

**Factors influencing the adoption of payment technologies in the
informal sector in South Africa.**

by

**Thabiso Ntando
676676**

Supervisor: Dr, Robert Venter

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University of the Witwatersrand, Johannesburg

South Africa

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Declaration

I, the undersigned, **Thabiso Ntando** hereby declare that this research is my own, unaided work. It is being submitted in fulfilment of the requirement for the degree of Master of Commerce at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

I further declare that:

- I have followed the required conventions in referencing the thoughts and ideas of others and,
- I understand that the University of the Witwatersrand may take disciplinary action against me if there is a belief that this is not my own unaided work or that I have failed to acknowledge the source of the ideas or words in my writing.



Thabiso Ntando

08-02-2022

Date

Abstract

Literature purports that various innovations that use QR, Bluetooth and NFC technology to facilitate digital and mobile payments have emerged recently in South Africa. Besides these advancements, cash payments are still dominant in the informal sector with approximately 96 percent of payment transactions in 1.5 million informal traders being conducted in cash. This is despite a strong interest for alternative digital and card payments displayed by consumers. A gap evidently exists between the informal sector and customers in the informal sector. There is an opportunity to assess why, despite the significant advancements in payment technologies, cash is still a favoured method of payment in the informal sector. This research sought to shed light upon the factors influencing the adoption of payment technologies in the informal sector. Using a qualitative research approach, thirty semi-structured interviews were conducted with informal traders and their customers in the cities of Johannesburg and Cape Town in South Africa. Thematic data analysis was used through identifying common patterns. The data was analysed by means of an inductive thematic analysis. The findings indicate a moderate understanding of payment technologies and financial products in general. An openness to alternative methods of payment was displayed through adoption of some of the payment technologies currently in the market like e-wallet. This indicated that the informal sector does not have a payment technology adoption problem but instead suffers from a lack of relevant technological availability.

Keywords

Digital Payments, e-Wallet, Informal Sector, Payment Technology, Technological Adoption, Technological Availability

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Dedication

In memory of my beloved friend Dumisani Irvin Mtsweni whom I lost before the completion of this thesis – thank you for encouraging me to study further and supporting me on this journey by writing one of my recommendation letters during the application phase.

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LIST OF ABBREVIATIONS

CBD – Central Business District

4IR/Industry 4.0 – The 4th industrial revolution

EME – Exempted Micro Enterprises

FNB - First National Bank

GDP – Gross Domestic Product

NFC – Nearfield Communication

PCI DSS - Payment Card Industry Data Security Standard

POS – Point of Sale

QSE – Qualifying Small Enterprises

SMME – Small, Medium and Micro Enterprises

Stats SA – Statistics South Africa

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Chapter 1

Introduction

1.1 Overview

South Africa remains characterised by socio-economic challenges such as poverty and high unemployment rate, amongst others. As a result, the establishment and subsequent growth and success of Small, Medium and Micro Enterprises (SMMEs) play an essential part in driving economic growth as well as eliminating these trials. However, South African SMMEs and informal traders remain faced with a challenge of a stubbornly high failure rate, and this has made entrepreneurship and business management to be a very complex exercise (Littlewood & Holt, 2018). As a result of this complexity, entrepreneurial participation has been low as most entrepreneurs prefer a more conservative and safer approach of going into corporate to seek a job as opposed to starting their own businesses, putting pressure to the already strained South African labour market (Masondo, Ntando, Mkhwanazi & Goldman, 2017).

The new competitive landscape possesses a significant challenge towards SMME success, as it dictates that contemporary SMMEs need to develop strategic flexibility that enhances adaptability, creativity and innovation through technology and globalisation (Bettis & Hitt, 1995). Several other factors such as access to funding, entrepreneurial education and training, innovation and collaboration amongst others have previously been attributed to the failure rate of SMMEs, with several stakeholders within both the public and private sectors collaborating through various financial and non-financial efforts to try and mitigate these factors (Littlewood & Holt, 2018). It is evident from reviewing literature that SMME establishment, growth and successes in South Africa remains an unwavering problem that requires rigorous investigation and attention.

According to Schwab (2017) the fourth industrial revolution (industry 4.0) entails the integration of technologies that eliminates the existing gaps between digital and physical spheres therefore eliminating barriers of entry that traditionally exist in the traditional setting, the banking industry in South Africa is a good example of this (Capitec Bank Ltd, 2020). This

industrial revolution, while complex, presents an exciting opportunity for the South African economy; both formal and informal to develop and benefit from the new technological capabilities brought about by industry 4.0. According to Ntimane (2020) there has been significant technological developments in South Africa, however, more work needs to be done in terms of integrating these technological developments into the informal sector.

1.2 Background of the Study

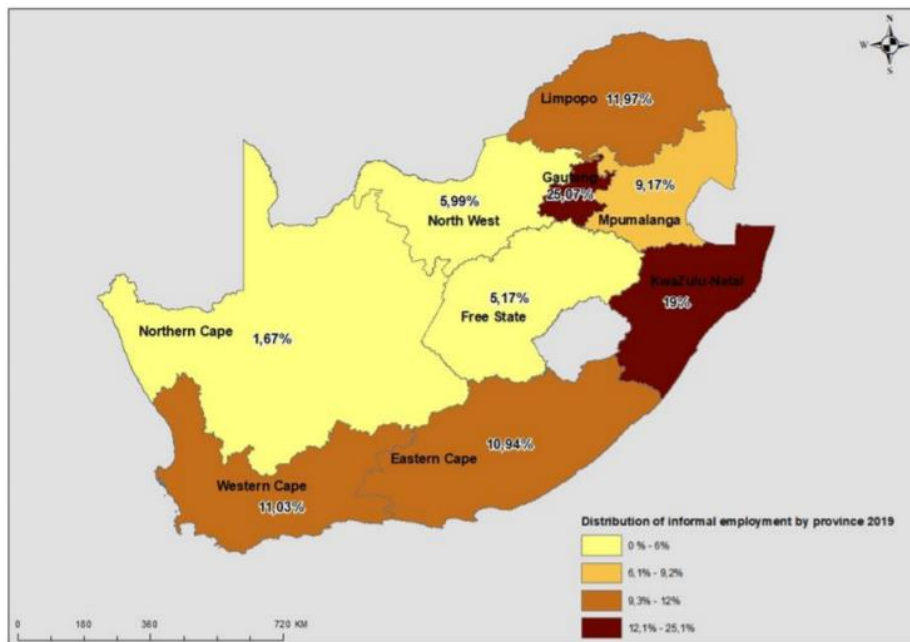
According to International Labour Organisation (2018) the informal sector, which includes self-employed entrepreneurs and SMMEs plays a more significant role in job creation than previously believed. It accounts for 60% of total employment especially in developing and underdeveloped economies (Olawale & Garwe, 2010). Fatoki (2014) suggested that there is a need to develop the informal sector in South Africa using technology in order to improve operations, processes and customer experience which have an impact on the sales and overall growth of a business. According to Klapper, Miller and Hess (2019) there is one common thing in any business whether formal or informal, large or small, rural or urban and it is the fact that they accept payments. In recent years, various innovations that use QR codes and Near Field Communication (NFC) technology to facilitate mobile payments have emerged with start-ups such as Zapper and Snapscan in South Africa (Kalan, 2016).

Besides these advancements in the payments technology space worldwide, according to MasterCard (2017) cash payments are still dominant in the informal sector in South Africa, with approximately 96 percent of payment transactions in South Africa's 1.5 million informal traders being conducted in cash and this is despite a displayed strong interest for alternative digital and card payments by consumers. A gap evidently exists between the informal sector and consumers. There is an opportunity to assess the reasons there is still a heavy dependence on cash payments in the informal sector, despite the advancements in payment technologies. This study seeks to investigate and explore the factors that are causing the low adoption of payments technology in the informal sector.

1.3 Research Context

This research study was focused on entrepreneurs as well as customers in the informal sector in the cities of Johannesburg and Cape Town, South Africa. These two metropolises are the highest ranked South African cities when it comes to the ease of doing business according to World Bank (2018). Cape Town is ranked first due to its low cost of products, transportation and advanced infrastructure. Johannesburg is second due to higher salaries which attract people to the city and result in high spending and commercial activities that increase chances of a success for a business. It is also the largest city in South Africa in terms of population and the capital city of Gauteng, the wealthiest province in South Africa (Stats SA, 2011). As a result, different kinds of informal businesses including informal supermarkets (spaza shops), street vendors, barbers, and car wash businesses, amongst many others exist in these two cities and they service millions of customers. The focus was specifically on street vendors due to the recommendations of the panel during the proposal defence in December 2020. The consensus was that it is better to focus the study on a particular sector within the informal economy as it allows for less variability in responses.

Figure 1.1: Distribution of informal employment by province 2019



Source: Stats SA QLFS, Q3: 2019

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1.4 Research Problem

There have been significant advancements as far as payments technology is concerned with the use of various mobile technologies such as Nearfield communications (NFC), QR codes and Bluetooth amongst others, to introduce quicker, seamless and secure methods of facilitating payments in large businesses like retailers and other small businesses like coffee shops and restaurants (Pankomera and van Greunen, 2019). However, regardless of this progress and acceptance in small formal businesses, there still is a low adoption rate of these products in the informal sector according to MasterCard (2017). Over ninety six percent of payment transactions in South Africa's 1.5 million informal traders being conducted in cash and this is despite a display in interest for alternative digital and card payments by the modern consumers.

The literature reviewed indicates that there are various factors that influence the adoption of payments technology in the informal sector in South Africa. These include access to formal banking tools, awareness and understanding of available options and solutions as well as the costs associated with accepting digital payments (Slade, Williams, Dwivedi & Piercy, 2015). According to Bhattacharya (2019) when it comes to technology and ICT in the informal sector there is often a tendency to mimic solutions that are built for the formal sector to the informal sector. Seetharaman, Cunha and Effah (2019) adds that this does not work because the formal sector and the informal sector are significantly different. This means that if technological solutions are to be successfully implemented in the informal sector, then solutions have to be specifically tailored for the informal sector and not an ad hoc adoption of formal sector solutions (Ntimane, 2020).

Feenberg (2017) through the critical theory of technology, explained that the design of a technology can easily lead to exclusions of certain groups of society. These are often the groups that are deemed to be less affluent such as the informal sector. Matthews (2021) adds that these exclusions can be in the form of various nuanced factors such as cost structure or other impracticalities that hinder implementation. This then leads to the exclusion of vulnerable groups of society. According to Kirkpatrick (2020) one way of bridging this gap is usually through deliberate democratisation of technology design and this is usually driven by stakeholders like governments, and corporates such as banks. From this point, it can be deduced

that for payment technologies to effectively land in the informal sector, banks and other payment technology companies have a pivotal role to play as they have significant influence.

The abovementioned factors heavily highlight that the technological solutions that have been introduced to the informal sector might not necessarily suit the environment due to complexities, as the informal sector requires simple and cost-effective solutions with no transactional costs, monthly costs and the like. (Fatoki, 2014). This study looked to unpack this further by focusing specifically on the factors that influence the adoption of payments technology in the informal sector and their impact on the informal sector, the different forms of payment technologies, their relative availability and associated costs. Lastly, the research will also unpack the various stakeholders and the roles that they play towards bridging the gaps that influence the factors that influence adoption.

1.5 Research Questions

The following research questions guided this study:

- What are the different forms of payment technologies and their relative availability for informal traders?
- What factors influence the uptake of payment technologies in the informal sector?
- How cost effective and convenient is it for informal traders to accept cash payments over digital and mobile payments?
- How does the current South African banking landscape influence the uptake of payment technologies in the informal sector?

1.6 Research Objectives

- To review the payment technologies solutions that are available for informal traders.
- To identify the factors that have an influence on the uptake of payment technologies in the informal sector.
- To compare the advantages and disadvantages of accepting in relation to digital and mobile payments.

- To explore the influence of the current banking landscape on the uptake of payment technologies in the informal sector.

1.7 Significance of study

Conducting this study was important to the field of business management in South Africa from both a theoretical and practical point of view as it sought to help explore the various factors that influence the adoption of payments technology in South Africa's large informal sector (International Labour Organisation, 2018). In doing so, this study specifically focused on informal traders as well as their customers and their perceptions of payments technology in comparison to cash payments. From a practical point of view this research was aimed at proposing recommendations that can help South African payments technology firms to drive adoption and implementation of payments solutions in collaboration with informal traders that will assist in reducing the amount of cash transactions in the sector (Pillay, Ori & Merkofer, 2017). Theoretically this study looked to contribute to the body of knowledge of technology in the informal sector in South Africa and other developing economies. Various studies such as (Blankley & Moses 2009; Kalan, 2016; Klapper, et al., 2019; MasterCard, 2017; Pankomera, & van Greunen, 2019) have contributed significantly to this body of knowledge. However, the focus of these studies has largely been on technological adoption and often neglected technological availability which was a significant part of this study as it explored adoption in the informal sector from the perspective of informal traders. The study also explored the perceptions of the technology that is available and its viability for the informal sector environment. Over and above knowledge creation, this study's findings have potential to influence other socio-economic issues such as unemployment, while influencing policies on other strategic areas such as education.

1.8 Delimitations of the study

This study focused on a specific section of technology which is payment technologies and did not focus on various other areas of technology that can impact a business (Ntimane, 2020). Furthermore, a focus was placed specifically on street vendors as the study did not focus on other types of informal businesses such as spaza shops, barbers and car wash businesses amongst others (Fatoki, 2014). Another key focus of this research was the informal sector in

Johannesburg and Cape Town, which are largely urban cities. The informal sector also exists in other more rural areas of South Africa and the insights in those may differ from those in the urban cities. Lastly, this research was approached from a qualitative approach.

1.9 Dissertation outline

This research study is divided into six chapters. Chapter 1 is the introductory chapter that provides the introduction and overview of this research study which also includes the research question and the research objectives. Chapter 2 of this study expands the literature review which begins with a consideration of the theoretical framework of this research which is the critical theory of technology. This section unpacks this framework in detail as it is an essential part of this study. The second section of Chapter 2 presents the literature review which provides a detailed account of past research studies on this topic over five topics namely, the characteristics of the informal sector, differentiating the informal sector from the formal sector, the reasons for the large informal sector in South Africa, types of payment technologies that can be implemented in the informal sector and factors affecting the adoption of payment technologies in the informal sector in South Africa. Chapter 3 of this study addresses the research methodology of the research, while Chapter 4 focuses on the analysis and discussion of the results of the research. Chapter 5 is the last chapter which closes the study through concluding remarks of this research.

Chapter 2

Literature Review

2.1 Introduction

This chapter of the study reviews the literature on the informal sector and payment technologies with a focus on the South African perspective. This section will start with a consideration of the theoretical framework that was adopted for this study, the critical theory of technology. This heavily influenced and shaped this study, and this section details the critical theory of technology as well as its central tenets before diving into the rest of the literature.

2.2 Consideration of theoretical overview

Osanloo and Grant (2016) likens the theoretical overview of any research to a blueprint of a house as it influences one's thinking on the type of design and methodology of the research. This makes the process of choosing a theoretical framework very essential to the research process. For this specific research, a high level of openness and intuition was required together with forward thinking. A critical assessment of the informal sector needed to be conducted together with the perceptions informal traders have towards the payments industry, cash as well as digital and card payments in South Africa. Furthermore, an in-depth learning of the knowledge of informal traders of the current payment technologies was required to make recommendations that may be able to influence and transform the way payments are processed in the informal sector (Seetharaman et al., 2019). This research required to benefit from a theoretical framework that is reflective in nature and sought to consciously fuse theory and action while having a futuristic approach (Marcuse, 1989).

The acceptance theory, which models how users accept or end up using technology or any other technological acceptance or adoption theory, would have been ideal in finding out why payments technological adoption has been slow in the informal sector in South Africa regardless of the significant strides that have been made towards technology (Mastercard, 2017). However, the flaw in these theories was that they already presumed that the problem is with businesses in the informal sector (Harborth & Pape, 2020). This research sought to

critically question the problem from both a technological availability and acceptance or adoption point of view. It was for this reason that this research was approached using the critical theory of technology by Feenberg (1991) which goes beyond the descriptive meaning of things to examine why things are the way they are and how they can be made otherwise.

According to Feenberg (2012a) the application of critical theory in technology allows for social constructivist methods to take place, which are fruitful because social factors intervene in the decisions that lead to the success of a particular design. Part of what this study sought to assess was if the informal sector and entrepreneurs within the sector consider alternative methods of payment other than cash for their businesses (Bhattacharya, 2019). The critical theory of technology argues that there should be a democratic participation in the variety of possible technologies which people must choose from (Matthews, 2021). Hence this theory is an important aspect for this study, as part of the study was to interrogate whether current technological solutions in the South African market are viable and practical for the informal sector and if informal traders understand the benefits of multiple payment methods (Feenberg, 2008). This study sought to interrogate and unpack if current payment solutions are perceived to be effective by informal traders and what factors influence adoption of payments solutions in the informal sector.

The critical theory of technology has been cited by various scholars such as (Feenberg, 2012; Friesen, 2012; Veak, 2012; Fuchs, 2015; Kirkpatrick, 2020; Matthews, 2021) and is not without its pitfalls. According to Marcuse (2020) the critical theory of technology has the same challenges that any critical theory face. Larsen and Wright (1993) add that these are usually due to their high dependence on social values, which tend to be highly subjective and in the case of a conflict the question of “whose values are better?” always emerges (Kincheloe & McLaren, 2011). However, Feenberg (2012b) argue that this is offset by its strength to combine theory and practice, which tends to drive actual change which is what this study seeks to do.

The central argument that is presented by the critical theory of technology is that technology like most things is often biased and rational (Kirkpatrick, 2018). According to Matthews (2021) it is for this reason that most technological solutions and their design are usually influenced by assumptions and beliefs of the stakeholders that design the technology. A simpler way of putting this into perspective is that a non-religious person designing a religious technological website or solution might not produce the most relevant solution in comparison to someone

who is religious and understands religion better (Ihde, 2018). The above example can also be applied to the informal sector in critically assessing the payment technologies that are currently in the South African market and posing questions to determine if they are relevant in design and many other questions to do with feasibility and viability.

There is no doubt that the availability of information is not a constraint nowadays and this, coupled with the emergence of mobile technology, can assist in facilitating technology in areas such as payments (Kirkpatrick, 2020). With this said, technology can certainly be used to facilitate payments in the informal sector in South Africa. According to Karlovitz (2020) the critical theory of technology understands technology in the context of its design, and it is for this reason that it is able to delve deeper into how technology can best serve public interest as well as the values that a technological solution drive. According to Feenberg (2008) the critical theory of technology promotes technology that democratises by building social justice for all.

