Factors that impact the uptake of mobile banking adoption in South Africa.

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DECLARATION

I, Rirhandzu Steward Mabunda, declare that this research article is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration in the Graduate School of Business Administration, University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

Steward Mabunda

Signed at …Johannesburg……

On the ……30th…….. day of ……June…… 20…23…

DEDICATION

This work is dedicated to my late father Mr. TM Mabunda who was a hero and a pathfinder. Thank you for the selfless trailblazing work you've done for your generation and mine.

ACKNOWLEDGEMENTS

First, I thank Jehovah the Creator for giving me life and the capacity to perform this challenging work from beginning to end. Without the mere ability to breathe every day for the last 2 years, I would not be where I am. All the glory to Him for this achievement.

Thankful to the many individuals who contributed to this work in various forms and capacities. My mother – Luceth will come first; the first gift I got when I arrived in this world. The prayers and support throughout this journey, even when I got admitted to the hospital due to not coping with demands she was by my side, I'm grateful for the love and support. And also, my brothers, sister, sister-in-law, relatives and friends who supported and assisted and many different ways.

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ABSTRACT

m-banking is poised to overcome the traditional banking channels such as the Internet, ATM and branch banking and become the mainstream banking option for the sub-Saharan African and global community. The Covid-19 pandemic has reached its peak ushering in the rapid development of digital banking across developing and developed economies. And that prompted the reason for this study.

The cross-sectional investigation used a self-administered online survey questionnaire that was distributed to the participants across 9 South Africa and used a modified Technology Acceptance Model consisting of Subjective Norm, Facilitating Conditions, Perceived Usefulness and Perceived Ease of Use to determine the factors that impact the adoption of m-banking. The findings are in line with previous researchers in other parts of the global economy and further studies are advised in the African continent.

Keywords: m-banking Technology Acceptance Model Mobile Banking Adoption Developing Countries

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List of Acronyms

AVE - Average Variance Extracted

M-banking – Mobile Banking

SD - Standard Deviation

M - Mean

DV - Discriminant Validity

Fintech – Financial Technology Company

BASA – Banking Association of South Africa

4IR – Fourth Industrial Revolution

SARB – South African Reserve Bank

PASA – Payments Association of South Africa

USSD - Unstructured Supplementary Service Data

ATM - Automatic Teller Machine

1. Chapter One – Background of the study

1.1. Introduction

This section outlines the background of the study at the time of writing as well as a brief discussion on the identified problem statement, leading to the justification of the study. The research questions are formulated and the objectives of the study are then listed. The section ends with the significance of the study and also a discussion of the limitations.

1.2. Overview of the Study

The emergence of the Covid-19 pandemic in late 2019 into 2020 has impacted most industries in the global economies including the South African economy (Naeem & Ozuem,2021). During the season of lockdown levels experienced in South Africa with the aim to curb the spread of the pandemic, both small and big businesses across all industries were forced to find ways to survive. Unfortunately, those who did not adapt to the change had to cut costs drastically by retrenchments or ultimately shut down.

The businesses that fought to survive during the lockdown had to be agile and quickly become innovative in offering digitalised products in order to remain operational since customers were mostly based at home (Masuku, 2021). The regulations led to a surge in e-commerce transacting and social media usage where large retailers such as Checkers, Mr Delivery, Uber Eats, etc. created online platforms to purchase groceries, ultimately expanding the food transport market. The period of the 574 days of Covid-19 lockdown in South Africa forced the population to be stuck at home and the workforce subsequently engaged in work-from-home models, with most using mobile devices (smartphones, tablets, smartwatches) in order to communicate, work, socialise, attend schools, and even arrange lobola ceremonies (Seetharaman, 2020). As such, the season has enabled the rapid adoption of electronic devices as a way of communication, to the extent of entering a crisis in terms of the technology chip manufacturers experiencing a global shortage due to the booming demand (Ramani et al., 2022).

According to Arndt et al. (2020), the banking industry was not left out in the drive for product digitalisation and banks had to come up with transformed products in order to remain sustainable after the introduction of the Covid-19 pandemic. As a result, traditional banking methods had to be overhauled to the 'new normal' way of doing business as banking customers were encouraged to avoid transacting at branches and avoid contact with ATMs and point-of-service terminals in order to minimise the chances of contracting the Covid virus. This has resulted in a rise in internet-based transacting, mobile transfers and remissions, in-store retail banking and on the flip side a drastic reduction in branch banking.

In addition to the Covid-19 impact on banks to digitalise, there have been other megatrends that have also spurred the need for banks to transform. 4IR, digital wallets, and the modernisation of payments are some of the key initiatives that SARB has been spearheading across the South African banking industry in recent years to have the population move towards digitalisation. In spite of all this effort, it has been reported that the majority of the South African population still uses cash to transact, and that rate has been growing and not declining (BASA, 2020). This is contrary to the desire by the SARB to use electronic payments as they're more reliable from a risk perspective.

According to Thusi & Maduku (2020), the rapid increase in the usage of mobile apps in South Africa has resulted in over 80 million mobile phone connections with service providers, and this accounts for around 22 million individuals owning mobile phones. Though there's been a surge in the usage of mobile phones and other apps, the amount of banking app usage has been reported to sit at 43 per cent. This low uptake of mobile banking triggered the curiosity to investigate why there is such low usage of mobile banking usage by the South African population at this time in the technology evolution.

1.3. Problem statement

The pervasiveness of using mobile phone devices (smartphones, tablets, smartwatches) cannot be ignored. They are not merely used for leisure, but the nature of their usage has an economic impact and contributes to growth (Aker & Mbiti, 2010). Furthermore, as much as 89% of South African adults own a mobile phone (Chigada & Hirschfelder, 2017), translating to over 22 million individuals

(Thusi & Maduku, 2020). South Africa has a population of around 60 million (Stats SA,2021). However, it is important to note that the plethora of mobile device usage has not automatically translated to the adoption of mobile banking technologies. This poses low-hanging fruit for banks as well as Fintech (Financial Technology businesses) and other financial institutions that offer products to unlock trade as the digital market is largely untapped, especially in remote areas.

Studies have been carried out in other parts of the world on mobile adoption factors (Shaikh et al.,2015; Bankole,2017; Asongu & Odhiambo, 2019). Though few related studies have been carried out in Africa (Brown et al.,2003; Brown & Molla,2004; Shambare, 2013), it is surprising that much less research has been done to cover the entire South African population. Some studies have included the sub-Saharan region (Aker & Mbiti,2010), but that is too big to focus on and understand the adoption factors per country or bloc and would require a longitudinal study and extensive resources to carry out. In light of inadequate research done in South Africa to explore the mobile adoption factors, this study aims to investigate what are the factors that impact the uptake of mobile banking adoption across the 9 South African provinces.

1.4. Research questions

This study sought to address the underlying questions and find gaps in the mobile banking adoption rate in South Africa.

i. What impact does perceived usefulness have on mobile banking adoption in South Africa?
ii. What impact does subjective norm have on the adoption of mobile banking in the South African context?
iii. What impact does perceived ease of use have on the South African population's mobile banking adoption?

1.5. Research objectives

The purpose of this study was to investigate the factors that determine mobile banking adoption among the baby boomers, millennials, Gen Y and Gen Z, working and non-working populations across the South African 9 provinces. Therefore, the following research objectives were selected for the study:

i. Investigate the importance of perceived usefulness as a driver of mobile banking adoption in South Africa.

ii. Investigate perceived ease of use as a driver of mobile banking adoption in South Africa.

iii. Evaluate the importance of subjective norms as a driver of mobile banking adoption.

1.6. Significance of the study

There have been scanty studies conducted among the 9 South African provinces. As such, the research was aimed at providing insights that could be provided through this study. It would give more understanding of the adoption determinants across the South African population. The banking and financial institutions would also be offered insights to understand the markets that remain untapped as they've been mainly serving the upper and middle class with offerings while the larger populations outside cities and in remote areas have not been offered solutions and have continued to use physical cash (IMF,2022). The research will also provide insight into the readiness of the big banks to respond to the competitive threat posed by smaller and more nimble players in the fintech space.

1.7. Limitations of the Research

The research will use a cross-sectional method to find out the factors determining mobile banking adoption technology across the 9 South African provinces. And as the nature of this study is not longitudinal, the data collection was limited to understanding the social settings of potential customers and so the focus was to sample a big aggregate comprising of smaller population samples from the 9 South African provinces. The various age groups selected might also give a limited reflection to the needs of the various psychographic needs of the population.

1.8. Chapter summary

The background of the study has been outlined, and the topic of mobile banking has been introduced with the researcher providing the rationale for conducting the research on the topic at the point in time of the writing. The South African landscape has still not seen mobile banking reach a critical mass, and therefore a concern arose as to why it is such the case. The following chapter delves into the literature review on mobile banking, providing an overview of what previous researchers have discovered on the topic.

2. Chapter Two - Literature Review

2.1. Introduction

This section covers the literature review concerning the adoption of m-banking. It looks at some of the most internationally, regionally as well as locally reputable and complementary contributions on mobile banking. Furthermore, the section outlines the most common theoretical frameworks that have been used in the history of mobile banking research. Thereafter the conceptual framework is introduced with the constructs thereof.

2.2. Brief evolution on the convergence of cell phone technology and mobile banking in South Africa

Cell phone technology arrived in South Africa in 1994. The adoption was rapid such that by 2002, the technology had seen the traditional telephone line overtaken drastically (2003; Bankole et al., 2017). Cell phones have become a personal mobile office where individuals perform multiple functions such as texting friends and family, making calls whilst on the move, and so convenience was introduced through the technology (Brown et al.,2003).

