

Examining the influence of digital payment adoption on the digital divide in Kagiso township, South Africa

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ABSTRACT

Digital payment systems have become increasingly popular and a vehicle for financial inclusion and access to financial services. However, as technological advancements progress, there remains a population segment that is left behind in terms of adoption and access. Digital payment systems are generally not adopted by township residents in South Africa. This is due to the uneven telecommunications infrastructure in South Africa and its limited availability in the townships.

This study investigates the influence of tap-to-pay digital payments on the existing digital divide in Kagiso township and the factors that impact adoption and usage of this technology. This study adopted a qualitative research methodology that involved conducting face-to-face interviews with 12 respondents from Kagiso township. The respondents' feedback was consolidated and analysed to uncover key findings.

The findings revealed the presence of a digital divide in access and availability within Kagiso township, characterised by challenges stemming from poor infrastructure and limited access to technology, worsened by an uneven distribution of ICT. Furthermore, this study revealed lack of awareness and understanding of tap-to-pay, safety and security, unemployment and socioeconomic challenges as significant barriers to the adoption and usage of tap-to-pay payment systems in the township.

Therefore, it is advisable for the South African government to increase investment in infrastructural upgrades to improve the accessibility and availability of digital technologies in the townships while also collaborating with the private sector to support initiatives aimed at addressing the digital divide in the townships. The collaboration with the private sector, particularly the telecommunications companies is crucial in driving these efforts. By leveraging market opportunities, telecommunication companies can implement strategies that accelerate the adoption of new technologies. One such strategy is investment in fiber optic networks to provide high-speed internet access in townships.

DECLARATION

I, Malengolo Mokgwatsane, declare that this research report is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Management in the field of Digital Business at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

Name: Malengolo Mokgwatsane

Signature: *Malengolo*

Signed atJohannesburg.....

On the ...28.... day of February.....2024

DEDICATION

I want to dedicate this research report to my parents, ntate Lehlohonolo Phori and mme Matlhaka Manako Phori. Thank you for all the hard work you have put in to get us all this far.

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First and foremost, **all** glory, honour and praise to the One who made it all possible and helped me through this season, my Lord Jesus Christ. Truly, with God all things are possible!

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KEYWORDS

Artificial intelligence

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Digital divide

Digital payments

Financial inclusion

Near field communication

Tap-to-Pay

TABLE OF CONTENTS

ABSTRACT	ii
DECLARATION.....	iii
DEDICATION	iv
ACKNOWLEDGEMENTS	v
LIST OF TABLES.....	x
LIST OF FIGURES	xi
LIST OF ACRONYMS	xii
CHAPTER 1. INTRODUCTION	13
1.1 PURPOSE OF THE STUDY	13
1.2 BACKGROUND OF THE STUDY	13
1.3 RESEARCH PROBLEM	15
1.4 RESEARCH QUESTIONS	16
1.5 SIGNIFICANCE OF THE STUDY	16
1.6 DELIMITATIONS OF THE STUDY.....	16
1.7 DEFINITION OF TERMS	17
1.8 ASSUMPTIONS	17
1.9 CHAPTER OUTLINE.....	18
CHAPTER 2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK.....	19
2.1 INTRODUCTION	19
2.2 DIGITAL PAYMENTS	19
2.3 CONTACTLESS PAYMENTS.....	21
2.4 TAP-TO-PAY PAYMENTS	23
2.5 NEAR FIELD COMMUNICATION	24
2.6 DIGITAL DIVIDE IN TOWNSHIPS	25
2.8 THEORETICAL BACKGROUNDS.....	28

2.8.1 TECHNOLOGY ACCEPTANCE MODEL	28
2.8.2 THEORY OF REASONED ACTION	29
2.8.3 UNIFIED THEORY OF ACCEPTANCE AND USE OF TECHNOLOGY.....	30
2.8.4 CONCLUSION OF THEORETICAL BACKGROUND	31
2.9 CONCEPTUAL FRAMEWORK.....	31
2.9.1 PERCEIVED USEFULNESS.....	32
2.9.2 PERCEIVED EASE OF USE	33
2.9.3 PERCEIVED RISK	33
2.9.4 ACCESS	34
2.10 CONCLUSION OF LITERATURE REVIEW	35
CHAPTER 3. RESEARCH METHODOLOGY	36
3.1 RESEARCH APPROACH	36
3.2 RESEARCH DESIGN	36
3.3 DATA COLLECTION METHODS	37
3.4 POPULATION AND SAMPLE.....	37
3.4.1 POPULATION	37
3.4.2 SAMPLE AND SAMPLING METHOD	38
3.5 THE RESEARCH INSTRUMENT	38
3.6 PROCEDURE FOR DATA COLLECTION	39
3.7 DATA ANALYSIS AND INTERPRETATION	39
3.8 LIMITATIONS AND CHALLENGES OF THE STUDY	40
3.9 QUALITY ASSURANCE.....	40
3.9.1 TRANSFERABILITY.....	40
3.9.2 CREDIBILITY	41
3.9.3 DEPENDABILITY	41
3.10 ETHICAL CONSIDERATIONS.....	41
CHAPTER 4. PRESENTATION OF FINDINGS	42
4.1 INTRODUCTION	42
4.2 DEMOGRAPHIC AND SOCIO-ECONOMIC CHARACTERISTICS OF PARTICIPANTS ...	42
4.3 THE IMPACT OF TAP-TO-PAY TECHNOLOGY ON THE DIGITAL DIVIDE	44
4.3.1 EXPLORING THE DIGITAL PAYMENT LITERACY IN KAGISO TOWNSHIP	45
4.3.2 ADDRESSING CHALLENGES IN DIGITAL PAYMENT.....	47
4.3.3 EXPLORING THE IMPACT OF TAP-TO-PAY TECHNOLOGY ON THE DIGITAL DIVIDE	48
4.4 FACTORS INFLUENCING ADOPTION AND USE OF TAP-TO-PAY	50
4.4.1 PERCEIVED BARRIERS TO THE ADOPTION OF TAP-TO-PAY TECHNOLOGY.....	51
4.4.2 CONTEXTUAL BARRIERS IN TAP-TO-PAY ADOPTION	52
4.4.3 DIVERGENT DIGITAL ADOPTION ACROSS GENERATIONS.....	52
4.4.4 ACCESSIBILITY AND DISPARITIES IN TECHNOLOGY ADOPTION.....	54
4.4.5 FACTORS PROMOTING THE ADOPTION OF TAP-TO-PAY TECHNOLOGY	54
4.4.6 FACTORS INFLUENCING FINANCIAL PERSPECTIVES	55
4.4.7 FACTORS PROMOTING ACCESSIBILITY AND INCLUSIVITY	56
4.4.8 SECURITY CONSIDERATIONS IN DIGITAL PAYMENTS.....	56

4.5	CONCLUSION OF FINDINGS	59
CHAPTER 5. DISCUSSION OF FINDINGS.....		60
5.1	INTRODUCTION	60
5.2	THE ADOPTION OF “TAP-TO-PAY” DIGITAL PAYMENT TECHNOLOGY AND THE DIGITAL DIVIDE	60
5.2.1	THE IMPACT OF TAP-TO-PAY TECHNOLOGY ON THE DIGITAL DIVIDE.....	60
5.3	FACTORS WHICH INFLUENCE THE ADOPTION AND USAGE OF “TAP-TO-PAY” PAYMENTS	63
5.3.1	FACTORS INFLUENCING THE ADOPTION AND USE OF TAP-TO-PAY	63
5.4	CHAPTER SUMMARY	66
CHAPTER 6. CONCLUSIONS AND RECOMMENDATIONS.....		67
6.1	INTRODUCTION	67
6.2	SUMMARY OF FINDINGS ON THE IMPACT OF TAP-TO-PAY TECHNOLOGY ON THE DIGITAL DIVIDE	67
6.3	SUMMARY OF FINDINGS ON THE INFLUENCE OF ADOPTION AND USAGE OF TAP-TO-PAY PAYMENTS IN KAGISO.....	68
6.4	RECOMMENDATIONS.....	69
6.5	SUGGESTIONS FOR FURTHER RESEARCH.....	70
REFERENCES		71
APPENDIX A - List of codes.....		80
APPENDIX B – Participant information sheet.....		84
APPENDIX C - Participant agreement form.....		85
APPENDIX D - Instrument		86
APPENDIX - E ETHICS APPROVAL		88

LIST OF TABLES

Table 1: Diversity of participants	43
Table 2: Impact of tap-to-pay technology on the digital divide.....	44
Table 3: Factors Influencing the adoption and usage of tap-to-pay technology	50

LIST OF FIGURES

Figure 1 Three-level digital divide framework (Faloye & Ajayi, 2022).....	26
Figure 2 Conceptual Framework	32
Figure 3: Impact of Tap-to-pay Technology on the Digital Divide	50
Figure 4: Factors Influencing the adoption of tap-to-pay technology.....	58

LIST OF ACRONYMS

Acronym	Name
AI	Artificial Intelligence
CAGR	Compound Annual Growth Rate
Fintech	Financial Technology
ICT	Information and Communications Technology
NFC	Near Field Communication
POS	Point of Sale
RFID	Radio Frequency Identification
SSA	Sub-Saharan Africa

CHAPTER 1. INTRODUCTION

1.1 Purpose of the study

The purpose of this qualitative study is to investigate how the adoption of digital payments influences the digital divide, with the focus on individuals living in Kagiso township.

1.2 Background of the study

New digital technologies have made it possible for new entrants and other related industries to enter the payments market with innovative solutions (Deloitte, 2019). This has caused a disruption in the more traditional business models and has made it difficult to differentiate between different industries like banking, and retail. These technologies also help more people access financial services (Deloitte, 2019).

The COVID-19 pandemic has changed the way individuals live and work, consume products and services, and how they manage their finances (De Girancourt et al., 2020). Many companies are changing their business models and products in order to reduce barriers to digital financial services and to expand the reach of cashless transactions to more people (De Girancourt et al., 2020). The debate on including digital financial services to aid in empowering the unbanked and underserved population is growing, and it has become a topic of discussion globally on how to promote financial inclusion for this growing population (Mhlanga, 2020).

The World Bank's Global Findex database indicated that 1.7 billion adults in the world are unbanked, this means that such adults either do not have a bank account with a financial institution or mobile money, of which most of this adult population is in developing countries (Kshetri, 2021). The small-scale borrowers, such as the low-income earners and small businesses are often overlooked by the traditional banks due to high transaction costs and processes that are inefficient in providing loans to these borrowers (Kshetri, 2021). Financial technology (Fintech) companies position themselves as the solution to bridging the gap in accessing financial services

(Kamdem Yeyouomo et al., 2023). Improving the standards of living and the well-being of the poor in developing countries can be achieved by promoting financial inclusion. In essence, financial inclusion aims to provide individuals with affordable access to financial products and services to meet their needs (Kshetri, 2021). Mobile money has played a significant role in enhancing financial inclusion across various regions, and Africa has emerged as a global leader in the adoption and utilisation of mobile money services (Shipalana, 2019).

Artificial intelligence (AI) is the latest disruptor in the field of computer science and has transformed the banking and financial services industry (Mehrotra, 2019). There is no doubt that AI has revolutionised payments and has emerged as the driving force behind digital payments. The present era of transformation requires that many industries implement artificial intelligence in their operations to remain competitive and ensure their survival in a fully automated era (Sardjono et al., 2021). According to Kruse et al. (2019), the use and acceptance of AI systems could push the global GDP by 14% by 2030, which is equivalent to an additional \$15.7 trillion. AI first came into the scene in 1956 as a research area in academics (Hentzen et al., 2022) but in recent years its utilisation has gained momentum. AI has great prospects in the financial services sector as banks continue to collect enormous amounts of data, especially customer and transaction data, which serves as its primary resource (Kruse et al., 2019). Many platforms utilise AI processes, including fintech companies, for instance Peer-2-Peer (P2P) lending in fintech has the capability to easily determine a borrower's eligibility by leveraging big data on how consumers spend their money. Therefore, through AI, fintech companies can make educated assumptions about an individual's behaviour towards a loan offered (Sardjono et al., 2021).

About 80% of the population in South Africa has a bank account and the banking sector is heavily favoured by the regulatory environment (Ehrlich et al., 2019). Despite this, cash remains the preferred method of payment and informal vendors are hesitant to adopt non-cash payment methods (Soutter et al., 2019). In addition, there are barriers to banking, which include distance to bank branches, mistrust, burdensome paperwork, and the burdensome demands of identity documentation (Soutter et al., 2019). According to Deloitte (2019), many people still need to learn about the risks of using cash and the advantages of electronic payments. In South Africa, mobile money

has not gained significant traction due to regulatory issues, poor technology performance, and challenges with local agent cash-in-cash-out services (Soutter et al., 2019). However, there is a significant increase on mobile phone adoption which makes it easier to offer digital financial services to people who do not have access to banks (Deloitte, 2019). Moreover, more effort and research are needed to comprehend the requirements of individuals and creating products that effectively cater to their needs (Deloitte, 2019).