The critical theory of technology proposes that when social factors are not taken into account, technology can easily fall into bias and this bias is often skewed towards a certain grouping of society (Ihde, 2018). This thinking is in parallel with the theory of technological dualism which suggests that there are two main sectors in an economy of underdeveloped countries namely the modern or formal sector and the rural or informal sector (Malizia, Feser, Renski & Drucker, 2020). According to Sukharev (2021) this often results in a situation in which productive job and technological options are limited to the modern and formal sectors due to resource and technological constraints, rather than a lack of demand by the informal sector. In this instance, Kirkpatrick (2020) argues that technological development and solutions often favour the formal sector, and the informal sector is usually overlooked. Not taking social elements into account may also lead into technology that is built from assumptions that are not necessarily in-touch with the reality and context of the users that the technology is intended for (Matthews, 2021). Feenberg (2012b) proposes a very important aspect of design in technology which is around value in design. The next section discusses this in detail and relates it back to this study.

2.2.1 Value in design

Veak (2012) states that the value of technology is in its design and hence design of technology is a critical part of any technology. Technological design is a thorough process with a set of

defining characteristics, this process is systematic, creative deliberate, purposeful and based on a certain requirement (Kirkpatrick, 2018). With this said, this theoretical framework was vital towards shaping this study as it guided the research in reviewing the current payment products and critically review their design and if this design is suitable for the informal sector. Through the critical theory of technology, the research sought to revisit and evaluate the methodology that was applied in the design of these payment technologies and what they were intended for, in order to understand why there was a low adoption of these payment technologies in the informal sector. The research wanted to avoid making presumptions about the informal sector as identified in the reviewed literature, rather the intent was to look at both the informal traders and the technology.

According to Orbey and Sarioğlu Erdoğdu (2021) design is a process of ensuring that an artifact is shaped and modified so that it is able to meet specific goals of a specific context. A vital element of this definition is context, as it speaks to the environment (Arnold & Michel, 2017). Therefore, the design of technology as well as its solutions, need to address the context that it is intended for and a failure to do so means there will be challenges in the acceptance and adoption of technology (Friesen, 2012).

Upon further reviewing the technology in the informal sector with the guidance of the critical theory of technology, this research was guided into assessing the availability of payment technologies in the informal sector rather than just the adoption of payment technologies in the informal sector (Bhattacharya, 2019). The distinction between the two being that adoption already assumes that the problem is with informal traders and customers in the informal sector, and they are resisting technology that is available (Seetharaman, et al., 2019). However, assessing technological availability meant that the research started off by assessing the available technology and if the informal traders are aware of the technology and if they have used it before in their businesses and then slowly unpacks the advantages and disadvantages that it possesses for them (Kalan, 2016).

Matthews (2021) argue that technology, processes and systems are never value neutral because it is often a result of a context. This means that technology is often implemented to solve a problem of a certain context or environment (Feenberg, 2012a). According to Ihde (2018) questions such as who made the technology, why it was made and how it was intended to be used, always arise and these are often critical in analysing the design of technology and

technological solutions, systems and processes (Kirkpatrick, 2020). In approaching payment technologies in the informal sector, this study sought to understand the who, why and how as stated above in the context of the informal sector in South Africa.

The critical theory of technology believes that values shape how technology is designed and for this reason when designing technology there ought to be more than technical standards as they often prove to be rigid and one dimensional in comparison to the complexity of society (Kirkpatrick, 2020). Technical standards often rely on rationality but since technology serves people and their problems this can prove to be a limitation that can have an influence in the manner in which technology is accepted and adopted. After all, technology is meant to compliment and assist people and society (Friesen, 2012). For this to be achieved then it means that the needs of people need to be fully addressed and looked at. This is one of the core reasons that the critical theory of technology resists technology acceptance theories as they view technology as neutral, which the critical theory of technology believes is not and cannot be (Fuchs, 2015).

Central to the critical theory of technology is the convergence of social elements with technical elements (Ihde, 2018). If this research was to achieve one of its objectives of identifying the factors that have an influence on the uptake of payment technologies in the informal sector, then this school of thought had to be adopted. The critical theory of technology enabled a critical evaluation of the informal sector from both the perspective of the informal traders and the customers that buy in the informal sector as well as the payment technologies that they have at their disposal. Another analysis of the available payments technologies was to assess if they were there to serve the informal sector instead of exploiting the sector before any conclusions could be drawn out (Klapper, et al., 2019). According to Kincheloe and McLaren (2011) modern technology often blurs the line between genuinely serving the public interest and the benefits of those that create it such as governments and corporates.

The prioritisation of profits, other corporate interests and government surveillance interest has proved to be a stumbling block in advancing technology and building solutions that are relevant and serve the public (Karlovit, 2020). This opted this study to probe if this could be one of the challenges that has presented itself in the informal sector in South Africa in which there was no contextually relevant technology for the sector (Klapper, et al., 2019). Feenberg (1991) argues that in the design of technology both value and values need to be taken into account;

the value that the technology possesses and will be derived by the end user as well as the values of those that create and build the technology (Kirkpatrick, 2020). These values also play a vital role in ensuring that the technology does not infringe on the rights of society and the end users of technology.

According to Matthews (2021) the critical theory of technology relies heavily on combining philosophy of technology with society through two models of technology design. These are namely the technocratic model of control as well as the democratic model of communication (Friesen, 2012). The rest of this section will go into detail of these two models of technology design and relate them back to payment technologies in the informal sector in South Africa (Kalan, 2016). These helped this research in providing a framework in which designs of payment technologies that are currently in the market will be reviewed and assessed. This shaped the questions that the research participants were asked as well as the analysis of the results that emerged from the study.

2.2.2 Technocratic model of control

The technocratic model of control is one of the models of technology design that are proposed by Feenberg (2012a). In the technocratic model of design, technological design is heavily influenced and relies on expertise and is often in isolation of the community meaning that in this model, the context is often ignored (Friesen, 2012). This means that a group of technical experts use their expertise to develop solutions and the downside to this is that this expertise are also human beings, and they are not without their own biases (Fuchs, 2015). These biases often show up in the design of the technology and lead into a one size fits all type of solution (Kirkpatrick, 2020). This is not an ideal way of going about it because the technocratic needs are not the same for everyone.

This model of design views approaches technology through a single path that is usually shortened and does not spend much time investigating the societal side of technology (Kirkpatrick, 2018; Matthews, 2021). Since this entails a group of experts and what they say goes, this then creates a restrictive layer to technology because technology has endless benefits and potential benefits. According to Feenberg (2008) restricting participation in the design of technology through technocracy preserves power structures that can easily lead to the

manipulation of technology. Friesen (2012) adds that this way of thinking that is proposed by the critical theory of technology can easily be linked to the corporates and players that are operating in the payment technology space in South Africa. This research sought to interrogate if there were limitations into the approach to payments technology and if past elite structures dominated and dictated how payment technologies were developed, which in turn had influence on acceptance and adoption (Fuchs, 2015).

At the core of the technocratic model of control is the belief that technology is neutral of which the critical theory of technology argues that this is not the case as not everyone will share the same technocratic priorities (Karlovitz, 2020). Kirkpatrick (2020) explains that approaching technology from a centralisation point of hierarchy as it is done by the technocratic model of control, does not only restrict an ability for socially relevant design, but it denies society of alternative ideas, technologies and schools of thoughts. Different schools of thoughts and technologies unlock innovation and lead to alternative ways of doing things (Friesen, 2012). Looking at payment technologies that are currently in South Africa there are mostly mobile wallets, QR payments and card POS (Klapper, et al., 2019). It can be argued that a technocratic model of control is being applied with banks and other cooperates being at the centre of all the payments technology that is available.

According to Kirkpatrick (2018) the potential flaw in this is that whatever technology that is produced, if it does not ultimately feed into the objectives of the corporates or see them benefiting from the informal traders purchasing their POS hardware or informal traders using their banking account products, then they simply make it seem like there is no technology that can be able to address an issue like the payments in the informal sector (Friesen, 2012). Other narratives could be that there is technology, but the informal sector is stubbornly resisting to adopt when in fact the problem might be the technocratically created solutions are not practical enough for the context of the informal sector (Fuchs, 2015). Because banks are usually big and influential players it is easy for them to benefit from undue influence by leading the rest of society to buy-in to their narrative (Matthews, 2021).

According to Weiblen and Chesbrough (2015) this is the reason that new start-ups usually succeed in landing a new and beneficial kind of technology as opposed to existing companies. Guzman and Stern (2015) adds that as much as IBM, Microsoft, Yahoo and many other IT communication companies existed there was a need for new start-ups in the form of Facebook

and Twitter to emerge and influence the way people communicate through new technological approaches and ideas. While everyone believes that they are innovative and will continue to see things with a fresh pair of eyes there just is a stage that one gets boxed into a certain way of thinking and it takes those that are out of this box to be able to drive change (Arbinger Institute, 2010).

Feenberg (2008) argues that there can never be such a thing as neutrality of technology as we can definitely not say that technology is indifferent with respect to human ends. The critical theory of technology is not entirely against the technocratic model of control, but it proposes that it should exist in a hybrid type of environment in which alternatives can be able to emerge (Karlovit, 2020). This is a type of setting in which decentralisation of technology design prevails and is not only dependent on a centralised hierarchy because today there are certain restrictions to the technology we employ, and these restrictions are not only owed to our knowledge but to the biases that emerge from the centralised powers that build this technology (Feenberg, 2017).

Context remain a key and core focus of any technology design as the context plays a huge role in the final technology (Matthews, 2021). The thinking here is that one seeks to merge the expertise and skills of a centralised power with the environment that will use the technology that is being designed. In the case of this research the desire was to understand how the current payment technologies are relevant to the informal sector, review their design, pricing, requirements and other specifications in order to determine if they designed in context of the informal sector or if a technocratic model of control was adopted (Bhattacharya, 2019). Other potential flaws from this approach in technological design that need to be guard against are that of ethical issues (Fuchs, 2015; Kirkpatrick, 2018). As in any system such as political, economic, social and many others, technology is no exception as it can easily lead to ethical issues such as corruption or more relevantly, in this case, discrimination on the basis of cost, pricing and many other intangible characteristics (Feenberg, 2017).

The second model which is the democratic model of communication as presented by Feenberg (2017) is looked at in detail in the next chapter as this section seeks to outline some of the contrasts between the technocratic model of control and the democratic model of communication.

2.2.3 Democratic model of communication

The democratic model of communication entails decentralisation and participation from multiple factors and components in order to approach technology. Karlovitz (2020) explains that plurality is at the centre of this model, and it is a remedy to the pitfalls of the technocratic model of control. This is a model that eliminates hierarchies and as a result encourages multiple standpoints and ideas to emerge (Kirkpatrick, 2020). Looking at payment technologies in the informal sector, the adoption of a democratic model of communication would entail that payment technologies are not only offered by banks and payments companies but instead a high degree of possibility of the technology emerging from a retailer or even an entrepreneur (Feenberg, 2017). After all, payments are important to all kinds of businesses and individuals.

This model achieves its elimination of hierarchies by being inclusive through taking into account society and environment (Feenberg, 2017). As previously discussed, questions such as who made the technology, why it was made and how it was intended to be used, always arise even before a technology is developed (Matthews, 2021). Kirkpatrick (2020) adds that the democratic model through its decentralisation already addresses these questions in the beginning of a technology design. The technocratic model in this instance falls short because while it does have its advantages in that there is a high level of expertise that it benefits from, it can easily fall into the trap of biases and often become rigid when there is potential for alternatives to emerge (Fuchs, 2015). Incorporating the social elements to a design of technology ensures that valuable insights that are often qualitative can be gathered (Ihde, 2018). These insights while qualitative often have a very influential role that they play in both acceptance and adoption because they often address relevant problems and are developed and deployed with the context of the user in mind (Feenberg, 2002).

According to Feenberg (2017) the democratizing of technology is important because the new possibilities it brings can then be further looked into by the technocratic experts. A way of relating this to the informal sector and payment technologies in South Africa is that not everything should wait for the so-called experts in payment technology i.e., not every solution that should be introduced in the payments realm should wait for a major bank or financial services firm, but everyone should be able to take a stab at it (Kalan, 2016). In the case that significant inroads are made in unearthing a certain technology then experts in government and larger corporates can play a role in refining and ensuring that the technology scales up and

reaches the optimum potential and this is usually to the benefit of the economy (Kirkpatrick, 2020).

This is an example of how a balance can be maintained between the two models of technology design as the aim is not really to do without the other but to benefit from the strengths of each of these models (Fuchs, 2015; Ihde, 2018). Viewing technology like this also considers the fact that an economy is interrelated and an ecosystem and critically evaluating technology can yield massive success for not only a company, industry or sector but an entire economy (Klapper, et al., 2019). As with the above example, if a technology that is developed for the informal sector manages to successfully reach its optimum success through a hybrid of the technocratic and democratic models, it can easily be duplicated to similar markets that face similar challenges that can be addressed by the technology. With that said, the whole economy can benefit from this and might end up addressing other economic and socio-economic issues.

2.3 Literature review

Technology has played a pivotal role in transforming society through various aspects of how we live, communicate, do business and make payments, amongst many others (Holmes, 2005). Furthermore, it has also presented significant benefits such as improved efficiencies, increased productivity and sales, reduced costs and access to global knowledge and practices. According to Muzari, Gatsi and Muvhunzi (2012) regardless of all these endless benefits of technology there has been somewhat a low rate of technological adoption in the informal sectors in Africa. In attempting to expand on payments technology, its impact and adoption in the informal sector, the literature reviewed highlights that there are various factors influencing technological adoption in the informal sector (Seetharaman, et al., 2019).

According to Klapper, et al. (2019) payments are an important part of any business and over the years there has been significant improvements in the payments space. Schalekamp, McLaren and Behrens (2017) cite mobile driven technologies such as QR and NFC as important disruptors of the payments industry over the years. According to Pankomera and van Greunen (2019) mobile payments have enabled for payments to take place in a convenient, safer, quicker and reliable way for both merchants and consumers, as a result this has enhanced a higher appetite for a cashless society worldwide. Thomas, Jain and Angus (2013) believes

there has been a rapid adoption of these technologies due to the success and adoption of mobile payments in general. Mbogo (2010) adds that the increased focus on mobile payments is due to how these technologies have been able to disrupt traditional models as well as easily enable financial inclusion amongst society. MasterCard (2017) highlights that regardless of these significant developments in payments and its adoption, there, however, is somewhat a resistance of payments technology in the informal sector.

Various scholars cite different reasons for this, according to Seetharaman et al. (2019), there has not been any technological solutions in the first place for the informal sector to adopt in both the developed and developing countries. According to Sparks and Barnett (2010), solutions that have attempted to exploit information technology in the informal sector have either been a knee-jerk or nothing but a mimic of the solutions that are targeted for the formal sector. This then forms a solid case for Bhattacharya (2019) who states that not enough effort and emphasis has been placed on formalising and coming up with solutions that assist the informal sector, and if anything, it is actually neglected.

According to Charman and Petersen (2015) since Africa is still very much informal and relies on the informal sector for employment it cannot be ignored that efforts to develop and improve the sector should be priority (Dewa, Adams, Nyanga, Gxamza and Ganduri, 2018). Spring (2009) adds that the informal sector in Africa highlights the entrepreneurial attitude of Africans and therefore shows that with the right tools, solutions and technology there is potential of developing Africa's entrepreneurs into the world's most successful entrepreneurs (Pillay, Ori & Merkofer, 2017). Payment technology could be the first in assisting to develop the informal sector from a technological point of view as it can bridge the gap between the informal sector and the formal sector and allow a potential relationship that enables access to various financial and non-financial support (Fatoki, 2014).

The reviewed literature sought to provide the basis from which to explore the central argument that there is a payments technology adoption problem in the informal sector. However, there is a possibility that, amongst other factors, a bigger problem lies in the availability of technological solutions that are designed specifically for the informal sector. As a result, this study sought to expand on this argument by firstly looking at the history of the informal sector. Secondly, this section discussed the characteristics of the informal sector. Thirdly, the literature reviewed outlined the key differentiators of the informal sector in relation to the formal sector.

Then the reasons for the large informal sector in South Africa and developing countries in general were looked at. Thereafter, the types of payments technology that can transform the informal sector were assessed. Lastly, the literature looked at the factors affecting the adoption of payment technologies in the informal sector.

2.3.1 The history of the informal sector

According to Huang, Xue and Wang (2020) there are three mainstream theories of informal economies namely, modernization, neo-Marxism, and neoliberalism. Morris (2019) explains that the modernization perspective identifies two types of economies, the formal and the informal economies. The formal economy is characterised by development and advancement while the informal economy on the other hand is characterised by underdevelopment and backwardness. Williams and Kedir (2018) explain that this perspective believes that as the country's economy grows the informal sector will shrink. Scholars of modernization also argue that with a high rural-to-urban migration, the informal economy will continue to increase due to the high unemployment rate that is caused by pressure on the labour market. According to Jackson (2015) the arguments of the modernization theory have not necessarily proved to be accurate due to the fact that the informal economy continues to exist and significantly contribute to the Gross Domestic Product (GDP) of developed and advanced countries. Morris (2019) concludes that this highlights the importance of the informal economy and that instead of dismissing it, economies should embrace it and develop it.

According to Ramsuraj (2020) neo-Marxism views the informal economy as a capitalistic strategy to reduce costs and improve competitiveness rather than an inability of the formal sector to create jobs. According to Williams (2017) neo-Marxism believes that strategies such as globalisation are put in place to increase informal economies, this process is viewed by the neo-Marxism theory as a part of industrialization and modernization, which contradicts the modernization theory (Williams & Kedir, 2018). This theory, therefore, draws that the relationship between informal economies and economic development is justified according to a country's context as opposed to being a given (Dewa, et al., 2018).

The last theory, which is neoliberalism, follows a belief that the informal sector is due to excessive state regulation, which motivates people to choose to engage in informal economies

in an attempt to avoid bureaucracy (Williams, 2017). This school of thought has been supported by various scholars such as Jackson (2015) that have indeed shown that countries with high tax laws and heavy regulation lead to high informal economy activities. Rogan and Skinner (2017) adds that this has nothing to do with globalisation or lack of development but is rather due to the entrepreneurship mindset and rationality of informal traders in the context of the high cost of legality. Huang, et al. (2020) concludes that these theories are not contradictory at all, but rather are complimentary and highlight the various complexities when it comes to the informal economy and how the differing context of various countries play a role in the informal economy.

According to Nilakusmawati and Srinadi (2020) the term informal sector was coined by Hart (1973) as a result of a study that sought to interrogate the economic activities amongst rural migrants in Ghana. Etim and Daramola (2020) adds that the informal sector was represented by economic activities that emerged despite various limitations and restrictions that were caused by capitalist domination. Fatoki (2014) explains that despite these hinderances a lot of profitable informal activities took place and generated income for various people and their families, and this is how the informal sector emerged. According to Dewa, et al. (2018) early on the informal sector was thought to be a temporary phenomenon and most did not expect this sector to be sustainable. The belief was that as the world continues to develop, this way of commerce would evaporate (Darbi, Hall & Knott, 2018).

The above does not mean the informal sector started in Ghana however, it simply means that Hart (1973) coined this term from a study done in Ghana. Various studies went on to identify that this was the case in most developing countries both in Africa and other parts of the world such as Asia and South America (Rogan & Skinner, 2017). Regardless of the 1970s belief that the informal sector would not be sustainable and futureproof, there has been a significant shift in this thinking with time. According to International Labour Organisation (2018) in Africa, the informal sector is and remains a very vital part of the economy in Africa as it contributes up to 60% of total employment. Darbi, et al. (2018) concludes that this evolution of the informal sector has come as a result of how it has assisted economies to address various socio-economic issues and various key stakeholders simply cannot ignore the sector as it presents many opportunities. This increased interest in the informal sector, however, does not mean the informal sector has lost its unique characteristics that define it (Fatoki, 2014).

2.3.2 The characteristics of the informal sector

The informal sector is quite unique than most people think, and the environment is very different and complex than how most people perceive it to be (Seetharaman, et al., 2019). Rothenberg, Gaduh, Burger, Chazali, Tjandraningsih, Radikun and Weilant (2016) used the informal credit market as an example to highlight how it is unregulated and non-subsidised however, easy to access. Fourie (2018) supports this sentiment by stating that the informal sector thrives on ease and simplicity and whatever solution or legislation that is proposed or intended for this sector should not make it complex. Rogan and Skinner (2017) adds that another characteristic of the informal sector is its competitiveness and labour intensiveness, however there is no disputing that technology can play a role in easing this and benefiting this sector in many other ways. Bhattacharya (2019) notes that while there has been talks about technology and how it can benefit the informal sector, this environment is very informal and lacks basic infrastructure, such as electricity in some instances. Seetharaman, et al. (2019) expands on this by stating that most informal businesses barely have computers to use, let alone the means to connect to the internet.

2.3.3 Differentiating the informal sector from the formal sector

Gershuny (1987) argues that the difference between the formal and the informal sectors goes beyond than just one having set specific rules or guidelines that are followed while the other doesn't. The environmental differences are significant as the informal sector has no luxury of an office environment, access to electricity, set working hours, are always on the move, and the like. (Seetharaman, et al., 2019). Klapper, et al. (2019) believe that the very same technologies that are currently available can also boost the informal sector and has a point, however, Donnelly, Simmons, Armstrong and Fearne (2015) argues that this is where the fundamental error lies as well as the inability to adopt technology in the informal sector as there are no solutions being created specifically for that environment. DeVries (2018) echoes this sentiment stating that the current solutions are made with the formal economy in mind and as a result are difficult to adapt for the informal sector. Charman and Petersen (2015) believes that solutions need to be made that are tailored specifically for the informal sector and the availability of various technologies being used in the formal sector can simplify the process as there is no need for reinventing the wheel, but rather putting the puzzle together with the informal sector in mind.

2.3.4 The reasons for the large informal sector in South Africa

The informal sector in South Africa, just like the rest of the African continent is still an essential sector for most and the reason for this is largely due to the high rates of poverty and unemployment (Cobbinah, Erdiaw-Kwasie & Amoateng, 2015). According to Gerdts, Raifman, Daskilewicz, Momberg, Roberts and Harries (2017) the informal sector still provides employment and income for millions of workers and business owners making it a very vital part of the economy. Fatoki (2014) highlights that a lot of opportunities exist in the informal sector however, it remains ignored by both businesses and governments. Rogan and Skinner (2017) adds that this sector possesses a wealth of entrepreneurs that are open and willing to participate in various activities to help the sector develop however not much attention is being given to the sector. Spring (2009) believes that a lot of opportunity exist in the informal sector as it requires various solutions that can benefit both the sector and those that come up with the solutions.

According to Gerdts et al. (2017) one of the determinants of the informal sector in South Africa, just like other African countries is poverty which soared after most African countries gained their independence. This has left most people with no choice or anything else to turn to, so the informal sector is actually the positive side of this two-sided coin emerged, with the other side being crime. Tshuma and Jari (2013) adds that a lack of access to economic resources, finance, property and land is a huge driver of the high informal sector because it leads to a lack of access to various resources that enable ordinary people to actively participate in the economy. These are important for people to be able to establish a livelihood. Arendse (2014) points out how the process of registering a business was not necessarily the most inclusive in South Africa.

Finance, while it is not the only factor that enables a business to be successful, is still a very important component of any business therefore a lack of finances has a huge influence on whether a business succeeds or not. The issue of finances in small businesses has led to most small businesses failing to succeed as there are pressures that come with running a business, either large or small (Kar & Marjit, 2009). According to Mulibana and Rena (2021) expenses immediately emerge from costs of registration to taxes and bank account costs amongst many others. This is what leads to the reluctance towards entrepreneurship by most people. Spring

(2009) divides the informal sector according to two types of entrepreneurs; those that are there due to high extreme poverty and no other choice as well as those that are avoiding going formal because of the complexities that come with a formal business.

2.3.4.1 Poverty and the informal sector

Tshuma and Jari (2013) believes that the relationship between the informal sector and poverty is inverse and the more attention that is given to the informal sector, the lower the poverty rate will be. Lose & Kapondoro (2020) adds that often there has been a desire to formalise the informal economy but given its contribution to some of the socio-economic challenges, the aim is not to try and formalise the informal economy but to rather support its development. Van der Berg et al. (2011) explains that this belief stems from the view of people in the informal as unproductive and vulnerable people that are stuck in a cycle of poverty. The truth of the matter is that they are not that, as this narrative around poverty omits the fact that this has been a lucrative and integral part of the South African economy as it provides employment to various households as well as income for health needs, education, food as well as other basic needs.

Cobbinah et al. (2015) believes that rethinking how the informal sector is viewed and trying to look at the informal sector as a tool of reducing poverty has a great potential of shaping future policies. These could be policies that encourage growth as well as development of the informal sector, this is essential as the role of the income generated from the informal economy plays a vital role in the households of the poor people that work there. According to Fourie (2018) there are various advantages to reducing poverty in a country, one key advantage being the impact it has on social grants. This is because the more sustainable that you invest in making the informal sector to be developed means the lower the poverty becomes. This will then lead to a decrease in the number of families that have a household income that is at a threshold of qualifying for social grants then this money can be rechannelled into different areas of the economy such as health, education amongst others (Murungi, 2015).

2.3.4.2 Bureaucracy

Various policies that have been put in place to regulate businesses in South Africa and other developing countries tend to not take into account the informal sector. Mulibana and Rena

(2021) explains that policies that are currently put in place are ideal for corporate governance however this is the time where more has to be done to try and craft policies that are tailored specifically for this sector as it has potential, and it is important. Kar and Marjit (2009) adds that bureaucracy in the informal sector is not a case of policies that are implemented to explicitly stifle the informal sector but more of a case of policies that are currently there being restrictive to anything other than formal businesses (Masondo et al., 2017). There isn't much of a framework that has been put in place by the government in partnership with the private sector as well as other stakeholders to develop policies and introduce products that are tailored for the informal economy (Mulibana & Rena, 2021).

This is in line with the neoliberalism theory which states that the informal economy is due to excessive state regulation, which motivates people to choose to engage in informal economies in order to avoid bureaucracy (Huang, et al., 2020). According to Etim and Daramola (2020) countries that have higher tax rates and heavy regulations on the economy tend to have higher share of the informal sector in their economy. Masondo, et al. (2017) also argues that the institutions that should be playing a role in cultivating entrepreneurship within the South African landscape have often fell short due to their inflexibility and inefficiency. Fatoki (2014) adds that bureaucracies are often slow to react to unexpected situations due to their rigid rules and procedures. They are also slow to adapt to changing social conditions which is the case with most institutions like banks, funding agencies and many others that can influence development (Lose & Kapondoro, 2020).

2.3.4.3 Education in the informal sector

Education and training play a crucial role in the sense that the higher the education that one receives is, the less that they are likely to end up in the informal sector. Fatoki (2014) argues that this is the root of the high informal sector, and this issue of education is often approached from surface level and not from its roots. According to Mbembe (2015) the Fees must fall campaigns that took place in recent years in South Africa are evidence that access to Education remains a challenge in this country and as much as there is a will for some people to get an education, they still find themselves excluded due to factors such as finances. This simply means the richer you are the most likely you are to be educated and the less likely you are to find yourself in an informal economy (Jackson, 2015).

2.3.4.3.1 Basic Education

Education is more accessible at basic education level in South Africa with a fair number of public schools nationwide. However, the standards of certain resources and schools in certain provinces such as the rural provinces remains one of the hinderances to those that seek to get an education (Modisaotsile, 2012). Countless incidents of maladministration and other incidents within the education system have been reported in South Africa since 1994, These have led to some public-school infrastructure diminishing and being poorly maintained, a lack of stationery and textbooks and many other issues that get in the way of students getting an education (Dewa et al., 2018). The challenge becomes that these schools already serve students and children from disadvantaged backgrounds, and they cannot afford the alternative to public schools, which is private schools (Murungi, 2015).

Other issues that are typically experienced at basic education level include classroom size as there are capacity issues in public schools over the years. Mulibana and Rena (2021) adds that this has a significant impact on the quality of education, the ability of students to learn and leads to poor results. Van der Berg, Taylor, Gustafsson, Spaul and Armstrong (2011) argues that there is a gap that exist between basic education and higher education in relation to the basic education pass mark and the desired results to get higher education in South Africa. Murtin (2013) cite this as the reason why some students that manage to get into higher education still struggle to adapt to the standards of higher education and often leads to a high level of tertiary dropouts.

Most households that students in public schools come from are also affected by other issues to do with the parents such as gender-based violence as well as a lack of involvement from the parents to provide a solid support structure. This often results in the students performing poorly or high dropout rates in which students then have to leave school to go and help in taking care of their families either financially by seeking employment or having to take care of other family such as the elderly or younger siblings. This may lead to them opting to go and seek employment in the informal sector and not completing their studies (Modisaotsile, 2012).

2.3.4.3.2 Higher Education

Higher education institutions are expensive and therefore this makes access to higher education to be challenging. In the instance that a student from the background that is described in the above section does manage to overcome the hurdles and obtain their matric certificate, the next challenge becomes access to funding into tertiary education. According to Murtin (2013) there are various bursary and scholarship programmes however it is worth noting that the students that require funding and especially those in the above section represent the majority and not just a niched group. This then means that there is often a high demand of funding than there is funding. This is what has triggered and led to campaigns such as #FeesMustFall and calls for free education.

Higher education costs include tuition fees, accommodation fees, stationery and textbooks, monthly groceries. This is a cost in all honesty that is challenging to the majority of South Africans, not only the poor but even the middle class as these are costs that are required on a yearly basis. Typically, a student has to overcome the hurdles that they have to face while they are still at growing up and in the conditions that are described in the basic education section above. According to Modisaotsile (2012) after overcoming the hurdles of registration for the first year of study, students often have to worry about how they are going to stay in school or get funding for school in the next year. It is, for this reason, that there tends to be a dropout rate due to financial exclusion.

2.3.5 The meaning of trade and its impact on the informal sector

Trade is the exchange of goods and services which is usually achieved through buying and selling (Tang, Ma, Xiao & Xiao, 2020). According to Klapper, et al. (2019) accepting payments is one common thing that is found in any business whether formal or informal, large or small, rural or urban. The nature of how trade is undertaken has evolved over the years with the first ever recorded type of trade being the barter system. Sukoharsono and Gaffikin (2019) maps out the evolution of trade according to the following phases: the barter economy, commodity money, metallic money, paper money, credit money, electronic money and cryptocurrencies. According to Schrauwers (2020) the barter system was an ancient form of exchange of goods in which people would exchange an object for an object e.g., clothing for sugar. Over time

there was an emergence of money which started off as silver or gold coins, which would have an estimated value. This then made trading to be much easier and more accurate (Tang, et al., 2020). Over time money evolved into the coins and notes that we know today which made trading even easier as notes are lighter to carry than coins. Kalan (2016) adds that with the convenience of notes came the security concerns around money and notes such as robberies.

With the evolution of technology and banks, easier and convenient ways of banking have emerged in the form of mobile and digital payments (Slade, et al., 2015). This emerged as a result of e-Commerce which became prominent through companies such as e-Bay and Amazon. Around this era various legislation such as Payment Card Industry Data Security Standard (PCI DSS) were established, and this meant that digital payments started to meet the necessary requirements from both a legislative and security point of view (Tang, et al., 2020). Nowadays payments are facilitated electronically on websites, through mobile apps and bank cards and this has seen a significant reliance on cash. According to Ntimane (2020) This adoption of digital payments is high in advanced environments such as the formal sector, but adoption has remained somewhat low in the informal sector (MasterCard, 2017).

Looking at the informal sector and how large it is, as well as the characteristics that define this sector the methods of trade in this sector have remained traditional. As suggested by the reviewed literature such as (Jackson, 2015; Klapper, et al., 2019; Ntimane, 2020; Tang, et al. 2020) the informal sector is as a result of various factors such as unemployment which led to people seeking alternative ways to earn a living. Furthermore, not everyone makes it into the informal sector however, Williams and Kedir (2018) state that there is a direct correlation between entrepreneurship and the informal sector. Most of the traders in the informal sector are entrepreneurial individuals that seek an opportunity in the market and address this opportunity through trading the goods and services that they offer (Masondo, et al., 2017).

According to Fatoki (2014) products and services that are traded by informal traders are influenced by demand which means that change can happen quickly in this environment. An example of this change may be determined by season or foot traffic of a particular place (Ntimane, 2020). The setting that this trade happens in has often meant that people prefer straight cash exchange as a method of trade simply because of the fast-paced nature of this environment and that there is no guarantee that the customer they serve today will be back tomorrow (Lose & Kapondoro, 2020). Schrauwes (2020) states that trade methods such as

credit have also failed to make significant inroads in this space. This is simply because trade happens at places such as taxi ranks, street corners and other public spaces where people pass by (Fatoki, 2014). Bhattacharya (2019) emphasizes on this uniqueness of the informal sector when it comes to building technological solutions that can be implemented in this space.

The reason for trade in the informal sector taking place through cash payments are somewhat justifiable (Mulibana & Rena 2021). But the evolution of trade from the barter days to what it is now with cryptocurrencies has led to probes by various scholars such as (Bhattacharya, 2019; Seetharaman, et al. 2019; Ntimane, 2020) who sought to unpack the reasons for the low adoption in modern technological solutions in the informal sector in relation to other sectors of the economy. Sukoharsono and Gaffikin (2019) divides the evolution of trade according to the following phases: the barter economy, commodity money, metallic money, paper money, credit money, electronic money and cryptocurrencies. Seetharaman, et al., (2019) explains that throughout this evolution which has largely been due to technological, the world has never failed to adapt to the newer ways however, the informal sector seemed to reach the paper money stage and remained stagnant. A factor that Bhattacharya (2019) argues and believes that is as a result of those at the centre of driving innovation neglecting the informal sector.

2.3.6 Types of payment technologies that can be implemented in the informal sector

There are several kinds of technologies that can be deployed into the informal sector as an alternative to cash. George (2012) believes that there have been significant developments in the world that are quicker, simpler and better ways of facilitating a transaction between people other than cash. Chang (2014) adds that we have seen over the years how geographic borders and other barriers have been eliminated to with payments happening in a seamless manner. Regardless of this significant progress and ease in payments through the use of various technologies, there is still high interdependence on cash, which then leaves a lot of questions that require to be answered. Bhattacharya (2019) states that - given the array of payment technology products that are provided by banks and various other tech firms, questions still arise as to which of these are suitable and sustainable for the informal sector and its context.

A study by Ntimane (2020) cautions that a lack of solutions that can improve the customers life and address their needs will find it hard to make significant inroads in the informal sector. Fatoki (2014) echoes this sentiment and explains that the informal traders also need to be taken

into account and whatever technology that is introduced into the informal sector ought to be seamless otherwise a failure to achieve this will lead to a continued reliance on cash in the informal sector. Bhattacharya (2019) believes that any technology that can be introduced into the informal sector, requires a substantial amount of time to be taken in educating the stakeholders within the informal sector. This then makes payment technologies very complex because it deals with money which is a touchy subject and due to this resistance, it is most likely to be high because of issues to do with trust.

According to Duncombe (2011) the types of payment technologies that the informal sector can make use of can be grouped into four categories namely, mobile browser-based payments, in-app mobile payments, mobile or wireless card readers and contactless mobile payments or wallets (Slade, et al., 2015). Blankley and Moses (2009) explain that mobile browser-based payments are mostly suitable for online based businesses such as e-commerce websites as they allow users to make card-not-present (CNP) purchases. In-app mobile payments are similar to mobile browser-based payments except they make use of an app instead of a website (Mbogo, 2010). According to Kalan (2016) significant progress made in the small businesses space so far has been through mobile or wireless card readers with start-ups like ikhokha, Yoco and the like. Contactless mobile payments or wallets have been a major part of payments in small businesses, however, MasterCard (2017) notes that regardless of all this progress and acceptance in small businesses, there still is a low adoption rate of these products in the informal sector.

This section of the literature review will further unpack these different methods of payment technologies that are available and review what past literature says about them. The reviewed literature will be able to guide and provide further insights into the methodology of these technologies as well as how long they have been available in the market. This section will look at mobile browser-based payments, in-app mobile payments, mobile or wireless card readers and contactless mobile payments or wallets. These are types of payment technologies that are currently available and can be deployed into the informal sector.

2.3.6.1 Mobile browser-based payments

According to Schrauwers (2020) since the inception of e-commerce, customers started making payments over a website and did not necessarily have to walk into a brick-and-mortar store.

With this trend, came an emergence of a new kind of payment system arose (Tang, et al., 2020). There was a need to facilitate transactions for a customer who is not in the premises of the shop that they are buying goods and services from. This trend grew even further in the 21st century as more people started to prefer doing business from the comfort of their homes, work and the like. It was companies such as Amazon, eBay and many others around the world that led to companies such as PayPal emerging. These start-ups possessed modern ways of addressing the need of facilitating payments between customers and businesses online (Chang, 2014).

The trend grew over the past couple of years to an extent whereby it is hard to imagine a world in which there aren't any payment technologies. George (2012) adds that the rapid growth of online businesses and e-commerce business has led to the maturity of this technology. According to Chang (2014) this rapid boom in e-commerce retailers was imminent given the various advantages that an e-commerce business presents in relation to traditional business models. Kalan (2016) cites advantages such as faster buying processes, affordable marketing, reduced rent costs, product and price comparisons amongst many others as the reason for the rapid rise of the e-commerce world. Bhattacharya (2019) adds that these advantages are not only experienced by the business owners but by customers too as there is a high degree of flexibility and convenience that e-commerce possesses.

This trend largely started in the retail world, however within no time it had spread into other sectors such as banking and financial services (Tang, et al., 2020). This further strengthened the need and development of mobile browser-based payments technology which have evolved significantly from what they looked like in the beginning and there has been various banks and tech companies that have invested a lot of resources towards developing this technology (Slade, et al., 2015). This technology allows users to make card-not-present transactions purchases in which a customer visits an online store through their computers or mobile phones, they select the products or services that they want to purchase, and they enter their card details and complete their payments (Schrauwers, 2020).

Taking the abovementioned into account, there has been significant developments in mobile browser-based payment technologies however, the informal sector in South Africa has not had many deployments of e-commerce-based type of solutions like websites and mobile applications (Kalan, 2016). This means that while this type of technology is a potential payment

option, more work still needs to be done in terms of contextualising it to the environment of the informal sector (Feenberg, 2017).

2.3.6.2 In-app mobile payments

According to Kalan (2016) these type of payments have increased due to the increase in mobile applications usage. Mobile applications have become an important part of businesses as they serve as an additional marketing, communication and service channel. Apps have become an alternative to websites due to the fact that most people navigate the internet through their phones. Using mobile applications enhances customer experience which allows ease of navigation which is why they have soared and as a result a need for them to facilitate payments emerged (Seetharaman, et al., 2019). These types of payment technologies are very similar to a mobile browser-based payment and just differ in the sense that one is app-based and the other is facilitated through a browser.

2.3.6.3 Mobile or wireless card readers

George (2012) describes this as the most common and oldest type of technology that is available in payment technologies, and this is due to cards – both debit and credit, being one of the first ever alternatives that emerged to cash. This method of payment often relies on a point-of-sale machine which is a card reader that customers insert their cards into, enter a pin to authorise a transaction and then the money is paid into the account of the retailer or business that the user is purchasing from. This solution often comes with a hardware product that is accompanied with a software in which transaction costs must be paid to the bank. Chang (2014) explains that this is one of the limitations that this technology has as it may work out to be too expensive for smaller businesses. It is worth noting that POS machines were originally introduced by big retail companies and restaurants that can avoid both purchase costs and maintenance costs of the hardware and still enjoy high profit margins after the transaction costs involved with these card readers (Kalan, 2016).

The evolution of technology in recent years has led to evolved POS machines that have extremely affordable hardware that can be purchased at a once-off price (Tang, et al., 2020). These solutions are mostly targeted at smaller businesses that struggled to afford the expensive

POS solutions that were previously available to the market. Another restriction that came with POS in the past that has significantly disrupted by the emergence of newer technology is the reliance on banks and financial institutions (Seetharaman, et al., 2019). Banks are highly regulated in almost every country and as a result of this, acquiring any banking product or solution often requires a lot of paperwork and is filled by what may seem like bureaucratic processes for smaller businesses.

Bhattacharya (2019) argues that a significant number of small businesses in South Africa do not have their paperwork in order due to the fact that they are still fighting to survive amongst many other pains that small companies experience. Schalekamp, McLaren and Behrens (2017) further added that the informal sector is called the informal sector largely for the fact that there isn't any formal paperwork in place. If formal small businesses struggle to have their paperwork in place, then what more the informal sector. Feenberg (2017) believes that certain characteristics of modern solutions can easily lead to the exclusion of some players in society even without intending to do so. This is such an example, as banks due to their legislative and compliance duties easily exclude some businesses like the informal sector with their product requirements.

Another common exclusion that often emerges with this kind of payments technology is cost (Ntimane, 2020). Nonetheless, there have been significant developments with cheaper hardware solutions as well as the ability for businesses to turn their smartphones and tablets into POS however, as much as this is possible a banking account or wallet is still needed to receive payments.

2.3.6.4 Contactless mobile payments or wallets

Contactless mobile payments and wallets have been a major part of payments in small businesses in recent years as a result of newer technology such as Bluetooth that has enabled payments to be initiated easily (Kalan, 2016). These kinds of payments are usually initiated through mobile devices such as smartphones and tablets and also modern bank cards and credit cards. These kind of payment technologies are much more convenient and beneficial to the users because they do not depend on hardware and in most instances just require one to have a phone which most people have (MasterCard, 2017).

From an implementation and integration point of view, these types of solutions are easy for smaller businesses to adopt. The cost of running such a payment system is also extremely low and is usually charged as a percentage fee of the transaction cost (Tang, et al., 2020). The cost usually ranges between 1-3% of the total transaction costs, this is a reasonable model that is often affordable for smaller businesses. The methodology behind contactless mobile payments is the most convenient and easy to use for merchants as it usually requires downloading an app on your phone or being in possession of a cell phone number (Seetharaman, et al., 2019). These types of technologies also use Near field communication (NFC) which is similar to Bluetooth but is modern and safer which protects both parties involved in the transaction from any potential fraud (Schalekamp, et al., 2017).

2.3.7 Factors affecting the adoption of payment technologies in the informal sector

Various factors have been cited to have affected the acceptance of payments technology in South Africa, according to MasterCard (2017) a lack of access to formal banking tools is one of the main reasons as payments technology solutions in the South African market require a form of bank account on the part of the informal merchants. Pankomera and van Greunen (2019) cites a lack of understanding of available options as one of the reasons which are attributed to marketing, communication and training. Kalan (2016) questions if the informal sector is even aware of the mobile payments solutions that are available. According to Thomas, et al. (2013) costs associated with accepting digital payments have also been a reason for a lack of acceptance of payments technology in the informal sector as they affect the bottom line of informal traders, leading them to opt for cash-only payments. According to Seetharaman, et al. (2019) this highlights that technological solutions that have been introduced to the informal sector do not necessarily suit the environment and its requirement for simple and cost-effective solutions with no transactional costs, monthly costs and the like. (Fatoki, 2014).

Schalekamp, McLaren and Behrens (2017) adds that from a technological availability point of view, there are significant technological tools that can be used to build solutions for the informal sector. Bhattacharya (2019) echoes the sentiment of Seetharaman, et al. (2019) citing complexity as a potential factor that influences payment technology in the informal sector. According to Sparks and Barnett (2010) while current technological solutions may be simple, convenient or cost effective for a formal business, they are somewhat complex for informal

traders, and this might be the reason for traditional and conventional methods being prevalent in the informal sector. DeVries (2018) emphasizes on the need to make the informal sector a main focus when developing anything to do with the informal sector. According to Ntimane (2020) a potential collaboration needs to exist between technology companies and the informal market as previously displayed in South Africa's banking industry when Capitec Bank, a micro lending SMME tailored a simplified banking solution for the informal consumer that was typically unbanked and was not serviced by the industry (Capitec Bank Ltd, 2020).

Heiman, Ferguson and Zilberman (2020) emphasizes on awareness being a huge factor in the adoption of most technological solutions. According to Pankomera and van Greunen (2019) most technology providers do not spend enough effort communicating and building awareness on the solutions that they have developed. Slade, et al., (2015) adds that companies in the tech space are usually ran by technical people, however there is a need for them to reemphasize the marketing and communication as this helps to land a new solution especially if it is novel or innovative. The degree to which an innovation is perceived to add value is if it is viewed to be an improvement of whatever system or process it replaces (Schalekamp, et al., 2017). According to Huang, et al. (2020) this perception is fostered through educating and communicating to the market about the new innovation which is a difficult process as there is a degree of resistance to change that needs to be managed this then leads to most companies failing to effectively land a solution to the market (Maduku, Mpinganjira & Duh, 2016).

2.4 Conclusion

The reviewed literature started off with a detailed consideration of the theoretical framework, critical theory of technology as well as its various components. These include the importance of both value and values in design, the technocratic model of control and democratic model of communication as proposed by Feenberg (2008). The design, methodology and analysis of findings were heavily influenced by the critical theory of technology and the reviewed literature. This research sought to achieve a balance at all times, in an effort to ensure that this theoretical framework guides the findings of this research to be as neutral as possible. A well-rounded and balanced approach was taken in the methodology, similar to the democratic model of communication to ensure that all social elements were incorporated. This is seen in the

sample as the research did not only focus on the informal traders but also focused on customers of the informal sector (Matthews, 2021).

The reviewed literature sought to provide the basis from which to explore the central argument that there is a payments technology adoption problem in the informal sector. However, there is a possibility that, amongst other factors, a bigger problem lies in the availability of technological solutions that are designed specifically for the informal sector. As a result, this study sought to expand on this argument by firstly looking at the history of the informal sector. Secondly, this section discussed the characteristics of the informal sector. Thirdly, the literature reviewed outlined the key differentiators of the informal sector in relation to the formal sector. Then, the reasons for the large informal sector in South Africa and developing countries in general, were looked at. Thereafter, the types of payments technology that can transform the informal sector were assessed. Lastly, the literature looked at the factors affecting the adoption of payment technologies in the informal sector.

Chapter 3

Research Methodology

3.1 Introduction

This chapter of this research presents the research methodology, design and approach that was adopted for this study. It begins by discussing the research paradigm and approach. Thereafter the research design is looked at as it is the overall strategy of this research. The target population where the sample of this study was selected from is discussed. Thereafter the sampling, data collection methods and data analysis methods that were deployed to carry out this study are discussed in detail.

3.2 Research Paradigm and approach

This study was conducted using the interpretivist paradigm because it sought to understand meaning from the subjective experiences of individuals as opposed to measurement which is usually one of the key drivers and objectives in the case of positivist paradigms of thinking (Merriam & Tisdell, 2015). The factors that influence informal traders to use payment technologies or not in the informal sector is highly subjective and situational than it is universal, therefore, it was for this reason that it was vital for this research to explore as much as possible the different factors from the lens of different informal traders and the customers that they serve (Porter & Heppelmann, 2017).

At the centre of the interpretivist paradigm is the belief that reality is created by individuals, and it therefore seeks to gain deeper insights into these individuals to understand why they do what they do (Creswell, & Poth, 2016). A key component of this study was to go into the informal sector environment and try to gain insights and an understanding of their reality as well as gauge these against the payment technologies. According to Bayat & Fox (2007) an interpretivist paradigm also believes that individuals are conscious and question social forces instead of just being shaped by them as is the belief with a positivist paradigm.

Epistemology is a belief system of knowledge, what is known and how knowledge is examined (May, 2021). Epistemological concerns for this research, were similar to any concerns that come with an interpretive paradigm of thinking in comparison to positivist research which is based on measurement and evidence (Scotland, 2012). For this reason, scholars such as Pham (2018) suggest that insights provided by positivist studies have a higher validity and reliability than interpretive research. However, through an interpretivist study, a single phenomenon such as factors influencing behaviour in the informal sector may have various interpretations rather than a single interpretation as often highlighted by the process of measurement by positivist research which is what this research seeks (Laumann, 2018). This reason was compelling enough to indicate that this research would benefit more from an interpretive paradigm of thinking especially because it is still exploratory in nature. Future studies that succeed this research that are focusing on specific interpretations that emerged from this study can adopt alternative paradigms such as positivism.

According to Park, Konge and Artino (2020) ontology is a philosophical branch that studies the nature of reality and truths amongst human beings' existence as individuals, in society and in the universe. Ontological concerns for an interpretivist study is that it carries multiple realities as the knowledge is acquired from a social setting and this makes meaning more difficult to interpret. (Crawford, 2005). This study always required a high level of consciousness during this research as well as ensuring that there isn't any subjectivity taking place. Axiological concerns around the ethics were addressed by emphasizing on the human values of everyone that was involved with or participated in this research project and noting and respecting the diversity of the various participants in both the informal sector and payments industry (Kivunja & Kuyini, 2017). The ethics training that the researcher underwent before conducting the study played a vital role in ensuring that this concern was addressed.

Since this research used an interpretivist paradigm of thinking, it also required a research approach that enabled the study to reach the world out there in order to find meaning as opposed to a study conducted in a specialised research lab setting (Merriam & Tisdell, 2015). This study then used a qualitative research approach which allows personal contact with research participants which will lead to much more in-depth interactions (Ulin, Robinson & Tolley, 2012). A qualitative research approach was beneficial to this study because it provided it with rich description in the form of words and images as opposed to just numbers and stats to describe a phenomenon (Merriam & Tisdell, 2015). According to Tuli (2011) qualitative

approach is preferred for a study where there are limited theories because it is inductive as it allows the researcher to gather data and build concepts, which is intended by this research.

3.3 Research design

A qualitative case study is a research methodology that explores a phenomenon within a particular context (Crick, 2021). In the case of this research, the factors that influence the adoption of payment technologies in the context of the informal sector were explored. This kind of research focuses on the events surrounding one case in a contemporary context or setting (Baxter & Jack, 2008). This research sought to unpack the perceptions and views of informal traders and their customers on payments technologies in comparison to cash payments. The study focused specifically on the informal sector in South Africa. Through this research design, there was an ability to gain valuable insights as to why 96% of transactions in the informal sector in South Africa still happen through cash (MasterCard, 2017).

According to Houghton, Casey, Shaw and Murphy (2013) this is because at the centre of a case study research design is the ability of a complex phenomenon to not only be explored, but a case study design also allows for this exploration to take place through different factors interacting with each other. According to Merriam and Tisdell (2015) a vital part of this research design is constructivism which is the belief that knowledge is constructed or created and not waiting to be discovered in a lab (Adom, Yeboah, & Ankrah, 2016). Constructivism was essential to gaining deeper insights about payment technologies that are in the market and how they are experienced by the informal sector, this then enabled this research to incorporate new information into the pre-existing knowledge.

3.4 Target Population

This research study targeted informal traders and customers in the informal sector in the cities of Johannesburg and Cape Town in South Africa. These are two of the top ranked cities when it comes to the ease of doing business according to World Bank (2018). This population was able to shed light on the factors that influence informal traders to implement and adopt payment technology solutions into their businesses. Different types of informal businesses including informal supermarkets (spaza shops), barbers, and car wash businesses were initially meant to

be targeted, however, a decision was taken after the proposal panel recommendation to have niched approach and focus on street vendors for this research.

Johannesburg and Cape Town are both urban metropolitan cities in South Africa and on an annual basis attract significant amounts of people that leave their homelands into these cities to seek opportunities. For this reason, both areas have a high population density which draws more opportunities for informal traders and businesses. The high population of these cities mean that they attract a lot of informal traders that seek to create employment for themselves on an annual basis (Giddy, Idahosa & Rogerson, 2020). According to Stats SA (2019) Gauteng and Western Cape which are the homes of Johannesburg and Cape Town are both ranked in the top 3 in terms of contribution to the country's GDP. Various entrepreneurs, businesses and influential politicians and academics reside in these cities. This means that there are high prospects of a business starting small and growing into a formal SMME as there are various opportunities (Fatoki, 2014).

Due to the high level of economic participation, the target population of this research was selected from these two cities. According to Stats SA (2021) the total size of the informal sector is 2.2 million (2 280 000). The distribution of informal employment in Gauteng is 25.07%, while the Western Cape is on 11.03% (Stats SA, 2019). These stats highlight a significant amount on informal traders that this research could sample from. The informal sector accounted for 18.3% of employment in 2019 according to Stats SA (2019) this highlights how significant of a role it plays in South Africa

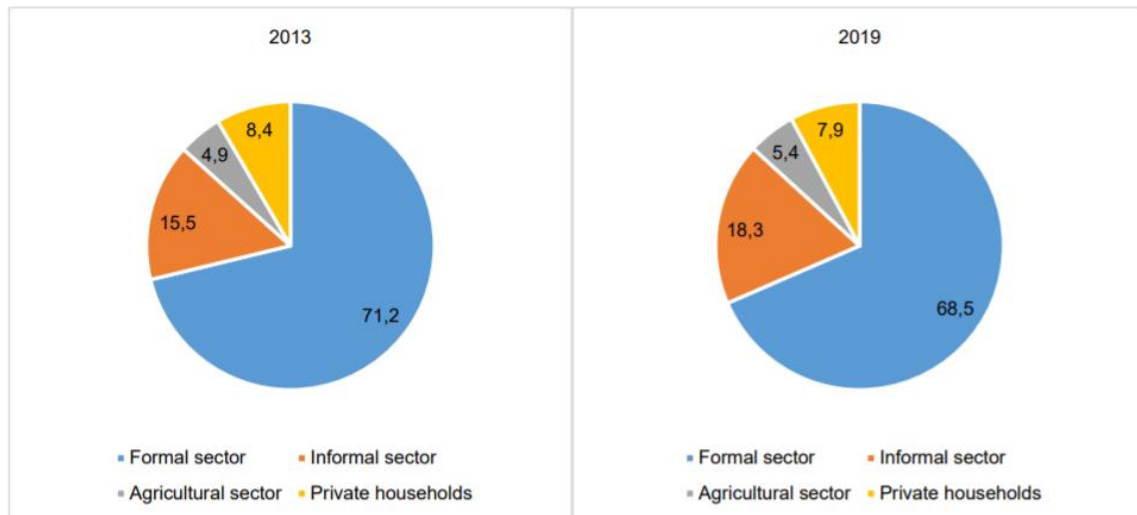
Figure 3.1: Key labour market indicators

	Apr-Jun 2020	Jan-Mar 2021	Apr-Jun 2021	Qtr-to-qtr change	Year-on- year change	Qtr-to-qtr change	Year-on- year change
	Thousand					Per cent	
Population 15–64 yrs	39 021	39 455	39 599	145	578	0,4	1,5
Labour force	18 443	22 237	22 768	530	4 325	2,4	23,4
Employed	14 148	14 995	14 942	-54	793	-0,4	5,6
Formal sector (non-agricultural)	10 064	10 574	10 200	-375	136	-3,5	1,4
Informal sector (non-agricultural)	2 280	2 502	2 686	184	406	7,4	17,8
Agriculture	799	792	862	69	63	8,7	7,8
Private households	1 005	1 127	1 194	67	189	6,0	18,8
Unemployed	4 295	7 242	7 826	584	3 531	8,1	82,2
Not economically active	20 578	17 218	16 832	-386	-3 746	-2,2	-18,2
Discouraged work-seekers	2 471	3 131	3 317	186	846	5,9	34,3
Other (not economically active)	18 107	14 086	13 515	-571	-4 592	-4,1	-25,4
Rates (%)							
Unemployment rate	23,3	32,6	34,4	1,8	11,1		
Employed/population ratio (absorption)	36,3	38,0	37,7	-0,3	1,4		
Labour force participation rate	47,3	56,4	57,5	1,1	10,2		

Source: Stats SA QLFS, Q2: 2021

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Figure 3.2: Distribution of total employment by sector in South Africa, 2013 and 2019



Source: Stats SA QLFS, Q3: 2013 and Q3: 2019

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3.5 Sampling

3.5.1 Sample size estimation

The sample for this research was focused on informal traders and their customers, the sample size was 30 units, and these units were divided as follows, ten informal traders and five customers for Johannesburg and ten informal traders and five customers for Cape Town. The 2:1 ratio split of the sample size between the informal traders and their customers was due to the fact that the study's primary focus was from the lenses of the informal traders in order to understand factors that influence their adoption of payment technologies to their businesses. The customer sample was added to the study in order close the loop as well as identify potential gaps that may exist between the informal traders and their customer base. A substantial amount of time will be spent with each respondent as required in interpretive research (Fusch, & Ness, 2015). The sample size of 30 units was determined due to saturation in responses that led to recurring and repetitive responses amongst the research participants (Laumann, 2018).

Table 3.1: Sample of research participants

Variable	City	
	Johannesburg	Cape Town
Informal traders	10	10
Customers (informal sector)	5	5
Total	15	15

3.5.2 Sampling technique

Purposive sampling was used for this research because the aim of this research was to understand, discover and gain insights, therefore, it was essential to select a sample that the most can be learnt from and purposive sampling was best suited to ensure that this research can achieve this (Etikan, Musa & Alkassim, 2016). Purposive sampling is also suitable for an exploratory study like this research, although it can sometimes be open to selection bias due to its subjective nature. Purposive sampling afforded this study with a degree of flexibility and simplicity which was needed in tackling the complexity of business management in a diverse and complex environment as South Africa and the South African informal sector (Merriam & Tisdell, 2015).

Purposive sampling is a type of non-probability sampling, one of the advantages that non-probability sampling possesses in comparison to probability sampling techniques is that it is both time effective and cost effective. One of the major reasons that this research opted for this approach is because of its ease of use and ability to be used even when a sample size is small of which the 30 units sample size of this research was fairly a small size in comparison to positivist samples (Crick, 2021). Since this research took an interpretive paradigm of thinking in its approach, the focus was not on a large sample but more on a focused sample that would be spent enough time with so that the study can gain insights and understanding of the sample's reality and environment (Etikan, Musa & Alkassim, 2016).

This type of sampling was also very useful for this research as it is qualitative, this the allows the research to identify and select cases that are rich in information related to the phenomenon

of interest (Wronski, 2020). Purposive sampling is not without its disadvantages as it carries disadvantages that any non-probability sampling carry, these include the impossibility of really determining how well you are representing the population when sampling (Bakkalbasioglu, 2020). This might lead to the research duplicating the same sample types. Due to this, it then becomes extremely difficult to also estimate or tell if there is any sampling variability and this also hinders the researcher from identifying any possible bias that might be there (Merriam and Tisdell, 2015). In research that is not exploratory and seeks to unpack specific phenomena, this might not be the best sampling technique to deploy.

3.5.3 Data collection strategy

Data collection for this research was conducted through semi-structured interviews (See appendix A: Interview schedule) with predetermined open-ended questions that were arranged in a specific order (Rogers, 2010). According to Merriam and Tisdell (2015) semi-structured interviews allow for a discussion to take place with the respondents because there is less of a straightforward question and answer approach. This is usually achieved through asking open-ended questions as they are triggers to a discussion. The semi-structured personal interviews were relevant and essential to this research given the fact that it had adopted a qualitative approach that required to dig deeper into the thinking, rationale and context of the informal traders and their customers.

These interviews were done through face-to-face meetings and interactions with the sample and these interactions were recorded on audio through a mobile device. The decision to conduct face-to-face interviews had to be constantly evaluated given the time that this research study was conducted, which is during the Covid-19 pandemic. The decision was heavily influenced by the Covid-19 lockdown levels and restrictions as set out by the government; at the time of the fieldwork, the lockdown level was permitting of a face-to-face interaction hence the interviews were carried out through face-to-face meetings. While the lockdown levels were permitting, all COVID-19 protocols still had to be adhered to in order to ensure safety of both the researcher and the research participants. In order to ensure this, social distancing was maintained at all times, however masks were removed during the interviews in order to ensure that the audio that was being recorded would be audible. Sanitizers were made available for the researcher and the research participants at any period of the interviews.

The interviews were conducted in the research participant's preferred language of choice between English and their home languages which vary from IsiZulu and Sesotho in Johannesburg and IsiXhosa in Cape Town. These language options were determined by the fact that these are the commonly spoken languages in the two regions where the fieldwork was conducted. The translation of the data was conducted by the researcher who is fluent in Sesotho isiXhosa, isiZulu and English. Initially the study sought to use a translator to assist the researcher however 73% of the research participants opted to conduct their interviews in English which meant that only 27% of the interviews required translating hence the services of a translator were not deemed necessary. The carrying out of face-to-face interviews played an essential part to this research as it enabled the research to avoid ambiguity by capturing emotional information that is usually easy to pick up in a face-to-face setting as it is displayed by tone, body language and other human gestures (Walker, 1985). All the research subjects that participated in this study were selected through purposive sampling in the informal sector in Johannesburg and Cape Town as mentioned above.

3.6 Data Quality Control

Trustworthiness of this research was ensured using Guba's (1981) well-established constructs of validity and reliability through credibility, transferability, dependability and confirmability. Firstly, credibility was ensured by giving participants that were approached the opportunity to refuse, this ensured that only participants that genuinely wanted to participate in the study were interviewed. The study benefited from this as there was cooperation and detailed insights could be gained from the interviews (Shenton, 2004). Member checking was also conducted on the data results and conclusions. This was an important exercise that ensured clarity of the data being collected through allowing the research participants an opportunity to rectify any errors and clarify their intentions (Lincoln, Lynham & Guba, 2011).

Transferability of this research, which is the degree of how the results of this study were generalised to other contexts, was achieved through the researcher clearly outlining the research context and all the important information such as the boundaries of the study (Guba, 1981). The researcher prioritised providing as much detail about either the informal traders or their customers that linked back to their perceptions and realities when it comes to payment

technologies. This is clearly represented in Chapter 5 of this study that looks at the analysis of the results as specific information on descriptions, location and many other factors that were considered and influenced the study are provided.

Dependability entails ensuring that the research findings are not only consistent but can be repeated (Anney, 2014). According to Korstjens and Moser (2018) the aim of dependability is to verify the findings of the research against the raw data that was collected. This study managed to achieve this by ensuring that an in-depth account of the research methodology is provided in detail to allow any future researchers to repeat this work. The last component of trustworthiness is confirmability which was achieved through reflexivity by always ensuring self-awareness in order to avoid any bias during data collection and data analysis (Richards & Hemphill, 2018).

3.6.1 Reflexivity

According to Dodgson (2019) reflexivity in qualitative research is an ongoing process by the researcher of reflection in order to achieve self-awareness that enables for a systematic ability to create knowledge without bias. Reflexivity in this research was maintained by ensuring that at all stages of research, a high degree of sensitivity to the context of the research participants in relation to the researcher. The fundamental position of reflexivity is recursively and critically assessing oneself in respect to the object, context, and process of inquiry (Darawsheh, 2014).

In order to achieve reflexivity, a reflective notebook was created by the researcher. This journal assists in this process as it enables the researcher to document all the notes that they want to conduct during the research process. These notes were used to review and analyse some of the methodological decisions that were taken against the researcher's own belief system and values. This way any bias and self-influence of the researcher towards the research may be identified. Any issues to do with contradictions that were identified on the part of the research participants as well as bias that were identified on the part of the researcher were addressed immediately.

The reason for taking these measures were because the researcher has extensive experience in the banking and financial services industry. The researcher took cognisance of this in order to

avoid a situation where the researcher's knowledge and experience would end up influencing the research participants. To further ensure that the researcher did not have any "home ground advantage" that may result in influence, all the interviews were conducted in the informal trader's environment which was on the streets, at taxi ranks and the like. This was intentionally done so that the researcher can be immersed into the informal sector environment while ensuring that the research participants feel more in control and would not be easily influenced.

3.7 Data analysis

Thematic data analysis was used through systematically identifying common patterns and themes to analyse the data that was collected for this research. This was achieved through the use of a manual data analysis due to its high level of flexibility in approach as it allows for multiple modifications to be done in order to meet the needs of many studies (Leech, & Onwuegbuzie, 2011). According to Braun and Clarke (2006) manual analysis is much more accurate and freer from many errors as Computer Assisted Qualitative Data Analysis Software (CAQDAS) and it achieves this by providing a rich and detailed, yet complex account of data. Manual data analysis also allowed for further clarity of concepts which led to logical and reasonable conclusions (Guest, MacQueen, & Namey, 2011).

The process of data analysis followed a 6-step process as prescribed by Braun and Clarke (2006). The first of these steps started off with the familiarisation process in which the researcher was familiarising with the data. This process was achieved through the researcher transcribing all the recorded audio of the 30 semi-structured interviews that were collected during the data collection process. The second phase of the thematic analysis that was carried out by this research was to generate codes that were emerging from the data that was being analysed. According to Bayat and Fox (2007) the interesting stuff that you note in the data is called a code. These are just descriptions that and do not need to be interpretations of what is being said yet (Gentles, Charles, Ploeg, & McKibbin, 2015). After the code generation process took place the data codes were grouped together into different themes, thereafter these themes were further reviewed to try and ensure that there aren't any contradictions with the themes (Braun & Clarke, 2006). The fifth and last step of this process that this research followed was the naming of these themes before they were presented in Chapter 4 of this study. An inductive thematic analysis was adopted as it provided more rich data while the thematic data was

analysed at a latent level in order to examine the underlying ideas, assumptions and conceptualizations (Merriam & Tisdell, 2015).

3.8 Ethical considerations

Ethics are essential in the relationship between researchers and participants in qualitative research studies and for this reason various ethical concerns such as privacy, honesty and open interactions as well as misrepresentations had to be addressed for this research. According to (Richards & Schwartz, 2002) three of the most important ethical concerns during qualitative research are anonymity which entails keeping the participants identity unknown. Confidentiality which means that no personal information is to be revealed and lastly, informed consent which emphasizes that the researcher has a responsibility to inform participants of various aspects of the research in a language that is clear and understandable.

The abovementioned factors were upheld through the following:

- The research participants' identity remained anonymous throughout the data collection process (see appendix C: Consent form).
- All the data has been and will remain confidential and no personal information will be revealed or disclosed publicly.
- All information regarding the research was shared and communicated to the research participants and they were given the opportunity to decide whether they want to be a part of this study or not (see appendix B: Participant information sheet).
- The interviews were conducted in the participant's preferred language of choice between English and their home languages which varied from IsiZulu and Sesotho in Johannesburg and IsiXhosa in Cape Town. The translation of the data was conducted by the researcher with the assistance of one translator.

Ethics clearance for the research was granted by the University of the Witwatersrand's Human Research Ethics Committee (non-medical) before the data collection process began (see appendix D: Ethics clearance certificate).

Lastly, before the ethics clearance certificate was issued, the researcher underwent ethics training to ensure that they would be best placed to deal with any ethical conundrums that may

emerge throughout the research process (see appendix E: Certificate of competence in research ethics).

3.9 Conclusion

This chapter outlined the research methodology of this research. This research was approached through an interpretive paradigm of thinking and data was collected from a sample of 30 research participants in Johannesburg and Cape Town through semi-structured face-to-face interviews. The collected data was manually analysed through a thematic analysis. The thematic analysis process followed a 6-step process as prescribed by Braun and Clarke (2006). The final themes are discussed in detail in Chapter 4 of this study.

Chapter 4

Analysis of Results

4.1 Introduction

In this chapter of the study, the results that were collected during the data collection process will be presented and discussed. The data collection process was administered through semi-structured interviews with the research participants with predetermined open-ended questions that were arranged in a specific order, and these were guided by the research questions. All Covid-19 protocols were adhered to.

The following research questions as mentioned in section 1.5 of this research, guided the data collection:

- What are the different forms of payment technologies and their relative availability for informal traders?
- What factors influence the uptake of payment technologies in the informal sector?
- How cost effective and convenient is it for informal traders to accept cash payments over digital and mobile payments?
- How does the current South African banking landscape influence the uptake of payment technologies in the informal sector?

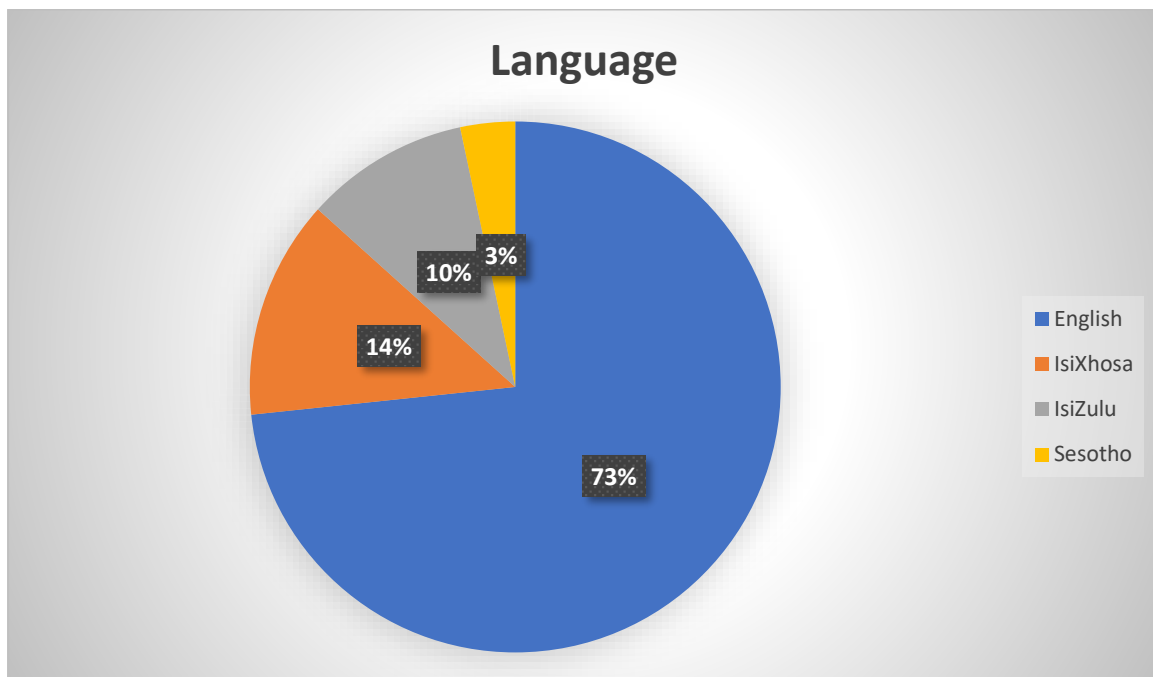
This section will start off by detailing the demographics of the research participants. Thereafter, as detailed in Chapter 3 of this research, a thematic data analysis method was used through systematically identifying common patterns and themes. These results are further grouped into themes and verbatim quotes from the research participants as required in a study that adopts an interpretive paradigm of thinking. All the quotes in the themes will be translated to English as the interviews were conducted in various languages including English, IsiXhosa, IsiZulu and Sesotho.

4.2 Demographic description of research participants

Table 4.1: Demographic of research participants

Variable	City		Gender		Bank Account	
	Johannesburg	Cape Town	Male	Females	Yes	No
Informal traders	10	10	5	5	13	7
Customers (informal sector)	5	5	13	7	10	0
Total	15	15	18	12	23	7

Figure 4.1: Language of research participants during interviews



There was a sample total of 30 research participants for this research and these focused on informal traders and their customers. The samples size of 30 units was divided into 10 informal traders and 5 informal sector customers from Johannesburg as well as 10 informal traders and 5 informal sector customers for Cape Town. Of all these research participants, a substantial amount of time was spent with each respondent. All the 30 respondents – both informal traders and customers were no younger than 18 years of age.

The research participants had the option of responding to the interviews in either English, IsiXhosa, IsiZulu and Sesotho. Out of the 30 research participants 73% opted to be interviewed and respond in English, 14% of the research participants opted for isiXhosa, 10% of the research participants opted to participate in IsiZulu and lastly 3% of the research participants opted to participate in Sesotho.

Out of all the informal traders that participated in this research, 65% of the research participants had bank accounts that they used for personal reasons and some for both personal reasons and their businesses. From the customer research participants all participants (100%) were in possession of a bank account. This stat was determined in order to try and gauge the level of literacy of the research participants when it comes to banking and financial products.

4.3 Main Themes

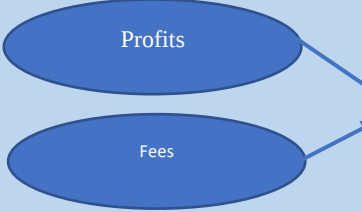
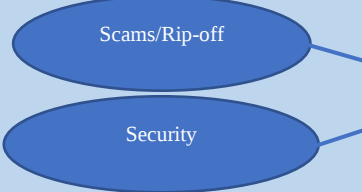
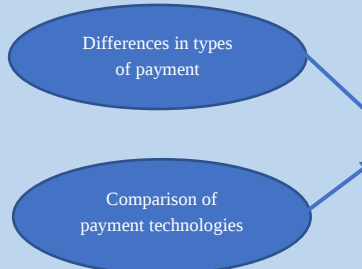
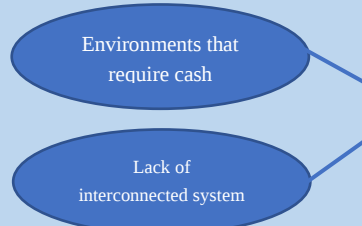
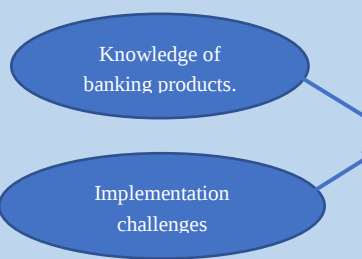
The main themes that emerged from this research are discussed below in detail as guided by the research questions, the theoretical overview as well as the literature review (Chapter 2). This research was guided by the research questions and used Thematic analysis due to the research questions looking for subjective information such as a participant's experiences, views, and opinions. The final themes that emerged from these findings were determined through a manual analysis that involved the 6 steps process as prescribed by Braun and Clark (2006) that included familiarising yourself with your data, generating initial codes, searching for themes, reviewing themes, defining and naming themes and producing the report.

Table 4.2: Thematic analysis process of this research

Step	Description
Familiarising yourself with the data	This was mostly achieved during the transcription phase as the researcher personally transcribed the data from the audio recordings. During this phase notes were made, and preliminary ideas emerged. The analysis took an inductive focus.

Generating initial codes	Brief descriptions of what was being said in the interviews as identified from the printed notes during the transcription stage.
Searching for themes	The list of codes that were identified were collated into themes. This was achieved by collating the quotes and extracts into broader themes.
Reviewing themes	This process was to ensure that there aren't any contradictions with the themes.
Defining and naming themes	The final themes were identified and are as follows: 1. Costs associated with digital and mobile payments in relation to cash 2. Safety concerns 3. Differences between Mobile payments vs card payments 4. Convenience of payment technologies 5. Payments ecosystem for the informal sector 6. Payment technologies adoption vs availability
Producing the report	Final report was drafted and is presented below

Table 4.3: Data structure

First order themes	Second order Themes	Theme
• Small business with low margins • Cash doesn't have transaction costs • Card machines are expensive • High cost of transactions • Withdrawal fees are high		Costs associated with digital and mobile payments in relation to cash
• Get robbed • Reversal of payments from wallet • Fraud at banks • Card cloning and skimming • Not safe to use cash at small businesses		Safety concerns
• e-wallets are easy • Card machines are slow for this environment • Signal issues with card payments • Mobile payments are more convenient than card payments • Only need a phone number for mobile payments		Mobile payments vs card payments
• Lose customers due to customers not carrying cash • Don't like to carry cash • Can allow for informal traders to qualify for credit • Help with getting more customers to the business • Allows for trade outside of local area		Convenience of payment technologies
• Pay in a taxi and other places that require cash • Need cash to go and buy stock • Somewhere to keep use money without needing to withdraw it		Payments ecosystem for the informal sector
• I have bank account • Aware of e-wallets and cards • Difficult to use in my environment • Comfortable with banking products • Open to digital payments so there is a trail for funding applications and government and banks		Payment technologies adoption vs availability

4.3.1 Theme 1: Costs associated with digital and mobile payments in relation to cash

Costs associated with digital and mobile payments immediately emerged as one of the key themes amongst the research respondents. However, what was even more thought-provoking was the striking contrast between how informal traders viewed this cost in relation to their customers. This section will detail these findings thoroughly from the perspective of both the informal traders and the customers.

4.3.1.1 Costs from the perspective of informal traders

All research respondents demonstrated a moderate understanding of the topic as well as what payment technologies mean for their business. Flowing from this understanding was an admission by the research subjects that cash is not the best option when taking customers and other parties into consideration, but regardless of this revelation, cash remains their first option. The main reason cited for this is that they are of the opinion that all solutions that are currently offered by banks and other payments companies that include cards point-of-sale (POS) machines and mobile payments are expensive and not friendly for their type of businesses (Kalan, 2016). This supports scholars such as (Kirkpatrick, 2018; Bhattacharya, 2019; Matthews, 2021) that argue that cost plays a significant role in the exclusion of the informal sector from technological solution

The table below consists of some of the verbatim quotes that highlights the concerns raised by informal traders regarding the costs associated with payment technologies:

Table 4.4: Quotes of the informal trader research participants regarding costs of payment technologies

	Respondent
“With digital and technological payments there are charges that you pay for when you transfer money but it’s easier with cash.”	CI3
“...because it’s a small business because for credit cards, swiping machines come with a cost, so it means that if you’re swiping, I have to have an extra charge fee for swiping.”	CI1

“Cash has got no extra or hidden costs. I also do not pay any fees from getting money from customers.”	J4
“It is cheap my brother if the person that is consulting gives you cash, because there are no charges and eft have charges.”	J3

An interesting point that emerged from the research participants was that regardless of mobile payments being costly for them, there is an openness and willingness to accept alternative payment methods in their businesses (MasterCard, 2017). This demonstrates an awareness of the various benefits and advantages that payment technologies possess for any business and further highlights an understanding around the payment structures as well as the various pricing models that are currently deployed for payment technologies.

Table 4.5: Quotes that highlight the willingness to accept alternative payment methods by informal traders

	Respondent
“It will boost my business because I have a lot of customers who want to use a speed point because they don’t carry cash.”	CI10
“Yes, mobile payments would be good because then I wouldn’t carry cash so there would be less risks. For everything that I want to pay for, I would just make use of mobile payments and just transfer so it would be easier. I think it’s a good idea for everyone, so we can just do mobile payments. It would be a great idea on my side because sometimes people get robbed because of cash payments as little as R10.”	CI1
“I am very open to having other digital payments because it will have a good impact on my business.”	CI8
“I think other having payments, it will grow the business.”	J10

According to (Kalan, 2016; MasterCard, 2017; Seetharaman, et al., 2019) one of the reasons that informal traders had not adopted alternative payment methods was that they perceived them to be expensive. This re-emerged in this study, however the research participants show an awareness and understanding of how the pricing works as well as the benefits of this to their business. The conflict then arises with the nature of businesses they operate as well as the environment that they operate in. This supports Bhattacharya (2019) who found that the

informal sector is extremely unique and requires tailored solutions as opposed to a mimic of what is offered in the formal sector. The informal sector environment is characterised by selling of multiple products and services that have multiple price ranges from as little as 20 cents upwards. The research respondents cited how small their businesses are as well as how they already have small margins and do not make much profit unless if it is a good day with high sales volumes which rarely happens every day.

It is for this reason that as much as there is a willingness to accept alternative payment methods by the research participants there is an underlying limitation that at this point is masked as cost (Slade, et al., 2015). This limitation makes it difficult for the informal sector to accept digital payments. However, when linking this back to the theoretical framework of this study, the critical theory of technology sought to probe such examples that appear to be one thing at surface level i.e., cost but are probably driven by the technocratic model of control (Kirkpatrick, 2020). This is a model in the critical theory of technology that suggest technological solutions are implemented without democracy and in isolation with society and the market which then means they just lean on the authority and expertise of those that develop the technology (Feenberg, 2017). It is an essential model when implementing technology that is novel, but in a case like this one it seems the informal sector has been neglected too often which has led to the available technology not fully taking the informal sector context into consideration.

Table 4.6: Quotes that highlight some of the reasons the research participants prefer cash for their businesses

	Respondent
“...digital payments in small businesses, the devices are not user friendly.”	J4
“...because the business that I am doing is a small business. So, I prefer cash because everything that I am selling is cheaper. Because it’s a small business because for credit cards, swiping machines come with a cost, so it means that if you’re swiping, I have to have an extra charge fee for swiping.”	CI1
“Once you own a small business that is not generating enough money, digital payments will not work for it.”	CI8
“of course, as a low scale trader, I have little money to actually locate those machines.”	CI3

“Because I’m still running a small business. I don’t prefer using many things for payment.”	J1
“. I think the banks are not doing enough to advertise to us small business owners because we think the speed points can only be given to big businesses.”	CI10

4.3.1.2 Costs from the perspective of customers

Cost did not feature prominently amongst the customer research participants as something that would somewhat be an issue, instead they highlighted how convenience of payment technologies outweighs the cost associated with them. They felt that whatever transaction costs may arise as a result of having to pay digitally was worth it given the amount of effort, time as well as risk that it takes to be able to use cash this supports the findings of MasterCard (2017) regarding a displayed strong interest for alternative digital and card payments by consumers. Theme 4 below expands further on the findings regarding the convenience of payment technologies.

4.3.2 Theme 2: Safety concerns

Safety and concerns around safety when dealing with money as well as making payments emerged as one of the key themes for most of the research participants. What was worth noting is the fact that these concerns were raised for both cash and digital payments which highlighted all the risks associated with both options as far as the informal sector is concerned. This section will detail these findings thoroughly from the perspective of both the informal traders and the customers.

4.3.2.1 Safety concerns from the perspective of informal traders

Safety concerns were raised by the research participants as an important factor that influences how they run their businesses as they are often victims to various crimes (Fatoki, 2014). These concerns emerged from two-sides in the sense that the research participants were very aware of and raised safety issues around carrying and keeping cash as that attracts robberies, theft and other crimes associated with keeping cash. However, different kind of security concerns

emerged, and these include scams that they have experienced within their environment that have to do with payment technologies such as e-wallets (mobile wallets).

Table 4.7: Quotes that highlight some of the safety concerns that were raised by the informal trader research participants

	Respondent
“I would say cash payments also has it’s disadvantages as well as digital payments because you might pay me R200 and as soon as I walk away, someone might come and rob me and I might get scammed via digital payments.”	J8
“Because with the e-wallet, if you do not go and take out the money on time the pin changes which means you have to get another pin and sometimes people forget the pin. It’s easier but it’s also a problem.”	CI4
“The greater impact will be that technological payments will be affected by complications such as poor network where sometimes there won’t be network and some customers will run away with my cash.”	CI3
“...because of fraud. With card payments and e-wallet, it’s easy to do fraud.”	J10
“no one will rob me when I use that machine but if I use e-wallet then the customer is able to reverse it so with the Yoco machine, once the payments is in, it’s in.”	J1

This finding goes further than revealing to this research that there are potential security risks to technology but importantly reveals that there has been an attempt to implement the solutions that are currently within the market such as e-wallet, cash send, and the like (Mulibana & Rena, 2021). This further eliminates the old beliefs and tales that informal traders are not open to technology, do not understand technology and hence the reason for the slow adoption of not only payment technologies but overall technological processes in the informal sector. Another key insight that this study unearthed is that 65% of the research participants have got bank accounts that they use for personal use and some for their business. These are all vital nuggets that highlight that contrary to previous research and literature such as DeVries (2018), it is no longer about the informal traders’ failures to adopt technology nor is it about their financial literacy levels, understanding of banking and financial products but much more a case of no

relevant technology being available for this market this finding is in support of Donnelly et al. (2015).

4.3.2.2 Safety concerns from the perspective of customers

The customer research participants were very concerned about carrying cash as they feel that it is not safe at all and attracts criminal acts such as robberies this concern supported one of the characteristics of the informal sector as explained by Rogan and Skinner (2017). This also did not automatically mean that they were open to digital payments as they fear scams and fraud that is related to cards and their bank accounts. Card skimming is popular in South Africa and for this reason the research participants cited that they would not be open to swiping or transacting their cards at a place that is not as reputable as official supermarkets and formal businesses (MasterCard, 2017). This meant that the customer research participants were much more open to the idea of a mobile payment solution like e-wallet, instant money and the like. where there is no potential link to their bank accounts or any potential fraud that can link back to their bank account.

Table 4.8 Quotes that highlight some of the safety concerns that were raised by the customers research participants

	Respondent
“Cash is good but to be honest it is very dangerous because people can follow you and steal all of the money.”	CC3
“Because if you’ve got cash on you, you might get robbed.”	JC2
“We don’t carry cash on us a lot because we might get robbed so we just swipe with our cards when we buy.”	CC5

4.3.3 Theme 3: Mobile payments vs card payments

One of the major themes that emerged amongst the research participants which was a key differentiator between the Johannesburg research participants and their Cape Town counterparts was the preference of the type of payment technologies they would prefer. This Theme is important as it also further highlights a moderate level of financial literacy and understanding in the sense that the research participants were able to distinguish the different

types of solutions that are currently at their disposal. This is supported by Seetharaman et al. (2019) who found that adoption problems in the informal sector while usually attributed to literacy are actually linked to technological exclusion as they are not designed in context to the environment (Matthews, 2021). These solutions emerged in the form of mobile payments which they often referred to as e-wallet a name of First National Bank's (FNB) mobile payment solution and digital payments which were often referred to as cards, card machines and POS.

4.3.3.1 Cape Town research participants

The Cape Town research participants were leaning more towards mobile payments solutions and most of them mentioned that they had indeed tried it before, and they also still offer this option as a solution to clients that do not have cash on them. When looking at the characteristic of this type of a payment solution, it often does not require a bank account and uses a user's cell phone number to link the payment into a wallet that the user can access often through a bank's ATM network and in some instances through major retailers (Kalan, 2016). Looking at the characteristics, it can be induced that from an implementation point of view, this is an easier solution to implement as all it requires is for an informal trader to have a cell phone, of which a 100% of the research participants had (Bhattacharya, 2019).

As much as there is a willingness to accept mobile payments, there is an underlying issue of safety concerns that were discussed in the previous theme whereby the payment can be reversed, or the one-time pin can be changed by the customer before the informal trader withdraws their money from their wallet (Slade, et al., 2015). This is a genuine concern and digging further into this issue to try and understand the causes of this issue and gaps show us that as with the other payment technologies in the market they are not necessarily meant for the informal traders. This is in line with arguments by Feenberg (2017) regarding technological exclusion and democratisation of technological design.

Mobile payment solutions like e-Wallet (FNB), Send Cash (Capitec), Cash Send (Absa), Instant Money (Standard Bank), etc are peer to peer payment solutions that were introduced by South African banks to try and facilitate payments between friends and families that do not have bank accounts through mobile phones. Due to this, implementation into the informal sector is easy to do as there is no requirements of any hardware POS machines or any other

expenses. However, the gap highlighted by the research participants of potential loss due to reversals cannot be ignored. The reason for this problem highlights while this is an easy fix to the payments gap in the informal sector, this is not created with small businesses in mind, particularly informal businesses (Schalekamp, et al., 2017). However, a key take out here is that the technology that is available for mobile payments need minor tweaks to be able to suit the informal sector, but nothing is being done about it by any of the payments companies and banks. This further supports the points that were raised by literature regarding the technological adoption issue in the informal sector being more a technological availability issue.

Table 4.9: Quotes that highlight some of the informal trader research participants use mobile payments to accept payments in their businesses

	Respondent
“Interviewer: What other methods of payment other than cash do you accept in your business? Interviewee: E-wallet. Interviewer: So, you accept e-wallet here? I can buy with e-wallet here. Interviewee: Yes.”	CI2
“Interviewer: Currently, what other methods of payment besides cash do you currently accept in your business? Interviewee: E-wallet of course.”	CI3
“Because I use cash to go and buy my stock. I can also do e-wallet but for now I prefer cash because it hasn’t been long since I started my business”	CI8

4.3.3.2 Johannesburg research participants

The Johannesburg research participants were leaning more towards digital payment solutions that include card payments as they were against mobile payments due to similar concerns of payment reversals that their Cape Town counterparts had. The Johannesburg research participants were also in favour of card payments due to how quick they perceive it to be and for the safety of their customers in the sense that they do not have to take out their cell phone in a public place that might not be safe. They prefer a card due to NFC functionality that enables customers to tap their cards in order to make a payment, they feel this is a quicker option than having to follow a process on a phone app and they operate in fast paced Johannesburg CBD

where a long queue can easily lead to them losing some impatient customers that want to get things done on the go.

A contrasting view was detected from the informal trader customers in Johannesburg as they were a bit concerned about having to use card payments at informal traders. They cited a fear of criminals that will pose as informal traders in order to acquire their card information which will enable them to clone their cards and facilitate other types of scams and frauds (Maduku et al., 2016). There was a consensus however from Johannesburg research participants, both customers and informal traders, of a quick on-the-go solution that will enable payments to happen as fast as possible. The differences lie in the how as the customer research participants favour a mobile type of solution that does not expose their bank accounts to any scams, while the informal traders prefer an NFC enabled tap solution that facilitates a transaction as quick as possible (Slade, et al., 2015).

Table 4.10 Quotes that highlight some of the customer research participants' concerns with scams

	Respondent
"...because there is a lot of criminal activities and using mobile payments might be dangerous on the streets. It's better in big markets like Shoprite."	JC3
"I would still prefer cash because it depends what kind of shop it is and you wouldn't know if they are scamming you or not."	JC2
"I still wouldn't trust them as they are in the township. I would only pay cash and not with a credit card."	JC3
"The problem is that there are a lot of scams in the digital industry, so I wouldn't prefer using digital payments over using hard cash. Hard cash is a physical transaction between me and you unlike digital where I don't have proof that you are there."	JC1

4.3.4 Theme 4: Convenience of payment technologies

This theme emerged as a result of corresponding views between both the informal trader research participants and the customer research participants, that there could be better and convenient ways to make payments as opposed to cash. This section of this research details

some of the reasons that were given by the research participants with regards to why payment technologies are convenient and have added benefits when it comes to making purchases both in general as well as in the informal sector (Schalekamp, et al., 2017).

The research participants noted that they have lost many customers and potential customers due to not having alternative methods of payments. The reason for this being that because a lot of people do not carry cash on them as they used to in the past because a lot of other sectors are encouraging cashless payments. This then leads to instances whereby a customer shows interest in a product and when they are about to make a purchase, they then realise that they do not have any cash on them then they end up leaving without buying, which leads to a loss for the informal traders.

The customer research participants echoed this sentiment by their fellow research participants as they believe alternative payment methods are more convenient as they sometimes have left their cash behind at home or do not have it for whatever reason. They also feel that having to carry cash means having to stand in an ATM queue which is a waste of time and if there could be an alternative method then that would be much easier. Another interesting insight that emerged was one regarding payment technology's ability to create a paper trail for informal traders and how this can help them to gain access to things such as funding from both public and private institutions such as banks, finance agencies and many others. This finding is in line with Fatoki (2014) who proposes that for the informal sector to develop, measures need to be put in place to ensure that they are eligible for funding and other non-monetary support.

This insight was further supported by the belief that the research participants have regarding payment technologies being an enabler to saving money. The research participants feel that when money is stored in either a bank or digital wallet it is easier to save and not spend than when you have it in cash. This insight also highlights that there are potential financial solutions around saving and investing that can be built for those that are in the informal sector in order for them to be able to grow their money (Klapper et al., 2015; Schalekamp, et al., 2017).

Table 4.11: Quotes that highlight some of the research participants' opinions regarding the convenience of payment technologies

	Respondent
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“Sometimes when we accept the digital cards as a payment, we’re looking to get money to other banks just to help us to grow so it’s also good for that and at the same time it’s also good to get funds from the government if they see that we have bank accounts and we bank all the money.”	CI4
“You see my brother, most of the times when you have put some money in the bank, you can save, and you can also learn not to misuse money. It’s just easier to save when the money is being sent to your account, even if you want to buy something using a card, it is easier, you just swipe for whatever you are getting, even though there are charges, it is much easier if you are using a card.”	J3
“Yes, I am comfortable because sometimes it helps to know the different payments. Sometimes when I forget my wallet at home, I am able to do cardless transactions and get money from the bank without having my card.”	JC1
“Cash comes with a lot of risks for the business no matter how small it is.”	CI1

4.3.5 Theme 5: Payments ecosystem for the informal sector

Another common theme that emerged from this research, from the perspective of all the research participants – both informal traders and customers was a need for an ecosystem that can enable payments to be facilitated between suppliers, customers and consumers. This theme is important as it highlights the interdependence of the various stakeholders in the informal sector and how one of these parties have a strong influence over the overall ecosystem and the other stakeholders (MasterCard, 2017). This lack of interconnection has surfaced as one of the major reasons why adoption of payment technologies remains so low in the informal sector and this section will unpack this further. This is in line with Seetharaman, et al. (2019) who argue that the informal sector is usually not incorporated into the bigger picture when solutions are implemented

Most of the research participants cited cash as their preferred method of payment and one of the common reasons for this was that accepting digital payments was an inconvenience as they would still withdraw money so that they can go and stock. This is an important factor that influences the informal trader’s attitude towards accepting digital payments (Klapper, et al., 2019). Informal traders’ stock their goods at wholesalers and these are usually specific wholesalers that sell these goods at extremely discounted prices which means the informal

traders get to benefit from the most possible profit margins. This insight on specific wholesalers was not only in Johannesburg but also in Cape Town. This research did not get more information on these wholesalers, how they operate and why they operate the way they do beyond what the research participants stated.

From the perspective of both Johannesburg and Cape Town these wholesalers are a key stakeholder in the supply chain of goods in the informal sector. They sell in bulk and at extremely discounted prices and form strong relationships with informal traders as their official go to places when they want to stock up on inventory (DeVries, 2018). A key characteristic about these wholesalers that emerged from this research is that they do not accept other methods of payments other than cash for whatever reason. The reasons for this leave an interesting gap that can be filled by other research studies. The result of this characteristic carries a heavy influence on the adoption of cash in the informal sector as most of the research participants said they preferred to accept cash payment as they would need it when they go to stock and for this reason would be easier and convenient for them to have cash on hand as opposed to having to go and withdraw money from a bank or retailer (Kalan, 2016).

Table 4.12: Quotes that highlight the research participants' reason for needing cash for stocking up on inventory

	Respondent
"Because I use cash to go and buy my stock. I can also do e-wallet but for now I prefer cash because it hasn't been long since I started my business."	J10
"Cash payments because sometimes I need to buy something, and I can't use a card so that's why I use cash."	CI2
"Let me first say, I like both because digital payments are safer, but cash can be used for now to buy something now when you can't use your card at informal traders"	CI4
"I prefer cash for payments in my business because I use cash where I buy my stock"	J7

A follow up question that preceded from this to try and gauge willingness and openness to accept digital payments from the research participants was "would you accept mobile payments if you could use the money to buy stock or run your business without having to withdraw

cash?”. From this question most of the research participants showed a willingness to accept payments if an ecosystem that enabled them to make payments within their supply chain without having to withdraw money existed (Klapper, et al., 2019). Such an ecosystem would entail a method payment that is implemented by the wholesalers, the informal traders as well as their customers. This way this then enables informal traders to receive digital payments from their customers and can go and pay their wholesalers when they stock through the same wallet without the hassle of withdrawing cash, for any reason including cash for taxifare or transport (Kalan, 2016).

The abovementioned sentiments regarding an ecosystem were echoed by the customer research participants that addressed how the gap between the growing payment technologies and the informal sector’s lack of payment technologies is impacting them. One of the impacts that have been cited by the research participants is how they often find themselves without any cash on them while they need to make a quick purchase in the informal sector. This usually leads to the inconvenience where they need to look for an ATM which may be located far from the informal traders that they want to buy goods from. In most instances they end up not being able to buy what they wanted to buy at all, leaving it for another day which means a loss of business for the informal traders (Bhattacharya, 2019). It is for this reason that all research participants where for the idea of a payment technology ecosystem where they can be able to all make payments as well as buy through the same digital or mobile wallet from their suppliers. This is in line with Rogan and Skinner (2017) who found that all sectors are interlinked, and it is important to preserve the interdependence that exists.

Table 4.13: Quotes that highlight the research participants’ thoughts regarding a payment technology ecosystem

	Respondent
“Yes, mobile payments would be good because then I wouldn’t carry cash so there would be less risks. For everything that I want to pay for, I would just make use of mobile payments and just transfer so it would be easier. I think it’s a good idea for everyone, so we can just do mobile payments. It would be a great idea on my side because sometimes people get robbed because of cash payments as little as R10.”	CI1

“I think I would be able to accept digital payments if they didn’t only accept cash where I buy my stock.”	J7
“Yes, I would you accept other payments if I could use the money without having to withdraw it to buy stock?”	J2
“Interviewer: Would you accept mobile payments if you could us the money without having to withdraw it? Interviewee: Yes.”	J1

4.3.6 Theme 6: Payment technologies adoption vs availability

This is an interesting theme that emerged from the findings of this research and runs parallel to the reviewed literature in chapter 2. This section seeks to unpack this theme in more detail by looking at some of the findings of this research that indicate that there is a fine line between a payment technology adoption issue and a payment technology adoption problem when it comes to the informal sector.

4.3.6.1 Adoption

The most common assumption when reviewing literature in order to understand why there hasn’t been implementation of payment technology solutions or any technological solutions in the informal sector is that there is an adoption problem. The problem is automatically assumed to be the informal traders, a notion that this study tried to remain unbiased of and managed to achieve through the guidance of the critical theory of technology by Feenberg (2017). One of the points of departures that this study took in order to try and critically review the problem regarding the adoption of payment technologies in the informal sector was by firstly reviewing the available technology (Bhattacharya, 2019).

This was achieved by analysing the awareness of the research participants of the payment technologies that are in the market. This study found that there is deep awareness amongst the research participants of the products that are currently out there in the market. Furthermore, to this awareness there is a moderate understanding of how they work amongst the research participants. This is even highlighted by how some research participants were in possession of POS machines like Yoco, while others offered an alternative method of payment to their clients

through mobile wallets like e-wallet, Cash send and the like. This further supports scholars such as (Feenberg, 2017; Kirkpatrick, 2018; Matthews 2021) that argue that if technology design is democratic and relevant then adoption is likely to be high.

This study further probed and evaluated if more consumer education in terms of payment technologies is needed. However, again there was a moderate to high understanding of the product in the market and how they work. Instead, what emerged were gaps and restrictions that these products had in their design, that made it a challenge for them to be implemented into the informal sector (Kirkpatrick, 2020). With the guidance of the critical theory of technology by Feenberg (2017) which places a strong emphasis on understanding technology through the context of its design, it can easily be induced that none of the products that the research participants brought up during this study were designed for the context of the informal sector. This could be the reason why there is still a very high dependence on cash payments, this then also indicates that the problem in this sector is not one of adoption but perhaps of relevant payment technological solutions not being available (Seetharaman, et al., 2019).

Table 4.14: Quotes that highlight the research participants’ awareness of the payment products that banks are offering

	Respondent
“They have done a good part of it because it caters for all the markets and all the LSMs which shows that even though you don’t have a lot of money you’re able to use the payment products but it’s not user friendly for people who sell on the streets.”	J5
“I think the banks are doing enough to advertise to us small business owners, but the speed points can only be given to big businesses because they are expensive and only, they can afford them.”	CI10
“Interviewer: Would you say banks are communicating and educating business owners like yourself about their products (things such as card payments and e-wallets) properly? Interviewee: Yes.”	CI5

4.3.6.2 Availability

From the reviewed literature, Seetharaman, et al. (2019) states that technological solutions that have been introduced to the informal sector do not necessarily suit the environment and its requirement for simple and cost-effective solutions. The findings from this study echoed these sentiments from a payment technologies point of view. The research participants highlighted various limitations that hindered them from successfully implementing payment solutions that are currently available in the market. One of these limitations and probably the most common was the cost that is required to be able to own and run a POS machine in a business. The research participants felt these costs were too high for their kind of environment and they automatically excluded them as they run business with extremely low margins (Matthews, 2021).

The second limitation is that of design, the finding with regards to safety concerns when using e-wallet is a good example of this. The design of mobile wallets that are currently in market allows for the sender of the money to be able to reverse the money they sent or change a pin for as long as the receiver of the money has not withdrawn the money. This then leads to a high risk of various loss or theft being encountered by informal traders when they use this method of payment in their business. This is in line with Kirkpatrick (2020) as it shows that this is not a solution that is built for businesses, whether informal or formal but rather is a peer-to-peer solution meant for friends, family and other relationships where there is an established level of trust. With that said, this method of payment remains the easiest to implement in this sector and most research participants are open to this kind of a solution if there would be a product available in the market that has addressed the current pitfalls. This finding supports Bhattacharya (2019) who found that if solutions that are implemented in the informal sector are built with the informal sector context in mind, then they are most likely to succeed.

The last limitation that this study identified is the bureaucracy and paperwork that is required of informal traders before they can possess a payment technology product (Mulibana and Rena, 2021). Most of the research participants felt that they did not have the amount of paperwork that was required of them and could not get the paperwork. This limitation has led to a belief and perception that these machines are meant for bigger businesses or formal businesses that have business bank accounts and the relevant documents that are needed to be able to qualify to get these payment products. These limitations clearly outline a gap that exists between the available products in the market as well as the informal traders and when looking to at them

they do seem like major contributors to the reason cash remains king in the informal sector (Seetharaman, et al., 2019).

4.4 Conclusion

In this chapter of the research the results that emerged from this research were discussed in depth. This was done through the various themes that emerged during the data analysis process. The discussion of these themes and overall results was also presented in this chapter and are linked to the literature review of this study as presented in Chapter 2. The process of how the themes emerged was detailed before all the themes were discussed.

Chapter 5

Discussion and concluding remarks

This section of this research discusses the findings that emerged from the study. This chapter starts off by recapping and relooking at the objectives of this research that were set out during the research proposal and are communicated in Chapter 1 of this study. This is done to evaluate if the research managed to achieve what it meant to achieve. This section will also look at some of the limitations of this study. Thereafter, the recommendations that flowed from this study will be detailed in this section and, lastly, suggestions for further research are outlined in this section.

5.1 Aim of the study

This research sought to identify the factors that influence the adoption of payment technologies in the informal sector in South Africa. This is at the back of the technological advancements that have taken place over the past decade in the payments space not only in South Africa but the whole world. To investigate these, this research was guided by the following research objectives:

- To review the payment technology solutions that are available for informal traders.
- To identify the factors that have an influence on the uptake of payment technologies in the informal sector.
- To compare the advantages and disadvantages of accepting cash in relation to digital and mobile payments.
- To explore the influence of the current banking landscape on the uptake of payment technologies in the informal sector.

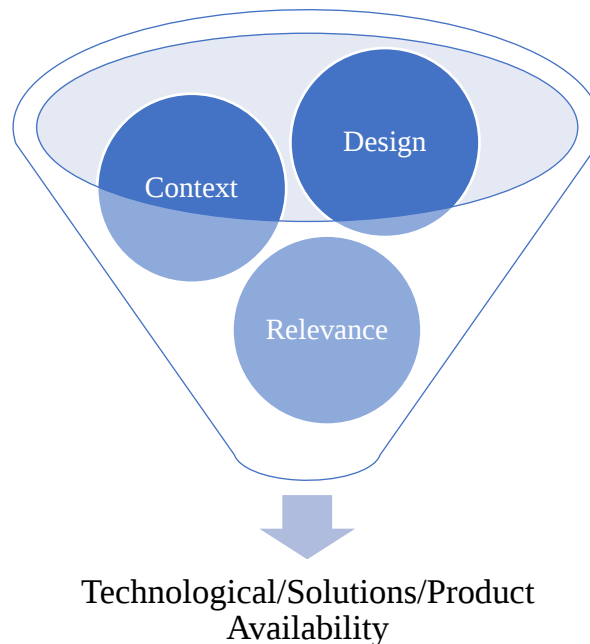
5.2 Discussion of findings

The main finding of this study is that the informal sector does not have a technological adoption problem but instead suffers from a lack of relevant technological availability. This supports Bhattacharya (2019) who states that not enough effort and emphasis has been placed on

formalising and coming up with solutions that assist the informal sector, and if anything, it is actually neglected. This is parallel to both the neoliberal and neo-Marxist theories. For the purpose of the presentation of these findings the term technological availability will be used however terms such as solutions availability and product availability can be used interchangeably to describe this phenomenon. The theoretical framework of this study, the critical theory of technology played an essential role in uncovering this finding. Past literature and other research have often investigated the technological adoption problem in the informal sector from a point of informal traders being at fault, for lack of a better word (Gerdt et al., 2017). Technological solutions have often been shoved down their throats and they are expected to implement these solutions regardless of context, design and relevance to their environment. Seetharaman et al. (2019) calls this mimicking of what is available for the formal sector into the informal sector. In a case where there is a failure to do so then it is an adoption problem and various reasons are cited for this, from financial literacy, cost, to the unwillingness of informal traders to adopt, amongst many others.

Contrary to this belief, this study unearthed a vital angle that has not been critically evaluated which precedes adoption and this is availability of technology, solutions or products that can be adopted. Technological availability as unearthed by this research is about three key components, namely context, design and relevance. This is in parallel with (Friesen, 2012; Feenberg, 2017; Kirkpatrick 2020; Matthews 2021) who argue the importance of decentralisation and participation of multiple factors and components in order to approach technology. This speaks to asking the following questions when applying to the informal sector, before the technology is developed, is it firstly designed for the informal sector? Is there research and design thinking that is conducted with informal traders and their customers in order to determine if the solution is relevant for their environment? When reviewing the solutions that are currently in the South African market against the abovementioned questions, this research study simply found the answers to be no. And, in that case, it can easily be induced that as it stands there are no payment technologies available for the informal sector in South Africa to adopt or implement.

Figure 5.1: Technological availability model



For a technology, product or solution to be available for one to adopt, it needs to be relevant and designed according to their context.

5.2.1 History of technological availability

This issue of technological availability is growing to be a very important part when it comes to technology not only in South Africa but in Africa. According to Lose and Kapondoro (2020) Africa historically has never been at the forefront of innovation or introducing new technological solutions regardless of sector, this means that a lot of solutions that have been implemented have often been adopted. Bhattacharya (2019) explains that there is nothing wrong with this, however the problem that has emerged from this is that there tends to be a tendency of adopting solutions that are out of context. In simpler ways, there tends to be mimicking of solutions and there are a variety of case studies and examples of these in South Africa (Seetharaman et al., 2019). Okes (2019) reminds us that at the core of any solution is a problem that is being solved. Therefore, when the advanced economies and the silicon valleys of the world are introducing solutions, it is to solve a problem.

And yes, the world is interrelated and the solving of a certain problem in China presents solutions for everyone including South Africa, France, Brazil and the like. but what we tend to

overlook is the fact that at any given point the context of the problem in China is not necessarily the same as South Africa or France (Matthews, 2021). So, while the solution can have massive benefits, each economy still needs to embark on a contextualisation journey of their own for any given solution so that it becomes the right fit to the problem being solved (Feenberg, 2012a). The contextualisation journey can take place at different levels ranging from economy level, industry level, company level to sector level as is the case with the informal sector.

A recent example of technological availability in South Africa is that of the banking industry in the early years of democracy. South Africa had 4 major banks namely Absa, FNB, Standard Bank and Nedbank however a huge part of the population remained unbanked. This part of the population that was unbanked was mostly the lower income citizens which also happen to be the majority in South Africa (Rogerson, 2008). Looking at this problem it was not a lack of adoption of banking products or solutions amongst lower income South Africans, but it was more a case of a lack of availability of relevant solutions that were designed with their context in mind. And for this reason, they often opted to keep their money under a mattress and dealt most in cash. Researchers of those days such as Brown, Cajee, Davies and Stroebel (2003) cited adoption as the problem, lack of financial literacy and many other reasons for this but never critically evaluated the products and solutions that were available.

It was after not only the emergence, but the success of Capitec Bank, which was formed in 2001, that everyone started to realise that maybe this was not necessarily a financial literacy problem after all, nor was it an adoption problem (Bhattacharya, 2019). Questions began to arise as to why this new bank was successful in challenging what was previously known as the big 4 banks of South Africa. Capitec's model was under scrutiny, to which it emerged this was a bank that introduced one simple banking product that enables the client to perform basic banking services. Because of this design this means the cost is extremely low on a monthly basis, no cheque books, pricing was much clearer and easier to understand and most of the benefits of the account were included in that simple pricing which meant no hidden costs. This instantly became a relevant solution for the majority of both those that were unbanked and those that were banked. Most people did not need cheque books or many of the irrelevant add-ons that came with banking products that often inflated the price and made the products complex. The above supports the democratic model of communication by Feenberg (2017) as presented in Chapter 2 of this study

Due to the relevance, design and being in-context, Capitec Bank became a success in world banking (Capitec Bank Ltd, 2020). This is a great case study that shows us that if a relevant technology or solution is introduced then people will easily adopt it. This is one such example of many case studies that are available, of that usually misunderstood thin line that exists between technological adoption and technological availability. The next sections look at three components of context, design and relevance that lead to technological availability in more detail.

5.2.2 Relevance

The three components of technological availability as prescribed by this study are all interrelated and interlinked. The first component which is relevance is central to these components as it influences the context as well as the design of a solution. As previously mentioned, the core to a solution is a problem that is being solved. Therefore, if the solution is not relevant to the problem, then the problem will not be solved, it might seem as if it is solved but it will not be solved (Okes, 2019). What is the meaning of relevance? According to Feenberg (2017) something is relevant when it is practical, appropriate and closely connected especially in a socially applicable manner.

This definition alone strongly supports why relevance should be at the core of determining technological availability. The findings of this research show that the research participants do not have practical payment technologies that they can implement into their environment. There are solutions that are currently available, but these solutions were built for formal businesses, peer-to-peer transactions amongst friends and family and the like. For this reason, they fall short when it comes to their practicality and implementation in an informal environment sector due to certain design limitations that they possess (Bhattacharya, 2019). Regardless of this, the research participants are very much still trying their best to implement some of these solutions in order to try and make life convenient for their customers and to avoid losing business in some instances (MasterCard, 2017). Now, this is over and above the significant developments in payments, where there are multiple skills, knowledge and expertise available in order to build and assemble a relevant solution for the informal sector.

5.2.3 Context

Indeed, there isn't a shortage when it comes to skills, knowledge and expertise in the payments technology space Kalan (2016) questions what could be the reason for a lack of tech solutions in the informal sector right now? The answer from this study is context, this research should not be misunderstood to be implying that there are no payment technology solutions in South Africa. However, this research found that there are no payment technology solutions that are built in the context of the South African informal sector (Seetharaman et al., 2019). According to Feenberg (1991) context is "the circumstances that form the setting for an event, statement or idea and in terms of which it can be fully understood." So, there is technology that can facilitate payment from person A to person B in the context of friend to friend or family to family and other relationships where there is trust. Furthermore, there is technology that can facilitate payment from person A to person B in the context of a buyer and a seller however this is designed for a context of a formal business.

One of the misconceptions that the reviewed literature of this research revealed is that there is a tendency of mistaking small formal businesses in South Africa to be the same as informal businesses or businesses in the informal sector (Ntimane, 2020). These are two distinctively different types of businesses, their contexts are significantly different, and the findings of this research show these nuances. This is the fundamental reason why the assumption is that the informal sector is not implementing or adopting any payment solutions. The banks and payment companies that operate in the payments space have done a lot to significantly develop payment technologies (Heiman et al., 2020). There are new products that are tailored for an e-commerce business whether big or small as well as small businesses such as a small coffee shop, restaurant or retail stores.

These payment products are affordable and built for this environment, the pitfall becomes when the very same products are expected to work in the informal sector (Matthews, 2021). While these businesses might be similar in the sense that they are small and will probably be more cost sensitive and the like. The informal sector is still different and complex in the sense that most of its environment is probably outdoors, the staff complement is usually one person, the environment is fast paced as people are constantly on the move, the business is not officially registered so they don't qualify for business bank accounts which means other products such as POS machines may be a hassle to get (MasterCard, 2017). Their products are small and have

small margins so even if they get a solution like iKhokha or Yoco they have to charge their customers more for using the solution which then makes them more expensive and potentially lose business to their many competitors who might choose to not have a payment solution, meaning they have lower prices (Klapper, et al., 2019). These are just a few of the characteristics that this research identified in terms of the context of the informal sector that is not factored in the design of the payments products that are currently out in the market.

5..2.4 Design

Design is the third component of technological availability as determined by this research and it flows from relevance and context. The payment solutions that are currently in the South African market present a challenge when it comes to implementation in the informal sector due to certain design limitations that they possess (Matthews, 2021). And what causes these design limitations is the fact that design took place without a specific emphasis being placed on the relevance and context of the informal sector (Kirkpatrick, 2020). As a result, the design limits the informal traders from successfully implementing payment technologies, one of these examples that this study found was the cost and pricing model. Another being the example of mobile payment solutions like e-wallet that are easy to implement in the informal sector environment but is designed in such a way that the sender can reverse the money before the recipient withdraws it.

This limitation can result in theft or loss as the sender will leave having taken the goods they purchased from the informal trader, due to their context and environment. The informal trader will probably only get time at the end of the day to go and withdraw the money sent to them and during this period the sender/customer has ample time to reverse the payment. This limitation is understandable considering when most of these mobile wallets were not designed or built in the context and relevance of the informal traders but rather for a friend to friend or family to family and other relationships where there is trust (Feenberg, 2017). However, this research did find that regardless of this limitation, a product along these lines without the abovementioned limitations would probably be an instant success in that environment. The technology to easily put together such a solution already exists meaning there is an opportunity for ICT companies, payment companies, banks and other tech companies and entrepreneurs in the country to just puzzle the technology into a relevant design in the context of the informal

sector. This opportunity exists not only in the payments technology space but in technology within the informal sector, not only in South Africa but in Africa.

5.3 Limitations of the study

This research aimed to contribute to the South African business management realm through creation of knowledge and content as well as recommending strategies that may potentially yield success for the South African payment technology industry and the informal sector. The first limitation to the study was that due to limited funding the study could only focus on informal traders in the Cape Town and Johannesburg areas, which are areas that are very urban and perhaps other areas that are rural may have presented different insights to this study. A comparison of urban and rural areas would have helped in identifying the similarities and gaps between the 2 environments. Another limitation was that this research only focused specifically on payment technology and neglected other forms of technological solutions that may have a significant contribution to the informal sector which would have clarified if there are other areas that technology is being adopted in within the informal sector. However, due to the broadness of technology and the various innovations taking place in the informal sector, it was of benefit for this research to focus on payments because payments are a huge part of any business – formal or informal, urban or rural.

5.4 Recommendations

The findings of this research if implemented well can trigger somewhat of a technological revolution that presents various opportunities in both the South African and African markets. The African continent has been behind as far as adoption of technological processes is concerned. This research unearthed that the informal sector does not have a technological adoption problem but instead suffers from a lack of relevant technological availability (Matthews, 2021). If South Africans are to view the relationship between technological adoption and availability through the lens of this research findings, then surely, it can be induced that there is an opportunity to relevantly redesign the various technological solutions - payments or otherwise according to the South African and African context (Kalan, 2016). Afterall, most technological solutions that we implement in South Africa are created by first world countries. This will result in opportunities for various stakeholders in South Africa. The

recommendations from this research are divided into the different stakeholders that can make the most of these findings.

5.4.1 Academic scholars and institutions

Albert Einstein is credited with saying “The definition of insanity is doing the same thing over and over again but expecting different results.”, a huge focus when reviewing literature on technology in South Africa is on technological adoption (Lose & Kapondoro, 2020). This research has presented an alternative perspective to how we have often viewed the implementation of technology in our society. This is an alternative perspective that has not been pursued much but possesses a lot of potential and can still be investigated and developed further. There is a lot of opportunities for academic scholars and researchers to delve into this school of thought that this research calls technological availability, who knows maybe the name might even evolve.

This is a big opportunity for those in the academic realm to further look for even more alternative causes to the factors that cause low adoption to technological solutions not only in the payments space but in the overall field of technology. This then affords various other stakeholders from government to businesses and individuals to be able to understand how technology is not only about introducing something new but about introducing something relevantly designed to the context. This will then provide an opportunity for students in universities to start grasping the complexity that comes with technological solutions from as early as undergraduate level. It is important to remember that those in the research realm serve as the main instigators of knowledge creation and while they might not produce the final solution, they have the sufficient influence to spark ideas in others that will get to the final solution.

5.4.2 Entrepreneurs

Technology is often associated with opportunity and there is one characteristic that both entrepreneurs and technology have in common and that is the fact that they solve problems or close gaps. The technological availability model as discussed above in Chapter 4 describes a lot of opportunities for entrepreneurs. Entrepreneurs can identify gaps that currently exist in

the payment technology field or the broader technology field as well as the technological solutions that are currently available in the market both locally and abroad. They can then relevantly redesign solutions in the context of South Africa. This can make them successful, and they can start successful companies and create jobs for the country.

The beauty about South Africa is that, while it is a bit advanced it is still very much like other African countries in the sense that a relevant fix for SA is probably a relevant fix for the rest of the continent. This means once entrepreneurs can get this right in South Africa, they can duplicate this to the rest of the continent and be able to build multi-national corporations that are built in Africa by Africans for Africans. However, in the duplication of solutions they need to always remember that while South Africa is like other African countries, each country's relevance and context might have slight differences hence it is always important to revisit the technological availability framework in 4.4 to ensure a relevantly designed solution that falls within the context of the problem.

5.4.3 Tech start-ups

Tech start-ups, similarly, to entrepreneurs are in a good position to make the most of the findings of this research because they already understand technology from a much more technical point of view. They also possess some resources that are required to make some enhancements to existing products as well as develop new products. They need to start looking at their product offerings as well as various projects they work on and invest in striving for relevance of context and design as this is enough to automatically drive adoption and success of their products and solutions. This success can also lead to exponential growth that has been recorded by various tech giants worldwide or the abovementioned example of Capitec Bank here in South Africa.

5.4.4 Banks and large companies

Solving problems for our society is a collective effort and should always be viewed as such, the problem has become that of too much short-term focused competition. The banks and larger companies are in the best position to implement the findings of this research over all the other stakeholders. The current solutions that are in the market are products of these banks and

companies so they can already start testing out the findings of this research by making the necessary tweaks and applying the thinking behind technological availability to see if it will yield the necessary results for the informal sector. They are also in the best position from a resource point of view which means they can build a product from scratch that is focused on the informal sector from a relevance, context and design point of view.

The banks can also play a role in influencing the government to create a technological landscape that enables payment and other technologies to thrive and succeed. Banks can also work with academic researchers and institutions in creating more knowledge that will unpack more reason for the unavailability of relevant technological solutions in the South African and African market. This research can benefit them exclusively as well as benefit the broader society. They can also work with smaller tech-start-ups and entrepreneurs in unlocking much more relevant solutions that can benefit society and create jobs in the process.

5.4.5 Government

One thing that can never be ignored is the importance of policy and how it shapes the landscape, which determines the success or failure of anything. In South Africa and most countries, the government are the policymakers, and they play a vital role in ensuring that this pro-technological thinking prevails. The advantage here is that most technology already exist it just has not been implemented in South Africa due to limitations like the ones that have been unearthed by this research. The government would need to go on a drive to try and create an environment where they support all the above-mentioned stakeholders by creating an environment that is conducive and enables local and relevant solutions to be implemented. One such way is teaming up with bigger firms and banks to solve various technological gaps in society, while ensuring that through these projects, part of the work is subcontracted to smaller tech start-ups – Exempted Micro Enterprises (EME) and Qualifying Small Enterprises (QSE). Further to this the aim is to deliberately create a tech ecosystem among all the above-mentioned stakeholders in which technological solutions that are currently available are all contextualised and relevantly redesigned according to South Africa.

5.5 Suggestions for future research

This research effectively covered its scope and addressed its research questions, however various gaps still exist. Some of these gaps exist as a result of what was uncovered by this research while other gaps are as a result of the limitations of the study from the beginning. The first gap for potential future studies is in the form of the wholesalers that emerged in this study as key stakeholders where informal traders buy their stock and inventory for their businesses. There was a theme that emerged around their requirement for cash and not having alternative payment methods, there is an opportunity to unpack this further and understand the influence it has on payment technologies in the informal sector. This study focused on informal traders and customers in the informal sector and gained valuable insights on the kind of payment technology in the market and the limitations around their effective implementation. Future research can pick up on this study with a focus on banks and payment technologies companies to investigate availability of relevant payment technologies in the informal sector. This would be essential since banks and payment companies are the ones that are responsible for the technological design of payment technology products. Lastly, future research can focus on informal traders in other geographical areas that are not as urban as Johannesburg and Cape Town as they may yield deeper insights than those that emerged from this study.

5.6 Conclusion

This research is important to the fields of business management and technology in South Africa from both a theoretical and practical point of view. Over and above knowledge created by this study's findings, if implemented and explored further, this research has potential to influence other socio-economic issues such as unemployment, while influencing policies on strategic areas such as education. From a practical point of view this research's proposed recommendations can help South African payments technology firms, banks and the other listed stakeholders to drive availability of payment technologies which will lead to adoption and implementation of payment solutions in collaboration with informal traders. This will also assist in reducing the amount of cash transactions in the sector. Theoretically this study's findings can contribute significantly to the body of knowledge of technology in the informal sector in South Africa and other developing economies. The technological availability model

that emerged from the results and discussed in this chapter is an example of a model that can contribute significantly to future research. This model states that for a technology, product or solution to be available for adoption, it needs to be relevant and designed according to context.

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Appendix A: Interview Guide

Name of Interviewer: _____

Interviewee Information

Gender: Male / Female / Prefer not to say

Age: _____

Interview language: _____

Place of Interview: _____

Date of Interview: YYYY / MM / DD

Purpose of the study: explore factors influencing the adoption of payment technologies in the informal sector in South Africa.

Questions

Part A: Informal traders

1. What do you prefer between cash and digital payments in your business, why?
2. What methods of payment other than cash do you accept in your business?
3. How would you ideally like to receive payments in your business?
4. How cost effective do you think cash payments are compared mobile payments, why?
5. How convenient do you think cash payments are compared to mobile payments, why?
6. Would you consider having more alternative methods of payments?
7. What kind of payment product do you think would suit your business and environment?
8. What payment products are you aware of that can be of use to your business?
9. Are they easily accessible and affordable for you? Why?
10. Do you have a bank account?
11. Do you use your bank account for your business, why?
12. What impact do you think accepting mobile payments will have on running your business?
13. Would you accept mobile payments if you could use the money to buy stock or run your business without having to withdraw cash?

Part B: Informal sector customers

1. What do you prefer between cash and digital payments when buying goods or services, why?
2. What methods of payment other than cash do you know of?

3. What do you think is more affordable between cash payments and digital payments, why?
4. How would you ideally like to make payments in when you buy goods or services?
5. Do you have a bank account?
6. How do you usually make payments, is it through your bank account, a specific app, your phone or cash?
7. What are your thoughts on having to use cash to pay for payments at spaza shops, in taxis, or other informal settings?
 - 7.1. Is this convenient for you or do you prefer using alternative payment methods?
8. Would you trust a method that would allow you to use mobile payments when buying goods and services in the informal sector?

Appendix B: Participant information sheet - Informal traders



Good day

My name is Thabiso Ntando and I am a Masters student in Management at the University of the Witwatersrand, Johannesburg. As part of my studies, I must undertake a research project, and I am investigating the factors influencing the adoption of payment technologies in the informal sector in South Africa under the supervision of Dr Venter. The aim of this research project is to identify the factors that have an influence on the uptake of payments technology in the informal sector.

As part of this project, I would like to invite you to take part in an interview. This activity will involve you answering questions to a single interview and will take around 40 minutes. With your permission, I would also like to record the interview using a digital device.

There will be no personal costs to you if you participate in this project, you will not receive any direct benefits from participation but there are no disadvantages or penalties if you do not choose to participate or if you withdraw from the study. You may withdraw at any time or not answer any question if you do not want to. The interview will be completely confidential and anonymous as I will not be asking for your name or any identifying information, and the information you give to me will be held securely and not disclosed to anyone else. I will be using a pseudonym (false name) to represent your participation in my final research report. If you experience any distress or discomfort at any point in this process, we will stop the interview or resume another time.

If you have any questions during or afterwards about this research, feel free to contact me on the details listed below. This study will be written up as a research report which will be available online through the university library website. If you wish to receive a summary of this report, I will be happy to send it to you. The data collected from this research project will be stored in Dr Venter's office in the New Commerce Building at Wits University and will be kept for 2 years. With your permission the data collected from this research project may be used by other researchers. If you have any concerns or complaints regarding the ethical procedures of this study, you are welcome to contact the University Human Research Ethics Committee (Non-Medical), telephone +27(0) 11 717 1408, email hrecnon-medical.researchoffice@wits.ac.za

Yours sincerely,
Thabiso Ntando

Researcher:
Thabiso Ntando, 676676@student.wits.ac.za, 071 150 5096

Supervisor:
Dr Robert Venter, Robert.Venter@wits.ac.za, 084 580 7587

Appendix B: Participant information sheet – Customers



Good day

My name is Thabiso Ntando and I am a Masters student in Management at the University of the Witwatersrand, Johannesburg. As part of my studies, I must undertake a research project, and I am investigating the factors influencing the adoption of payment technologies in the informal sector in South Africa under the supervision of Dr Venter. The aim of this research project is to identify the factors that have an influence on the uptake of payments technology in the informal sector.

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Yours sincerely,
Thabiso Ntando

Researcher:
Thabiso Ntando, 676676@student.wits.ac.za, 071 150 5096

Supervisor:
Dr Robert Venter, Robert.Venter@wits.ac.za, 084 580 7587

Appendix C: Consent form – Informal traders

UNIVERSITY OF THE
WITWATERSRAND,
JOHANNESBURG



Title of project: Factors influencing the adoption of payment technologies in the informal sector in South Africa

Name of researcher: Thabiso Ntando

I,, agree to participate in this research project. The research has been explained to me and I understand what my participation will involve. I agree to the following:

(Please circle the relevant options below).

I agree that my participation will remain anonymous	YES	NO
---	-----	----

I agree that the researcher may use anonymous quotes in his / her research report	YES	NO
---	-----	----

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

I agree that the information I provide may be used anonymously after this project has ended, for academic purposes by other researchers, subject to their own ethics clearance being obtained.	YES	NO
--	-----	----

Appendix C: Consent form - Customers

UNIVERSITY OF THE
WITWATERSRAND,
JOHANNESBURG



Title of project: Factors influencing the adoption of payment technologies in the informal sector in South Africa

Name of researcher: Thabiso Ntando

I,, agree to participate in this research project. The research has been explained to me and I understand what my participation will involve. I agree to the following:

(Please circle the relevant options below).

I agree that my participation will remain anonymous	YES	NO
---	-----	----

I agree that the researcher may use anonymous quotes in his / her research report	YES	NO
---	-----	----

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

I agree that the information I provide may be used anonymously after this project has ended, for academic purposes by other researchers, subject to their own ethics clearance being obtained.	YES	NO
--	-----	----

Appendix D: Ethics clearance certificate



Research Office

HUMAN RESEARCH ETHICS COMMITTEE (NON-MEDICAL)
R14/49 Ntando

CLEARANCE CERTIFICATE

PROTOCOL NUMBER: H21/02/17

PROJECT TITLE

Factors influencing the adoption of payment technologies
in the informal sector in South Africa

INVESTIGATOR(S)

Mr T Ntando

SCHOOL/DEPARTMENT

Business Sciences/

DATE CONSIDERED

19 February 2021

DECISION OF THE COMMITTEE

Approved
Risk Level: Minimal

EXPIRY DATE

17 March 2024

DATE

18 March 2021

CHAIRPERSON

(Professor J Knight)

cc: Supervisor : Dr R Venter

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10004, 10th Floor, Senate House, University. Unreported changes to the application may invalidate the clearance given by the HREC (Non-Medical)

I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to submit an amendment of the protocol to the Committee. **I agree to completion of a regular progress report. For Minimal and Low studies, this is due annually on 31 December. For Medium and High Risk studies, this is due twice annually on 30 June and 31 December.**

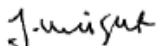
Signature

18 / 03 / 2021

Date

PLEASE QUOTE THE PROTOCOL NUMBER ON ALL ENQUIRIES

Appendix E: Certificate of competence in research ethics

CERTIFICATE OF COMPETENCE IN RESEARCH ETHICS	
Name: Thabiso Ntando	
Student/Staff No: 676676	
Date of Certification: 31 March 2021- 30 March 2024 (This certificate is valid for a period of three years)	
 UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG	TRAINED BY:
	PROFESSOR JASPER KNIGHT (RESEARCH ETHICS)
	SIGNATURE
	
	ISSUED BY:
	DR ROBIN DRENNAN (DIRECTOR: RESEARCH OFFICE)
	SIGNATURE
	
This certificate is confirmation of successful completion of a training course in Research Ethics for Non-Medical human research, based upon achieving a minimum level of competence in different assessment tasks.	