showing positive perceptions of accessibility. Overall, the study revealed the need for improvements to ensure seamless access and utilization of digital financial services throughout South Africa.

Exploring the factors behind digital divide in South Africa was at the core of the study's aim. Therefore, the study highlights that convenience is a significant factor for South Africans when it comes to digital financial transactions. The study also emphasizes the importance of security, reflecting the growing concern around data breaches and fraud in digital transactions. South Africans prioritize protection and trust of their personal and financial information when choosing transaction methods. Factors such as peer influence, cost-effectiveness, and rewards are relatively less important but still considered. The study therefore suggests that service providers should prioritize seamless user experiences and data protection while also exploring innovative ways to offer incentives, competitive pricing, and personalized recommendations.

The study reveals also revealed several challenges faced by South Africans in accessing digital financial services. These challenges include insufficient financial literacy, lack of banking infrastructure in certain areas, high fees or transaction costs, and difficulties in meeting eligibility requirements. Therefore, study emphasized the need for educational initiatives, affordable financial services, and inclusivity in eligibility criteria to address these challenges. Overall, the findings highlight the multifaceted nature of the challenges faced by South Africans in accessing financial services.

Mostly importantly, the study's hypotheses were tested against the study's primary results. Pertaining the study's first hypothesis, the study examined the impact of innovative payment technologies on financial inclusion in South Africa. The results contradict the null hypothesis and reveal a significant positive correlation between the adoption of innovative payment technologies and financial inclusion. The study suggests that as South Africans utilize and adopt these technologies, their access to and participation in financial services improve. In particular, the study showed that innovative payment technologies provide convenience, accessibility, and efficiency, enabling individuals to overcome traditional barriers to financial inclusion. Embracing these technologies allows individuals to access a wider range of financial services, enhancing their financial capabilities, promoting economic participation, and fostering greater

financial resilience. The results highlight the transformative potential of innovative payment technologies in driving financial inclusion in South Africa, and leveraging these technologies can lead to a more accessible and inclusive financial ecosystem, empowering individuals and promoting economic growth and stability. Furthermore, the study's tested the second hypothesis, and the study indicate a strong positive correlation between digital payment systems and improved financial services delivery in South Africa. The study found that the adoption and utilization of digital payment systems contribute to enhancing financial services in the country. These results highlight the transformative impact of digital payment systems and emphasize the importance of embracing and advancing digital technologies in South Africa's financial sector.

6.4 Conclusions of the study

The study's main aim falls on investigating the digital divide in South Africa as it relates to financial services. Grounded on results of the study, several key findings emerge. Firstly, the study revealed that South Africans possess a solid foundation of digital literacy, demonstrating strong abilities in navigating webpages, using mobile apps, completing online applications, and finding information online. This indicates a readiness among South Africans to engage with digital financial services. However, challenges were also identified, including limitations in availability, a lack of banking infrastructure in some areas, and high fees or transaction costs and convenience of digital financial services in certain locations. These challenges contribute to the digital divide and hinder access to financial services for some individuals in South Africa. Additionally, concerns about security and trust in digital transactions imply the importance of data protection and user confidence. Despite these challenges, the adoption and utilization of digital payment systems have a significant positive impact on financial services in South Africa. Innovative payment technologies provide accessibility, convenience, and efficiency, enabling individuals to overcome traditional barriers to financial inclusion. Embracing these technologies allows individuals to access a wider range of financial services, enhancing their financial capabilities, promoting economic participation, and fostering greater financial resilience. Factors influencing financial transactions in South Africa

include convenience and security emerging as primary considerations for South Africans. Therefore, data protection, and seamless user experiences are crucial in building confidence in digital financial services.

Therefore, in conclusion, the study demonstrates the existence of a digital divide in South Africa concerning financial services, as well as the potential for digital technologies to drive financial inclusion and bridge this divide. While South Africans possess digital skills, there are challenges that need to be addressed, such as improving affordability, availability, and accessibility of digital financial services. Efforts, therefore, should be made to enhance user confidence through, user-friendly interfaces, improved security measures and educational initiatives. Thus, by leveraging innovative payment technologies and addressing the identified challenges, South Africa can create a more inclusive financial ecosystem that promotes and enhances financial well-being for all.