1.3 Research problem

Around 60% of adults residing in Sub-Saharan Africa do not have access to formal banking services, and they primarily conduct their financial transactions in cash (Soutter et al., 2019). Fintech companies are playing a significant role in providing financial services to those who have limited access to finance. With their flexibility and ability to adapt quickly to the market needs, fintech companies have been able to introduce some of the most creative and customer centric payment solutions (McKinsey, 2022). Consequently, digital payments have emerged in the financial services sector, delivering the most significant returns and growth, and attracting investments.

As e-commerce grows and new technologies like near-field communication (NFC) and mobile devices become more prevalent, consumers are changing the way they make transactions, with digital payments becoming increasingly popular (Flavian et al., 2020). For instance, between 2010 and 2020, there was a significant growth in the payments industry in India with a Compound Annual Growth Rate (CAGR) of 23% (Ravikumar et al., 2022).

South Africa has made significant progress in making digital payments accessible to all LSM market segments. More than 94% of adults in South Africa are financially included, with around 82% having access to a bank account. However, despite these advances, the adoption of digital payment methods remains slow across the LSM markets where cash remains the most common method of payment in the country, especially those in the townships and lower LSM. (South African Reserve Bank, 2019).

Therefore, this study focuses on examining whether the adoption of digital payments contribute to the digital divide amongst individuals living in South African townships.

1.4 Research Questions

Based on the identified problems, this study addresses the following questions:

1. How is the adoption of tap-to-pay digital payment technology in Kagiso township influencing the digital divide, and what are the perceived barriers and opportunities?
2. What factors influence the adoption and usage of tap-to-pay payments in Kagiso township?

1.5 Significance of the study

Digital payment systems have become increasingly popular and a vehicle for financial inclusion and access to financial services. Artificial intelligence plays a major role in the transformation and innovation of products and services, and it has transformed the workings of individuals, whether it is shopping online or getting driving directions. The same can be said about businesses.

It is not without doubt that whilst companies are continuously innovating and producing products and services that make the lives of individuals better, there is a population segment that is left behind in terms of adoption and access to the innovated products and services.

Given the aforementioned factors, the significance of this study lies in the investigation and exploration of the effect of digital payment adoption on the digital divide. In addition, this study aims to contribute to the body of knowledge on the perceptions of individuals on the use of digital payments.

1.6 Delimitations of the study

This study is exclusively focused on the South African context, without taking other judications into consideration. Moreso, only township residents will be included in this

study. The aim is to capture the effect of digital payment adoption on the digital divide since most people in the townships experience a digital divide compared to residents in the developed suburbs.

1.7 Definition of terms

The key terms of this study are defined as follows:

Artificial Intelligence refers to machines exhibiting similar attributes as to human beings (Mehrotra, 2019).

Digital Divide refers to instances where there is significant inequality in the availability of or the use of information and communications technology (ICT) devices (Campbell, 2001).

Digital Payments is defined as financial transactions that take place partially or entirely online without the need to physically exchange money (Ravikumar et al., 2020).

Financial Inclusion is defined as individuals, irrespective of their status and income, having access to financial products and services that are both affordable and beneficial (Lee, 2020).

Township is a term used in South Africa that refers to an urban area that is underdeveloped which was meant for black people during apartheid (Mkhize & Davids, 2021).

1.8 Assumptions

- The participants are honest when answering the interview questions.
- There is a perception in the township that some digital payments do not meet the needs of individuals.
- The participants are aware and understand digital payments.
- The participants understand the technologies that enable digital payments.
- The participants do perform some digital transactions.

1.9 Chapter Outline

This research study comprises of six main chapters:

Chapter 1: introduces the research with the purpose and background of the study, detailed problem statement and the research questions this study intends to address. The chapter also highlights the rationale behind the study, the delimitations of the study and gives the definitions of the key terms as well as assumptions into the study.

Chapter 2: presents the literature review covering digital payments, digital divide, contactless payments, tap-to-pay and near-field communication (NFC). Additionally, it provides an overview of adoption theories and other constructs from past studies, concluding with a theoretical framework.

Chapter 3: presents a detailed research methodology outlining the research approach, research design, the population, sample, and sampling method employed in the study. It elaborates on the data collection process and its analysis. Furthermore, it addresses this study's limitations and challenges, along with the steps taken to ensure quality assurance.

Chapter 4: presents the results of the findings, beginning with a profile of the participants.

Chapter 5: provides a discussion of the results, focusing on the key findings from the research and comparing them to past literature.

Chapter 6: concludes the research by summarising key findings and providing recommendations for key stakeholders. Additionally, it offers suggestions for future research studies.

CHAPTER 2. LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Introduction

This chapter presents the literature review and covers the main themes of the research, which are digital payment systems, contactless payments, near field communication, digital divide, and the research theoretical background. This section addresses each of these themes with reference to the research questions presented in Chapter 1.

2.2 Digital payments

According to Mützel (2021), digital payments are payment transactions that are carried out using an electronic medium such as a mobile phone at a point of sale, a QR-code, an app using near-field communication (NFC) and Bluetooth. These types of payments, sometimes also known as electronic payments (e-payments) involve the transfer of money from a payer's account to the receiver's account through a digital mode.

There are a variety of digital payment systems in existence, and these include debit and credit cards, mobile payments, mobile banking, electronic wallets (e-wallet), and so on (Bezhovski, 2016). Card based transactions are the most common in e-commerce across many markets (Junadi & Sfenrianto, 2015). Debit or credit cards are payment cards where the transaction amount is directly connected to the bank account of a cardholder (Lu et al., 2022). There is not much difference in processing a card transaction over the internet from an offline transaction in a physical store. The difference is that for online transactions an individual does not require to have a physical card present (Junadi & Sfenrianto, 2015). Mobile payment refers to a transaction that is carried out using a mobile device to pay for goods and services (Moghavvemi et al., 2020). Mobile banking is an application provided by a user's bank and is used to support the user's banking activities. The banks have developed this application to provide convenience to customers in which they can transact anywhere at any time (Sardjono et al., 2021). An e-wallet is an application running on a phone

that is designed to facilitate financial transactions by digitally collecting and verifying an individual's credentials (Ravikumar et al., 2022).

Traditional payment methods changed to digital with the emergence of products such as e-wallets and digital payments. As the development of technology advances globally, new digital payments also emerge as stated by Sardjono et al. (2021). Alber & Dabour (2020) suggest that the reliance on electronic payments increased rapidly during the COVID-19 pandemic. With more than three billion people isolated during the pandemic, the status of the digital space changed from being an asset to a necessity as more people relied on it to access information and services (Beaunoyer et al., 2020). However, in South Africa, the adoption of digital financial services continues to be a challenge. This is due to the consistent unreliable network infrastructure experienced in some parts of the country, connectivity challenges, the cost of technology and system failures.

India has emerged as the global leader in real-time digital payments. Due to an improved digital infrastructure, favourable government policies and initiatives, the availability of new technologies and the change in the customer mindset, the Indian payments market has strongly shifted towards digitisation (Ravikumar et al., 2022). Customers are attracted to the use of digital payments due to the convenience they offer as well as speed and cost-effectiveness (Ravikumar et al., 2022). Sardjono et al. (2021) highlights that some studies suggest cash will not be eliminated, and this is due to the concerns and trust around digital payments. When organisations develop digital payment systems it is important to have the security of individuals in mind. To overcome security challenges in digital payment systems, features such as integrity, confidentiality, authentication, robustness, efficiency, and confidentiality must be emphasised (Ravikumar et al., 2022).

Notably, the future of digital payments is one of the fastest growing digital segments. Moon et al. (2022) presented the following evidence: in 2020, the United States digital payments transaction value reached \$5.44 trillion and suggests that by 2026 the value will reach \$11.29 trillion. In Canada electronic transfers were worth \$5.1 trillion in 2020 whereas in Singapore the value of digital payments is predicted to reach \$17 billion.

India digital payments transactions is assumed to reach \$1.0 trillion by 2026. This is evidence that digital payments are said to spread extensively worldwide.

Sardjono et al. (2021) found that digital payment systems have some limitations and vulnerabilities. However, there are more advantages of digital payments than there are disadvantages. Patil et al. (2017) argues that digital payments provide an opportunity for the lives of millions of individuals to be transformed in developing countries by providing financial services to those who are unbanked. They also argue that in emerging markets, mobile payments can foster financial inclusion by extending financial services to the unbanked. Digital financial services have been introduced in more than 80 countries and this has resulted in millions of individuals, that were previously excluded and underserved to move from cash transactions to digital transactions (Mhlanga, 2020). There has been a significant increase in the adoption of mobile phones. Smartphones have been the driving force towards technological progress with a vast majority of people in emerging markets owning and using them for various reasons including digital payments (Moghavvemi et al., 2020).

2.3 Contactless payments

Recently, numerous companies have been looking at ways in which they can implement digital payment services as fintech's attempt to provide solutions that can solve the day-to-day challenges (Sahi et al., 2021). Wireless technology has transformed the commerce landscape and individuals are now able to carry out contactless payments, such as mobile payments, wearable-enabled payments, and contactless enabled-bank card payments (Sahi et al., 2021). Contactless payment refers to the practice of securely making retail payments at a retail outlet without having to physically touch the POS terminal (Karjaluo et al., 2020). Contactless payments use a technology called near field communication technology (NFC). It is an extension of radio frequency identification (RFID) technology which was created by combining contactless identification and interconnection technologies (Jenkins & Ophoff, 2016).

According to Felber & Meyer (2023) contactless payment cards are the most popular advancement in digital payment technology in recent years. The authors also noted that in majority of countries, contactless payment cards are significantly more common

than payments that are done with wearables or mobile phones. Contactless payment cards let customers make purchases by "tapping" or "waving" their credit or debit cards over a POS terminal. They were anticipated to become the next big thing in consumer payments (Akaka & Ke, 2020). Card issuers, banks and payment networks made efforts in guaranteeing that contactless cards would be the first option that customers consider when making a transaction. To make a payment, all the user needs do is present the card in front of an NFC reader for a brief moment and await confirmation (Mehrnezhad et al., 2015).

Bounie & Camara (2020) argue that payments using contact cards (where the card is inserted into the terminal) can be completed more quickly with contactless technology. They also found that in Canada, there has been a significant rise in the use of contactless payment cards; more than half of debit and credit card transactions are contactless. In South Africa though, only 14% of POS terminals accept contactless payments, while over 50% of customers continue to rely on cash for their transactions (Karjaluo et al. 2020). Akana & Ke (2020) draws the conclusion that although contactless card payments are more likely to be adopted, there remains significant obstacles in the way of widespread acceptance.

Another form of contactless payments that has been widely adopted globally is contactless mobile payments. These payment types as argued by Al-Sharafi et al. (2022), differ from traditional mobile payments. They define the concept of contactless mobile payment technologies as payments done by bringing a smartphone or smartwatch incorporating the payment platform near to a POS terminal. Examples of well-known contactless mobile payment applications such as Samsung Pay, Google Pay, Apple Pay and Alipay utilise NFC to facilitate the payments through mobile devices (Aljawder & Abdulrazzaq, 2019).

The significant increase in mobile phone penetration in Africa and globally has led to the emergence of mobile payment technologies. Even though in South Africa mobile penetration rates are high, forecasts indicated by 2023 only 6.4 million people are expected to be open to adopting contactless mobile payments (Humbani, 2021). This indicates that mobile payments have not yet become a widely accepted method of payment in South Africa (Humbani, 2021). This includes South African townships

where the adoption and use of mobile payments is slow because generally, residents in the townships do not use mobile payment solutions (Mhlongo et al., 2017). The adoption and use of mobile payments in townships is influenced by several crucial factors, including the ability to test the mobile payment solution for free and the convenience of using it on existing user's devices (Mhlongo et al., 2017).

Akana & Ke. (2020) revealed that generally what's lacking from the conversation around contactless payments is an awareness of consumer enthusiasm for this technology. According to Erikson et al. (2021) mobile payments, compared to traditional payments could offer an improved customer experience, decrease transaction costs, and enhance payment security. However, Felber & Meyer (2023) argue differently and believe the acceptance of contactless payments has encountered barriers to adoption due to concerns around privacy and security. Jenkins & Ophoff (2016) echoed the same sentiments and discovered that perceived risk is significantly influenced by worries about security and trust.

2.4 Tap-to-pay payments

In a study conducted in the United States (US), it was found that tap-to-pay transactions grew by 100% year on year (Bradford, 2021). This is due to more customers looking for alternatives to handling cash and pin pads since the COVID-19 pandemic. According to Visa (2020), tap-to-pay payments are quickly becoming the most popular method of payment globally, with 60% of Visa transactions outside of the US happening through tapping. Over 50 regions in Europe, Africa, and the Middle East, have made strides to encourage more people to use this payment method for its safety and dependable features (Visa, 2021).

According to Srivastava (2021), these payment methods allow individuals to carry out payments without ever needing to touch a payment device such as a point of sale (POS). For tap-to-pay to work, retailers need to have a contactless POS terminal and the customer must possess a device capable of communicating with the POS (Aljawder & Abdulrazzaq, 2019). Customers make their payments by simply "tapping" their mobile device or bank cards onto a contactless-enabled terminal. The payments

are processed quickly (Bounie & Camara, 2020) and offers convenience to the customers.