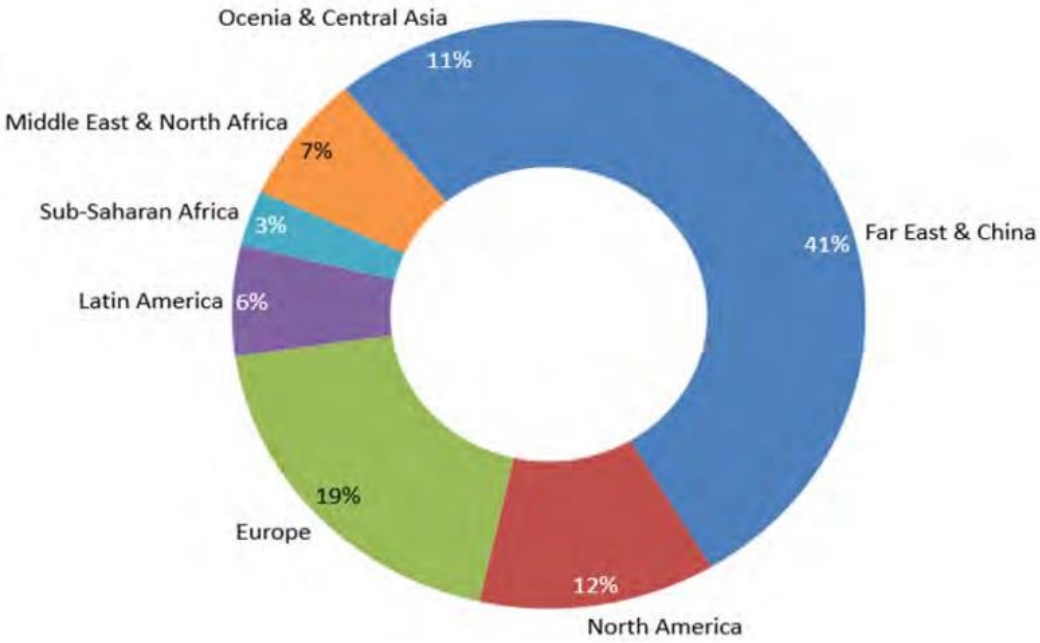
Zhang et al. (2018) posit that cell phone banking was launched globally for the first time in the 1990s in Germany. Thereafter, the technology scaled in usage across European countries and was introduced in Africa around the mid-2000s (Maduku & Mpinganjira,2012). The technology could allow bank customers to transfer funds to another bank account, check their bank balance, and get notifications for deposits.

The omnipresence of cell phone technology uptake triggered the banking industry to leverage technological advancement and tap into the new channels where a customer's bank account that historically only used a bank card to transact could be synchronised to perform banking transactions using a cell phone as well. This concurrent with internet banking was the newest banking channel in the market then (Chigada & Hirschfelder, 2017).

Cell phone technology improved in functionality around the mid-2000s and had a newer variant called the smartphone. The improvement had a downstream impact on the banking services that were offered on cell phones and saw more features added to the banking applications on smartphones. For instance, a customer could add

beneficiaries on the mobile phone and schedule a future transfer to another account (Balabanoff, 2014). All of this functionality demonstrates the rapid evolution and adoption of cell phone technology. At the time of this study m-banking has been introduced and has become the mainstream banking channel for handheld devices across the globe as depicted in figure 1.

Figure 1: m-banking penetration by world regions



Source : Mothibi & Rahulani (2021)

2.3. M-banking benefits and economic impact

Numerous advantages support m-banking development, more especially for the complex South African population, which has surpassed the critical mass in the mobile phone uptake. M-banking provides financial and economic inclusion to the previously unbanked. And for the financial institutions offering banking products, this reduces operational costs drastically as compared to the cost of operating other channels such as bank branches, (Automatic Teller Machine) and ATMs (Shambare,2013; Shaikh & Karjaluoto, 2015).

The advancement in mobile technology provides a balancing act in contributing to solving inequality (Dalvit, 2022). It is a matter of fact that South Africa is the most unequal country on earth, example is one of the big mining firms where the CEO was remunerated R300 million in one financial year while 30 thousand workers went on

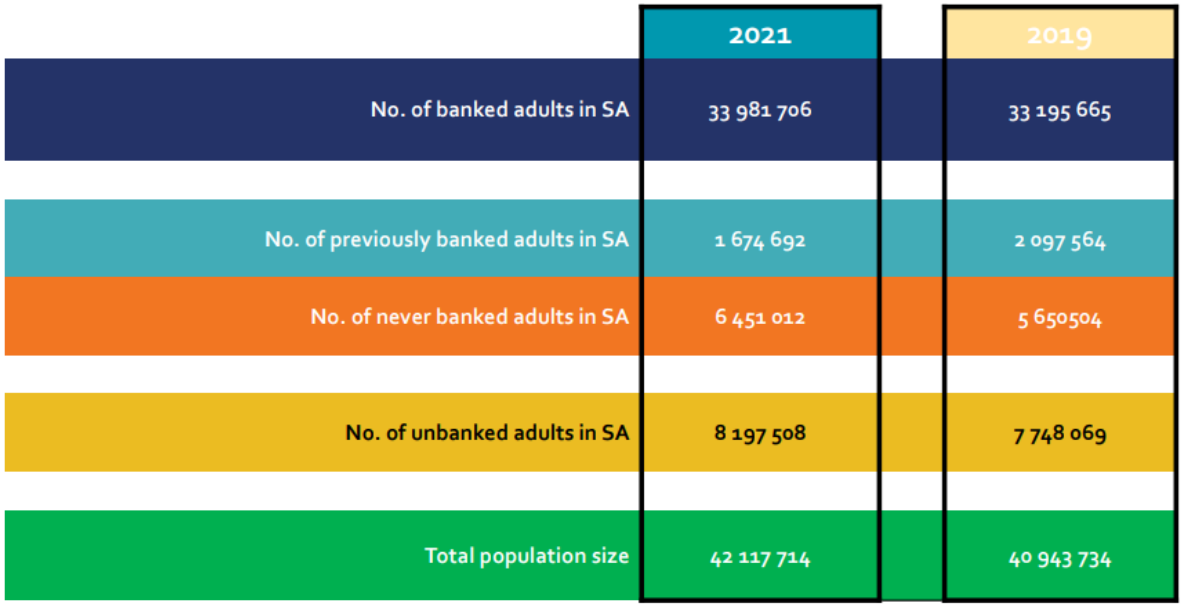
strike for a wage increase from R7 hundred to a thousand (Moneyweb, 2022). Though the historically disadvantaged have been the ones trailing in acquiring the economic resources that would help them catch up with the economically advantaged, m-banking provides a solution to narrow the gap and give both the poor and the rich the technology resources required to participate economically (Brown & Licker,2003; Asongu & Odhiambo, 2019).

M-banking innovation offers opportunities for individuals to obtain information that helps them make better financial decisions (Deventer et al., 2017). The current global economy which has ushered megatrends such as 4IR thrives on the acquisition of information to gain a competitive advantage, meaning that those [economies and individuals] who know less will have to play catch up. Therefore, subscription to m-banking services can expose customers to virtual advisory services which are often free of charge, they can also obtain free tools that help them manage their finances. These are great value-added services that would traditionally involve the role of financial advisory which would come at a higher cost.

m-banking has been reported to positively reduce the gender parity gap more rapidly in recent years than ever before (Asongu & Odhiambo, 2019). Women have been historically left out of certain industries and have been subjected to merely taking care of household activities. However, m-banking has seen a shift in the norm and more women have been empowered to participate in communities and found to be involved in key decision-making in developing countries. This is in line with the finding by (Asongu, 2017) who found that m-banking has spurred women's inclusivity in community building.

It is clear that the gains of m-banking adoption discussed above outweigh the lack thereof. It is then of concern to note that the concept has not reached a critical mass though it makes banking much simpler and more convenient as customers do not have to travel to a branch to transact while they can do the same in the comfort of their homes and hence offering a win-win situation for banks and customers (Shambare, 2013; Venter et al., 2020). This study discovered that South Africa has 20% of the population which is not banked as shown in figure 3 below.

Figure 2: South African citizens with a bank account



Source : FinScope (2022)

2.4. Study's adopted terminology

The concept of mobile banking (m-banking) comprises the use of mobile devices such as tablets, cell phones and smartphones, with cell phones using 3G technology to transact using USSD (unstructured supplementary service data) functionality. And the tablet has the capability to use smartphone banking apps as well as browser internet banking (Tran & Corner, 2016). Laptops are not included in the concept of mobile banking as they are classified with desktop computers which predominantly use desktop browsers, this becomes another topic on its own and was not the focus of this study (Shaikh et al., 2015).

There are various terminologies used over time to explain the concept of transacting using cell phones, smart watches, smartphones or tablets; (CPB) cell phone banking (Shambare, 2013), SMS banking by Ho et al., (2020),(mbapps) mobile applications by Balabanoff (2014), (MB) mobile banking (Tran & Corner, 2016), (m-banking) mobile banking (Shaikh & Karjaluoto, 2015), m-payments, m-transfers, m-finance were also used by Donner & Tellez (2008). Due to the advancement of payments technology, the latter (m-payments) can be confusing to mean remittances which are also used by non-bank financial institutions in "open banking" (Maduku & Mpinganjira,2012; Ho et al., 2020).

In conclusion on the terminology, this study aimed to integrate both the use of cell phone banking and the more extensive mobile app banking technologies and refer to both as “m-banking” (Shaikh et al., 2021). This is because they ultimately converge in the concept of offering banking transactions. Notwithstanding the above assertions by the researchers listed, this study acknowledges that there are other terminologies that could have been used in other studies to address the same topic. Thus the terms listed above were an aggregate of searching through academic databases on the topic.

2.5. Adoption of m-banking in South Africa

Sub-Saharan Africa has some of the least developed infrastructure in the world i.e., basic commodities such as energy, water, road networks and fewer investment projects (Acker & Mbiti, 2010). But the most advanced infrastructure is mobile, which covers both the urban and the most remote areas (Shaikh et al., 2015). And the uptake of mobile phones has boomed with a usage of around 60% of the 1.14 billion population (Blabanoff,2014; Chigada & Hirschfelder,2017) and surpassing by a large margin those who are banked. This signals a lot of groundwork for the financial sector to reach the masses who are not participating economically as a result of a lack of inclusion.

The boom in mobile phone uptake has made the African continent the second most growing mobile phone market in the world, growing at an annual rate of 14% (Brown & Licker,2003; Balabanoff,2014). This has further introduced new business models such as Business to Consumer, and Business to Business, Consumer to Consumer. Therefore, the mobile banking uptake warrants investigation in order to unlock the potential that lies in the market (Chigada & Hirschfelder,2017; Ho et al., 2020).

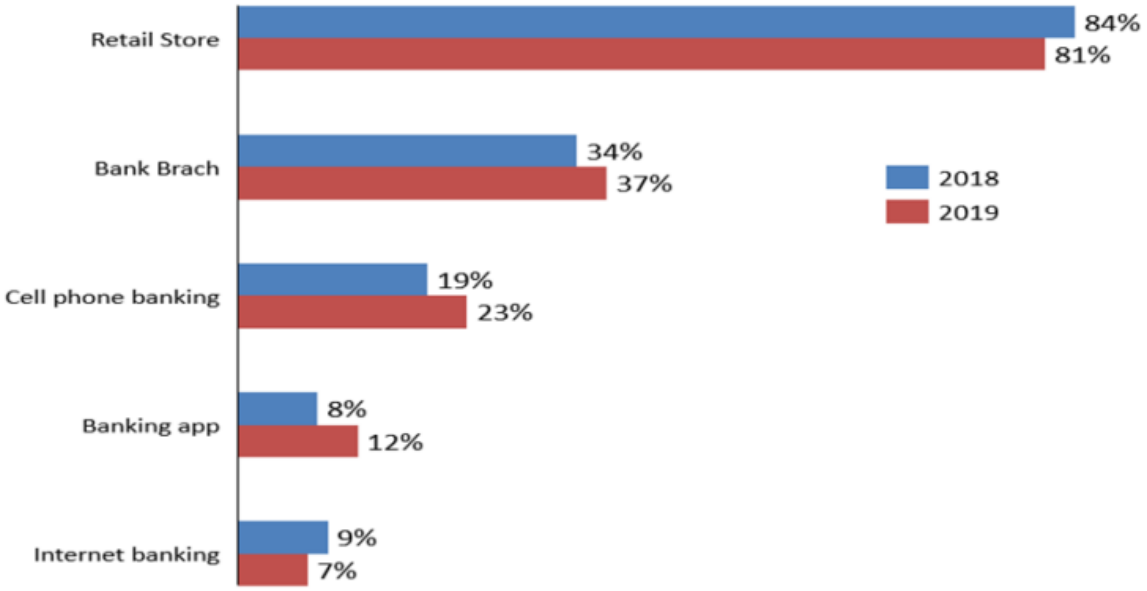
There have been efforts to investigate m-banking adoption in other parts of the world over the last decade such Middle-east, North America, Europe, Oceania, and Asia (Sharma S. S., 2019; Baabdullahet al., 2019; Gao & Waechter, 2017; Sharma et al., 2022). However, in South Africa specifically, it cannot be said that the topic has been exhausted. In preparation for this study, time was spent searching for reputable journal articles on the topic across various databases such as EBSCO Host, Google Scholar, Science Direct, and other South African databases, and only a few came out for selection based on originality, referenced by others and peer-review (Brown

et al., 2003; Brown & Molla, 2005; Masinge, 2010; Bankole & Cloete, 2011; Ismail & Masinge, 2012; Maduku & Mpinganjira, 2012; Wentzel et al., 2013; Balabanoff, 2014; Bankole et al.,2017)

It was notable that 4 of the above-referenced studies were focused on the Gauteng province only, proving the argument made in this study for the need to sample all other provinces as Gauteng's population comprises only 25 per cent of the total South African population (World Bank, 2023). Studies notably conducted in other provinces except for Gauteng and Western Cape were by Shambare (2011); Ahmad (2018) to mention a few.

South Africa's banking industry is world-renowned. A research study in the early 2000s by Brown et al. (2003) showed that m-banking had not penetrated the market to become ubiquitous. And the big 4 banks – FNB, ABSA, Nedbank, and Standard Bank were offering cell phone banking services to their customers. However, as much as 3% of the population had opted for cell phone banking services and so the uptake was lower relative to the number of customers who had cell phones as well as the population of the country at the time. At a period of twenty years, the picture had not changed much the time of this study as the table below shows a low activity for even those who had opted for the various banking channels, and other researchers supported the same stance (Shaikh et al., 2015; Venter de Villiers, Chuchu, & Chavarika, 2020).

Figure 3: South African banking population transacting per banking channel



Source : Mothibi & Rahulani (2021)

2.6. Adopted m-banking conceptual framework and constructs.

Researchers have raised concerns about the lack of much-needed empirical data, more so with the increased uptake of digital products resulting in all industries changing the way they operate (Tan & Teo, 2000; Baptista & Oliveira 2015; Nan, 2019). This would give more understanding of the dimensions that impact the adoption of m-banking across the different population groups in developing countries (Luo et al.,2010; Shaikh & Karjaluoto,2015; Chigada & Hirschfelder,2017).

The commonly used theories have been applied to previous studies on m-banking and information systems studies such as the Theory of Reasoned Action (Fishbein & Azjen, 1975). Diffusion of Innovations (Rogers,1995), which focuses on an individual's adoption of a new technology. Theory of Planned Behaviour (Ajzen, 1991). Technology Acceptance Model (Davis et al.,1989; Venkatesh et al., 2003), posits that an individual's use of a product is impacted by their behavioural intention, which is also influenced by a customer's attitude. And the Unified Theory of Acceptance and Use of Technology (Venkatesh et. al., 2003), was developed as a result of combining constructs of earlier theories such as IDT, TRA, the Motivational Model (MM) (Davis, Bagozzi, & Warshaw, 1992).

The Technology Acceptance Model is the most used theory by researchers and was initially designed to determine the factors that determine an individual's acceptance of using an information technology innovation (Lee, 2009; Baptista & Oliveira, 2015). This study used the combination of the TAM constructs Perceived Usefulness (PU), Perceived Ease of Use (PEU), UTAUT construct Facilitating Conditions (FC), and the Theory of Planned Behaviour construct Subjective Norm (SN) to form a framework which was used to investigate the adoption of factors of m-banking in South Africa's 9 provinces. Figure 1 below depicts the modified TAM with the adopted constructs (SN, FC) which were used to test m-banking adoption and be able to answer the research questions discussed in Chapter 1.

2.6.1. TAM justification

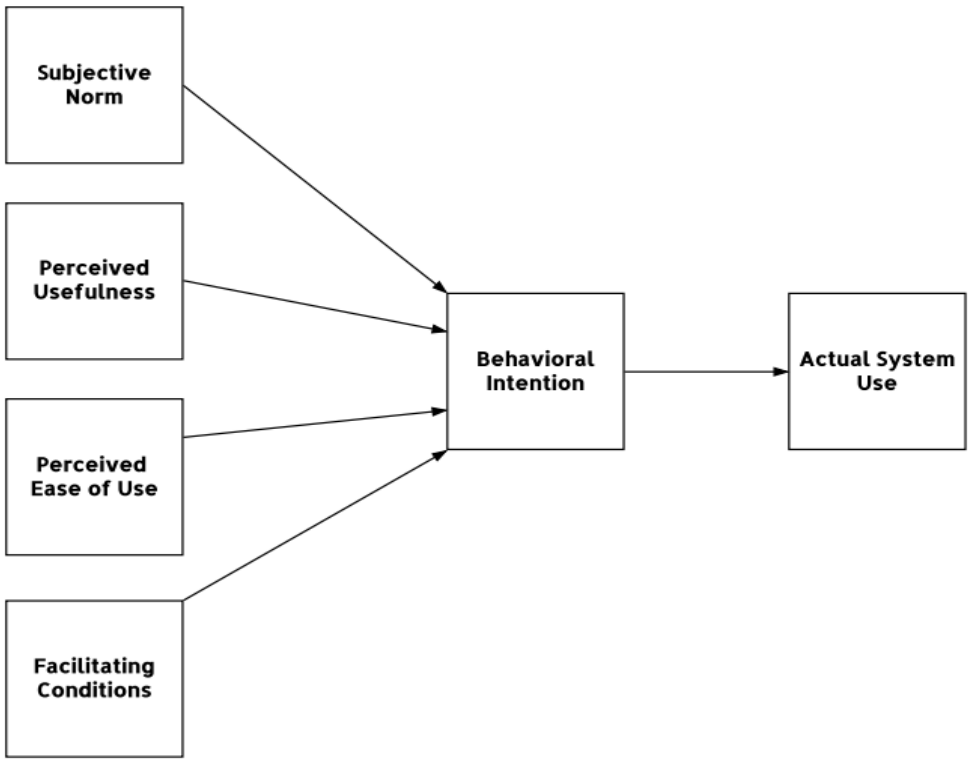
The Technology Acceptance Model (TAM) has been criticised by researchers who said that it is parsimonious to deploy when testing technology acceptance for industries such as banking (Shaikh & Karhaluoto,2015; Zhang et al., 2018), moreover, it is not compatible with measuring success but is only used for testing the acceptance of an information system. Further criticism of the model is that TAM can not be used as a hypothesis since it lacks practical utility and has insufficient descriptive and analytical capacity. Zaineldeen et al. (2020) also argued that the model is not well designed to cater for external variables that bring adjustable factors that impact the dependent variable. Ho et al. (2020) also criticised that though TAM is widely used for the intention to use technology, it lacks the propensity to cover factors post-acceptance such as performance, quality, and satisfaction (Assensoh-Kodua et al., 2016). Sharma et al. (2022) came up with a different suggestion that TAM has been overused with IDT and UTAUT and so new models are needed to test factors such as consumer resistance as well as mobile banking and its impact on social media.

Despite the critics of the TAM as mentioned above, many other researchers have rallied behind the model and so some scholars say that the model is simple and practical and has been widely accepted by information systems researchers ((Zaineldeen et al., 2020; Thusi & Maduku, 2020; Baptista & Oliveira, 2015; Zhang et al., 2008; Luarn & Lin, 2005). Furthermore, other researchers argue that the model

has been tested in many studies and is widely accepted to be effective (Maduku,2013; Balabanoff, 2014; Bankole et al.,2017).

Another defence of the TAM is that it has been used by psychology professionals in various industries, testing complex technologies and studies in global communities proving that the model is robust and universal. To overcome the limitations of TAM, researchers have encouraged the augmenting of the model to include constructs obtained from other models (Tran & Corner,2016; Ho et al., 2020). On that basis, the addition of the Subjective Norm and Facilitating Conditions constructs to this study is justified. Therefore, the modified TAM model is shown in Figure 1 below with the constructs that were tested.

Figure 4: Study's Conceptual Framework



Source: Adopted from Davis et al. (1989)

2.6.2. Subjective norm

Subjective Norm (SN) has to do with the impact of social influence that has a bearing on an individual's perception towards a specific desired action (Maduku & Mpinganjira, 2012; Fishbein & Ajzen, 1977). An individual's adoption of a new technology is on a personal discretionary basis. However, it has been shown that certain groups of individuals in society have a greater influence on an individual's ability to make decisions, such are friends, family, superiors and colleagues. An example of such a scenario is the introduction of a new social media app that everyone talks about and informs their friends and family to subscribe to. In this case, SN would have positively influenced the usage of the app (Md Husin et al., 2016).

The interaction among social circles has a positive impact of alleviating the reluctance of the uptake of a new technology and any other hesitance that might be experienced by individuals if they were left alone to decide on whether to adopt or not (Tran & Corner, 2016). South Africa is one of the countries where a majority of households live in a communal setting (Assensoh-Kodua et al., 2016). for instance, the latest stats showed that 33.6 per cent of households from different generations live together in the same dwelling (Stats SA, 2022). Baptista & Oliveira (2015) did a study that included SN in Mozambique and noted that the cultures vary per country and beliefs and values are not the same, as such the construct would have to be tested in other developing countries. Therefore, subjective norm (SN) was used in this study to test the social influence of adopting m-banking in South Africa's population in order to determine the results in a different country as advised by Thusi & Maduku (2020).

Ho et al., (2020) also postulate that SN does have a bearing on the adoption of technology due to the fact that it impacts how a person should act based on influence by those who are in their social circles. Therefore, the construct qualifies and is not far from relating it to the adoption of new technology, thus making it relevant to this study. Previous studies argued in favour of SN in that it is worth investigating, especially in developing countries where trans-generational members live in one household and play a role in influencing the young generation and passing on knowledge (Balabanoff, 2014; Md Husin et al., 2016; Shaikh et al., 2021).

2.6.3. Perceived usefulness

According to Davis (1989) Perceived usefulness (PU) is one of the most tested constructs in investigating technology acceptance. It involves an individual's belief in using a given technology to improve the way they perform a task. Zaineldeen et al. (2020) posit that PU is one of the most used constructs in studying technology adoption, and even other variables have emanated from it since it was coined by Davis (1989). M-banking researchers have discovered that once banking customers ascertain a clear understanding of what benefit a technology has for them, they are more likely to adopt it (Zhang et al., 2018, Shaikh et al., 2021).

Shaikh & Karjaluoto (2015) conducted a literature review study on m-banking adoption and investigated 55 publications from various databases, the majority were peer-reviewed and the results showed that PU was one of the most significant antecedents for m-banking adoption in both developing and developed countries. Thus, many studies support the findings that PU has a positive relation towards the use of m-banking (Luarn & Lin, 2005; Alalwan et al., 2016; Bankole & Bankole, 2017; Chigada & Hirschfelder, 2017; Singh & Srivastava, 2020).

It is worth noting that the PU is not a holy grail, critics such as Zaineldeen et al. (2020) assert that PU has the propensity to reduce as the rate of experiencing a technology decreases, and so it is relevant at the early stages of adoption. Others supported and argued that the results of their studies showed that there was no significance of PU impacting m-banking adoption (Munoz-Leiva et al., 2017; Li, Liu et al., 2014).

2.6.4. Perceived ease of use

Perceived ease of use (PEU) is a construct that involves a user's discretion on the effort required to perform a task on a specific technology (Zhang et al.,2018; Kim et al.,2007). Researchers have posited that the easier a technology is deemed easy to use the increased intention to use the technology (Zaineldeen et al., 2020). Therefore, tying this to the purpose of the study, the population sample will be tested to determine their perceived ease of use of m-banking technology. This along with PU are deemed to be the most used variables in the TAM model and are mainly

included when testing the adoption of a new technology (Assensoh-Kodua et al., 2016).

Munoz-Leiva et al. (2017) conducted a study at the largest bank in Europe to investigate the factors that impact the acceptance of m-banking applications. They found that the construct has a positive impact towards the adoption of m-banking (β = 0.61; p = 0.000). In the sub-Saharan context, Lule et al. (2012) conducted research on 395 participants on m-banking adoption factors in Kenya using the TAM. PEU and PU also came out to be strong determinants of m-banking. This outcome is consistent with the research findings of previous studies.

Another developing country studied to determine m-banking adoption factors among students and academic staff yielded the same results that PEU is a positive antecedent of m-banking adoption (Olasina, 2015). In South Africa research was done to determine the factors impacting participation in technology-enabled financial services by Wentzel et al. (2013), and PUE was found to be significant as well. This was in line with the findings of other researchers on the topic (Alalwan et al., 2016; Ho et al., 2020; Lin et al., 2015; Thusi & Maduku, 2020; Alalwan et al., 2016).

Research work has been conducted in Indonesia to study the m-banking adoption the PEU was tested and found to have a negative impact on the adoption of m-banking (Salihu et al., 2019). Makanyeza (2017) had similar findings in an m-banking study conducted in Zimbabwe. Another study was done in Malaysia to investigate the intention of continuity in using m-banking, the results revealed that PEU had a negative determination on the m-banking adoption as well (Foroughi et al., 2019). This then warrants the continual testing of the TAM model and its constructs across developing and developed economies to determine the commonalities.

2.6.5. Facilitating conditions

Facilitating conditions (FC) entails the support by governments, mobile network providers and financial institutions to enable potential customers to use a new technology (Shambare,2013). In South Africa, there's a commonly known term 'born-before-technology' which refers to individuals who grapple with fear towards using a technology product and thereafter retract when not succeeding in operating it. As

such, this study aimed to find out what impact FC has on South Africans' use of m-banking technology (Shaikh & Karjaluoto, 2015).

FC plays an important role in creating an environment that expedites the flow of information to individuals (Tran & Corner, 2016), this has a compounding effect of having users depend less on others to help them adopt a new technology. Another advantage is that resources such as internet usage [social media, blogs, web platforms] allow users across the globe to connect and create a sharing ecosystem of content.

Research conducted in various parts of the globe revealed that FC is an important intermediary in the uptake of a new technology product. A supporting example is a study conducted in other developing markets [Indonesia] to test the construct among 360 m-banking customers (Iskandar et al., 2020). The results revealed that FC has a positive impact on the intention to adopt m-banking. This is consistent with findings by other studies which had similar outcomes in FC being a strong predictor of m-banking (Ho et al., 2020; Shaikh et al., 2021; Jadil et al., 2021).

Other researchers previously argued against the FC as a positive antecede3nt to m-banking adoption. For instance, research done in Zimbabwe by Makanyeza (2017) tested the determinants of m-banking adoption among 232 banking clients and discovered that there is no positive influence towards adopting m-banking. Oni et al., (2022) conducted a similar study in Nigeria where there are 98 million unique mobile phone users and found that FC also has a negative impact on user intention. This is contrary to findings by similar studies (Oliveira et al., 2014, Ho et al., 2020).

2.7. Chapter summary

The theoretical and conceptual frameworks have been introduced with a brief discussion of each of the constructs used in this study. The TAM model has proven to be useful when testing the adoption of technology adoption in various fields. The next section discusses the technical considerations used when setting up this study and how the conceptual framework was applied in the study.

3. Chapter Three - Research Strategy

3.1. Introduction

This chapter covers the design of the research and touches on the technical aspects that were used in setting up the investigation of m-banking. The paradigm, methodology, demographics sampling, as well as instruments for data analysis and collection, are discussed in theory with the rationale for choices made specifically for this study.

3.2. Research design and paradigm

According to Bhattacharjee (2012:35), a research design comprises a blueprint for collecting data. It is aimed at addressing research questions or tantamount to testing hypotheses. Therefore, this study had the aim of applying the extension of the Technology Acceptance Model by Davis (1989) to determine why the majority of the South African population had not reached a critical mass in m-banking adoption.

According to Rahman (2017), there are commonly three types of research paradigms: positivistic, critical theory and interpretive research. The positivistic approach is the belief that the social world is characterised by objects that can be studied and measured, and have hypotheses tested. The interpretive research approach is of the belief that reality is subjective and varies from one individual to the next. Interpretive approaches provide insight and comprehension into behaviour, and explain acts from the perspective of the participants (Scotland, 2012). And the critical theory, which sprang from the Frankfurt School, explores the larger oppressive nature of politics or cultural effects and frequently includes feminist studies (Gemma, 2018).

Researchers who adhere to positivism, which is of the empiricist school of thought believe that knowledge should be impartial and free of any prejudice resulting from the researcher's values and views (Scotland, 2012). Therefore, since positivist studies are of the view that there are unquestionable facts and that reality is constant for everyone and can be subject to observation and measurement to reveal the nature of reality, this study adhered to the positivist paradigm, which commonly uses a deductive approach to develop a theory and test hypothesis through gathered empirical data.

According to Neuman (2014), the deductive approach in research studies is used to predict patterns in human activities, as such, this study used the positivist approach, with a customised Technology Acceptance Model to test the constructs such [SN, PEU, PE and FC] on the population sample to determine from the empirical data in analysing the factors that determine m-banking adoption in South Africa's 9 provinces.

3.3. Research methodology

According to Scotland (2012), a research methodology is a strategy or plan of action that guides the selection and application of a research approach. Thus, the methodology is concerned with the reasons, nature, sources, timing, and methods of data collection and analysis. Methodology guides how might the inquirer go about learning what they feel can be known. The precise procedures and techniques used to gather and analyse data are referred to as methods.

Methodologies of study can be related to an ontological perspective via methodology. Any sort of investigation must contain (often implicit) commitments to ontological and epistemological ideas (Creswell, 2014). Kothari (1990) asserts that a quantitative methodology is used to design the research approach of gathering empirical data, which is later extracted from raw form and processed to a form where theories or hypotheses can be tested. As such, this research undertaking used a quantitative approach to investigate the factors that determined m-banking adoption while mobile phones have reached a critical mass (Baptista & Oliveira 2015).

3.3.1. Benefits of the quantitative approach

One of the most evident reasons for using a quantitative research approach is the ability to save time and resources (Eyisi, 2016). Its emphasis is on the gathering of empirical data and analysis, which connotes that it's scientific in its setup. As the nature of this study was cross-sectional, it would be unimaginable to travel across the 9 South African provinces and be able to spend time with almost a thousand respondents of the population sample. Therefore, this study used an online survey questionnaire which disseminated the research questions to the respondents and managed to collect the data for analysis, all through the aid of a computing program [SPSS].

Another benefit of using the quantitative research methodology is that it allows the concept of generalisation by using scientific techniques for data collection and analysis (Cohen et al., 2018). One population group's statistical inference can be generalised, resulting in the affirmation that the findings of studies are not deemed as mere coincidences over replicable geographical locations (Eyisi, 2016).

3.3.2. Challenges of the quantitative approach

The researcher is also cognisant of the possible occurrence of the impact of the Hawthorne effect on the side of the participants. The Hawthorne effect is concerned with research participation i.e., the subconscious awareness that one is being examined, and the potential impact on behaviour when responding to the questionnaire (McCambridge et al., 2014). Moreover, influencers in their social circles who could have forwarded the questionnaire could also impact the results by sharing their views on the answers to the effect of spurring conformity and social desirability. To remedy this, the questionnaire had a note to encourage the population respondents to answer truthfully by having each question guide what was asked.

Rahman (2017) posits that a weakness of the quantitative approach is that the analysis of the respondents can be prone to incorrect generalisation of the real-life total population, this can eventually give an incorrect interpretation of data and at times studies in the same topic yield contradictory results, and so this study aimed to sample the highest number of individuals in order to avoid this bias.

Another challenge with using the selected quantitative approach is English language proficiency. South Africa is a developing country and since the population sample involves the historically disadvantaged, there’s a possible challenge of interpreting the questionnaire if the questions were too eloquent. Therefore, the study aimed to simplify the language used in questions in order to overcome the hurdle.

3.4. Research sampling

3.4.1. Population

This study applied the use of a cross-sectional self-administered online survey questionnaire across the 9 South African provinces to target the population sample from the age of 18 to 75 years old, students, working and non-working, based in remote as well as urban dwellings. Previous studies have been done on a student sample in South Africa (Brown 2003 et al.,2003; Maduku, 2013).

An online questionnaire was deployed to gather a sample size of a minimum of 150 individuals across the 9 South African provinces and be inclusive of all South African racial composition as the country is predominantly divided into 4 groups – Indians, native Africans, Caucasians, and Coloureds (which comprise of mixed races) (Venter et al., 2020). The number allows the study to tap into a more realistic view of a real-life representation of the m-banking phenomenon (Sukamolson, 2007).

3.4.2. Time horizon

Time is incorporated in all research types as one does not have forever to study a phenomenon (Taherdoost, 2016). The two main time frames used in research are a single point-in-time approach called cross-sectional, which is short and does not have the capability to show changes in events in time. And the other one is multiple-point in time - longitudinal, which allows researchers to gather data over a long period of time allowing the phenomenon studied to be analysed over a timeline and depicting the changes.

The researcher chose the cross-sectional approach for this study due to the time limit given to ensure that the study is completed on time and so a longitudinal study could not be suitable. Bhattacharjee (2012) agrees with the approach in that cross-sectional requires a large sample size making it suitable for quantitative research, and that the cross-sectional survey allows measuring of the dependent and independent variables at the same point in time. Additionally, the cross-sectional survey questionnaire allows for data to be externally validated i.e., data is collected in the field meaning that it’s not tampered with to cause distortion.

3.4.3. Sampling method

In research, sampling is about choosing a subset sample out of an entire population (Taherdoost, 2016). Sampling can have various functions such as generalising the population or inference from the sample. Sampling is generally categorised according to the main techniques; probability (also known as random) sampling and non-probability sampling.

Probability sampling was used in this study as it allows increased accuracy in the sampling representation. According to Kothari (1990), the disadvantage of probability sampling is that it yields statical regularity – the allowance of error estimation measured in a sample analysis can be high resulting in unwanted results from the sample. On the converse, probability sampling is praised by researchers in that it has the highest possibility of bias as the participants are selected at random.

The researcher saw it fit to use a multistage sampling procedure, which first identifies the intended population to sample and then makes a form of contact to get them to participate in the study (Creswell, 2014). Furthermore, Taherdoost (2016) agrees with the approach as this study is cross-sectional in time horizon and so the primary goal of multi-stage sampling is to pick samples that are concentrated in various geographical areas using an online questionnaire as this saves both time and money.

Dissemination of the survey consisted of an intentional approach where participants from the 9 provinces were approached by the researcher, and secondly, the participants received a link from the student community at Wits University. After seven weeks of data collection, the results were gathered and prepared for processing and presentation. Findings were made and discussed in Chapters 4 and 5.

3.5. Research instrument and measurement

A research survey instrument uses a quantitative or numerical depiction of a large number of individuals' trends, histories, attitudes, beliefs or views by analysing and drawing conclusions from a sample of the population (Neuman, 2014). This type of technique allows researchers to have a source of truth in that it collects data that is

captured as is from respondents without any manipulation. It assists researchers by efficiently gathering data from large population samples for analysis.

Surveys provide advantages that are appropriate for this study. For example, two of the method's major advantages are its outstanding general population representativeness, and lower cost when compared to alternative methods. The validity of survey findings, on the other hand, is heavily impacted by the survey's design and the accuracy of respondents' replies (Creswell, 2014).

A self-administered online survey questionnaire with a set of questions was distributed to the participants to provide their voluntary input on the study. In general, questionnaires aren't the best choice for exploratory research or other types of study that call for a lot of open-ended inquiries. They function best when researchers use standard questions that will be understood the same way by every respondent (Robson, 2002).In order to conduct descriptive or explanatory research, questionnaires might be utilised.

The structure of the questionnaire was mainly split into three sections; the first section was the questions related to the four constructs FC, SN, PEU, and PU that were used in the research framework (Davis, 1989). The second section was on m-banking usage among the participants with the aim of understanding the common functionality used (Brown et al.,2003). And thirdly the demographics of the population. Information such as age range, race, and income level was used to draw inferences from the 9 South African provinces.

A 5-point Likert scale adapted from Brown et al. (2003) was used to ensure the questions were addressing the constructs that were tested; the sale ranged from 1= Strongly Disagree, 2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree. The respondents were sent a web link that led them to fill in the answers. This was distributed through the use of email, WhatsApp, Facebook, LinkedIn, and the student community at WITS University school (see Appendix A: Research instrument).

3.6. Data collection

Primary data is raw unprocessed facts that are collected, witnessed, experienced or recorded when a phenomenon occurs (Queirós et al., 2017). It is specifically collected to address the objectives and requirements of an immediate research study

being undertaken. There are four main categories of primary data distinguished by the way they're collected, the first one is the measurement which deals with tallies of numbers, and the second one is the observation which relates to recording events. Third is interrogation which talks to probes, and then participation which is gained by participation.

Secondary data is data that has been pre-collected and analysed for other purposes (Saunders et al., 2023). It comprises of, not limited to processed data, published reports, journals, encyclopaedias, and newspapers. The type of data can be useful through the reusability of answering a researcher's current questions and objectives. Its advantage is that it is cheaper and does not need time and effort to collect as it's retrievable in a pre-processed state. Additionally, it is readily available data that is esteemed to be of high quality.

The downside of secondary data in research is that it might be collected for a different purpose from what the original researcher might have intended to use, meaning that one might have to augment the shortfall of such reliance through the use of primary data which would be collected mainly for the aim of the addressing the research question.

The researcher in this study collected primary data from 993 respondents and applied descriptive statistics to process the data. It allows one to make inferences on largely collected data with indices like average, mean, and frequency. (Fraenkell & Wallen, 2009). New data would be needed to test the constructs as previously advised by other researchers and also caused by the curiosity to analyse if the Covid-19 pandemic has changed any behavioural intention by consumers since the world was mostly digitised due to the lockdowns experienced (Naeem & Ozuem,2021).

3.7. Data analysis and interpretation

Data analysis entails the process of outlining how data in a research study will be gathered, arranged and results presented as well as the statistical method that is used to process that data (Creswell & Creswell, 2018). It is expedient for the researcher to use tables, graphs, and diagrams to help the readers understand what the data in a research study is addressing.

This research study used Cronbach's alpha to test the reliability of the constructs used in the framework. It offers a value between 0 and 1 that represents the internal consistency of a test or scale. Internal consistency refers to how closely all of the test items assess the same notion or construct, and is thus related to how closely the test items are related to one another (Tavakol & Reg, 2011). This was useful to this study as no less than 900 respondents were reached for sampling across South Africa’s 9 provinces. IBM SPSS was used as it has the functionality to extract, process and present data and the results of the constructs.

Factor analysis was used in the study as it is suitable for quantitative questionnaires (Williams et al., 2010). It creates underlying dimensions between latent notions and measurable variables, enabling the development and improvement of a theory. Additionally, it offers proof of the construct validity of self-reporting measures such as questionnaires.

The appropriateness of the collected data in a research study for factor analysis should be evaluated using several tests before the scores are extracted (Williams, Onsman, & Brown, 2010). The KMO (Kaiser-Meyer-Olkin) is one of the options for measuring sampling adequacy, it has an index ranging between 0 to 1, with 0.50 being deemed significant.

Another Factor analysis tool that is commonly used for questionnaires is Bartlett's Test of Sphericity (Tavakol & Reg, 2011). A matrix of numbers displaying the correlation coefficients between variables is known as a correlation matrix. Bartlett's Test of Sphericity determines whether there is any overlap in the variables that may be summed up into a small number of components. This test is frequently carried out prior to using a data reduction approach such as factor analysis, to ensure that the data can be compressed in a useful fashion. The test is deemed significant when the Bartlett's Test of Sphericity is at $p<.05$.

3.8. Reliability and validity

3.8.1. Reliability

Reliability in research is the ability of an experiment to measure variables consistently and dependably over many tests with similar study conditions such as the same group of respondents (Cohen et al., 2018). This helps researchers verify that their study offers the correct results. It is important to note that though measures can be put in place to ensure reliability in a research study, it is not likely that experiments will always yield 100% accuracy. Therefore, the importance of reliability in a study is that it puts in place the mechanisms to minimise errors in research scores.

There are many types of errors relating to reliability, the generally recognised ones are random errors of measurement (Creswell & Creswell, 2018). This type of error in a research study can occur as a form of a happenstance, while the second type of error is systematic error. These are commonly the reason for errors in a reliability measurement. The impact of this type of error is that it has a predictable tilting of measurement scores for a research study.

3.8.2. Validity

Validity in research has to do with ensuring that an instrument used to measure certain scores achieves what it's intended to do. It was initially designed to focus on measuring the instrument, but more recent years have seen a shift wherein the concept drifted to focus on measuring the scores of the instrument measurements (Ary et al., 2010).

Since validity is used to infer the scores that an instrument measures, it is important to note that it does not necessarily replicate the same results in every sampling, therefore the same variables tested in one environment may yield different results when tested in another (Neuman, 2014).

Internal validity

Ary et al., (2010) first came up with the concept of internal validity, which has to do with ensuring that a research study does not have extraneous variables. The impact of these variables is that they have the propensity to give an incorrect interpretation of the findings hence lowering the internal validity level. The ability to improve the internal validity is essentially by applying controls to the extraneous variable to ensure that they don't jeopardise the control variables.

External validity

The degree to which the results of a research experiment can be generalised and inferred to other environments, subjects, and treatments is called external validity Cohen et al., 2018). It involves two phases, first is where the original research is conducted under controlled conditions, and thereafter the results of the experiment are concluded. the researchers then move to the second phase of replicating the results in other regions, and environments than where the study initially took.

3.9. Ethical Considerations

According to Creswell & Creswell (2018), researchers must foresee ethical difficulties that may occur throughout their research as it entails gathering information about individuals from people. moreover, they must safeguard their study participants, build trust with them, promote research integrity, defend against misconduct and impropriety that might reflect negatively on their organisations or institutions, and deal with new, difficult situations. Personal disclosure, authenticity, and credibility of the study report; the role of researchers in cross-cultural contexts; and issues of personal privacy through forms of Internet data gathering are all ethical concerns today.

This study aimed to protect the participants by adhering to the South African POPI Act, which stipulates the protection of personal data against unconsented publication (Bruyn,2014). Therefore, the names and sensitive data about the population sample were not included in the questionnaire in order to be compliant with the objectives of the study. Over and above the POPI act, the study was structured to comply with the ethics set out by the Wits Business School and to ensure that the research practice is of the accepted standard.

3.10. Limitations

There are some limitations pertaining to the conduct of this study. The sections below summarise them. First, the study limited itself to addressing the m-banking adoption factors and did not spend time to unpack the impact of factors contributing to the non-adoption of m-banking by the South African population (Brown et. al, 2003).

Chigada & Hirschfelder (2017) also posit that qualitative longitudinal studies are also needed to investigate m-banking adoption in South Africa as literature is still lacking in that area. On the inverse, this study only focused on investigating the m-banking adoption using only a cross-sectional approach due to the obligation of this academic study.

3.11. Chapter Summary

This chapter outlined the research methodology, which was used, as well as the instrument used in collecting data, and how the data was processed and analysed. The section also covered the reasons for the selected research approach which would be a precedent of the justification for the data collection and analysis that is discussed in the following chapter.

Chapter Four - Presentation of Study Findings

3.12. Introduction

The preceding chapter outlined the research methodology for this study which was used in collecting data and analysing it. This chapter presents the empirical results and findings of the research survey. The chapter begins by summarising the demographical data and then discusses the constructs in relation to their validity and reliability.

3.13. Demographics of respondents

3.13.1. Gender profile

An online survey questionnaire was sent out to a total number of 1200 individuals with 993 respondents across the nine South African provinces, resulting in an 82% response rate. Among the total number of respondents, the gender profile resulted in 58.1 % female and 41.7 % male. The rest of the participants identified as non-binary, and none were not willing to disclose their gender. The results revealed that women participated more in the study even though the study was equally distributed in a random sampling approach.

Table 1: Gender profile of respondents

Gender	Frequency	Percentile
Female	577	58.1
Male	414	41.7
Nonbinary	2	0.2
Prefer not to say	-	-
Total	**993**	**100.0**

Source: Survey data (2023)

3.13.2. Age composition

The study collected data on the various categories of age groups of the respondents. The minimum age targeted was 18 years in order to ensure compliance with ethics. The highest age was 75 years of age, this was considerate of the fact that individuals can be active in the economy beyond the regulatory age of 65 set out by the Department of Labour (Parliamentary Monitoring Group, n.d.). It is important to note that the majority of the participants were between the ages of 18 and 30, this comprised over 70% of the participants signalling economic participation.

Age	Frequency	Percentile
18-30	729	73.4
31-40	166	16.1
41-50	78	7.9
51 -60	17	1.7
61-75	3	0.3
Total	**993**	**100.0**

Table 2: Age profiles of respondents

Source: Survey data (2023)

3.13.3. Racial composition

The racial composition of the respondents saw blacks or those of African descent amount to over 80% of the entire population sample. Caucasians had 8% of the next group's composition, followed by Indians at 5.9% and Coloureds (mixed race between Africans and Caucasians or Asians). The purpose of sampling across the South African 9 provinces was to ensure that a greater understanding of the m-banking adoption was not biased based on fewer provinces sampled, and this study's population is not far from the real-life composition as supported by Venter et al. (2020).

Table 3: Racial composition of respondents

Race	Frequency	Percentile
Black	822	82.8
White	82	8.2
Indian	59	5.9
Coloured	30	3
Total	**993**	**100.0**

Source: Survey data (2023)

3.13.4. Highest education achieved.

The study revealed that the group with the highest educational qualification obtained was 52%, which was at the undergraduate level. On the other extreme end, the respondents who had completed some post-graduate qualification amounted to 28%. Leaving the middle group with only grade 12 or matric qualification at 10%, this reveals that there's been an improvement in population matriculation in comparison to a decade ago (World Bank, 2023), where only around 1% of the South African population had a matric qualification (Statistics South Africa, 2012).

Table 4: Highest educational background of respondents

Education	Frequency	Percentile
Undergraduate	524	52.8
Graduate	76	7.7
Postgraduate qualification	285	28.7
Completed matric	106	10.7
Total	**993**	**100.0**

Source: Survey data (2023)

3.14. Construct reliability

According to Taber (2017), internal consistency, or the degree to which variables on a scale assess the same construct can be done by Cronbach's alpha. It is a commonly used measurement in psychometrics, and it is frequently used to evaluate the dependability of scales. The item-total correlation, which measures the relationship between a given item and the scale's overall score, is used to determine Cronbach's alpha. When a scale's items are highly linked and all measure the same concept, it has a high Cronbach's alpha.

According to Harrell Jr. (2015), the concept of binary logistic regression is a type of regression model where the target variable can only have one of two possible values, either 0 or 1. It simulates how a group of independent variables and a binary dependent variable interact. It is helpful in scenarios where the aim is to have the result of variables that can only take one of two conceivable forms, “0” or “1” in this case. The demonstration of dependent validity shows that any two of the latent variables can be used to describe different aspects of a respondent's opinion. The value of the square root of the AVE for each variable is displayed in the diagonal row of the table in order to make DV a more reliable statistic (Table 5). In order to have discriminatory data that is also reliable and credible, the square root of AVE needs to be higher than the value of the latent variable correlation (Mertler & Vannatta, 2016).

This research showed that Cronbach's alpha was used to test the reliability analysis of the constructs. Upon performing computations on the scales, Cronbach's alpha showed that all the values were found to be above the threshold of 0.70 (Peterson, 1994). Cronbach's alpha ranged from 0.841 to 0.913, respectively. This was way higher than the suggested 0.70. Table 5 shows the results of the internal consistency of the variables.

Table 5: Construct reliability, correlation, AVE's square root in diagonal (underlined and bold), and descriptive statistics of observed variables

Constructs	Perceived usefulness	Perceived ease of use	Facilitation conditions	Subjective Norm
Perceived usefulness	**0.805**			
Perceived ease of use	0.552	**0.776**		
Subjective norm	0.676	0.355	**0.841**	
Facilitating conditions	0.546	0.445	0.541	**0.871**
Cronbach's alpha	0.887	0.890	0.913	0.841
Mean	3.677	3.347	4.002	3.722
STD. deviation	1.408	1.326	1.250	1.590

Source: Survey data (2023)

3.15. Construct validity

Each variable showed to have a higher loading in the factor to which it is most closely related than the cross-loading it has on the other factors (Ali et al., 2018). As a direct consequence of this, the previous findings exhibited a significant amount of convergent validity (Chin et al., 1997). In order to demonstrate the credibility and validity of the research findings, Table 5 displays the standard deviation (SD) and the mean (M) for each variable, along with the discriminant validity (DV) that was derived from the correlation between the latent variables.

The sphericity Bartlett test and the KMO (Kaiser-Meyer-Olkin) tests were run initially to guarantee cross-loading criteria and evaluate sampling adequacy. The KMO value was found to be higher than the optimal value of 0.70 (Hair Jr et al., 2014). Equally convincing is the fact that the Bartlett test's p-value is statistically significant. All item loadings were shown to be higher than the recommended threshold of 0.60 using convergent validity. The literature supports this view (Chin et al., 1997; Malhotra &

Singh, 2010). The use of minimal sets of variables is an option that can be influenced by both conceptual and practical considerations. One example of this is the acceptance of factor loadings of 0.50 or higher (Mertler & Vannatta, 2016). The model in this study has been found to have a higher factor loading across the board for all items. Because each of the other variables has a high communality value, it can be deduced that the amount of variance that is shared by one variable with the other variables being analysed is significant.

Table 6: Confirmatory factor loadings

Note. F1: perceived usefulness; F2: perceived ease of use; F3: subjective norm; F4: facilitating conditions; Comm.: communalities. KMO = 0.812; approx. χ2 = 4,0130.53; df = 138; sig. = 0.000)

Constructs	Items	F1	F2	F3	F4	Comm
Perceived usefulness	PU1	0.752	0.023	−0.17	0.025	0.750
	PU2	0.891	0.027	−0.009	0.152	0.815
	PU3	0.888	−0.088	0.158	0.034	0.799
	PU4	0.870	0.105	−0.053	0.145	0.899
Perceived ease of use	PEU1	−0.051	0.769	−0.019	−0.033	0.712
	PEU2	−0.047	0.867	0.089	0.042	0.845
	PEU3	−0.033	0.833	0.050	0.0927	0.866
	PEU4	−0.025	0.762	0.069	0.045	0.766
Subjective norm	SN1	0.078	0.106	0.897	0.012	0.845
	SN2	0.041	−0.056	0.855	0.027	0.765
	SN3	0.105	0.043	0.750	0.123	0.756
	SN4	0.029	−0.090	0.830	−0.118	0.85
Facilitating Conditions	FC1	0.067	0.071	0.158	0.780	0.812
	FC2	−0.081	0.122	−0.035	0.829	0.879

	FC3	−0.034	−0.142	0.158	0.855	0.763
	FC4	0.043	0.124	−0.144	0.748	0.754
	FC5	0.019	0.075	0.096	0.848	0.832

Source: Survey data (2023)

3.16. Descriptive statistics

This section describes the data that was collected pertaining to the questions on the four constructs in the study: FC, SN, PU, and PEU. Each question addressing the particular construct was coded with values of 1 to 5 in relation to scores on the Likert scale. Furthermore, percentages of the total processed tallies were computed as per the tally of each question asked by the respondents.

Facilitating Conditions (FC)

FC refers to the conditions that accelerate the usage of mobile banking in South Africa. A question was asked on whether respondents afforded the necessary usage of m-banking services. It was established that 40,6 per cent agreed, and 43 per cent strongly agreed. This translated to over 80 per cent of respondents agreeing that they have the resources to access mobile banking services.

Table 7: Facilitating conditions.

Facilitating Conditions	1	2	3	4	5
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I can afford the resources necessary to use mobile banking services. e.g., data, smartphone, network.	2.8%	3.8%	9.8%	40.6%	43%
2. I have the knowledge necessary to use mobile banking services.	1.8%	3.1%	7.7%	41.5%	45.9%
3. It is simple to get help from my bank on using mobile banking	2.1%	6.2%	16.2%	41.3%	34.1%
4. I have a stable network connection to connect to my mobile banking app	2.5%	4.9%	12.9%	42.5%	37.2%
5. My mobile banking app has simple menu features	1.7%	3.1%	8.6%	50.1%	36.6%

Source: Survey data (2023)

Subjective Norm (SN)

The results of this study reveal that in the South African context, SN has some positive influence on m-banking adoption. Table 8 below outlines the fact that the construct shows the majority of the respondents had a higher measurement on the Likert scale for the majority of the four questions asked (Agree = 41.9%,38.1%,48.7%). The argument is also supported by the low scores in all the respondents' "Strongly Disagree" and "Disagree" measurements.

Table 8:Subjective Norm (SN) Respondents

Subjective Norm	1 Strongly Disagree	2 Disagree	3 Neutral	4 Agree	5 Strongly Agree
1. People who are important to me advise me to use mobile banking services.	22.9%	7.6%	21.3%	41.9%	6.3%
2. People who influence my behaviour think that I should use mobile banking services	8.6%	12.2%	24.6%	38.1%	6.7%
3. Mobile banking services use is a status symbol in my environment	13.2%	28.2%	25.8%	23.5%	9.4%
4. People who are important to me are aware of the services that mobile banking offers	31%	4.5%	12.8%	48.7%	2.9%

Source: Survey data (2023)

Perceived usefulness (PU)

PU had a more affirmative response in comparison to the FC and SN constructs discussed in the above sections. Of all the questions asked concerning the constructs, the lowest score was asking if m-banking had a useful impact in helping South Africans conduct banking chores, with 54% Strongly Agreeing to this. The construct had a Mean of 3.677, and a Standard Deviation of 1.408. The results are supported.

Table 9: Perceived usefulness (PU)

Perceived usefulness	1	2	3	4	5
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. Mobile banking makes it easier to do banking activities	1.2%	0.2%	3.7%	32.5%	62.3%
2. Mobile banking enables me to do banking activities more quickly	1.5%	0.4%	2%	31.1%	65.0%
3. Mobile banking enables me to complete banking activities more conveniently	1.4%	0.4%	5.2%	33.2%	59.7%
4. Mobile banking is useful in conducting banking activities	1.2%	0.3%	5.1%	38.6%	54.8%

Source: Survey data (2023)

Perceived ease of use (PEU)

PEU resulted in somewhat moderate scores more than PU in terms of the research's positive responses i.e., “agree” and “strongly agree”. The majority of respondents were neither neutral nor unclear on the questions asked on the construct. This shows a major improvement over the last two decades in comparison to the measurements on m-banking services and mobile phone usage in one of the first-ever studies done in South Africa by some of the experts on the topic (Brown et al.,2003).

PEU has a significant impact on the consumers' intentions regarding the adoption of m-banking. When the research respondents become aware of the benefits of m-banking, it makes them more likely to use that service. As such, this study revealed that consumers demonstrated that m-banking is a form of personal self-service technology (Arvidsson, 2014).

Table 10: Perceived ease of use (PEU)

Perceived ease of use	1	2	3	4	5
	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. It is easy to learn how to use mobile banking	1.2%	3.2%	13.9%	52.9%	28.8%
2. It is easy to get mobile banking to do what I want it to do	1.6%	3.9%	14.3%	53.5%	26.7%
3. It is easy to become skilful at using mobile banking	1.1%	4%	14.1%	49.4%	31.3%
4. Overall, mobile banking is easy to use	1.2%	1.7%	9.5%	48.2%	39.4%

Source: Survey data (2023)

3.17. Binary Model Results

A binary model was used to determine the factors influencing m-banking in South Africa. Researchers use binary models frequently because they may be used to forecast outcomes that are difficult to quantify or see such as customer behaviour, and risk assessment (Harrell Jr, 2015). The Hosmer-Lemeshow test was used to evaluate the fitness of regression. The model explained about 67 per cent of the variance in individual factors contributing to m-banking adoption. Five variables were statistically significant in influencing the adoption of m-banking as seen in Table 11. The Hosmer and Lemeshow test reveals a good fit (p value>0.05), suggesting that there is no difference between the predicted and observed model values of the dependent variable. The summary of the results is shown in Table 11.

Table 11: Binary logistic model results

VARIABLES	B	S.E.	WALD	DF	SIG.	EXP(β)
GENDER	-1.102	0.456	5.881	1	0.013***	0.350
AGE	-0.027	0.010	6.509	1	0.010***	0.909
EDUCATION(3)	0.327	0.357	1.107	1	0.234	1.381
EMPLOYMENT	-0.338	0.270	1.50	1	0.212	0.756
INCOME	-0.006	0.040	0.037	1	0.859	0.933
PU	-0.002	0.009	0.056	1	0.005**	0.929
PEU	0.945	0.319	7.701	1	0.002***	2.575
FC	-0.202	0.378	0.46	1	0.515	0.765
SN	0.000	0.000	3.449	1	0.061*	1.000
Constant	0.567	0.815	0.526	1	0.429	1.821
Number of observations					993	
-2 Log likelihood					341.244	
Cox & Snell R Square					0.117	
Nagelkerke R Square					0.140	
Hosmer and Lemeshow Chi-Square Test					8.777 (df = 10; p-value = 0.368)	
Omnibus Tests of Model Coefficients Chi-square					32.453 (df =13; p-value = 0.001)	
Overall model prediction (%)					67%	
Significant at 10%*; 5%** & 1 %*** significance level						

Source: Survey data (2023)

3.18. Chapter summary

This chapter looked at the findings of the data collection. The reliability and validity tests were revealed. The constructs that were significant were noted. The demographic findings are also brought to light as well as the binary model results. Literature is added to the findings. This chapter sets the tone for the next chapter where the results of the study are interpreted.

4. Chapter Five - Interpretation of Results

4.1. Introduction

This study initially set out the work to investigate m-banking factors that determine its adoption in the South African population. The research then established questions and objectives on the degree of impact SN, PEU, and PE had on m-banking adoption in order to address the focus in relation to the research topic and carry over from the advice of previous studies (Alalwan et al., 2016; Sharma, 2019).

4.2. Interpretation of results

4.2.1. SN

Researchers on the topic of m-banking have in the past encouraged the need to explore Subjective Norm as a determinant of an individual's intention to adopt m-banking (Baptista & Oliveira, 2015). As such, this drove this study to find an answer to the research question - what impact does SN have on the adoption of mobile banking in the South African context? According to the result of the findings, it was discovered that SN was statistically significant ($p = 0.061$), with a positive coefficient ($Exp(\beta) = 1.000$). The revelation above means that an individual influenced by SN towards the intention to adopt m-banking would have the probability of 1.000 times to do so. This is backed by the reliability of the measure of the construct's internal consistency (Cronbach's alpha = 0.841).

4.2.2. PU

This study also aimed to answer what impact Perceived Usefulness had on m-banking adoption in South Africa. Although previous studies had been conducted on the topic, it was of interest to investigate the South African population to see if there had been any changes caused by the impact of Covid-19. This is due to the fact that the majority of business services were shut down and economic participation such as transacting was mainly done electronically.

PU proved to be an important consideration for an individual's intention to adopt m-m-banking. The study found a positive relationship between PU and the adoption of m-banking at a 5 per cent significant level (p = 0.05). The odds ratio revealed that a person influenced by PU would be 0.929 times more likely to adopt m-banking technologies. Therefore, PU and its ability to positively impact the adoption of m-banking among consumers (AVE = 0.805) made the construct statistically significant (Eraslan Yalcin & Kutlu, 2019). This conclusion is in line with the same conclusions reached in previous studies conducted on the m-banking topic (Hanafizadeh et al., 2014; Teo et al., 2012).

4.2.3. PEU

The last question this study was aimed at answering was the impact Perceived Ease of Use had on the South African population's mobile banking adoption. Looking at reliability PEU scored a Cronbach's alpha of 0.776 (Table 5), this shows that the construct is reliable with regard to this study. The results also show the Mean (3.347) to be relevant for the study (Table 5) because the respondents had lower neutrality of less than 15 per cent, and the majority fell under the "Agree" category at a 50 per cent average (Table 10). The construct scored 2 per cent in terms of significance, qualifying it for statistical significance.

It was discovered that the majority of the South African provinces share the same information regarding the benefits of technologies such as m-banking, and therefore it is anticipated that the differences between populations will become less glaring over time. The findings of this study yielded results that were comparable to those obtained by Sabiote et al. (2012), and Zhang et al. (2018).

4.3. Demographic variables

Age

The study findings pointed out that the variable Age has a negative relationship in influencing the adoption of m-banking at a 1 per cent significant level (p=0.010; β = -0.027). This simply means that the younger the individual, the are 0.909 times (Exp (β) = 0.909) likely to adopt. However, the literature is inconclusive with regard to the effect of this variable in affecting the adoption of m-banking.

Gender

On the other hand, the variable Gender has a negative relationship with the adoption of m-banking. It was statistically significant at a 5 per cent level (p=0.013) and with a coefficient of -1.102. The odds ratio points out that when the respondent is female; there is 0.350 times more likelihood to adopt m-banking. Numerous studies found a positive association between female users of mobile devices and m-banking adoption.

Income

Income was found to be positively influencing the adoption of m-banking and statistically significant at a 1 per cent level (p=0. 061; beta coefficient β =0. 000). The odds ratio (Exp (β) =1. 000) revealed that the higher the income one has the more they're likely to adopt.

4.4. Chapter summary

This chapter discussed the objectives of what the study set out to do and the implications of the findings of the study. The results of the study are in line with other researchers who tested the TAM to investigate m-banking adoption. As such, the following chapter discusses the gaps that remain on the topic and guides future studies pertaining to the adoption of m-banking.

5. Chapter Six – Conclusion, Recommendations, and further research

5.1. Introduction

The concept of m-banking in South Africa started in the last 15 years (Brown et al., 2003). The researcher of this study sat and analysed papers that were done in the local as well as the SADC regional environment and concluded that though the majority of the studies were focused on the Gauteng province, more sampling would be needed to understand how m-banking adoption factors impact the population in other provinces. As such, this led to the enquiry into seeking out the adoption factors for m-banking as mobile phone usage had long reached a critical mass in the South African population of 60 million. The research undertaking was further encouraged by the fact that there were more than 20 million individuals who were still not banked at the time of this writing (Banking Assosciation of South Africa, 2020).

The researcher analysed various frameworks used in renowned studies on technology adoption and concluded that Technology Adoption Model by Davis (1989) was suitable to address the research objectives on m-banking factors in South Africa's nine provinces as there is no study that was found to have ever done so. The results of the findings are discussed in Chapter 4 and Chapter 5. The section below is aimed at discussing the study objectives and their outcomes.

5.2. Outcomes of research objectives.

The first objective was to use a modified TAM model to investigate SN construct as a driver of mobile banking adoption. The study showed that this construct has a positive relationship towards the intention to adopt the technology. This result is nothing different from what other studies discovered in environments where the society's collective decision-making was more prevalent than individualist (La Barbera & Ajzen, 2020).

To support the inference made above, the results of the study reveal that the respondents recorded a mean close to 40 per cent with positive scores on the construct. This signalled that generalisation can be made that the South African society deems those in their circles to have a major influence on the decisions they

make. The same results proved the same in research done in previous studies ((Baptista & Oliveira, 2015).

The second objective of this research was to investigate PU as a driver of m-banking. The findings on construct proved that an individual will be positively impacted by the propensity to deem a technology useful before they can adopt it. The results of the data collection showed that respondents were more assertive on the questions, with the lowest score at 54% in the “Strongly Agree” category. This makes the results helpful to researchers who would like to investigate the topic further.

It is worth highlighting that although studies have been done incorporating the use of PU as a moderator in studies before, the constructs still yielded a high score even beyond the peak of the Covid-19 pandemic which halted business operations at a global level. As such, the study does confirm that PU is a strong predictor of m-banking adoption. As discussed in chapter 4 and 5, the reliability, and correlation of the findings of this research undertaking supports this assertion.

The last objective of this study was to set out and investigate the Perceived Ease of Usefulness as a driver of m-banking in South Africa’s 9 provinces. The exploration showed a strong agreement on the variable’s measurement by the respondents meaning that they were clear and understood the impact of the construct on behavioural intention. This has been supported by the results of the factor loadings to test reliability and validity as well as the outcomes of the descriptive statistics as described in Chapter 4.

Over the last two decades, PEU has proven to be a relevant moderator of technology adoption. After reviewing work by previous studies on m-banking topics in South Africa, they deduced that the construct positively impacts adoption, and the same assertion remains confirmed after conducting this study. It is then safe to conclude that PUE is a strong driver of m-banking in South Africa and related economies.

5.3. Recommendations

5.3.1. Understand the needs of the population groups' banking needs.

The South African banking service providers and policymakers will have to study and understand the needs of the masses. The South African banking industry is rated among the best in the world as it has shown resilience even during tough economic conditions. The two arguments above might sound like an oxymoron, but this is due to the effect of inequality and wealth distribution over the minatory one per cent population which controls ninety per cent of the means of production resulting in the few banking industries serving the few wealthiest and the middle-class income groups (World Bank, 2023). The argument is supported by the finding of the study revealing that the respondents had earnings of five per cent in the above sixty thousand range, and eighteen per cent earned fifteen to forty-five thousand.

Antony Jenkins a former executive at ABSA bank said that if businesses want to see growth of m-banking services, they will have to do away with the traditional product-focused approach and become customer-centric as the needs of the customers evolve all the time, this means they have to concentrate on meeting the expectations of customers on m-banking functions (FinExtra, 2023). In this way, financial service providers will be able to have a lifetime journey and interactive feedback from their customers.

5.3.2. Deregulate by expanding the market.

South African banks have been reported to not keep up with technological evolution. This has a great impact on banking where the majority of bank customers still prefer using cash, a sign of not penetrating the population enough. On the contrary India, the most populous country in the world with 1.4 billion people has seventy-eight per cent of the population using a bank account (Statista, 2023). This number means that the majority of the population is financially included and actively participating in the economy and ultimately included in the global economy.

The South African central bank recently took a decision to allow FinTechs and other institutions to offer financial services through partnering with a bank whose license is in good standing (Deloitte, 2022). Such innovations are needed in order to unlock

new markets where traditional banking products have failed. and organisations which desire to penetrate the South African banking market with technological innovations will take proper consideration of how the findings of this study can play a major role in helping turn potential customers towards adoption.

5.3.3. Collaboration with telecoms networks to ensure increased participation.

The South African banking industry needs to explore partnerships with telecoms in order to leverage their coverage capabilities on the population that is in the urban and rural areas. This would allow the banking service providers to analyse the successful strategies that telecom businesses use to reach out to the masses. This study identified that critical mass had not been reached from an m-banking perspective, but mobile device usage had reached it over a decade ago (Aker & Mbiti, 2010; Mothobi & Grzybowski, 2017).

The partnerships strategy between banks and telecoms businesses has the potential to help increase the GDP as more revenue would be generated by the industries. This would also be advantageous to the banking industry through the ability to minimise costs of setting up the required complex infrastructure in remote areas where the population struggles to obtain even basic services. It is worth noting that technology firms are already implementing this strategy in remote and urban sub-Saharan African economies where telecoms giants have gained new market share in financial services, examples are Vodafone M-PESA, Mukuru remittances, MTN MoMo (Nan, 2019). This then signals a big warning in that the population can now transact without the need to have a bank account and therefore taking the market from the banking industry to the rhetoric it can easily become a *"museum of technology"* if it does not transform by digitalising its portfolios (FinExtra, 2023).

5.4. Further research considerations

This study focused on the cross-sectional approach to investigating the adoption of m-m-banking meaning that the study could be carried out for a short period of time. This was meant to ensure the requirements of the study were met from an educational policy perspective. Therefore, more research is needed to analyse the m-banking phenomenon for a long period of time using a longitudinal time horizon to see what results the constructs would yield. Longitudinal studies can give

researchers time to analyse phenomena because socio-economic variables change all the time and ultimately impact consumer behaviour. A good example is how the Covid-19 peak period impacted consumer behaviour.

The m-banking researchers can also look into studying consumers' and banks' co-creation of banking products (Venter de Villiers et al., 2020). This type of investigation would be aimed at focusing on the active collaboration of the products that the banks are offering. This is because globalisation allows more variety in terms of choice of products and makes it simpler for consumers to turn over if they're not happy with the products offered by their bank. Furthermore, competition has also increased as new players in the financial services sector are being introduced. Therefore, more customer-centric studies are needed to help tap into the mindset of the consumers.

Another option that can be investigated by future researchers is the ability to modify the research model by using other moderators (Baptista & Oliveira, 2015). This is to ensure that the m-banking topic does not cease to evolve and be able to capture the dynamics of the changing world. A blanket approach cannot be used to define the global community as it's very vast and complex and therefore it is not satisfactory if the same constructs are used across all the regions of the world.

The power of social media has no doubt taken the global economy by storm in the last 2 decades (Sharma et al., 2022). It would be fit to have investigations into the impact of social media on m-banking. This is due to the fact that it is cost-effective for advertisers to reach masses of global potential customers as well as tap into new digital markets over and above the traditional brick-and-mortar product offering approach. social media platforms such as Facebook can hit 2 billion users in a financial quarter, this is more than the population of the entire African continent, therefore justifying the need for reaching out to social media platforms by financial institutions.

5.5. Chapter summary

The chapter closes the recommending future work that can be looked to pertain to m-banking in developing economies such as South Africa. This also highlights that the topic has not been exhausted as some researchers have suggested. There are more individuals who are still not financially included in sub-Saharan Africa and so the topic remains relevant.

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Appendices

Appendix A: Research instrument

Questions Mobile Banking Constructs

Question no.	Facilitating Conditions	1	2	3	4	5
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
FC1	I can afford the resources necessary to use mobile banking services. e.g. data, smartphone, network.					
FC2	I have the knowledge necessary to use mobile banking services.					
FC3	It is simple to get help from my bank on using mobile banking					
FC4	I have a stable network connection to connect to my mobile banking app					
FC5	My mobile banking app has simple menu features					

Question no.	Subjective Norm	1	2	3	4	5
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
SN1	People who are important to me advise me to use mobile banking services.					
SN2	People who influence my behaviour think that I should use mobile banking services					
SN3	People who are important to me are aware of the services that mobile banking offers					

Question no.	Perceived usefulness	1	2	3	4	5
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
PU1	Mobile banking makes it easier to do banking activities					
PU2	Mobile banking enables me to do banking activities more quickly					
PU3	Mobile banking enables me to complete banking activities more conveniently					
PU4	Mobile banking is useful in conducting banking activities					

Question no.	Perceived ease of use	1	2	3	4	5
		Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
PEU1	it is easy to learn how to use mobile banking					
PEU2	it is easy to get mobile banking to do what I want it to do					
PEU3	it is easy to become skilful at using mobile banking					

Mobile banking usage questions

Do you own a mobile phone?	Yes	
	No	

Do you have a bank account	Yes	
	No	

Which bank do you mainly use?	ABSA	
	Capitec	
	FNB	
	Nedbank	
	Standard bank	
	Other	

What account type do you hold at your bank? (Please mark all that apply)	Cheque	
	Savings	
	Credit card	
	Other	

How often do you perform a transaction using your bank per month	0-5 times	
	10-15 times a	
	15-20 times	
	Other	

To what extent do you use the following to do banking? (Please mark all that apply)	ATM	
	Internet	
	Cell phone	
	Point of sale	
	Stop order	
	Other	

Which services would you use if you did Mobile banking? (Please mark all that apply)	Balance enquiry	
	View statements	
	Payments	
	Debit orders	
	Inter-account transfers	

Demographic questions

Gender	Male	
	Female	
	Not Specified	

Current employment status	Employed	
	Unemployed	
	Retrenched	
	Retired	
	Other	

Which of the following best describes your position in your company? (Job title/position)	Junior manager	
	Middle Manager	
	Senior Manager	

Age group (in years)	20-30	
	31-40	
	41-50	
	51 and above	

Marital status	Single	
	Married	

Education level	Undergraduate	
	Graduate	
	Postgraduate	

Income level (monthly)	Less than 3 000	
	3 000 to 15000	
	15 000 to 30 000	
	30 000 to 45 000	
	>55 000	

Ethnicity (in the South African context)	Black/African	
	Coloured	
	Indians	
	White	
	Foreigner	

Appendix B: Ethics clearance certificate

Graduate School of Business Administration
University of the Witwatersrand, Johannesburg

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

Ethics Clearance Certificate

Ethics protocol number: WBS/BA2327118/392
This certificate is only valid with a legitimate ethics protocol number and signed by the Researcher (below).

Project title	Factors influencing the uptake of mobile banking adoption in South Africa.
Investigator / Researcher	Mr Steward Mabunda
Nature of Project	MBA (Research Article)
Decision of the Committee	Approved, provided stakeholders and participants are guaranteed confidentialty.
Issue Date of Certificate	2022-10-11
Expiry date	Date of submission of the project / research report
Chairperson	Prof Anthony Stacey ☎ +27 11 717 3587 +27 82 880 4531 anthony.stacey@wits.ac.za

Declaration by Researcher

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

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