6.5 Recommendations of the study

Drawing on the results of the study, the recommendations can be categorized into three main categories:

1.) Improving access and availability

- **Enhance banking infrastructure in underserved areas:** Address the lack of banking infrastructure in certain areas by promoting the establishment of banking services and expanding the reach of financial institutions in remote locations. This will help ensure that all South Africans have access to digital financial services.
- **Reduce transaction costs and fees:** Take measures to minimize transaction fees associated with digital financial services, particularly for low-income individuals. Lowering these costs can make financial services more accessible and affordable to a broader population.
- **Enhance digital connectivity:** Invest in improving digital connectivity and internet infrastructure throughout South Africa, especially in rural and

disadvantaged areas. This will facilitate greater access to digital financial services and bridge the digital divide.

2.) **Enhancing user confidence and security**

- **Strengthen data protection measures:** Implement robust data protection measures to address concerns around security and privacy in digital financial transactions. This includes ensuring encryption protocols, secure data storage, and educating users about data protection best practices.
- **Improve user interfaces and experiences:** Enhance the design and usability of mobile apps and digital banking platforms to make them more intuitive and user-friendly. This will help build user confidence and encourage broader adoption of digital financial services.
- **Provide financial education:** Promote financial literacy programs that educate individuals on the benefits and risks of digital financial services. This will empower users to make informed decisions and navigate the digital landscape more effectively.

3.) **Promoting digital inclusion and innovation**

- **Foster partnerships and collaborations:** Encourage collaboration between financial institutions, technology companies, and government agencies to develop innovative solutions that address the specific needs of underserved populations. Collaborative efforts can lead to the development of inclusive digital financial services that cater to a wide range of users.
- **Offer tailored solutions for different user segments:** Recognize the diversity of users and their unique needs. Develop customized digital financial services that cater to different user segments, including those with limited digital skills or accessibility challenges.
- **Promote awareness and adoption:** Launch public awareness campaigns to educate individuals about the benefits and functionalities of digital financial services. This will encourage greater adoption and usage of digital payment systems, driving financial inclusion.

6.6 Areas of further research

Based on the findings of the study, particularly the literature review, below are four areas of further research that can expand our understanding of the digital divide and its impact on financial services in South Africa:

i.) **Inclusive design and user experience:** Investigate the design aspects of digital financial services and their impact on user experience, particularly focusing on the preferences and needs of underserved populations. Explore how inclusive design principles can be applied to create user-friendly interfaces that cater to diverse users, including those with limited digital skills or accessibility challenges.

ii.) **Socioeconomic factors and the digital divide:** Examine the socioeconomic factors that contribute to the digital divide in South Africa's financial services. Investigate how educational attainment, income levels, and geographical location influence access to and utilization of digital financial services. This research can provide insights into targeted interventions and policies to address the disparities and promote greater financial inclusion.

iii.) **Trust and security in digital financial services:** Explore the factors that influence security and trust perceptions among South Africans regarding digital financial services. Investigate the impact of data breaches, fraud incidents, and privacy concerns on individuals' willingness to adopt and utilize digital payment systems. Examine strategies to strengthen security measures, enhance trust, and improve confidence in digital financial transactions.

iv.) **Impact of digital financial services on economic development:** Assess the broader socioeconomic impact of digital financial services adoption in South Africa. Investigate how increased access to savings, digital payments, and credit services contributes to economic growth, poverty reduction, and entrepreneurship. Explore the potential for digital financial services to drive financial resilience and empower marginalized communities.

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Appendix 01 : Structured questionnaire

SECTION A : DEMOGRAPHIC INFORMATION

Please indicate your response to the question by ticking in the appropriate box.