As observed by Verma et al. (2017) usability is the main reason individuals use mobile tap and pay. In addition, they found that mobile tap and pay nonusers believe that carrying actual cards in their wallets is more secure than storing card information on a mobile phone. The reason being, individuals were ignorant of the security measures in place to protect card information stored on mobile devices (Verna et al., 2017). In South Africa, there are numerous different mobile payment apps, and, because of this, mobile tap-to-pay has become popular (Karjaluoto et al., 2020).

2.5 Near field communication

To understand the concept of near field communication (NFC) and how it works, imagine an individual in a store with a trolley full of groceries. They get to the till and the cashier rings up all the items in the trolley and at the end asks for payment. The individual pulls out a bank card and taps it on the POS terminal. The same individual stops at a coffee shop and pays for her coffee by tapping their mobile phone on the POS terminal. When they get to the car park, they pay for their parking ticket by gently tapping their smartwatch device on the parking machine payment terminal. All these capabilities are achieved through NFC (Hoy, 2013).

NFC is a method of exchanging data between devices over distances of up to 10 cm (Jenkins & Ophoff, 2016). Due to this limited range, NFC is commonly known as a “tap” method of transfer (Hoy, 2013). The technology enables customers to use payment instruments such as smartphones or bank cards for payments done over the counter without needing to touch or insert the card into a POS terminal (Karjaluoto et al., 2020). The technology uses radios to transmit transaction information from a customer’s payment device to a POS terminal (Tew et al., 2022).

As reported by Jenkins & Ophoff (2016), projections from industry forecasts anticipated a swift embrace of NFC, indicating that by the year 2014, one out of every five users worldwide are expected to own a mobile device equipped with NFC technology. Based on the findings of an NFC user experience trial, the authors also

found that 89% of participants consider NFC faster than cash payments. Hoy (2013) echoed the same sentiments that NFC has the capacity to accelerate transactions. Tapping your phone is faster than taking out a card, swiping it, and signing.

Tew et al. (2022), observed the intention to adopt NFC payments is due to ease of use. They also found that timesaving is an advantage to the customers as this reduces the time spent queuing at retail stores. According to Tew et al, (2020) customers are likely to embrace NFC payments if they believe they are easy to use and do not require effort to learn and this has led to notable shifts in customer behaviour. Therefore, this study proposes that contactless payments provide convenience to customers.

2.6 Digital divide in townships

Digital divide as defined by Faloye & Ajayi (2022) is the gap between people who have access and the skills to use information and communications technology (ICT) and those who do not have access and the skills to use it. Majola & Mudau (2022) only defines it in the context of access; the gap between individuals that have access to ICT such as cell phones, computers, and internet, and those who do not have access. Hidalgo et al., (2019) defines digital divide as the disparity in access to ICT which stems from a lack of motivation and low-income levels within a community.

Campbell (2001) states that the extensive influence of ICTs in society raises a deep concern on whether the unequal distribution of ICTs will cause the digital divide to widen in developing countries. The author further asserts that the speed of diffusion in the longer run will widen the digital divide due to differing circumstances facilitating the spread of ICT in developing countries.

Digital divide in South Africa goes way back in years during the apartheid era and is ingrained in certain segments of the population. The government has embarked on various projects to try and bridge the divide by providing technological infrastructure and skills acquisition however the divide persists (Faloye & Ajayi, 2022). The telecommunications infrastructure in South Africa is skewed and this is a result of the ICT policies which were formulated in the apartheid era and failed to include the needs of all individuals (Aruleba & Jere, 2022). The telecommunication infrastructures within

black dominated townships are scarce and not maintained compared to urban areas that are dominated by the upper class (Aruleba & Jere, 2022).

Several townships do not have telecommunication networks and a substantial number of ICT projects fail in these areas due to reasons such as lack of user participation. Data in South Africa is said to be the most expensive and individuals living in townships pay more than the wealthy individuals living in urban areas (Aruleba & Jere, 2022). Those living in urban areas have various options and are also able to take on contract packages whereas those living in the townships cannot afford these packages.

Over the years digital divide declined in developed countries because of an increase in the number of people having access to the internet (Magida & Armstrong, 2022). According to Majola & Mudau (2022) lack of resources, demographics of income, and ethnicity are the reasons for digital divide. Liu et al. (2022) looked at the relationship between ICT solutions and the digital divide and concluded that in South Africa the digital divide is focused on the difference in rural areas and cities rather than gender. Liu et al. (2022) presented the divide in two categories: first order digital divide which refers to a lack of technology ownership and poor internet connectivity and second order digital divide which refers to digital illiteracy. Magida & Armstrong (2022) on the other hand present the digital divide in three levels; the first level is attributed to access; the second level is skills and usage (capability), and the third level refers to the tangible outcomes related to being online. Figure 1 illustrates the three levels of the divide based (Faloye & Ajayi, 2022).

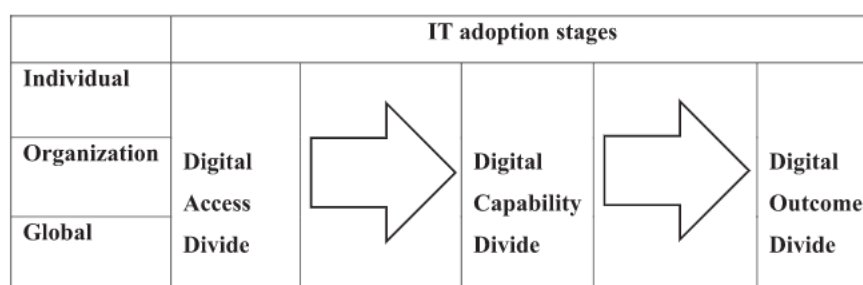


Figure 1: Three-level digital divide framework

Source: Faloye & Ajayi (2022)

Factors such as data costs and affordability, digital illiteracy, poverty, and inequality, loadshedding and infrastructural challenges drive the digital divide in South Africa. The reality of the divide was strongly realised during the COVID-19 pandemic when the country was forced to shut down in the hope of curbing the spread of the virus. For example, individuals from various public schools of which majority are in townships, struggled with the switch to online learning because of poor infrastructure and lack of access to the internet. On the other hand, individuals from private schools switched with ease due to the schools being able to provide effective online teaching and learning (Faloye & Ajayi, 2022). The government recognised the urgency for infrastructural upgrades in underdeveloped communities, leading to initiatives to install Wi-Fi in schools to enhance the use of ICTs.

ICT is crucial for advancing financial inclusion and providing access to various digital payment methods. According to Aruja & Diniz (2021), digital financial services, facilitated by payment platforms and mobile devices can expand basic financial services to the low-income population and thus promote accessibility which in turn reduces social inequalities. However, they also believe that there are people who still lack access to formal financial services. Agwu (2021) agrees with the authors and states that although the drive for digitisation has been greatly boosted by the introduction of technology in rural areas, many rural communities, particularly those in developing countries still lack access to financial services.

Banks aim to ensure that people living in rural areas are included in the formal financial system. Agwu (2021) believes that the growth of mobile device usage has led to the increase in digital payments which has greatly benefited the poor. This gives them access to digital payment options which impacts financial inclusion positively by changing how people conduct cash transactions (Aruja & Diniz, 2021). However, when it comes to financial inclusion, rural development still lags behind urban areas.

Therefore, this study proposes that while digital technologies like mobile phones improve financial inclusion, individuals in the townships face challenges due to literacy issues, as they might not be able to use these technologies for certain activities. This could undoubtedly impair financial inclusion for the residents, alongside other factors such as education, lack of infrastructure and costs. However, with the help and support

of governments and private businesses these challenges can be addressed (Agwu, 2021).

2.8 Theoretical Backgrounds

Technology is rapidly advancing and being adopted in various sectors in the hope to revolutionise industries, however, issues around adoption and acceptance have increased in the recent times. According to Rathod (2014), the adoption of technology is a well-researched discipline. Technology adoption research has evolved over the years by conceptualising new variables that are more suited to explain the adoption of technology which has since birthed several other theories (Rathod, 2014). Rathod (2014) further explains that governments and organisations are investing quite heavily in new technologies, but this investment will be in vain if the intended users are not willing to adopt the technology.

2.8.1 Technology Acceptance Model

Technology Acceptance Model (TAM) and its extensions have been one of the most used technology adoption models (Patil et al., 2017). It was introduced by Davis in the late 1980's and used to predict the acceptance and technology usage behaviours (Junadi & Sfenrianto, 2015). To predict the attitude of behavioural intention and uses of ICT, the model utilises two constructs, namely perceived usefulness (PU) and perceived ease of use (PEOU) and according to Davis (1989) these determinants are best suited to predict and explain technology use.

There are varying factors that cause individuals to either reject or accept a technology. Perceived usefulness as defined by Davis (1989) refers to an individual's belief in how the use of a certain technology may assist them in the performance of their tasks. Perceived ease of use on the other hand refers to the extent to which an individual believes that using a certain technology is not difficult and without effort (Davis, 1989). According to Flavian et al. (2020) both these variables influence an individual's attitude towards the use of a technology. Since the introduction of TAM, it has been used considerably and modified over time to predict the behaviour of technology adoption (Flavian et al., 2020).

Flavian et al. (2020) looks at the adoption of mobile payments and states that perceived usefulness influences an individual's intention to use mobile money as well as their attitude towards the use of mobile money. He further argues that perceived ease of use positively influences an individual's perception on how useful mobile payments are. Patil et al. (2017b) looked at the adoption of digital payments in developing countries. They found that perceived usefulness was the primary determinant of an individual's intention to use mobile payment, and this was followed by perceived ease of use.

Several studies have adopted and extended TAM across several research contexts. For example, the study by Najib & Fahma (2020) used TAM with trust as an extended variable. He looks at digital payment system adoption in Indonesia and states that trust is important to be used because digital payments are generally regarded as unsafe. Susanto et al. (2022) utilised TAM alongside UTAUT and their extensions. The focus of their study was a review on digital payments adoption in Asia. They tested 27 factors and only eleven proved to influence adoption (perceived ease of use, perceived usefulness, attitude, trust, social influence, satisfaction, motivation, facilitating condition, perceived risk, perceived enjoyment, and security). The study conducted by M. Te Lu (2001) on the digital divide in developing countries, supports the use of TAM with the recommendation to extend the model to understand the influence of culture on internet access and the digital divide.

2.8.2 Theory of Reasoned Action

Theory of Reasoned Action (TRA) is a theory of behaviour and was introduced by (Fishbein, 1967) and it evolved over time with extensions by (Fishbein & Ajzen 1975; Ajzen & Fishbein 1980). Its roots are founded in social psychology and the theory utilises three constructs, behavioural intention (BI), attitude (A) and subjective norm (SN) (Rathod, 2014). According to Rathod (2014), the behavioural intention of an individual is depended on their attitude and subjective norms. In other words, to predict the behaviour outcome of an individual, the individual must be asked whether they are going to implement that behaviour.

TRA suggests that the process to decide by individuals involves their attitudes, their beliefs, their intentions, and behaviours (Rahmayanti et al., 2021). The theoretical basis of the theory as stated by Rahmayanti et al. (2021), is that individuals act on their beliefs by experiencing the stages of attitude. He denotes that attitudes are feelings that can either be negative or positive that individuals experience towards a technology.

2.8.3 Unified Theory of Acceptance and Use of Technology

The Unified Theory of Acceptance and Use of Technology (Venkatesh, 2003) popularly known is (UTAUT) was introduced in 2003 by Vankatesh et al. The UTAUT theory was created by synthesising and integrating the Technology Acceptance Model (TAM), the theory of reasoned action (TRA), motivational models (MM), theory of planned behaviour (TPB), innovation diffusion theory (IDT), social cognitive theory (SCT), the model of the PC utilisation (MPCU), and combined TAM and TPB (Sfenrianto, 2015).

UTAUT has four constructs (effort expectancy, performance expectancy, social influence, and facilitating conditions) used as predictors of the intention to use a technology. Performance expectancy refers to the degree to which a user is of the opinion that using a certain technology will boost their job performance (Venkatesh, 2022). Effort expectancy refers to the degree to which a user perceives that using a technology is effortless (Venkatesh, 2022). Social influence is defined as a user's perception on how they think other people believe they should utilise a new technology (Venkatesh, 2022). Facilitating conditions refers to the belief by an individual that there exists an organisational and technical infrastructure that supports the use of a certain technology (Venkatesh, 2022). UTAUT has four additional moderating variables (age, gender, experience, and voluntariness of use).

The UTAUT model is one of the most adopted and used models to gain insights into user behaviour across different domains of ICT such as digital payment usage (Michael Musyaffi et al., 2021), acceptance of mobile payments (Ariffin et al., 2020), and the adoption of e-government services (Rodrigues et al., 2016). (Sharma & Sharma, 2019) utilised UTAUT and integrated psychological empowerment theory to

understand the perception that the population of India has on digital payments. They are of the view that the UTAUT model is the most appropriate theoretical framework as it was developed by considering technological and social determinants to comprehend the intention of India's rural population.

Junadi & Sfenrianto (2015) looked at factors influencing the intention of a consumer to use an electronic payment. The context of their study is Indonesia. They utilised UTAUT with two extended variables, perceived security, and culture. Haritha (2022) utilised TAM alongside UTAUT to understand the adoption of mobile services. The study suggests that perceived usefulness, ease of use, social norms, facilitating conditions, and perceived trust have a positive influence on the intention to use. (Pick & Sarkar, 2016) conducted a study by comparing different theories of digital divide. They argue that digital divide should be defined considering both aspects of access and usage. However, they found that UTAUT primarily focuses on acceptance and usage of technology and places less emphasis on access.

2.8.4 Conclusion of theoretical background

TAM is one of the most utilised models in determining technology adoption and as recommended by M. Te Lu (2001), it can be extended in the context of predicting technology usage and digital divide. This study will follow this approach of using TAM as the theoretical model. It will be extended by integrating two constructs: (1) perceived risk; how a user's perception of risk associated with digital payments influences their acceptance and usage behaviour and (2) access; the availability and ability of users to access and use digital payments. In this study, access is not limited to physical access but rather refers to a broader definition that describes and explains the different types of digital divide (Van Dijk, 2017).

2.9 Conceptual Framework

A conceptual framework functions as a research roadmap, where the argument about the topic of research and the proposed means of study are presented (Ravitch & Rigaan (2014)) The conceptual framework adapted in this study is represented in Figure 2 and is explained as follows:.

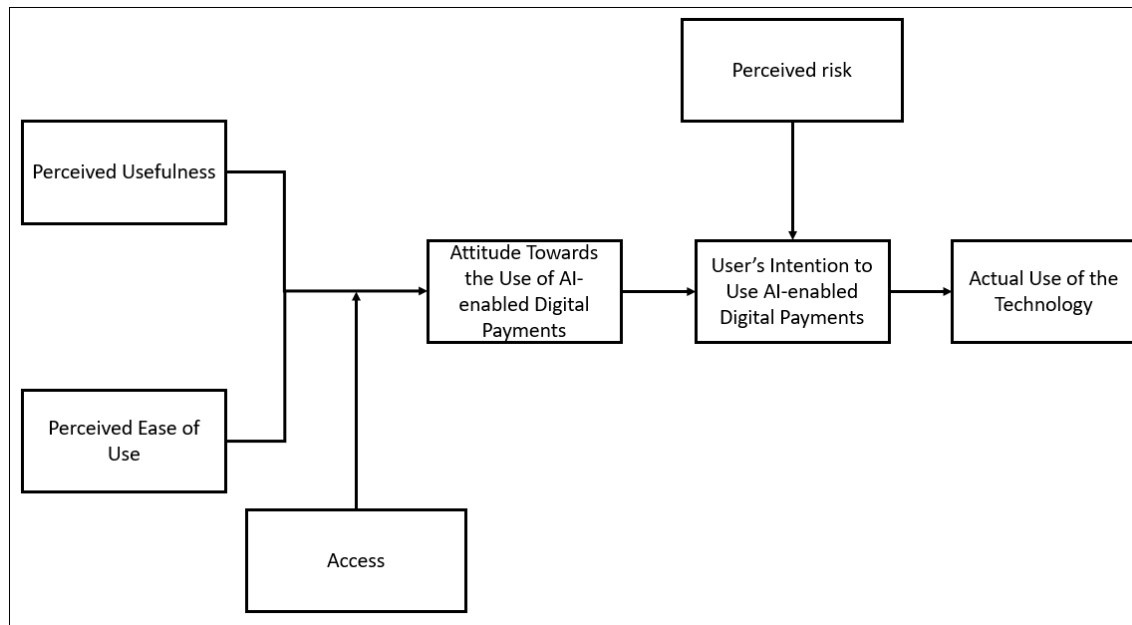


Figure 2: Conceptual Framework

2.9.1 Perceived Usefulness

Perceived usefulness is a Technology Acceptance Model (TAM) construct and refers to the belief a user has that utilising a certain technology will enhance the performance of their job/tasks. Davis (1989) founded the TAM model and revealed that perceived usefulness positively influences an individual's intention to use a certain technology.

Technology adoption and usage research has been conducted by numerous people where they have adopted TAM as a research model and have proved that perceived usefulness has an influence on the intention to use a technology (Patil et al., 2017b; Najib & Fahma, 2020; Alkhowaiter, 2020; Indarsin & Ali, 2017).

According to Najib & Fahma, (2020) perceived usefulness is influenced by perceived ease of use because if it is easy to use a technology it can then be useful. Regarding digital payments, perceived usefulness by an individual will influence the user's attitude towards the use of the technology.

2.9.2 Perceived Ease of Use

Perceived Ease of Use is a Technology Acceptance Model construct used to determine a user's perception of use. Multiple studies have tested perceived ease of use in the context of digital payment adoption to determine a user's perception on the intention of usage (Roy & Sinha, 2014; Setiawan & Setyawati, 2020; Noor Ardiansah et al., 2020; My et al., 2021).

Andavara et al. (2021) found that perceived ease of use explicitly and implicitly affects the user's intention to use a mobile payment service. The author indicated a rise in a user's desire to use a particular technology when they believe it is easy to use.

In the case of developing countries, Alqudah et al. (2022) revealed that the user's intention to use digital payment systems is significantly and positively affected by the perception they have on the usefulness of the system. However, there is no evidence to support the impact the perceived ease of use has on the user's intention to use the system.

According to Rabaa'i et al. (2022) perceived ease of use refers to how easily users believe they can learn and use mobile payment systems with minimal effort. When individuals find it easy to use digital payments it increases their behavioural intention towards adoption. They revealed that when it comes to predicting behaviour, the attractiveness of alternative options has the highest influence, followed by perceived ease of use.

2.9.3 Perceived Risk

Perceived risk was introduced by Bauer (1960). He described risk as the uncertainty and potential consequences that result from an individual's actions. For example, an individual may feel uncertain about negative consequences for utilising a product. Vinitha & Vasantha (2017) refers to perceived risk as a feeling of uncertainty towards something and a situation where the outcome cannot be controlled. In the case of digital payments, the user is aware of the risks associated with providing their card details for payment but there are restrictions on this.

The reluctance of using digital payment systems amongst individuals is often associated with concerns around safety. Individuals perceive a level of risk because often they are uncertain of the level of security embedded in an electronic payment system. According to Yang et al. (2015) previous studies that looked at the acceptance of mobile payment mainly looked at the motivation behind using mobile payment. He states that not much attention has been given to the study of inhibitors like perceived risk. In the case of mobile payments, Patil et al. (2018) found that perceived risk significantly influences the user's intention to adopt mobile payment systems.

Vinitha & Vasantha (2017) states that there is an association between electronic payment systems with perceived risk and that, among other factors, it is a determining factor in the decision to use the system. According to (Raihan et al., 2020) digital payments are not accepted the same around the world with some digital payment systems highly adopted and others less adopted. They found that perceived risk is a contributing factor to the low adoption of digital payments.

2.9.4 Access

For a long time, policymakers had a belief that the issue of digital divide would be resolved when a country has a high rate of internet connectivity for the citizens (van Deursen & van Dijk, 2019). However, studies on the second level digital divide found that the inequalities in internet skills and use continues to widen even with the widespread of physical internet access.

In terms of internet use and access, Porter & Donthu (2006) said people who are less educated, older, and lower income earners, have a lower rate of internet usage than people who are highly educated, younger, white, and wealthier. They found that education, age, income, and race have varying associations with belief about the internet. Additionally, these beliefs influence an individual's attitude towards the internet and use. They also found that even though access barriers notably influence internet use, perceived ease of use and perceived usefulness have a stronger influence.

According to Vasile et al. (2021) low level consumer income impacts access to financial services. Not everyone can afford to have smart devices that enable them to

take part in the digital financial market. They found that internet access, level of education, employment characteristics, gender and level of development influence the increased access to digital payments.

2.10 Conclusion of Literature Review

The literature reveals that new digital technologies are at the forefront of financial services disruption, and this contributes to the rise in popularity of digital payment systems in developed countries. There is however a slow adoption rate of digital payments in developing countries due to the digital divide. Cash remains the preferred method of payment in Sub-Saharan Africa however the need to drive financial inclusion remains a priority. TAM has been widely used and tested to understand the factors that influence technology adoption. Several authors have extended the model as they found that the model alone is not enough to understand the adoption factors of digital payments. This study extended TAM with additional constructs, perceived risk, and access.

CHAPTER 3. RESEARCH METHODOLOGY

This Chapter outlines the research methodology process that was followed to address the research questions in Chapter 1 and the propositions that arose in Chapter 2. The Chapter outlines the research approach that was taken, and the research design chosen. It describes how the data was collected and the procedure, the sample and population. It provides a description of the research instrument that was used, analysis of strategies and the methods of interpreting the data. The chapter also includes the limitations of the study, validity, and reliability measures, and quality assurance.

3.1 Research approach

This study seeks to investigate whether the adoption of digital payments has any effect on the digital divide in the South African township, Kagiso. This research adopted a qualitative research methodology with an exploratory design to achieve its objectives. As explained by Pratt (2009), qualitative research is best suited for addressing “how” questions instead of the “how many” questions. The author further notes that it is valuable for understanding the world through the lens of the individuals that are being studied.

Qualitative research is therefore appropriate for this study because it provides an understanding of the perspectives and behaviours of the individuals in relation to digital payments (Bell, Bryman, & Harley, 2022). It enables an understanding of the effects of technology implementation on the digital divide in the South African Townships.

3.2 Research design

Phenomenological research involves the understanding of human experiences through the account of the people being studied (Creswell et al., 2007). This is also referred to as lived experiences. This study adopted the same research design, and the data was generated through in-depth interviews.

Phenomenology focuses on the understanding of the perspectives of individuals, and this makes it an appropriate research approach to gain insights into the experiences and perspectives of individuals regarding the adoption and usage of digital payments. It provides an opportunity to investigate how the individuals living in the townships navigate the digital divide when adopting and using the technology.

The limitation of phenomenology lies in the limitations of a small number of participants within a specific context and therefore cannot be generalised to a bigger population or other contexts.

3.3 Data collection methods

Data was collected through in-depth interviews which were conducted face-to-face. The rationale for using in-depth interviews is that it allows for a detailed exploration of the participant's experiences and perceptions on the use of digital payment systems. The interviews conducted are semi-structured in nature which allowed for probing of answers to get more insights relating to the research questions (Saunders et al., 2009).

The interview questions were prepared beforehand, which enabled room for improvement. The researcher identified a suitable pilot participant that understands the phenomena being studied. A suitable place was identified to conduct the interviews and it was a comfortable setting so that the participant felt free to share their experiences. Once the researcher had conducted the interviews with a pilot participant and was confident of the outcome, a sample of the participants was selected for the study.

3.4 Population and sample

3.4.1 Population

The population for this study was individuals living in one of the South African townships in the Krugersdorp area known as Kagiso. Kagiso is a black dominated

township which was established in 1920 during the time of black and white segregation in South Africa.

3.4.2 Sample and sampling method

The sample chosen for this study is individuals residing in Kagiso township who understand the concept of and interact with digital payment systems. Given the geography, the individuals are affected by the digital divide. The sample is purposive sampling (Saunders et al., 2019) and the researcher purposefully selected units from a diverse population that captured the experiences and perspectives of using digital payments.

The sample size is 12 participants, and because there are no rules for establishing a sample size when using non-probability purposive sampling (Saunders et al, 2019), the researcher deemed this an appropriate size to achieve data saturation and provide sufficient data to address the research questions. However, more participants could have been interviewed if data saturation was not reached.

Demographics profile:

- Age: the phenomenon under investigation requires participants that understand digital technologies, engage with digital payments, and are banked. Therefore, the participants range between 18 and 60 years of age.
- Socioeconomic status: the participants are from different socioeconomic backgrounds, e.g., low to medium income earners, different levels of education, etc.

3.5 The research instrument

For a qualitative exploratory research, semi-structured in-depth interviews are useful. Semi-structured interviews include a list of open-ended questions that are prepared beforehand which address the research questions. The open-ended questions allow participants to be free to express their perceptions and experiences about using digital payment technologies. This gave the researcher an opportunity to probe the participants for more details which generated rich data. However, the questions can

differ with each interview and additional questions were be added during the interviews (Saunders et al., 2019).

An interview guide was used during the interview sessions. The interview questions were derived from the research questions and theoretical framework in Chapter 1 and Chapter 2 respectively.

3.6 Procedure for data collection

The data was collected through face-to-face interviews. The researcher ensured to choose a comfortable, and productive environment that encouraged open communication.

The procedure:

1. The researcher identified suitable participants and scheduled meetings with them telephonically.
2. A day before the interview, the researcher followed up to ensure the participant was available.
3. The researcher informed the participant about the consent form that needed to be completed.
4. On the day of the interview the researcher ensured the participants sign the consent forms before conducting the interviews.
5. The researcher informed the participants that the interview was being recorded and explained why it was necessary to record.