1. **SECTION A: DEMOGRAPHIC INFORMATION**

1. Which age group do you belong to?
2. ○ 18 – 25 Years
3. ○ 26 -35 Years
4. ○ 36 -45 Years

5. ○ 46 – 49 Years
6. ○ 50 Years and Above

2. What is your gender?
○ Male
○ Female
○ Non-binary / third gender

3. What is your highest formal level of education?
○ Less than high school diploma
○ High school diploma or equivalent
○ Bachelor's or equivalent

4.Do you have access to digital devices such as smartphones, tablets, or computers?
○ Yes
○ No

5. How frequently do you use digital devices for accessing financial services?
○ Rarely
○ Occasionally
○ Often

SECTION B

6. Digital Skills

	Not at all true	Not so true	Neither true nor untrue	Mostly true	Very true
6.1. I know how to install apps on a mobile device					
6.2. I know how to use the apps on my mobile device					
6.3. I know where to click to go to a different webpage					
6.4. I know how to complete online applications					

6.5. I know how to find information I want online					

SECTION C: DIGITAL FINANCIAL SERVICES FEATURES

7. Devices

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
7.1. I use a smartphone for my banking transaction daily					
7.2. I can use banking app or Internet banking very confidently					
7.3. I find the banking App/Internet banking-user-friendly					
7.4. Do you trust that bridging digital divide would positively impact access to financial services needs in South Africa					

8. Transactions Monitoring

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
8.1. I use a mobile App/Internet banking to track my daily transactions, balances					
8.2. I use a mobile App/Internet banking to monitor my investments growth					
8.3. I use a mobile App/Internet banking to apply for banking products					
8.4. I use a mobile App/Internet banking to pay my monthly bills					
8.5. I use a mobile App/Internet banking to buy electricity, Lotto, and airtime					
8.6. I use a mobile App/Internet banking to download proof of payments, statements, Account confirmation letters and tax certificates					
8.7. I use a mobile App/Internet banking to explore new product and financial education offerings					

SECTION C: DIGITAL FINANCIAL SERVICES TO CUSTOMER PRINCIPLES

9. Access to Digital Financial services

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
9.1. It is easy to access internet banking anytime and anywhere					
9.2. It is easy to access to transact on digital financial					
9.3. I find that digital services available all the time with minimum outages					

10. Digital Financial services adoption

Digital Financial services adoption

10. Which of the following transaction/payment methods do you use most frequently?

- Cash
- Debit or Cheque card
- Mobile Payment
- Online Banking transfers

11. What factors influence your choice of transaction/payment method?

- Convenience
- Security
- Cost-effectiveness
- Rewards or benefits
- Peer influence

12. Which of the following payment technologies do you believe have the greatest potential to enhance financial inclusion?

- Mobile banking apps
- QR code payments

- Biometric identification
- Digital currencies
- Blockchain-based solutions

13. Are you open to adopting new payment technologies in the future?
- Yes
- Yes, if it offers significant advantage over current method
- Undecide
- No, I prefer traditional banking method
- No,I have concerns about security and privacy

14. Have you faced any challenges in accessing financial services?
- Lack of banking infrastructure in my area
- Insufficient financial literacy or understanding
- High fees or transaction costs
- Difficulty in meeting eligibility requirements

15. How would you rate the importance of financial inclusion in improving economic growth and reducing inequality?
- Extremely important
- Very important
- Moderately important
- Not important

16. What concerns do you have regarding the adoption of new payment technologies
- Security and fraud risks
- Privacy concerns
- Technical issues or compatibility with devices
- Limited customer support or assistance

17. Which of the following factors would increase your trust in new digital banking
- Strong encryption and security measures
- Regulatory oversight and consumer protection
- Clear and transparent terms and conditions
- Verified authentication processes

18. How likely are you to switch to a digital-only bank that operates entirely online without physical branches?

- Very likely
- Somewhat likely
- Somewhat unlikely
- Very unlikely

19. How satisfied are you with your current banking/payment experiences?

- Very dissatisfied
- Dissatisfied
- Neutral
- satisfied
- Very satisfied

20. How would you rate the quality of digital banking services you currently use?

- Very high quality
- High quality
- Neither high nor low quality
- Low quality
- Very low quality
- I don't use banking services

21. Please provide feedback or suggestions on how financial service providers can help improve their payment offerings.