3.7 Data analysis and interpretation

For this study, thematic analysis method was followed. Thematic analysis is a method that is used to identify, organise, and offer meaningful patterns, themes, and concepts (Braun & Clarke, 2019). Thematic analysis uses a six-step guide; familiarisation with data, generating code, thematical search, reviewing themes, naming themes, exploring data (Braun & Clarke, 2019).

The researcher started by engaging and becoming familiar with the data by listening to the recordings and making notes to gain a deeper understanding of the participants perspectives. The recorded interviews were transcribed to Microsoft Word. The next step was to start coding by identifying meaningful texts in the transcribed data. Microsoft excel was used to code the data. In the next step the coded data was reviewed, and themes and patterns were identified that emerged from the data. Relationships and common meanings amongst codes were categorised. Each theme identified was named to interpret the findings. Lastly the researcher reflected on the data and interpreted the themes in relation to the theoretical framework.

3.8 Limitations and challenges of the study

The following limitations and challenges were considered:

- This study is a qualitative study with a small sample and focuses on one township. This limited the generalisability of the findings.
- The participants are multilingual, and the interviews were conducted in a language comfortable to the participant. The researcher therefore had to translate some of the transcript into the English language.

3.9 Quality Assurance

3.9.1 Transferability

When a study has the potential to be useful and be applied in other populations or contexts it is known as transferability (Tracy, 2010). This is achieved when a reader takes an account of a study, and they feel as though the account narrated resonates with their situation and transfers the narration to their action (Tracy, 2010).

Transferability of this study was achieved through clearly describing the context of the study, including the population studied, the setting and the demographic background of the population. In this research, the researcher ensured that the sample is diverse so that a range of perspectives and experiences can be captured, and the findings thereof resonated with a broader population and sample. By providing the research

context and demographic of the participants, the researcher ensured that the readers could understand the environment where this study was conducted.

3.9.2 Credibility

Credibility is the standard of measure of rigour in qualitative research and it is concerned with the study testing its intended purpose (Ibiamke & Ajekwe, 2017). To ensure credibility, the researcher selected participants who have first-hand experience with digital payments and can provide valuable insights. In the case of data collection, the researcher ensured that the interview was conducted in a comfortable space where participants were able to share their experiences freely. The researcher followed the thematic approach for data analysis ensuring transparency, theme development and interpretation.

3.9.3 Dependability

Dependability relates to internal reliability which encourages consistency and replication (Ibiamke & Ajekwe, 2017). The researcher ensured consistency and followed a systematic procedure for data collection and analysis by clearly outlining the steps taken to collect and analyse the data.

3.10 Ethical considerations

The researcher addressed the following ethical considerations.

- Firstly, the researcher obtained consent from all the participants and ensured that each participant understands the purpose of the research.
- The researcher communicated the anonymity of participation in the interview to the participants and ensured the same anonymity was upheld by the researcher.
- The researcher ensured to always keep in mind that participation is voluntary, and the participants can withdraw from the interview at any time.
- The researcher ensured that ethical approval was obtained first from Wits University before conducting the interviews.

CHAPTER 4. PRESENTATION OF FINDINGS

4.1 Introduction

This chapter presents the findings of this study, starting with demographic information to confirm the relevance of the sample. It also provides the detailed research findings based on the research questions. The findings are presented in two sections to align with the research questions.

- How is the adoption of tap-to-pay digital payment technology in Kagiso township influencing the digital divide, and what are the perceived barriers and opportunities?
- What factors influence the adoption and usage of tap-to-pay payments in Kagiso township?

4.2 Demographic and socio-economic characteristics of participants

The demographic and socio-economic characteristics of the participants are presented in Table 1. The sample presents a high number of participants whose highest qualification attainment is Grade 12. This is because in most townships, access to university education is limited as compared to urban areas. People living in townships do not have the financial resources to further their studies. Limited access to higher education in townships often means a high proportion of individuals entering the workspace with Grade 12 qualifications as their highest education attainment.

Gender distribution: most participants are female, with only one male participant. Gender distribution may influence how digital payment technologies, including tap-to-pay, are adopted, and used. Understanding the specific patterns can provide insights into the potential technology adoption and usage disparities.

Educational background: the highest level of education varies among participants, ranging from Grade 12 to Honours level. Education can impact an individual's

familiarity and comfort with technology. Participants with higher education levels may reveal a greater understanding and readiness to embrace digital payment technologies. However, the diversity in educational backgrounds allows for a comprehensive exploration of digital literacy across different education levels.

Employment status: the participants have diverse employment statuses, including students, unemployed individuals, those in learnerships, a teacher, and a self-employed participant. Employment status can influence financial habits and the perceived need for digital payment solutions, as well as the accessibility to digital payment solutions. Employed individuals, especially those in certain sectors, may have different perspectives on the usefulness of tap-to-pay compared to unemployed or self-employed participants.

Specific participant highlights: individuals in learnerships may have a unique perspective, influenced by their exposure to formal training or their workplace settings. Their experiences could shed light on how education and professional development initiatives influence people's perceptions about digital payments. As a teacher, a participants' perception may reflect experiences with technology in the educational sector and how this translates to their personal use of digital payment methods. Self-employed individuals might have different money management habits, which could potentially influence how they feel about the adoption of digital payment technologies. The presence of multiple unemployed participants allows for an exploration of how individuals without employment engage with digital payments. Understanding their perspectives can help identify any barriers or enablers to digital payment adoption within this demographic.

This wide range of participants provided a rich pool of perspectives on the adoption of tap-to-pay technology, allowing for a detailed analysis of how demographic and socio-economic factors may influence attitudes, preferences, and usage patterns.

Table 1: Diversity of participants

Participant ID	Gender	Highest level of education	Employment status
Participant 1	F	Gr 12	Student
Participant 2	F	Gr 12	Unemployed
Participant 3	M	University Yr. 2	Learnership
Participant 4	F	Gr 12	Learnership
Participant 5	F	Diploma	Insurance Financial Advisor
Participant 6	F	Honours	Teacher
Participant 7	F	Gr 12	Self-employed
Participant 8	F	Gr 12	Unemployed
Participant 9	F	Gr 12	Unemployed
Participant 10	F	Gr 12	Office Admin
Participant 11	F	Gr 12	Unemployed
Participant 12	F	Gr 12	Unemployed

4.3 The impact of tap-to-pay technology on the digital divide

One of the questions of this study is to address the influence of tap-to-pay technology on the digital divide in Kagiso, examining how it affects accessibility and security. To address this research question, participants were asked questions relating to the adoption of tap-to-pay digital payment technology and the influence on the digital divide in Kagiso township. The themes and subthemes relating to this research question are outlined in Table 2 and explained in the sub-sections that follow.

Table 2: Impact of tap-to-pay technology on the digital divide

Themes	Subthemes
	Conceptualisation of digital payments

Exploring the digital payment literacy	Practical experiences and perceptions of digital payments
Addressing challenges in digital payment	Access and availability of tap-to-pay adoption
Exploring the impact of tap-to-pay technology on the digital divide	Efficiency and convenience in tap-to-pay adoption
	Economic transformation through technology advancement

4.3.1 Exploring the digital payment literacy in Kagiso township

A detailed investigation into digital payment literacy revealed a range of different perspectives among participants in Kagiso. The primary theme revolved around the transition towards cashless transactions, and the community's perception on the adaptation to this changing landscape. The participants demonstrated a basic understanding and awareness of digital payments, defining them as transactions that do not involve the exchange of physical cash. This understanding aligns seamlessly with the global trend of transitioning from traditional cash-based transactions to the more digitised financial transactions.

Conceptualisation of digital payments

Concerning the conceptualisation of digital payments, the replies from the participants revealed convenience as a recurring theme, emphasising the useful characteristics connected to the use of digital payments. **Participant 1** captured this awareness, stating, *"What I understand is that digital payments...transactions without giving cash"*. This explanation emphasized a conceptualisation of digital payments as a way of making transactions without relying on physical cash.

Another participant emphasised this point concisely by stating, *"I don't have to carry cash"* (**participant 7**). Moreover, another participant emphasised the inclusivity of digital payments, stating, *"It can easily be used by anybody instead of cash"* (**participant 11**). The participants recognised the convenience of digital transactions

by eliminating the need to carry physical cash and simplifying daily financial transactions. The responses from these participants suggest a perception of digital payments as an accessible and user-friendly alternative, suggesting that financial transactions may become more accessible and less restricted than they are now when using physical cash.

Practical experiences and perceptions of digital payments

The experiences and perspectives of the participants shed light on how they use digital payments. **Participant 5** demonstrated a practical awareness of digital payment methods in everyday scenarios, particularly in shops, and states: *"Ok, about digital payments, I understand the scanning part when I pay at the garage or President Hyper or Checkers"*. This idea was supported by **participant 1**, with a high degree of details and said: *"The positive part what I like about the thing is that if you want to buy electricity and it is already late...the electricity meter it says zero, it's hard for it to switch on again"* This response highlighted the actual benefits of digital payments, which addresses situations that are time sensitive such as purchasing electricity and avoiding disruptions caused by a low meter. Another participant expressed a distinct perspective and said: *"It's that you can make payments on my laptop or even on my phone rather than going to the mall or to the store itself"* (**participant 7**). This showed the convenience of online transactions which offers an alternative to physically visiting the shops or malls to make payments. Another participant provided a broader view of defining digital payments as *"Anything that you do on your phone or maybe laptop to purchase something or to pay for something"* (**participant 9**). This definition is broad and includes a wider range of transactions conducted through digital devices.

The participants do not only understand digital payments conceptually, but they actively engage with digital payments in their everyday lives. The positive experience relating to the purchasing of electricity stands out as a practical example of how digital payments contribute to efficiency, convenience, and reliability, which enhances the overall narrative.

4.3.2 Addressing challenges in digital payment

In investigating access and availability of tap-to-pay technology within the township, a noticeable inconsistency emerged among the participants, as different participants have different experiences. **Participant 1** highlighted the challenges of access and availability of the technology by stating: *"Not easy to find...spazas have it, but it is rare to find"*. This shed light on the uneven distribution of tap-to-pay technology within the township, though some spaza shops offer the technology, its presence is not widely available.

Another participant highlighted the availability in various other areas, stating, *"Shops in the townships don't have these machines where you can tap, but you know that in the city, yes, you will find them but, in the townships, not at all"* (**participant 2**). This observation presented a huge accessibility gap by highlighting the difference in availability of tap-to-pay technology between the townships and suburban areas. Another participant further contributed to the discussion by showing a desire to have more access of the technology: *"I wish most of the stores can have the scan to pay... if more stores can have that scan to pay like Shoprite doesn't have at the moment, but the filling stations have"* (**participant 5**). When considering specific stores, the participants highlighted the absence of this payment method in certain retail outlets by pinpointing Shoprite's lack of implementation while acknowledging its availability at the filling stations, where **participant 5** further identified stores with the technology, stating, *"I know the filling stations have, President Hyper has, the Checkers has. Mostly, it is just Shoprite and Usave, which is the one that is in my community. Yes, I just wish they could also have that"*. The number of shops presented by the participant provided a glimpse into the participant's community, where the presence of tap-to-pay was limited to certain stores which leaves room for much greater integration with a wider range of retail applications.

In essence, these participants' perspectives collectively provide a complex picture of the accessibility of tap-to-pay in the township, highlighting both the current issues and the expressed desires to have more retailers offer the technology.

4.3.3 Exploring the impact of tap-to-pay technology on the digital divide

To explore the impact of tap-to-pay on the digital divide, efficiency and convenience in tap-to-pay adoption and economic transformation through technology advancement were used.

Efficiency and convenience in tap-to-pay adoption.

In exploring tap-to-pay adoption in Kagiso township, participants consistently highlighted how digital payments have changed their lives, focusing on the themes of efficiency and convenience. The adoption of the technology stood out as being straightforward and simple, which provides a seamless alternative to traditional payment methods. **Participant 4** summed up the essence of digital payment efficiency, noting, *"I understand that with a digital payment, you can do it in the comfort of your house, and it is very quick"*. This statement supports the timesaving and convenience theme which positions digital transactions as a solution for people's day to day fast paced lifestyles.

Interestingly for some participants, tap-to-pay expanded beyond just the convenience, it also presented practical challenges. **Participant 8** shared their personal perspective and said: *"You see, my husband is the type of person that forgets his pin number most of the time, so tap helps him a lot, so I see it as something that's good"*. In this scenario, the technology does not only streamline the payment process, but it is also helpful for people who might have challenges with the traditional pin-based payment methods. Another participant explained how easy it is to use tap-to-pay and revealed more insights into the participant's perceptions. *"It's very simple; you don't have to put in the card in the machine and key in your pin number. So that one, you just put your card there, and then it goes through. It is convenient. I just walk in the shop, tap, and walk out"* (**participant 10**).

These responses present a narrative on how tap-to-pay has the power to transform by simplifying transactions and making them quick which adds a sense of ease and efficiency to the day-to-day financial interactions.

Economic transformation through technology advancement.

As the people in Kagiso deal with the changing technology landscape, an important theme emerged, which is the belief that technology can bridge the economic gaps and promote social equality.

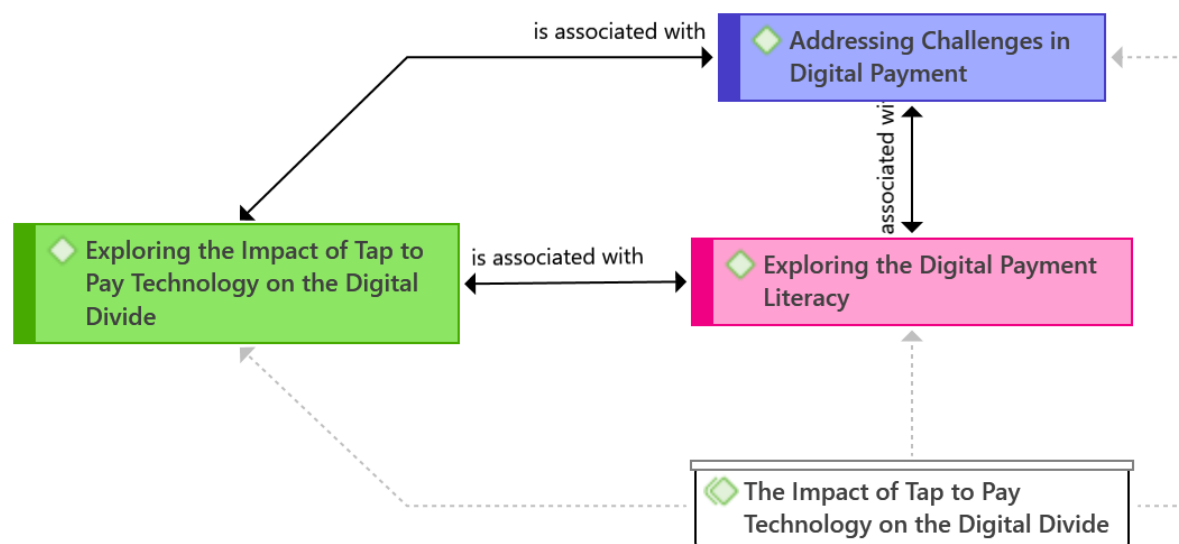
Participant 1 articulated this very well, stating, *"I believe so because, in life, we witness the constant change of technology. No one foresaw introducing a card that could be used without entering a PIN"*. This recognition of technology advancement highlights how dynamic progress is and introduces new opportunities that redefine the limits of financial transactions. **Participant 1** further argues that regardless of one's level of knowledge, staying up to date with modern technologies offers a pathway to accessibility. *"So, I think that aligning ourselves with the advancements in technology makes it more accessible for individuals like me, who, despite not being as knowledgeable as someone in Sandton, can still benefit."* This statement emphasises how technology can level the playing field and give people who might not have the same level of technical skill as those in more affluent places the chance to become technologically empowered.

From a similar perspective, **participant 3** discussed the financial effects of adopting technologies such as tap-to-pay and presented a complex argument: *"I believe it could pose a challenge considering the current employment statistics. In my opinion, I believe that having more income is connected to having a better access to tap-to-pay"*. This perspective suggests that using digital payments is connected to the overall economic well-being, connecting financial well-being to improved access to modern payment methods.

Participant 3 also proceeded by picturing a collaboration effort between the public and private sectors to boost job opportunities, thereby increasing the demand for tap-to-pay. *"So, if there were a collaborative effort between the public and private sectors to generate more employment opportunities, it could motivate the demand for tap-to-pay"*. This concept connects economic growth, job creation, and the adoption of technology, suggesting that financial success leads to an increased use of digital payments. These perspectives emphasised how technology advancement, economic

growth and social equality are interdependent. As Kagiso township embraces the ever-changing landscape of technology, the community envisions not only economic growth but also a way towards a more inclusive and equal society.

Figure 3: Impact of Tap-to-pay Technology on the Digital Divide



4.4 Factors influencing adoption and use of tap-to-pay

The adoption and use of the tap-to-pay technology in Kagiso is influenced by a range of factors which make it a multifaceted phenomenon. This study delved into the perspectives of participants, aiming to identify key themes and subthemes that shape the landscape of tap-to-pay adoption. Table 3 presents the main themes and subthemes identified during these discussions. From the issues of understanding and security concerns to generational differences and accessibility challenges, the investigation provided a comprehensive analysis of the dynamics at play in Kagiso. Examining these factors brings insight into the difficulties of incorporating digital payment methods in this community.

Table 3: Factors Influencing the adoption and usage of tap-to-pay technology

Themes	Subthemes
Perceived barriers to the adoption of tap-to-pay technology	Lack of understanding and security concerns
Contextual barriers in tap-to-pay adoption	Infrastructure and socio-economic challenges
Divergent digital adoption across generations	Generational differences in digital adoption
Accessibility and disparities in technology adoption	Digital divide and limited availability
Factors promoting the adoption of tap-to-pay technology	Positive user experience
Factors influencing financial perspectives	Understanding of financial management
Factors promoting accessibility and inclusivity	Inclusivity and access
Security considerations in digital payments	Safety and security management

4.4.1 Perceived barriers to the adoption of tap-to-pay technology

One theme that keeps coming up is the significant lack of understanding and awareness concerning tap-to-pay technology in Kagiso. **Participant 3** summed it up, revealing, *"I heard about it, but I haven't understood it fully in detail because I have only just heard about it"*. **Participant 9** openly admits to the initial acknowledgement of limited comprehension echoing the sentiment, *"I didn't know that this card can actually tap."* The insights from the participants collectively highlighted an existing gap in knowledge, indicating that participants are in the preliminary stages of familiarising themselves with this digital payment method. The lack of understanding extends beyond just awareness to the practical use of the technology, as articulated by **participant 12**: *"Me when I go to the bank, I just take money, maybe I pay, or I don't know why they use it"*.

Concerning safety and security, **participant 3** introduced a dimension of worry about phone security, saying, *"And if they get your phone, they can actually take your money more easily than if you actually have a PIN code"*. Looking at the bigger picture on safety in Kagiso, **participant 4** expresses doubt, remarking, *"Kagiso is full of criminals...I don't think it's safe because anyone can just tap your card. Even if you lose it, someone can just pick it up and start tapping"*. This viewpoint resonates with another participant's observation: *"The environment is not safe because here there are people who get into other people's houses and rob them, so if they can just take your card and they go tap" (participant 5)*. These participant's perspectives shed light on the potential vulnerabilities associated with digital payment methods, signaling the need for robust security measures to mitigate risks of unauthorised access and potential misuse.

4.4.2 Contextual barriers in tap-to-pay adoption

Growing up in Kagiso, the participants observed the inherent challenges arising from the infrastructure within the community. The participants' perspectives shed light on the contextual barriers influencing the adoption of tap-to-pay technology, primarily within the digital divide framework. Two major themes emerged: infrastructure challenges and socio-economic background. **Participant 5** highlighted the effect that infrastructure challenges have on the adoption of digital payments. *"From my experience growing up in Kagiso, I have realised that it's hard because of the infrastructure. Firstly, it is hard because people, like because of unemployment there is socio economic background, and so forth it is actually affecting like infrastructure in a way."*

One participant described how their socioeconomic background affected their use of digital payments. *"No, I don't because I don't have an app on my phone, so the only thing that I do is buy, swipe, tap, and do everything with my card." (participant10)*.

4.4.3 Divergent digital adoption across generations

The investigation of digital adoption within Kagiso township revealed a distinct pattern related to generational differences. Participants' perspectives showed that people of

different ages have different preferences and practices when it comes to technology, revealing a nuanced understanding across age groups. The participant provided valuable insights into the digital behaviours of the older generation within the community.

Participant 5 said *"In my community mostly, it's mostly the elders...they prefer cash because even at the spaza shops, remember R100 is R10 extra if you want 200 or you swipe things for 200..."* According to the participant, elders in the community predominantly favour cash transactions. This observation suggests that a substantial portion of the elderly population opts for traditional payment methods, driven by a combination of familiarity and perceived financial disadvantages.

In contrast, **participant 5** highlighted a marked difference in the digital behaviours of the youth within the community: *"Most of the youth have that access. Most of them use tap-to-pay "*. According to the participant, most youth have embraced digital payment methods, particularly tap-to-pay. This generational divide is attributed to the youth's greater access to and comfort with digital technologies.

Another participant introduced the narrative of a specific individual, their aunt, who represents a segment of the elderly population resistant to digital adoption. *"I really don't know because there are people like my aunt, for example, who do not have a bank card, and she does not even like a bank card. It is cash only for her, and someone like her will always use cash. She does not have time for laptops and things like that, so I feel like it has nothing to do with her, and she will just continue living on the other side, and we will be on this side"* (**participant 9**). The participant highlighted the aunt's dislike for bank cards, expressing a preference for cash transactions. The reluctance to embrace digital payment methods is linked to an apparent disinterest in technology, as evidenced by the aunt's avoidance of laptops and similar devices.

4.4.4 Accessibility and disparities in technology adoption

In Kagiso township, the digital divide is evident in the uneven distribution of tap-to-pay technology among businesses. Participants highlighted the disparities in availability, shedding light on how certain businesses offer this digital payment method while others lag. These insights reveal a fragmented landscape where the convenience of tap-to-pay is not widely accessible within the community.

Participant 5 explained this and said *"I know the filling stations have, President Hyper has, the Checkers has, Pick n Pay has. Mostly, it is just Shoprite and Usave, which is the one that is in my community. Yes, I just wish they could also have that."*

This observation emphasised the uneven implementation of tap-to-pay within the participant's immediate surroundings, illustrating a localised digital divide.

Similarly, **participant 1** echoed the sentiment of limited availability, stating that finding tap-to-pay options is not easy; *"No, it's not easy to find; it's kind of difficult, but other places like the spazas have it, but it is rare to find. Some have it, and some do not"*. The participant noted the rarity of this technology in some spaza shops, further emphasising the inconsistent access experienced by residents in various parts of the township.

4.4.5 Factors promoting the adoption of tap-to-pay technology

Positive experiences with tap-to-pay technology emerge as a key driver in fostering favourable perceptions among Kagiso township residents. The participants' insights shed light on the elements that contribute to this positivity, emphasising the quick, convenient, and cost-efficient nature of transactions conducted through this digital payment method.

Participant 1 expressed a pleasant surprise at the swiftness of the tap-to-pay transaction, highlighting the seamless and rapid nature of the process. The participant mentioned how the quick completion of the transaction left a positive impression, emphasising the sense of immediacy. *"The experience was nice because, at the same*

time, it was like, oh, is it done already because it was like so quick, and it was easier to use it. It was quick, and I was like, oh wow, this is so quick, so it is not bad."

Similarly, **participant 6** highlighted the convenience of tap-to-pay, especially when it comes to grocery shopping. The participant highlighted the convenience of not having to search for an ATM to withdraw cash, highlighting the experience of entering a store, making purchases, and leaving without the inconvenience of cash transactions. *"Yes, and also with groceries, it's convenient, also on the fact that I don't have to look for an ATM to withdraw and then go to, so I can just get in there and get what I want".*

Participant 3 while expressing a cautious approach toward future use, acknowledged the appeal of tap-to-pay and indicated a willingness to explore it further. The participant's desire to test the waters indicates a cautious yet open-minded attitude towards incorporating this digital payment method into their financial practices. *"I think in the near future I might try to actually venture into using it once or twice just to test the water because yes, as I said, because of that and so forth, but I would just use it a few times and just leave it. I would not want it to be a habit".*

The participants' insights collectively highlight the positive impact of quick, convenient, and cost-efficient transactions facilitated by tap-to-pay technology.

4.4.6 Factors influencing financial perspectives

There is a reluctance to engage with the banks which is based on the perceived negative aspects associated with financial institutions. The mention of "interest (bank fee)" suggests a concern about additional charges or fees imposed by banks, prompting participants to opt for the straightforwardness of cash transactions.

Participant 3 sheds light on this unique financial perspective, saying, *"So far I prefer paying cash because paying cash you know that you are going to get a certain amount back instead of banking with the banks because they are going to take interest (bank fee) so I will prefer cash"* In this expression, the participant revealed a preference for cash transactions citing two reasons for this preference: clarity in financial transactions and avoidance of banking fees.

The participant values the physical nature of cash, emphasising the assurance of receiving an exact amount during transactions. This preference aligns with the emotional comfort obtained from physical cash, allowing for a quick and tangible assessment of value.

4.4.7 Factors promoting accessibility and inclusivity

In the realm of digital payments, the promotion of accessibility and inclusivity emerged as a powerful theme, positioned to propel the widespread adoption of digital transactions. This narrative unfolded through a participant's moving statement, shedding light on the transformative potential of digital payment methods.

The participant's statement summed up a key concept—digital payments can be a force for inclusivity, reaching a diverse range of individuals, including those who may lack knowledge or familiarity with modern applications and technologies. The participant articulates, *"Because others that don't have the knowledge of using apps and all that other stuff, they can also get access to digital payments"* [Participant 4].

4.4.8 Security considerations in digital payments

In the area of digital payments and the evolving security landscape, participants provided insights that revealed a shared desire for more stringent security measures.

Participant 7 articulated a desire for an innovative approach to security, stating, *"I would rather prefer that perhaps where, there would be a fingerprint on the card like when you are holding it, it only works when it is connected directly to you via the fingerprint"*. This participant envisions an additional layer of security embedded in the physical card itself, proposing the integration of fingerprint technology.

Participant 11 echoed this sentiment by emphasising the need for measures that instill a sense of safety among users: *"They can add something that will make people feel safe when using their cards so that if you choose to tap, no one should be able to use the very same card as yours. People want to feel safe, so yes, I think they need to do that"*. This participant emphasises how important it is for users to feel secure

when doing transactions and how important the psychological component of security is. Figure 4 illustrates the factors influencing the adoption of tap-to-pay technology.

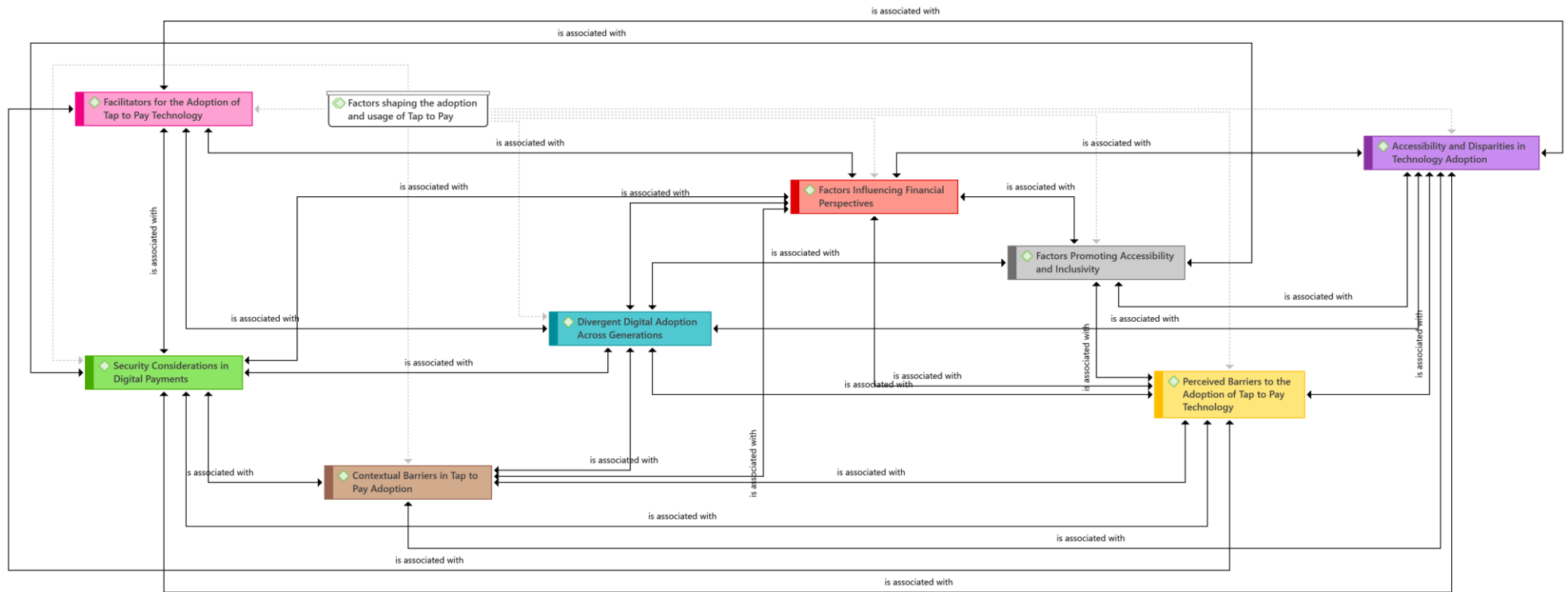


Figure 4: Factors Influencing the adoption of tap-to-pay technology

4.5 Conclusion of findings

This study revealed that the adoption and usage of tap-to-pay in Kagiso township is hindered by significant challenges, primarily rooted in a lack of awareness, security concerns, and contextual barriers. Participants expressed reservations concerning the safety of digital transactions, citing concerns about phone security and the prevalence of criminal activities in Kagiso. Additionally, generational differences highlighted varying preferences, with the older population favouring traditional cash transactions. The accessibility of tap-to-pay technology also faces disparities across businesses, contributing to a fragmented digital landscape. Moreover, the insights provided by participants highlight the need for ongoing advancements in security measures to build trust and confidence among users, paving the way for a more seamless integration of digital payment methods in the community. The next chapter discusses these findings, providing context by explaining limitations.

CHAPTER 5. DISCUSSION OF FINDINGS

5.1 Introduction

This study explored the dynamics surrounding the influence of digital payment adoption on the digital divide within Kagiso township, South Africa. This qualitative study aimed to shed light on the complex relationship between digital payment adoption and the widespread digital divide experienced by participants in Kagiso township. This chapter provides a discussion of the findings of this study in relation to the research questions, which explores the influence of tap-to-pay digital payment technology adoption on the digital divide in Kagiso township as well as the influence that the adoption and usage of tap-to-pay payments have in Kagiso township.

5.2 The adoption of “tap-to-pay” digital payment technology and the digital divide

The first research question aimed to explore the impact of adopting tap-to-pay technology on the existing digital divide within Kagiso township. This question sought to understand how adopting tap-to-pay technology affected the digital divide in Kagiso township. By examining the transformative potential of this digital payment method, this study aimed to explore how the integration of this digital payment method could either improve or worsen existing inequalities in digital access and usage among the township residents. This was understood by exploring digital payment literacy, digital divide and digital payment and exploring the impact of tap-to-pay technology on the digital divide.

5.2.1 The impact of tap-to-pay technology on the digital divide

Participants demonstrated a basic understanding and engaged with digital payments in various scenarios, highlighting positive experiences such as purchasing electricity and the convenience of remote online transactions. The research participants' responses reveal that there is a complex understanding of

digital payment literacy in Kagiso township. The findings emphasised on the idea that digital payments are transactions that do not involve the exchange of physical cash. This shows that people in Kagiso have the basic understanding and awareness of the difference between cash transactions and digital payments. This finding was consistent with previous studies that defined digital payments as payment transactions that are conducted using an electronic medium Mützel (2021). The participants expressed their willingness to use tap-to-pay technology because of the convenience of not having to carry cash.

From the practical experiences and perceptions of digital payments among the participants, this study found that 33% of the participants engage with digital payments in day-to-day scenarios, both online and instore. The participants understand the different platforms on which digital payments can be performed such as laptops, mobile devices, and retail POS devices. Of the participants, 25% indicated an awareness of the benefits associated with digital payments which include efficiency and convenience, where the transactions are completed seamlessly and with speed. This finding aligns with prior literature which supports the notion that individuals are attracted to digital payments due to the efficiency and convenience they provide (Ravikumar et al., 2020).

In investigating access and availability of tap-to-pay, this study found that there are challenges in access and availability of the technology within the township with participants noting the differences between townships and suburban areas and expressing a desire for expansion in access across different shopping outlets. This finding mirrors prior literature that suggests a skewed telecommunications infrastructure in South Africa (Aruleba & Jere, 2022).

The findings were inconsistent among the participants where 17% highlighted an uneven distribution of tap-to-pay technology in the township, noting that some retailers have the technology, and some do not. These participants reflections highlight a double challenge: not only is tap-to-pay not accessible everywhere, but it is also not always present at the businesses that do adopt it. The findings

closely mirror those reported in prior literature suggesting an uneven and unequal distribution of ICT which causes a digital divide (Campbell, 2002).

This digital divide in availability may contribute to differences in the level of exposure and familiarity that residents have with this technology, influencing their overall engagement with modern payment methods in Kagiso township. It is crucial to address these differences to promote equal access and participation in the developing field of digital payments. The uneven distribution of tap-to-pay is an indication of income disparities. Affordability is a key factor in the implementation and adoption of modern technologies. Uneven distribution also reflects disparities in infrastructure development with the community not having reliable internet and network coverage. The acceptance of tap-to-pay in Kagiso is beyond just the technology adoption. It represents a meaningful change towards a financial landscape that is convenient and accessible. I perceive that as people go about their day-to-day, the desire for efficiency plays a significant role in the growing popularity of digital payments.

Despite these challenges, the efficiency and convenience of tap-to-pay adoption emerged as transformative factors, simplifying transactions and addressing practical challenges, therefore contributing to a sense of ease and efficiency in the daily financial transactions. Furthermore, it is found that the use of tap-to-pay technology in the township will stimulate economic growth. The participants view technology as a tool for promoting social equality, closing economic gaps, and creating job opportunities. From the findings of this research, it can be argued that a mutual relationship exists between the advancement of technology, economic advancement, and social equality, while presenting tap-to-pay as a technological innovation and a pathway towards a more inclusive and equal society in Kagiso township.

5.3 Factors which influence the adoption and usage of “tap-to-pay” payments

The second research question investigated the factors influencing the adoption and use of tap-to-pay in Kagiso Township. This question shifts towards a more detailed investigation of the factors that influence the adoption and usage patterns of tap-to-pay technology within Kagiso township. By identifying and analysing these factors, this study aims to provide a detailed understanding of the socio-economic, cultural, and infrastructural elements that either promote or hinder the incorporation of digital payment technologies in the daily lives of Kagiso's inhabitants. These factors include perceived barriers to the adoption of tap-to-pay technology, factors influencing financial perspectives, contextual barriers in tap-to-pay adoption, accessibility and disparities in technology adoption, divergent digital adoption across generations, facilitators for the adoption of tap-to-pay technology, factors promoting accessibility and inclusivity, and security considerations in digital payments.

5.3.1 Factors influencing the adoption and use of tap-to-pay

This study found that perceived barriers to tap-to-pay adoption exists, and this includes lack of understanding and awareness of the technology. Of the participants, 25% revealed their lack of knowledge and understanding of the technology. The insights from the participants collectively underscored a prevailing gap in knowledge, suggesting that participants are in the early stages of familiarising themselves with this digital payment method. The study found that there is a potential gap in the education system regarding digital financial tools and there is a need for increased awareness, education, and clarity about the functionalities of tap-to-pay. This finding was supported by previous literature which also found that education and illiteracy influences access to digital payments (Vasile et al., 2021)

This study also found that safety and security are barriers to tap-to-pay adoption. 25% of the participants expressed their concern regarding safety and security. These participants highlighted the tangible risks associated with tap-to-pay in an

environment prone to criminal activities, emphasising the need for increased security measures and risk mitigation strategies tailored to the local context. The participant's view echoes the conclusions drawn in existing literature which suggest organisations should have the security of individuals in mind when developing digital payments (Ravikumar et al., 2022; Vinitha & Vasantha 2017). These participants' insights provided a detailed perspective on the difficulties Kagiso residents face in understanding and embracing tap-to-pay technology, emphasising the critical role of education, security, and contextual awareness in shaping the adoption landscape. In summary, the lack of understanding and security concerns emerged as significant barriers to the adoption of tap-to-pay in Kagiso. Addressing these concerns through education and enhancing security features may play a crucial role in overcoming these perceived obstacles.

Despite the emergence of barriers to adoption, this study also found that digital payments could break down barriers and become accessible to a larger audience. This finding is similar to existing literature that argues that digital payments provide financial inclusion opportunities for millions of people (Patil et al., 2017). The focus is on creating avenues for individuals who might not be familiar with the complexities of technology, especially applications. The perspective of the participants highlighted a vision where digital payments become an inclusive tool, offering financial access to a wider population, irrespective of their technological proficiency or knowledge. This narrative resonates with the overarching theme of inclusivity, highlighting the significance of ensuring that digital payment solutions are universally available. It highlights the importance of breaking down technological barriers and making these financial tools accessible to everyone. The participant's viewpoint becomes a catalyst for imagining a future where digital payments empower individuals from various backgrounds and levels of technological literacy to participate in the evolving landscape of financial transactions.

This study found that the link between unemployment and socio-economic background directly influenced the accessibility of modern technologies. One participant pointed out that these challenges directly affected the infrastructure in Kagiso, making it difficult for many people to adopt the advanced payment

methods. One participant showed a lack of interest in mobile payments and does not have a mobile application. The participant relies solely on card-based transactions. This limitation highlighted a clear link between a person's socioeconomic background and the lack of specific technological resources. As opposed to using mobile apps, the participant's dependance on card-based transactions suggests that there may be a digital gap that has its roots in socioeconomic factors.

This study found that the convenience of tapping to pay is acknowledged as a common practice among the younger demographic. The analysis demonstrated that Kagiso township has generational differences in digital adoption. While the younger generation is leaning towards digital payment methods, the elderly population favour traditional cash transactions due to economic disincentives and reluctance towards technology. This generational gap in digital adoption presents both challenges and opportunities, indicating the need for tailored approaches to address the diverse preferences and practices within the community. This finding provides support to prior research that revealed most adults conduct their financial transactions in cash (Soutter et al., 2019).

Despite the difficulties that have been brought to light, there is hope that technology will be able to bridge the digital divide in the future. Positive user experiences, convenience, and cost-efficiency emerged as driving factors for adoption. Participants also emphasised the importance of inclusivity and accessibility in the realm of digital payments, suggesting that innovative security measures, such as fingerprint technology, could enhance user confidence. Addressing the barriers identified in this study ranging from educational gaps and security concerns to generational disparities and uneven accessibility, is crucial for fostering more widespread and inclusive adoption of tap-to-pay technology in Kagiso township.

5.4 Chapter summary

In the participant's view, the ongoing evolution, marked by the 4th and upcoming fifth industrial revolutions, presents an opportunity for individuals to modernise and align themselves with the prevailing technological landscape. This perspective suggests that, despite current challenges, the trajectory of technological progress may lead to a reduction in the digital divide over time. In summary, the participants' quotes, seamlessly integrated into the narrative, highlighted how infrastructure challenges and socio-economic backgrounds together shape the use of tap-to-pay technology. Despite recognising the existing barriers, there is a sense of hope and anticipation that technology advancements will help overcome these challenges and contribute to narrowing the digital divide in the future.

CHAPTER 6. CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This chapter provides the conclusions of this study by summarising the main findings from the research. It also provides recommendations and suggestions for further research.

6.2 Summary of findings on the impact of tap-to-pay technology on the digital divide

The first research question of this study aimed to explore the impact of adopting tap-to-pay technology on the existing digital divide within Kagiso township.

Tap-to-pay technology has become popular in modern society, especially among the younger population, offering efficiency and convenience in transactions. This study found that individuals in Kagiso are willing to use the technology due to the convenience of not having to carry cash. Visa (2020) supports the findings of this study, where they similarly observed that individuals choose tap-to-pay payments because of convenience. While findings indicate that certain individuals have a basic understanding of tap-to-pay technology and actively use it, a substantial portion of the population remains unfamiliar with the technology and lacks understanding. This study found that this is due to the digital divide in access and availability. Technology access differs between townships and suburban areas, where suburbs have better access to technologies because of stable internet and infrastructure. However, the townships face challenges in poor infrastructure and limited access to technologies. This finding is backed by Aruleba & Jere (2022), who also found that the infrastructure in urban areas is better maintained compared to townships. These differences make the digital divide worse especially for township residents who are already facing economic challenges.

The uneven distribution of ICT in Kagiso, particularly the limited availability of tap-to-pay technology in certain areas of the township, contributes to the digital divide. This emphasises the need to address structural disparities in ICT distribution. By fixing these differences which highlight unfairness, will demonstrate a significant stride in narrowing the digital divide and creating a digital environment that is fair where everyone can participate and enjoy the benefits of modern technology.

These conclusions confirm the propositions that contactless payments provide convenience to customers and digital technologies improve financial inclusion, however individuals in the townships face challenges due to barriers in access, infrastructure, and availability.

6.3 Summary of findings on the influence of adoption and usage of tap-to-pay payments in Kagiso

The second research question of this study investigated the adoption and usage of tap-to-pay in Kagiso township and the dynamics influencing the adoption and usage of tap-to-pay.

One key finding was the lack of awareness and understanding of technology among the residents. Many participants are unfamiliar with how tap-to-pay functions which hindered their willingness to adopt this digital payment method. Additionally, safety and security concerns emerged as significant barriers to adoption. This finding aligns with prior studies (Felber & Meyer, 2023; Jenkins & Ophoff, (2016), indicating agreement that security is a barrier to technology adoption. The participants expressed worry about the security of their financial transactions when using tap-to-pay, citing fears of potential fraud.

This study also revealed a notable generational gap in technology adoption preferences. The participants revealed that older members of the community prefer cash and are reluctant to use the tap-to-pay payment method.

Furthermore, this study found that the influence of unemployment and socioeconomic background on accessibility to modern technology emerged as a

critical factor. The elevated levels of unemployment and socioeconomic disparities in Kagiso contribute to limited access to smartphones and other devices necessary for tap-to-pay transactions.

Overall, these findings highlight how social, economic, and cultural factors shape the adoption of technology in Kagiso. To overcome these barriers to adoption and use, interventions are needed, such as the emphasis on educating individuals about tap-to-pay to enhance understanding of the technology, supporting safety and security measures to ease resident's concerns and address underlying socioeconomic disparities to improve accessibility to modern technology.

6.4 Recommendations

The discussion around South Africa's deteriorating infrastructure has been ongoing and has had a significant impact on township communities, where the growing digital divide serves as a notable driver of inequality. The townships face high rates of unemployment, educational challenges, crime, and inadequate digital access. The uneven distribution of broadband in South Africa worsens the country's digital divide.

The following recommendations can be made.

- The South African government should increase investment in infrastructural upgrades to improve access and availability of digital technologies in townships. This will require a concerted effort with network operators to expand mobile network coverage and upgrade internet connectivity to support digitisation.
- Financial institutions together with technology providers should prioritise townships when introducing new payment technologies like tap-to-pay services, ensuring that townships have comparable access to technologies as suburban areas.
- Partnerships should be fostered between government and the private sector to support initiatives aimed at addressing the digital divide in townships.

- Lastly, there is limited study on digital payments and digital divide in South Africa and as such it is recommended that more research be done in the townships, specifically on digital payments and digital divide.

6.5 Suggestions for further research

This study's sample size comprised only of 12 participants from Kagiso township and 92% of the respondents were female. It is recommended that further research focuses on expanding the sample size across multiple townships to gain a deeper understanding of the digital divide in South Africa. Additionally, further research should be conducted in rural areas to explore digital inclusion and access to technology in these communities.

This study adopted a qualitative research methodology. A mixed-method approach can be adopted in future research to further enrich the understanding of the research topic. Such approach may provide a more comprehensive exploration of the complex relationships between digital divide, socioeconomic factors and digital payment adoption and offer deeper insights into the topic.

Additionally, not all digital payments were considered for this study and not all new technology adoption factors were considered. Therefore, further research could delve into the examination of additional digital payment methods and other factors that might influence the adoption of digital payments. This would provide a more comprehensive understanding of the dynamics surrounding digital payment adoption.

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APPENDIX A - List of codes

Access control Ownership Security	Adaptation Change Technological optimism	Education	Desire for convenience Preference for electronic payment Concern for safety	Prevention Concern for security Risk aversion
Access Technology	Adoption Technology	Encryption E-wallet Face recognition Security concerns	Fear of technology Fear of being scammed	Security
Accessibility Ease of use	Speed	Inconvenience Security	Technological barriers Financial Considerations	Transaction: Payment methods
Active participation Community engagement Information Sharing	Vulnerability Financial security Safety concerns	Resistance Inadequate knowledge	Generational differences Technology use	Limited availability Variability Difficulty

Challenges Benefit Lack of knowledge	Clarification Set limit Concerns	Convenience Comparison	Financial behaviour	Limited functionality
Resistance to change Concern for security Prevention of crime	Family bonds Sacrifice Trust	Security	Infrastructure challenges Socio-economic background Unemployment Lack of awareness Lack of investment	Limited information Lack of awareness
Evaluation Positive experience Open-mindedness Exploration	Payment method	Technological literacy	Social equality Education Economic development Technological advancement	Limited usage Financial constraint
Availability of product Local distribution	Internet Finance	Technology advancements	Technological advancements Online transactions	Preference for convenience Technological frustration Adaptability

			Fraud Scams	
Employment opportunities Economic growth Financial inclusion	Pin Security Transaction	Technology frustration Preference	Technological resistance Age differences Cash	Preference for mobile apps Preference for online shopping Avoidance of tap-to-pay Preference for app payments
Cost-Efficiency	Recommendation Safety	Simplicity Fear of theft	Technology dependency Fraud risk	
Potential for learning Importance of explanation Generation gap Lack of understanding	Shopping Digital payments Utility bills	Simplicity Youth	Technology disparity Social inequality	

	Community engagement Financial literacy Education	Cost-saving Digital transactions	Technology reliance	
		Problem-solving Security	Technology use Consumer behavior	
		Definition Understanding	Understanding the digital divide Understanding digital payments	
			Card payment Payment method	

APPENDIX B – Participant information sheet

Dear Sir/Madam

Re: Consent for participation in a research study

My name is Malengolo Mokgwatsane. I am a student at Wits Business Schools (WBS) studying Master of Management in Digital Business. I am undertaking a research study to investigate how the adoption of digital payments influences the digital divide. The aim of this study is to understand the perception and use of digital payments by individuals living in your community and how this influences the digital divide.

I would like to invite you to take part by allowing me to interview you. By participating in this study, you will be able to share your opinions and experiences on this topic and your contribution will be highly valuable to this study. Participation in this study is voluntary and you therefore have the right to accept or decline the invite. Should you consent to participate, the interview will be a face-to-face and will be conducted at a place and time that is most convenient for you. The interview will be roughly 40 minutes and it will be recorded which will allow me to document your responses with accuracy.

All information shared during the interview will be completely confidential and anonymous and I will not ask for any personal details or information that will disclose your identity. The information collected will be analysed and the findings will be presented in a research report and uploaded electronically on the university's library website.

If you have any questions, please feel free to contact me. Kindly indicate your consent by signing this letter. Thank you for your time.

Participant signature _____

Regards,

Malengolo Mokgwatsane

APPENDIX C - Participant agreement form

Examining the influence of digital payment adoption on the digital divide in Kagiso township, South Africa

Malengolo Mokgwatsane

I,, agree to participate in this research project.

I agree to the following:

(Please circle the relevant options below)

The research study was explained to me. I understand what this study is about.	YES	NO
--	-----	----

I understand that the study is on a voluntary basis, and I have the right to accept or decline to participate.	YES	NO
--	-----	----

I agree that the interview may be audio recorded	YES	NO
--	-----	----

I agree that the researcher can use direct quotes from my interview in their research report	YES	NO
--	-----	----

I understand that my participation will remain anonymous and none of my personal information will be used in any of the reports of this study	YES	NO
---	-----	----

I agree that other researchers may use the information I provide in my interview (depending on their own ethics clearance being obtained) but my name and any personal information will not be used or passed on	YES	NO
--	-----	----

..... (signature)
..... (name of participant)
..... (date)

..... (signature)
..... (name of researcher)
..... (date)

APPENDIX D - Instrument

Face-to-face interview questions

Section A – Use of Digital Payments

1. What do you understand about digital payments?
2. Do you have a bank card?
3. Do you use it to make payments for purchases?
4. Have you heard of “Tap-to-pay” digital payment method and have you used it?
5. How often do you use it to make payments?
6. What are your thoughts about “Tap-to-pay”?
7. How does “Tap-to-pay” compare to other digital payment methods you have used?

Section B – Factors that influence adoption of digital payments.

1. Give me an example of where you have used “Tap-to-pay” to make payments and what was your experience when using it to make payment?
**
2. What (factors) influenced your decision to adopt or not adopt “Tap-to-pay”?
3. Are there any specific situations where you find “Tap-to-pay” to be convenient and useful?
4. Do you find that the technology for “Tap-to-pay” is easy or difficult to access? For example, compatible devices, contactless payment terminals.
5. Are there any challenges you face in terms of availability and accessibility of “Tap-to-pay” in Kagiso?

6. Do you think “Tap-to-pay” transactions are secure?
7. Do you have any concerns about using “Tap-to-pay”?
8. Do you think the adoption of “Tap-to-pay” has the potential to bridge any digital divide in Kagiso? Why or why not?
9. Are there any specific ways in which you believe “Tap-to-pay” could be beneficial or challenging for different people in Kagiso?
10. Based on your experience with “Tap-to-pay” can you recommend or suggest ways for improving its accessibility or usage in Kagiso?
11. Is there anything else you would like to share about “Tap-to-pay” or digital payments in general?

APPENDIX - E ETHICS APPROVAL

Graduate School of Business Administration
University of the Witwatersrand, Johannesburg



Wits Business School Ethics Committee
Constituted under the University Human Research Ethics Committee (Non-Medical)

Ethics Clearance Certificate

Ethics protocol number: WBS/DB2502334/309

This certificate is only valid with a legitimate ethics protocol number and signed by the Researcher (below).

Project title	Examining the influence of digital payment adoption on the digital divide in Kagiso township, South Africa
Investigator / Researcher	Mrs Malengolo Mokgwatsane
Nature of Project	MM (Digital Business)
Decision of the Committee	Approved, provided stakeholders and participants are guaranteed confidentiality.
Issue Date of Certificate	16/08/2023
Expiry date	Date of submission of the project / research report
Chairperson	Dr Pius Oba ☎ +27 11 717 3976 ☎ +27 82 733 6587 ✉ pius.oba@wits.ac.za

Declaration by Researcher

One copy must be signed by the Researcher and returned to the Chairperson of the Wits Business School Ethics Committee.

I fully understand the conditions under which I am authorized to carry out the abovementioned research and guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I undertake to resubmit the protocol to the Committee.

Signature

05 September 2023

Date: