Factors influencing the adoption of mobile banking among lower-income groups in Gauteng

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ABSTRACT

The focus of the study was to determine factors that influence the adoption of mobile banking among lower income groups in Gauteng. The theoretical framework was based on TAM, UTAUT, Theory of Perceived Risk and Trust Transfer Theory. (SPSS v27) was used to check the quality of the data from 200 respondents in Cities, Towns and Townships in and around Gauteng where data was collected using a self-administered survey to address the research objectives. This quantitative study aimed to investigate the role of Perceived Trust (PT), Perceived Ease of Use (PEOU), Perceived Cost (PC), Perceived Risk (PR), and Facilitation Conditions (FC) in the application of behavioural intention (BI) towards mobile banking services. The initial hypotheses for the following constructs were supported: PC was accepted to have a negative effect on BI; PEOU was accepted toe have a significant positive effect on BI; PR2 was found to have a significant effect on BI; and FC had a significant positive effect on BI. However, the initial hypothesis for PR1 was rejected because it had no significant effect on BI. Age and PEOU variables had no significant relationship, and the hypothesis of income and PC having a significant relationship was also rejected. In the past there are studies that looked at mobile banking adoption in South Africa. However, none of them have focused of mobile banking adoption among lower income groups in Gauteng. This study focuses on factors influencing adoption of mobile banking among lower income groups in Gauteng where they are found to be an important contributor to financial institutions.

Keywords: Mobile Banking, Adoption, TAM, UTAUT, lower Income group, South Africa (Gauteng)

DECLARATION

I, Bongani Msimanga, declare that the factors influencing adoption of mobile banking among lower-income groups in Gauteng report is my own work, except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Management in the Field of Digital Business at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university**.**

Msimanga
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Bongani Msimanga

Signed at…Pretoria…….

On the…31…… day of …March…….2022

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ANOVA – Analysis of variance

BI – Behavioural Intention

BOP – Bottom of the pyramid

FC – Facilitating Conditions

ICT – Information and Communication Technology

KMO – Kaiser-Meyer-Olkin

MB – Mobile Banking

PC – Perceived Cost

PEOU – Perceived Ease of Use

PR – Perceived Risk

PR1 – Perceived Risk1

PR2 – Perceived Risk2

PT – Perceived Trust

TAM – Technology Acceptance Model

CHAPTER 1. INTRODUCTION

This chapter will cover the study's background, purpose, problem statement, and objectives that will lead the study, as well as the significance of the study and any delimitations. The chapter will end with assumptions of the study, the definition of terms and the report structure.

1.1 Purpose of the study

The purpose of this study was to evaluate the extent of factors influencing the adoption of lower income groups in Gauteng.

1.2 Context of the study

In South Africa, online banking has surged among urban cell phone users, rising to 44% from 27% a year earlier. (Goldstuck, 2012). This is due to consumers having come to trust mobile devices as a communication and efficiency tool. Furthermore, the impacts of the Covid-19 pandemic have resulted in an increase in the use of mobile banking (MB) as a service, with new adoption up to 200% higher than the previous daily average (Schindler, 2021). In 2020, 680 million applications were downloaded, with 64 percent of those being banking and financial apps (Kemp, 2020).

While mobile technology is widely accepted, mobile money technology has a low level of adoption, particularly among low-income groups (Chigada & Hirschfelder, 2017; Kabir, 2013). MB reduces time and travel, making basic financial services more accessible to low-income individuals.

Any banking activity facilitated through the use of a mobile device is referred to as MB (Rehman & Shaikh, 2020). This service is typically provided by banks and financial institutions remotely using tablets and smartphones. Customers can use their mobile phones and smartphones to conduct balance enquiries, and make account payments at any time and location (Alalwan, Dwivedi & Rana, 2017). For access to this mobile MB capabilities, however, the combined needs of electricity, coverage, connection, and data must be met in order to enable this Information Communication Technology (ICT) infrastructure.

In industrialised and emerging countries like the United States, the United Kingdom, China, India, Pakistan, Malaysia, and Iran, MB services are widely used (Rehman & Shaikh, 2020). As indicated by the launch of the financial service, MB has a lot of promise to help the poor integrate their finances. Eko India Financial Services Pty Ltd is a firm based in India that offers mobile money services to persons who have no bank accounts and their services are purely cell phone-based on the Simpli bank platform (Nandhi, 2011). MB is growing across Africa. The rise in MB has helped to solve the problem of the lack of banks in rural areas. This has offered alternatives in Kenya, where the majority of the population is financially excluded (Simiyu, 2019).According to an Eko research report, 90% of customers claimed their saving patterns had increased, with 57% “improvement” and 41% “somewhat improvement” after creating an Eko account (Nandhi, 2012). However, in Gauteng in particular, while many low- and moderate-income families have access to the internet, many remain under connected with intermittent connectivity (Rideout and Katz, 2016). The authors further state that affordability is one of the reasons why families at the bottom of the economic ladder lack access to the internet for financial transactions.The question of how diverse communities in South Africa's various economies use MB is further illustrated. According to the Deloitte Global Mobile Survey (2017), high-income groups are more likely to use the MB app for money transfers, whilst low-income groups are more likely to use money transfer providers. Furthermore, in a study of low-income clients conducted by WIZZIT, a start-up MB service that offers MB accounts, low-income users scored the convenience of MB higher (CGAP, 2016).

1.3 Research problem

Individual clients are crucial to banks because they represent chances for revenue and profit growth. The South African banking industry has adapted online transacting into its daily operations, according to Chigada & Hirschfelder (2017). Access, download, and convenience of use were regarded as major factors by users (Cudjoe, Anim, & Nyanyofio, 2015). Both Perceived Cost (PC) and Perceived Risk (PR) were shown to be adversely connected to perceived ease of use in an Indian poll of bottom-

of-the-pyramid clients, but the component of trust had the biggest impact on the practical use of mobile banking (Kansal, 2016).

There is existing literature that covers factors affecting MB adoption (Kansal, 2016) but it is unclear how Perceived Trust (PT), Perceived Ease of Use (PEOU), Perceived Cost (PC), Perceived Risk (PR), and Facilitating Conditions (FC) influence MB usage intentions, particularly among low-income Gauteng residents. For this reason, the South African (Gauteng) research is proposed to gain in-depth knowledge into factors that influence lower income groups in Gauteng to adopt mobile banking. The value of exploring this segment can help guide financial services firms. In the attempt to investigate and understand the identified problem, the study looks at the factors of PC, PR, PEOU, PT, FC, and behavioural intention (BI), in terms of their influence on the adoption of MB among lower income groups in Gauteng.

1.4 Research objectives

Based on the information above, it can easily be inferred that the issues of access and affordability make it difficult for lower income groups to participate in MB services.

From the issues highlighted above, the objectives of this study are to:

1. Investigate the role of PC, PEOU, PR, PT, FC towards MB adoption of BI.
2. Investigate the relationship that exists between Age and PEOU of MB adoption on BI.
3. Investigate the relationship that exists between Income and PC of MB adoption on BI.

1.5 Significance of the study

Due to challenges with external variables such as awareness and security which according to Ramavhona & Mokwena (2016), were found to have a significant influence on the adoption of MB among the lower income groups, financial institutions are not fully benefiting from mobile banking services. As a result, the focus of this study is on PC, PEOU, PR, PT, FC, Age and Income as factors influencing BI in the adoption

of mobile banking. This will assist financial institutions in growing their client base and identifying opportunities to better understand what motivates low-income customers to use the service, reducing the risk of failure when targeting this market.

1.6 Delimitations of the study

The study focused on users and non-users of mobile banking for personal use only, emphasising lower income users earning between R5600 to R6000 in Gauteng including towns, cities, suburbs, and townships. The focus is also on users and non-users of mobile banking services, irrespective of how they engage with mobile banking and how long they have been using the service.

1.7 Definition of terms

Mobile banking is the use of wireless application protocol to connect mobile devices such as cell phones and personal digital assistants to a banking network (Samant, Matter & Harniss, 2013)

Perceived ease of use is the degree to which a system's users find it simple to use a particular system (Abbas, Hassan, Asif, Junaid & Zainab 2018)

Perceived cost is a person's perception that using mobile banking services will cost them money (Ismail and Masinge, 2012).

Perceived risk is the subjective expectation of any loss incurred as a result of achieving a goal (Abbas et al., 2018).

Perceived trust indicates a customer's subjective likelihood that a certain transaction will be completed in a way that satisfies their trust expectations (Hassan and Wood,2020)

Facilitating conditions are the levels of belief that an organisation and technical infrastructure exist to enable the usage of technology by an individual (Yu, 2012).

1.8 Assumptions

- Respondents had access to an internet connection for MB use.

- The respondents answered the survey questions voluntarily and could withdraw at any time.
- Respondents would be sincere in their participation and honest in their feedback given on the survey.
- The respondents are consumers and non-consumers of MB and not business customers in Gauteng.

1.9 Chapter outline

The report's structure is set out as follows. The background of the study, the purpose of the study and the problem statement are discussed in chapter one. Chapter two details the literature review, theoretical framework, conceptual framework, and the drawing of the hypothesis. In chapter three, the research methodology is explored, with details of the study describing the population, the data collection method, the population sample, and the research instrument for data collection used, including validity and reliability. Chapter four presents the study results with a further detailed discussion of the results in chapter five. Chapter six is the study’s conclusion, discussing the findings and its implications.

CHAPTER 2. LITERATURE REVIEW

2.1 Introduction

This section of the research will look into the factors that influence lower-income groups in South Africa to use mobile banking services. The research and presentation of hypotheses will be guided by the theoretical and conceptual framework.

2.2 Background Discussion

2.2.1 *Mobile Banking*

Banking has progressed from traditional banking to internet banking, and subsequently to expanding internet banking to include MB. Consumers can use mobile banking to view account information, make payments, and do a variety of other banking tasks (Samant et al., 2013). While MB is brilliant for business, millions of people in developed and developing countries still lack access to financial services, due to a variety of factors like education and income levels (Ismail & Masinge, 2011).

2.2.2 *Lower Income*

All households with an income of less than R5600 fall into the lower income category, according to Chigada and Hirschfelder, (2016). For this study, a R5600- R6000 will represent a range for lower income groups. MB is a service requiring processing skills, experience, and acceptance of the use of the service. However, there is a behavioural tendency to resist change, and this stands in the way of acceptance and use of new technology. This study highlights the importance of financial institutions accessing the high percentage of lower income groups and to find out what drives their behaviour towards adoption of mobile banking services.

2.3 Theoretical framework

2.3.1 *Technology acceptance model (TAM)*

Davis' Technology Acceptance Model (TAM), published in 1986, was one of the models that attempted to address the process of client technology acceptance and use (Alsamydai, 2014). He further stated that PEOU, perceived usefulness,

behavioural intention, attitudes, and actual usage are all elements in this model. The TAM model has been used to differentiate between behavioural intentions and actual system usage by using Ajzen's theory of planned behaviour (Hoehle, Scornavacca & Huff, 2012). Even though TAM is one of the most mentioned models in the field of technology adoption with a lot of support throughout the years, a thorough understanding of the challenges requires more than one theoretical approach.

Users' attitudes toward the usage of new technologies can be predicted by perceived usefulness and ease of use, and so attitudes can be used to predict behavioural intention (Chong, Lin, & Tan, 2010). Intention to adopt and use technology is the precursor to behaviour (Ajzen, 1991). Many academics exploring digital adoption have found TAM to be a valuable resource (Hanafizadeh, Keating & Khedmatgozar, 2014). With much research having used the Technology Adoption Model to investigate the factors impacting the adoption of digital banking, internet banking, or mobile banking, Taherdoost (2018) states that TAM does consider other factors known as external variables including: system characteristics; user training; user participation in design; and the implementation process.

TAM, according to Gao, Krogstie & Siau, (2011), may not fully reflect the unique consequences of technology adoption in its basic form, and when applied to mobile services, it may affect consumer and user acceptance of the technology. They argue that people's intentions may not fully explain why mobile services are seen to be useful and simple to use. As a result, they advocated expanding TAM to include context, trust, personal initiatives, and characteristics as new elements impacting mobile service usage intentions.

TAM has limits, according to Taherdoost (2018), because it ignores social influences on technology adoption. It also has drawbacks when applied outside of the workplace, with additional variables needed to produce a more consistent prediction of the system. TAM may also be limited in the ability to be applied in the consumer context since it is limited in fulfilling consumer needs. TAM has been chastised for its implicit notion that once a client has decided to adopt, they can do so with no restriction. However, in reality, several constraints limit their ability to behave as they see fit.

2.3.2 *Unified Theory of Acceptance and Use of Technology (UTAUT)*

The Unified Theory of Acceptance and Use of Technology (UTAUT), according to Khalilzadeh, Ozturk & Bilgihan (2017), has been widely employed in the context of technological acceptance, the theory combines eight behavioural intention aspects. Among these models are TAM, the Theory of Reasoned Action (TRA), the motivational model, the Theory of Planned Behaviour (TPB), the model of PC usage, innovation diffusion theory, the combined TAM and TPB model, and models reflecting social cognition theory. As a result, the UTAUT has been validated in a number of countries and cultures, with studies demonstrating that it accounts for 70% of behavioural intention variance (Khalilzadeh et al., 2017).

The UTAUT discusses intent technology use and the ensuing user behaviour using four essential concepts: performance expectations, effort expectations, social influence, and facilitating conditions (Vankatesh, Morris & Davis, 2003). The four important concepts are the direct determinants of intention and using behaviour (Hanafizadeh et al., 2014. According to Khalilzadeh, Bulent, Ozturk & Bilgihan, (2017), these four dimensions are direct drivers of behavioural intentions and user acceptance, whereas attitude toward utilising technology, self-efficacy, and anxiety are not determinants of behavioural intentions. However, Venkatesh et al., (2003) and Moghavvemi et al. (2016), on the other hand, looked at the relationship between intention and behaviour to use technology and concluded that FC can't prevent external factors from having an impact.

External influences might inhibit or facilitate actions (or behaviours) that are not fully captured by the purpose, according to Venkatesh et al. (2003). Intention has also been found to be ineffective in predicting or explaining unforeseen occurrences that occur between the time the intention is formed and the time the action is taken (Moghavvemi et al., 2016). Finally, intention has been demonstrated to be ineffective in predicting behaviours that are not totally under the control of the individual. An individual, for example, may have been trained and intends to use mobile banking services but they will not be able to conduct the desired behaviour if their bank does not supply the service*.* Although UTAUT is a powerful model, it is not without flaws that limit its accuracy.

2.3.3 *Theory of perceived risk*

According to Li and Huang (2009), when communicating personal information online (e.g., identification numbers and credit card data) consumers feel insecure. They further state that online transactions come with many risks, including unauthorised transactions and fraud. Despite the fact that the internet provides online consumers with an extra channel for searching for product and service information, it still has some issues to address. When buying on the internet, consumers, for example, cannot feel, view, or touch the products or services before acquiring what they require. (Li and Huang, 2009). The authors further stathe that consumers may be apprehensive about the security of transferring credit card information over the internet. People's beliefs about the internet's lack of security and privacy are a barrier to electronic commerce adoption. Internet users believe that online product and service providers should give more secure tools to lower the PR of online purchase.

2.3.4 *Trust transfer theory*

Trust transfer is a cognitive process that occurs when one trusted entity transfers to another unknown entity in a new setting (Xiao, Fu & Liu, 2018). The authors further state that attribution theory, which aids persons in assigning attributions to events based on inferences gained from prior information, is the theoretical foundation for trust transfer. Researchers have classified Intra-channel and inter-channel trust transfer.

According to Xiao, Fu & Liu, (2018) The term "inter-channel trust transfer" refers to the ability to transfer trust from one setting to another. They go on to say that trust in an offline bank has a big impact on trust in its online banking counterpart, implying that trust is moving from offline to online channels. Customers' initial faith in mobile payment services is influenced by their trust in online payment services, suggesting that trust may be transferred from the web to the mobile environment (Xiao, Fu & Liu, 2018).

2.4 Factors impacting behavioural intention

In this section of the study, the literature on factors impacting behavioural intention is reviewed. PC, PEOU, PT, PR, FC, Age, and Income as moderating factors are discussed.

2.4.1 *To investigate the role of perceived cost towards mobile banking usage on behavioural intention*

The extent to which a person believes that using mobile banking services will cost money is characterised as PC (Ismail and Masinge, 2012). Kabir, (2013), names banking costs as the most essential attribute to stimulate the usage of mobile banking services and states that cost plays a major influence in the selection of mobile banking services. A study on the adoption of mobile commerce shows that PC is insignificantly compared to other variables such as PR, compatibility, and perceived usefulness in poor communities (Ismail & Masinge, 2012). On the other hand, Kansal (2016) argues that customers at the bottom of the pyramid have low incomes and are very price sensitive. Thus, the results of the two studies are inconsistent in that for some customers cost plays an important role while for others it does not, which then guides the proposed study on how low-income groups in Gauteng perceive the cost of mobile banking services.

Based on the literature reviewed above, it was hypothesised that:

H1: P has a negative effect on the BI towards the use of MB

2.4.2 *To investigate the role of perceived ease of use towards mobile banking usage on behavioural intention*

According to Abbas et al., (2018), PEOU is the degree to which users find a system to be simple to use. Gumussoy (2016), defines PEOU in relation to the system's ease of use as the user's perception of the system's ease of use when using it. When it comes to MB, Hassan and Wood (2020) affirm that researchers have previously observed a favourable association between PEOU and intention to use. The authors go on to explain the link between PEOU and attitude, as well as the intention to keep using innovation because of its perceived usefulness. According to a study conducted in

Zimbabwe, the easier the delivery method is to use, the more likely it is to be accepted; hence PEOU has a big impact on whether or not people will use mobile banking services (Abbas et al., 2018). However, according to a German study, PC, PEOU, PT were not the most important criteria influencing the decision to utilise mobile banking (Yu, 2012). As a result, the study advises that the following hypothesis about ease of use be investigated.

H2: PEOU has a significant positive effect on BI towards the use of MB

2.4.3 *To investigate the role of perceived risk towards mobile banking adopting on behavioural intention*

PR is defined by Abbas et al., (2018) as the subjective expectation of any loss that occurs in the pursuit of a result. The acceptance of mobile banking services is highly influenced by PR, according to research of the middle-class population (Kabir, 2013). In contrast, consumers remaining at BOP for mobile banking were not significantly affected by PR, according to research on innovation for the poor. (Ismail & Masinge,2012). As a result, the proposed research would address the following hypothesis about PR.

H3: PR has a significant negative effect on BI towards the use adoption of MB

2.4.4 To investigate the role of perceived trust towards mobile banking adoption on behavioural intention

According to Hassan and Wood (2020), PT refers to the subjective likelihood that a consumer believes a specific transaction will take place in a manner consistent with their trust expectations. Samant et al., (2013) indicates that a customers' view that a MB service provider is skilled enough to provide a reliable service is referred to as trust. Trust has three aspects, according to Kabir (2013): competence, integrity, and compassion. According to Samant et al. (2013), customer trust in MB can be gained when customers develop trust in integrity, care, and ability, which can reinforce trust and willingness to rely on MB to accomplish financial transactions. According to Ismail and Masinge, (2012), client loyalty to online services is favourably and directly related to trust. Another study by Van Deventer, De Klerk, & BevanDye (2017) found that trust

is more important in the use of MB services when there is uncertainty and perceived risk. As a result, the suggested research would look at the following hypothesis about perceived trust.

H4: PT has a significant positive effect on behavioural intention towards the use of mobile banking services

2.4.5 To investigate the role of facilitating conditions towards mobile banking adoption on behavioural intention

Facilitating Conditions (FC), according to Yu (2012), is the level of belief that an organisation and technological infrastructure exist to support the application of technology. FCs are defined by Alalwan, Dwivedi, Rana & Nripendra (2017) as the degree to which an individual believes that an organisation and technical infrastructure exist to facilitate the use of the technology. Yu (2012) discovered that technology-enabled conditions had a significant impact on the ability to control perceived behaviour, attitudes, and subjective standards. This is supported by Alalwan et al., (2017) confirming that customers may be inspired to use MB provided they have a specific degree of service and support resources, and the mobile device is compatible with other technologies they already use. The impact and role of facilitation on user behaviour towards MB services is supported by the above theory. As a result, the following hypotheses are proposed in this study:

H5: FCs have a significant positive effect on BI towards the use of MB services

2.4.6 *To investigate the relationship that exists between age and ease of use of mobile banking adoption on behavioural intention*

Redda & Surujlal, (2019), in a study of demographic variables and perception of MB, found that gender and age had no influence on customer perceptions. Laukkanen (2015) confirms the suggestion that age does not appear to moderate the effects of mobile banking. Sohail & Al-Jabri (2014) in a study on attitudes towards MB, state that the demographic characteristics of individuals are factors predetermining his/her attitude to mobile banking adoption. Young people prioritise convenience and time savings, according to the authors, and are more likely to use MB services than older

clients. The ease of use relates to the perception of MB as being easy to understand and operate (Sohail & Al-Jabri, 2014).

Based on the review above

H6: Age has a moderate positive influence towards ease of use of MB on BI

2.4.7 *To investigate the relationship that exists between income and cost of mobile banking adoption on behavioural intention*

Surujlal (2019) found that customers with higher education and higher income who use mobile technology for banking needs and have used it for longer periods of time, have more positive perceptions and attitudes about MB services. However, Rideout & Katz (2016) indicate that while low- and moderate-income families have internet, many are under connected with inconsistent connectivity. The authors further state that affordability is the reason why families do not have adequate access to the internet to engage in MB services.

For this reason, Hair, Krupka & Vlašić, (2021) suggest that the private sector and businesses look at low-income earners at the bottom of the pyramid as a market that can be reached with business strategies and where services cost less. The authors further state that successful strategies for consumers at the bottom of the pyramid include affordability and accessibility. In a study in Ghana, Cudjoe, Anim, and Nyanyofio (2015) found that perceived financial cost was the major setback regarding customers' adoption of MB services. In this case, income is linked to affordability and price sensitivity where Kansal (2016) describes affordability, as circumstances that stop a person from using the service, and price sensitivity to imply that at the bottom of the pyramid, PC OF MB would influence the perceived use. Upon the review of literature, the following hypotheses was formulated.

H7: There is a negative relationship between income and PC of MB banking services resulting in a negative BI.

2.5 Conceptual framework

Jabareen (2009) defines a concept to have some components that define it and a conceptual framework as a network of concepts that are alike. The author further

states that the conceptual framework analysis builds concepts based on ground theory frameworks.

The review of literature resulted in the following hypotheses

2.5.1 *Hypothesis 1*

H1: PC has a negative effect on the BI towards the use of MB

2.5.2 *Hypothesis 2*

H2: PEOU has a significant positive effect on BI towards the use of MB

2.5.3 *Hypothesis 3*

H3: PR has a significant negative effect on BI towards the use adoption of MB

2.5.4 *Hypothesis 4*

H4: PT has a significant positive effect on BI towards the use of MB services

2.5.5 *Hypothesis 5*

H5: FC have a significant positive effect on BI towards the use of MB services

2.5.6 *Hypothesis 6*

H6: Age has a moderate positive influence towards PEOU of MB on BI.

2.5.7 *Hypotheses 7*

H7: There is negative relationship between income and PC of MB services resulting in a negative BI**.**

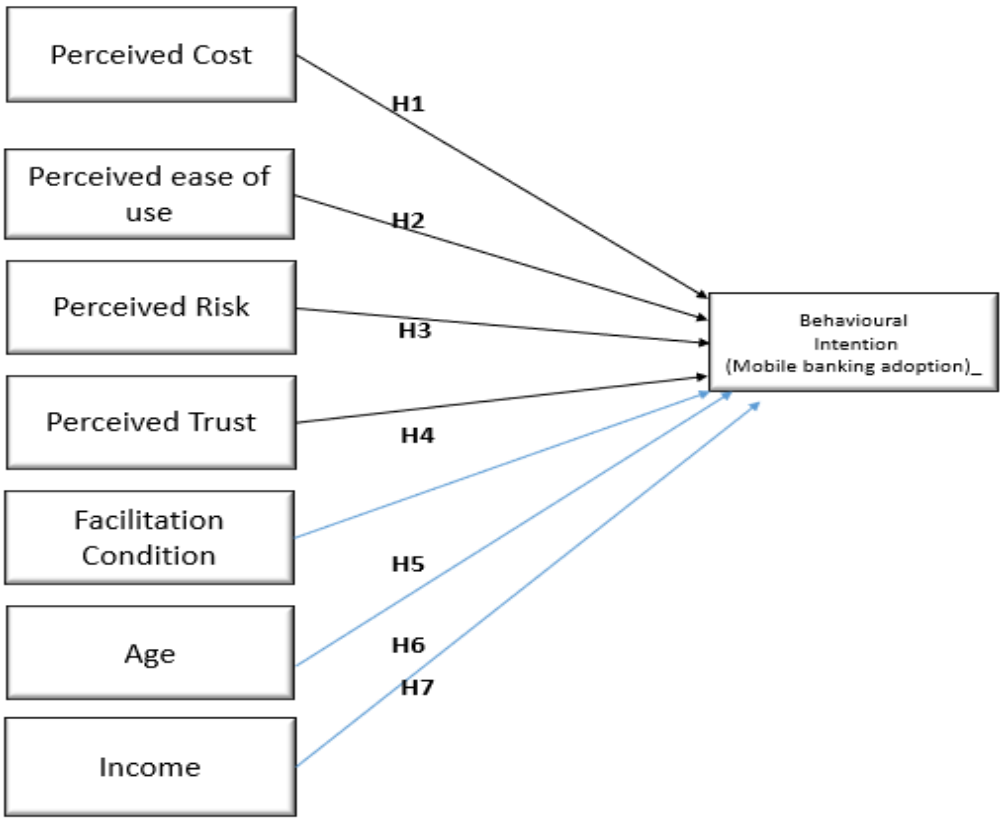

Figure 2–1 Summarised Conceptual framework

Source: Jabareen (2009)

2.6. Conclusion of literature review

The literature review resulted in Table 2–1 below summarises the hypotheses and research objectives on a consistency table.

Table 2–1 Consistency table: Research objectives

No	Research objective	Hypotheses
1.	Investigating the role of perceived cost towards mobile banking adoption on behavioural intention	H1: Perceived cost has a negative effect on behavioural intention towards the use of mobile banking

2.	Investigating the role of perceived ease of use towards mobile banking adoption on behavioural intention	H2: Perceived ease of use has a significant positive effect on behavioural intention towards the use of mobile banking
3.	Investigating the role of perceived risk towards mobile banking adopting on behavioural intention	H3: Perceived risk has a significant negative effect on behavioural intention towards the use of mobile banking
4.	Investigate the role of perceived trust towards mobile banking adoption on behavioural intention	H4: Perceived trust has a significant positive effect on behavioural intention towards the use of mobile banking services
5.	Investigating the role of facilitating condition towards mobile banking adoption on behavioural intention	H5: Enabling conditions have a significant positive effect on behavioural intention towards the use of mobile banking services
6.	Investigate the relationship that exists between age and ease of use of mobile banking adoption on behavioural intention	H6: Age has a moderate positive influence towards ease of use of mobile banking on behavioural intention.
7.	To investigate the relationship that exists between income and cost of mobile banking adoption on behavioural intention	H7: There is negative relationship between income and cost of mobile banking services resulting in a negative behavioural intention.

CHAPTER 3. RESEARCH METHODOLOGY

3.1 Introduction

In this section, the methodology for research and hypotheses is presented. This is done with consideration of the research approach, research design, data collection and sampling, the measurement instrument, data analysis and interpretation.

3.2 Research approach

The purpose of this quantitative study was to see how PT, PEOU, PC, PR, FC, age and income influenced lower-income group's willingness to use MB services in Gauteng. Quantitative research is a type of scientific study that uses both experimental and non-experimental approaches to track quantitative performance indicators. (Hoy & Adams, 2015). The study was based on deductive reasoning and used quantitative reasoning where data was collected, analysed, and interpreted for the results.

The approach used allowed for the measurement of dependent and independent MB variables to see if there was a significant relationship between them. This chapter operationalised the quantitative approach using a self-administered survey addressing the research objectives identified in chapter one. The outcome was dependant on the responses provided by respondents. The chapter also looked at population, sampling, instrumentation, and data collection, including validity and reliability.

3.3 Research design

The research design that was used is a survey design where data was collected using a self-administered survey to address the research objectives stated in chapter one. Online surveys, according to Heiervang and Goodman, (2011) can be completed faster and for less cost than traditional personal interviews. Couper, Traugott & Lamias (2001) state that in the absence of an interviewer to stimulate the respondent or provide direction on how to answer each question, the respondent seeks information from the instrument itself, utilising both the verbal and visual parts of the interface.

Eyisi (2016) opines that a quantitative study is a structured approach with variables, hypotheses, and research design, emphasising figures to be collected, collated, and analysed. The use of statistics, and the analysis via the IBM Statistical Package for Social Science (SPSS), on the data collected, enabled the interpretation of findings on the impact of factors influencing mobile banking adoption in Gauteng.

Some of the benefits of this approach included time saved and cost from the resource's requirement, including "research detachment" reducing research bias because of not directly contacting respondents (Eyisi, 2016). By distributing the online self-administered survey, the respondents' anonymity was supported and so was the researcher's objectivity, enabling the researcher to access a sample that otherwise could not be accessible through face-to-face interviews. Eyisi (2016) further pointed out that 'research detachment' can also be a disadvantage, with some respondents making it too hard to get the desired information.

3.4 Data collection methods

The online survey was undertaken and disseminated through the internet. Online surveys, according to Heiervang and Goodman (2011), can be completed faster and for less cost than traditional personal interviews. In the Covid era it was also advantageous to administer an online data collection, rather than face to face interviews, to avoid physical contact.

The final survey was shared with the respondents through Qualtrics and email. Because internet connectivity is a prerequisite for MB, it was assumed that all respondents had access to the internet.

3.5 Population sample

Respondents of all ages and races from various parts of Gauteng who had access to one device (smartphone, laptop, phablet, or tablet) and used or did not use mobile banking facilities made up the study's target population.

Respondents who could be reached through social media platforms (WhatsApp) and email were also included in the study. Because both require the same infrastructure (internet connectivity), it was assumed that respondents who have access to social networks would also have access to MB services.

3.5.1 *Population*

Respondents of all ages and races from various parts of Gauteng who had access to one device (smartphone, laptop, phablet, or tablet) and used or did not use mobile banking facilities made up the study's target population.

Respondents who could be reached through social media platforms (WhatsApp) and email were also included in the study. Because both require the same infrastructure (internet connectivity), it was assumed that respondents who have access to social networks would also have access to MB services.

3.5.2 *Sample and sampling method*

The sample used for the study was a non-probability, convenience sample (Cooper & Schindler, 2014). This was due to limited research time and budget. Wolf, Joye, Smith, Smith, & Fu (2016) stated that the sample argument of representativity is based on mistaken belief because of the self-selection bias of the sample respondents and because of the interest to represent a specific population on the survey.

The study sample included both users and non-users of mobile banking services. Both genders were represented and were older than 18 years of age, from different socio-economic backgrounds. Data collection was collected through Snowball sampling, a sampling method that uses a few cases to encourage participation in a study and convenience sampling, which includes selecting participants based on the ease of availability, with both being non-probability sampling techniques (Hamed Taherdoost, (2020). The data was collected in Gauteng, South Africa using the Qualtrics survey tool.

3.6 The research instrument

The survey consisted of 40 questions which were distributed to respondents and included an introduction to demographic information, income, mobile banking use, and experience in using mobile banking. All scaled responses were recorded on a five-point Likert-type scale, ranging from strongly disagree (1) to strongly agree (5). The

study did not include open questions as it was a quantitative study. The results were categorised on the basis the demographics to allow for further analysis.

Part B asked about previous mobile banking experiences, mobile banking models, and present and future intents to use mobile banking. Parts C, D, and E focused on PC, PEOU, PT, PR and FC for behavioural intention, with the majority of items rated on a scale of 1 to 5, where one was insignificant, two was minor, three was moderate, four was major, and five was catastrophic.

Table 3–1 Constructs used in the study

Construct	Literature sources	Dimensions
Mobile banking perceived cost	Luarn and Lin [2005], Sripalawat et al. [2011]	1. The cost of doing mobile banking is higher than using other banking channels 2. The wireless link fee is expensive when using mobile banking 3. The mobile device setup to using mobile banking, charges me a lot of money 4. Using mobile banking services is a cost burden to me
Mobile banking perceived ease of use	Alsamydai (2014)	1. To what extend does perceived ease of use affect your perceived usefulness 2. To what extend does perceived ease of use affect your experience to use mobile banking services 3. To what extend does perceived ease of use affect your experience to use mobile banking services? 4. To what extend does perceived ease of use affect your acceptance to use mobile banking services
Mobile banking perceived risk	Wang, (2020) & Jazed (2017)	1. I'm concerned that my personal information will be shared or sold to others when accessing mobile banking service platform

		2. I'm concerned that banking services platforms collect too much personal information about me 3. I'm concerned that mobile banking platforms are not safe to use 4. I'm concerned that sharing personal banking information cannot ensure my personal safety 5. I believe my information is kept confidential 6. I believe my transactions are secured 7. I believe my privacy will not be divulged
Mobile banking perceived trust	Javed (2018)	1. If I had a built-in help guidance for assistance 2. I trust the system's reliability and availability 3. If I had seen someone else using it
Mobile banking facilitating conditions	Venkatesh et al. [2003], Venkatesh and Zhang [2010], Sripalawat et al. [2011]	1. My living environment supports me in using mobile banking 2. My work environment supports me in using mobile banking 3. Using mobile banking is compatible with my life 4. Help is available when I get a problem using mobile banking
Behavioural intention	Venkatesh and Zhang [2010], Luarn and Lin [2005], Sripalawat et al. [2011]	1. I prefer to use mobile banking 2. I intend to use mobile banking 3. I would use mobile banking
Mobile banking adoption	Luarn and Lin [2005], Venkatesh and Zhang [2010], Foon and Fah [2011]	1. Using mobile banking would improve my performance 2. Using mobile banking would save me time 3. I would use mobile banking in anyplace 4. I would find mobile banking useful

3.7 Procedure for data collection

A survey was administered by collecting primary data using empirical analysis through a self-administered questionnaire, developed, and distributed again to collect and summarise on an online software (Qualtrics), from November 2021 to December 2021. The number of respondents who received the survey cannot be confirmed because it was also administered through social media. Respondents were sent a link via WhatsApp and e-mail to access the survey and complete at their convenience using their laptops, smartphones, tablets, and other mobile devices. The data collection software Qualtrics, allowed for the questionnaire to be digitally distributed even during the lockdown period.

The data collection was examined to help obtain the relevant results. The examining of the data included reviewing and validating the data to reduce invalid results, while valid responses were used for accurate findings. The various hypotheses had to be proven in relation to mobile banking with the analysis conducted to prove or disprove the hypotheses and conclusions about the different constructs in the research.

3.8 Data analysis and interpretation

The data analysis for the study is discussed below, highlighting considerations and steps taken in statistical decision making.

The data from the self-administered survey was distributed via the Qualtrics platform and downloaded onto Microsoft Excel for cleaning purposes to ensure that the data was verified and had integrity. The data was then uploaded on IBM's Statistical Package for Social Science (SPSS v27). When checking for the quality of the data, the following were considered: missing values, coding, data errors, completeness of responses including reverse coding some of the questions.

The survey allowed for respondents to answer all questions in more than one session, this meant that they could do a session and later complete the rest of the survey. This was meant to encourage as many respondents as possible to complete the survey. Even with more than one session to complete the survey, it still attracted unfinished questionnaires with missing data and partial completion, leading to steps to clean those with missing values from 298 to 200 responses collected.

The quantitative data included graphical presentation of data for trends, and fitting statistical models to the data (Field, 2013). To summarise sample demographics and descriptive statistics was used, including the use of a histogram with a normal distribution curve for normal distribution of variables (Field, 2013). The relationship among variables was assessed using correlation analysis, a form of inferential statistics; and regression analysis applied to assess the impact of the independent variables on the dependent variable (Field, 2013). Correlation analysis measures the association of relationship between two quantitative variables (Gogtay & Thatte, 2017).

In this study, multiple regression was used to assess the impact of more than one independent variable on one dependent variable, making it the most appropriate analysis for the hypotheses testing (Kewo, Munir & Lapa, 2015).

3.9 Limitations of the study

The study had the following limitations:

- The data was gathered in Gauteng among lower income groups only. As a result, generalisation of results to similar income groups outside of Gauteng could have been negatively affected.
- Only internet users were used in the study (reached by e-mail, Whatsapp). This could have missed non internet users, including the elderly and uneducated low-income earners.

3.10 Validity and reliability

3.10.1 *Internal validity*

Internal validity, according to Schindler (2019), refers to a survey which produces results that reflect intent. The short questionnaire was prepared for the purpose of this study to eliminate the threat to internal validity, which can arise when a questionnaire is too long, and respondents get bored before completing the questionnaire. Internal validity is threatened by eight factors, according to (Slack and Draugalis, 2001): history, maturation, testing, instrumentation, regression, selection, experimental mortality, and a thread interaction.

3.10.2 *External validity*

The extent to which inferences drawn from a study's sample are extended to a larger population or other target populations is known as external validity (Findley, Kikuta & Denly, 2021). The study used a sample of 200 people to ensure that the results could be applied to the entire population of Gauteng (Field, 2013). External validity was also considered while describing subjects in terms of important variables and determining generalisability.

3.10.3 *Construct Validity*

According to Heale and Twycross (2015), construct validity refers to the extent to which a research tool or instrument measures the construct as intended. They further state that the structural validity of the scale is measured using Exploratory Factor Analysis (EFA) to determine the extent to which items measured on a questionnaire reflect the constructs.

For this study, EFA was used to assess how the seven constructs (Perceived Cost, Ease of Use, Risk, Trust, Facilitating Conditions, Age, Income on Behavioural Intention) converge to their respective constructs (Field, 2003). EFA also assessed a concept called divergence validity, where items hypothesised to be in different constructs, diverge from each other (Field, 2013).

3.10.4 *Reliability*

According to Noble and Smith (2015), reliability is defined as the consistency of the analytical processes used. According to Heale and Twycross (2015), reliability is defined as the consistency with which a measure generates the same or comparable results across multiple testing. The authors further state that Cronbach’s α result is a number between 0 and 1, putting the acceptable reliability score at 0.7 and greater. The reliability for each construct in this study was assessed using the Cronbach’s alpha and they were all above 0.7. Sharma, (2016) describes a Cronbach's alpha as a widely used indicator of a survey instrument's internal consistency or reliability.

3.11 Ethical considerations

All the respondents' rights were protected during the research. The purpose of the study was also explained to the respondents, ensuring that they were aware of the study they were taking part in. To protect the interests of all study participants, ethical guidelines were followed. This entailed respecting the privacy, anonymity, and security of respondents. Only characteristics derived from the data were included in the final report and utilised for analysis with the consent of the respondents, and no respondents' data was shared with the University.

All data was stored in a password-protected repository for confirmation of findings, and none of it contained any personal information. It will be discarded ten years after the research is published. It was entirely voluntary to take part in the study. This meant that no incentives or associations were employed to entice participants to participate. The research's intention and limitations were communicated freely and clearly up front, with cover pages of declaration attached to any method of communication to ensure that participants understood the intent.

CHAPTER 4. PRESENTATION OF RESULTS

4.1 Introduction

In this chapter the results of the analysis will be presented and interpreted. This is followed by the presentation of data screening and quality, demographics and business information, validity and reliability, results analysis which include correlation analysis and regression assumptions, and results on the hypotheses.

4.2 Data screening and quality

Qualtrics software was used to distribute the survey for the data collection. After the data was entered into Qualtrics, it needed to be cleaned to guarantee that the data's integrity was not jeopardised. Screening the data for mistakes, coding, completeness, and reversed questions was part of the data quality control procedure (Field,2013). After that, the data was then downloaded into SPSS for analysis. The survey received a total of 298 responses, of which 98 responses were excluded due to missing information. Only 200 responses met the criteria to be included as part of the sample.

4.3 Demographics profile of respondents

This section looks at the respondents' demographic information (race, age group, employment status, income groups, and total household income). In addition, information on access to mobile devices, use of MB, the effects of Covid 19 on MB, participation in MB and MB use, was analysed. The respondents' view creates context for the study, and the results cannot be generalised.

4.3.1 *Race*

The characteristics in Figure 4–1 below reveal that 86.87% of the respondents were Black, followed by White respondents at 5.56%, and Coloureds, Indian and other races representing less than 7.59% of the respondents. Thus, more than three quarters of the number of respondents sampled in the study were black.

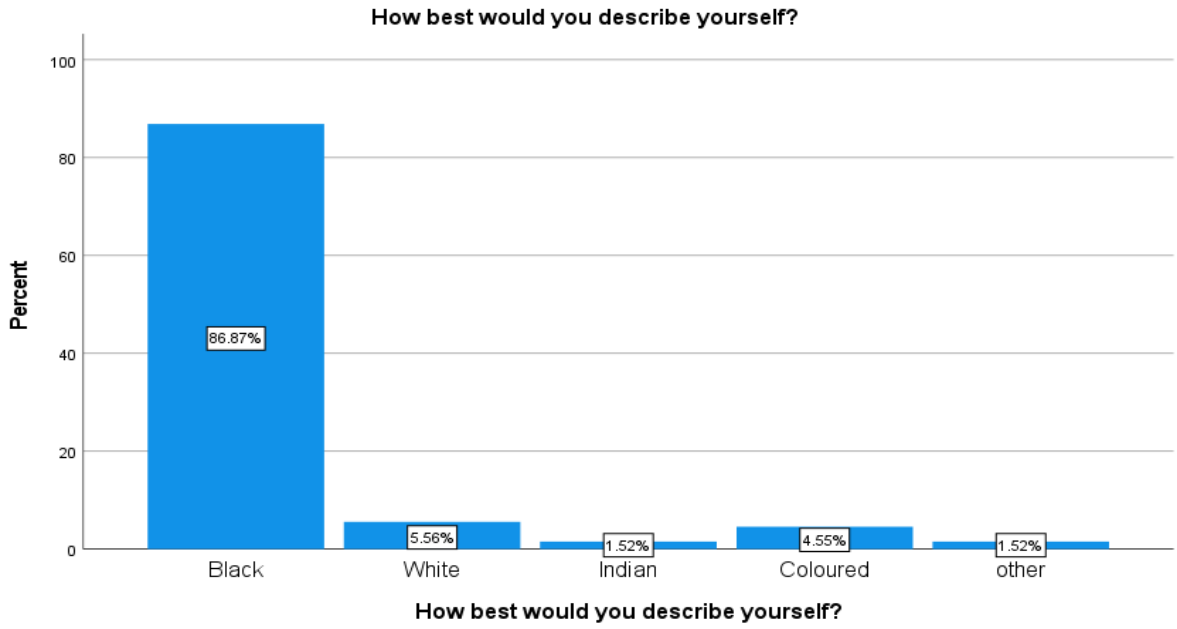

Figure 4–1 Race of the respondents

4.3.2 *Age group*

The age of the respondents is presented in the bar graph Figure 4–2 below, where 35.5% of the respondents were 25-34 years of age. Respondents between the ages of 35-44 years of age account for 29.5% of the sample. The ages between 18-24 presented at 18% and those aged 45-54 presented at 11.5%. The age group of '54 and above' made up 5.5% of the total of respondents.

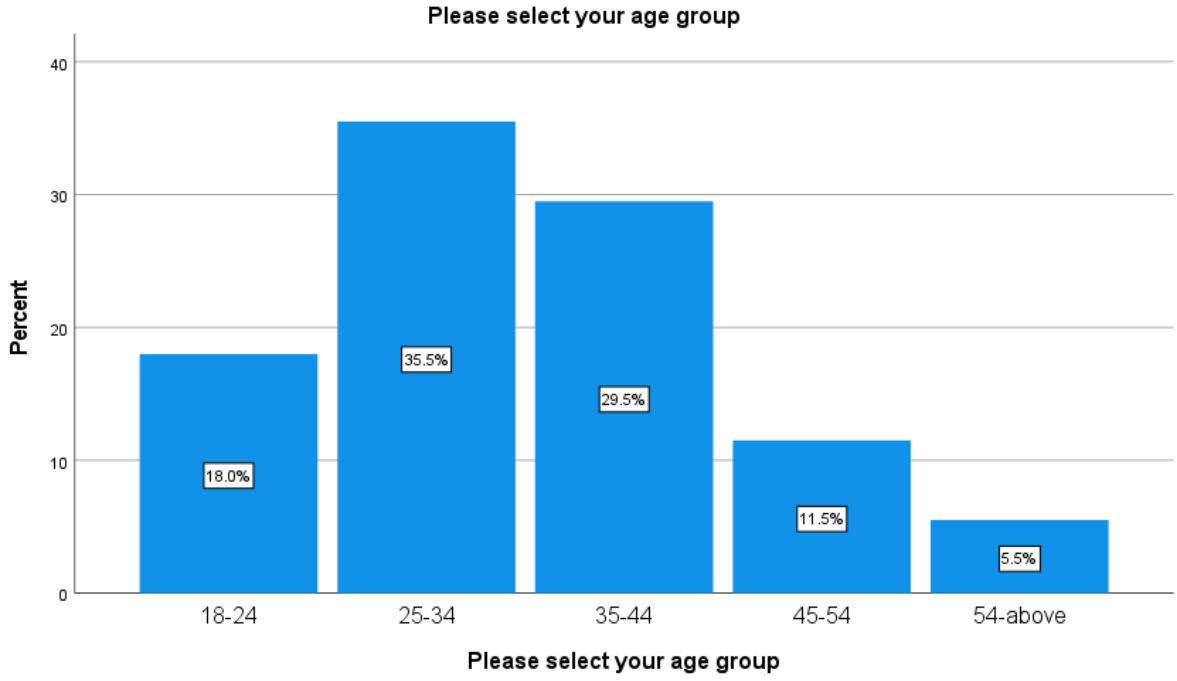

Figure 4–2 Age group

4.3.3 *Employment status*

The analysis of the respondents' employment status is depicted in Figure 4–3 below and shows that 39% of respondents were employed full time; 25% were unemployed and looking for work; 17% were employed part time; 13.5% were self-employed; and 5.5%were students.

Figure 4–3 Employment status

4.3.4 *Income group*

An analysis of Figure 4–4 below depicts income levels of respondents and showed that most respondents (35.5%) earned R5000 and above, 29.5% earned between R1-R1999, 12.5% of respondents earned between R3000-R3999, 11.5% earned between R4000-R4999, and 11% earned between R2000-R2999.

Figure 4–4 Income group

4.3.5 *Total household income*

Figure 4–5 below illustrates the total household income. From the bar chart below we can see that 39% of respondents' households earned R7000 and above, 26.5% earned less than R4000, and the ranges between R4000 to R7000 is 34.5%.

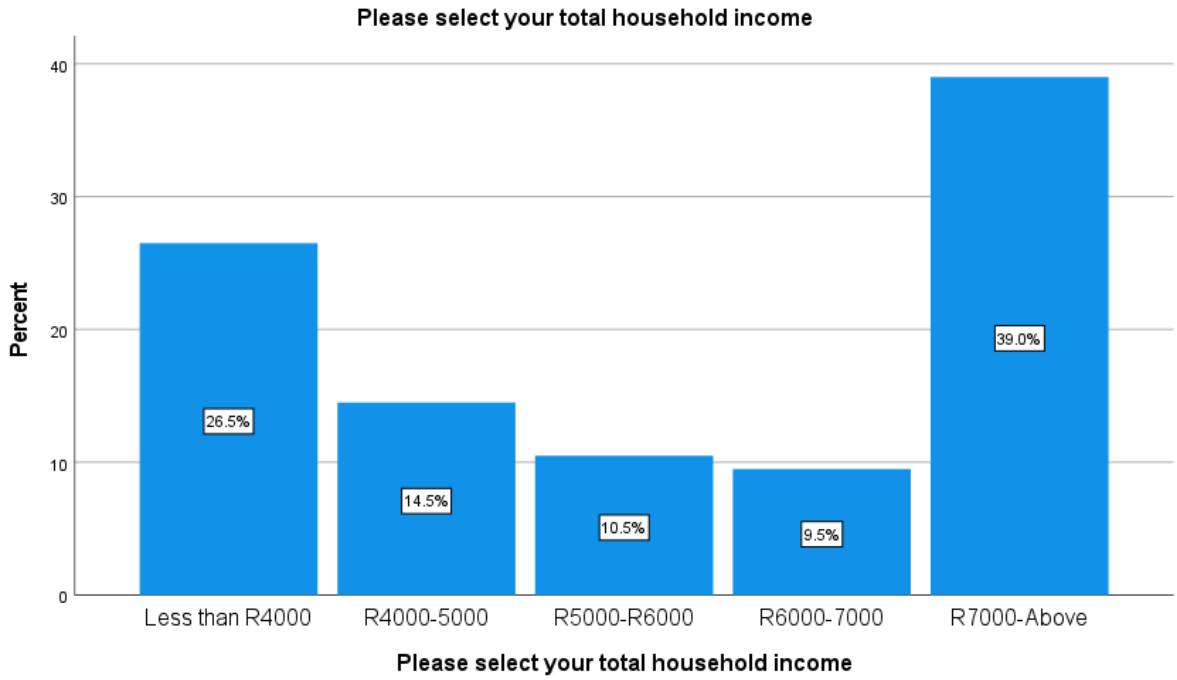

Figure 4–5 Total household income

4.3.6 *Mobile device ownership*

Based on the analysis in Figure 4–6 of mobile device ownership, the total number of respondents owning devices was 98% which is more than three quarters of respondents, while only 2% indicated that they did not have a mobile device.

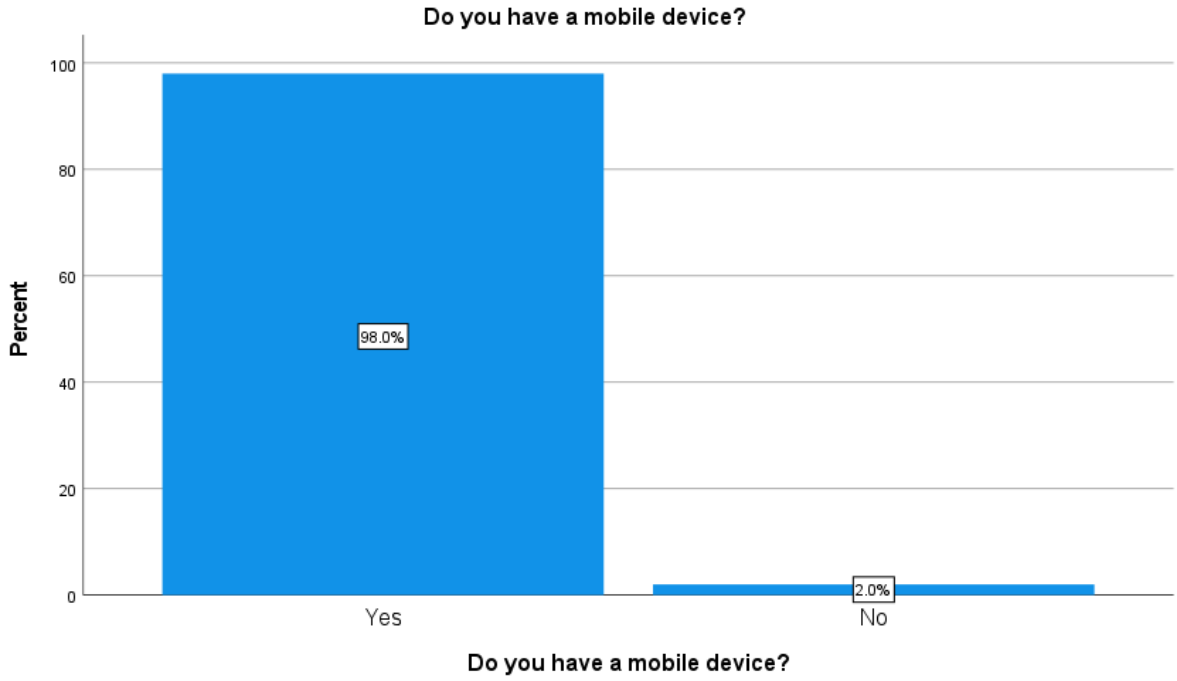

Figure 4–6 Mobile device

4.3.7 *Previous use of mobile banking*

Regarding previous mobile banking experience, Figure 4–7 below graphically shows the results to indicate that 89.5% of the respondents had used mobile banking previously and 10.5% had not used mobile banking previously. Thus, more than half of the respondents have used mobile banking previously.

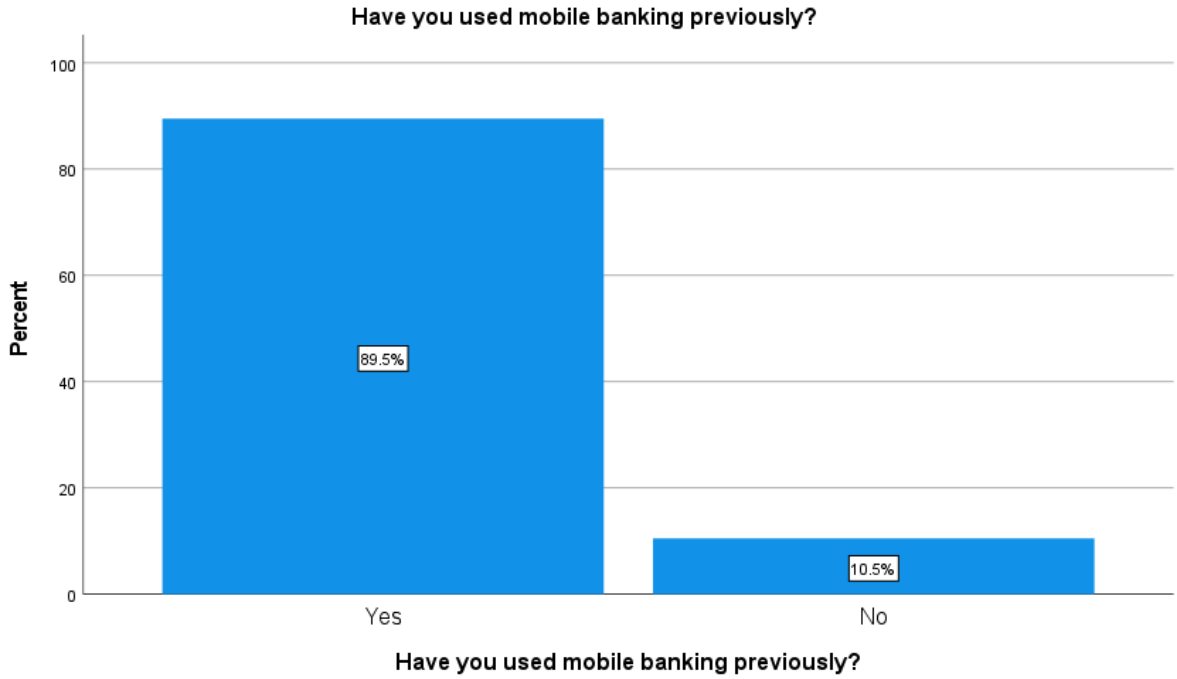

Figure 4–7 Previous use of banking

4.3.8 *Effects of Covid 19*

The graphs below represent the results for the effects on Covid 19 on physical health, financial situation, and banking activities.

a. ***Physical health***

Figure 4–8 below shows the effects of Covid 19 on physical health, with 29% having indicated that the effect was minor, 25.5% indicated that that the effects were moderate, 21.5% said it was insignificant, 14% said it was major, and 10% indicated that it impacted them terribly.

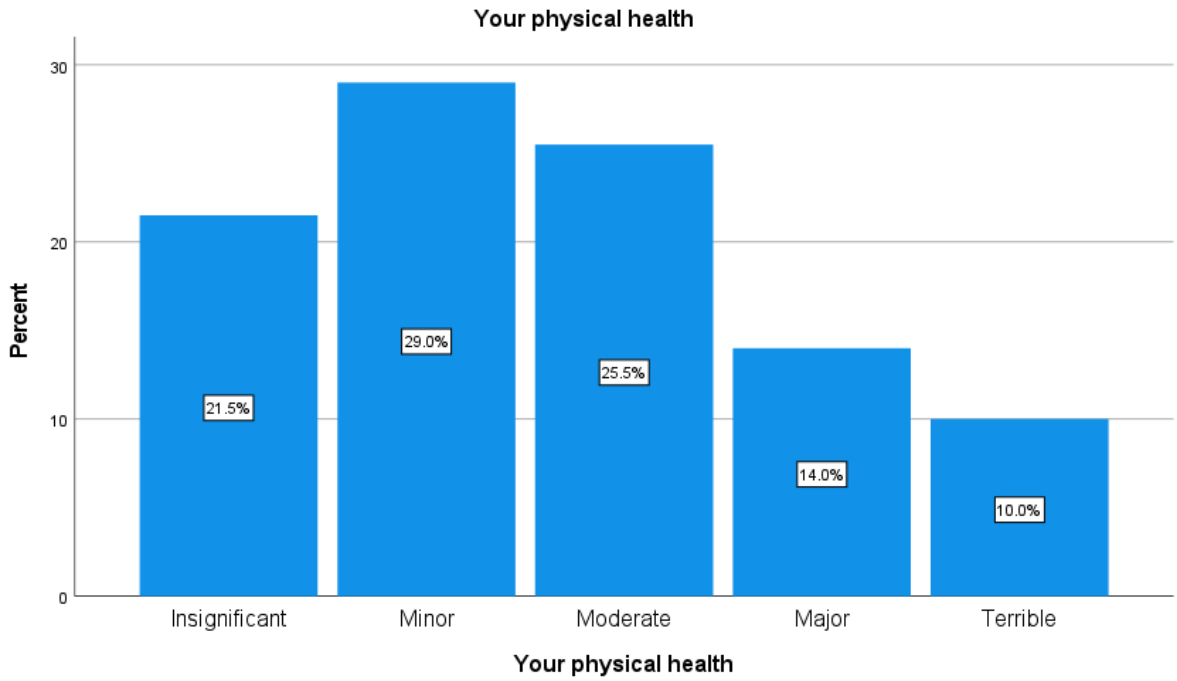

Figure 4–8 Physical health

b. ***Financial situation***

The results of Figure 4–9 reflect the effects of Covid 19 on the financial situation of respondents. Most of the respondents (28.5%) indicated that their financial situation was moderately affected, 22.5% said that their financial situation was affected in a major way, 19.5% of respondents who were affected said that they were terribly affected, a further 19.5% of respondents said that they were affected in a major way, and 10% said that Covid 19 had an insignificant effect on their financial situations.

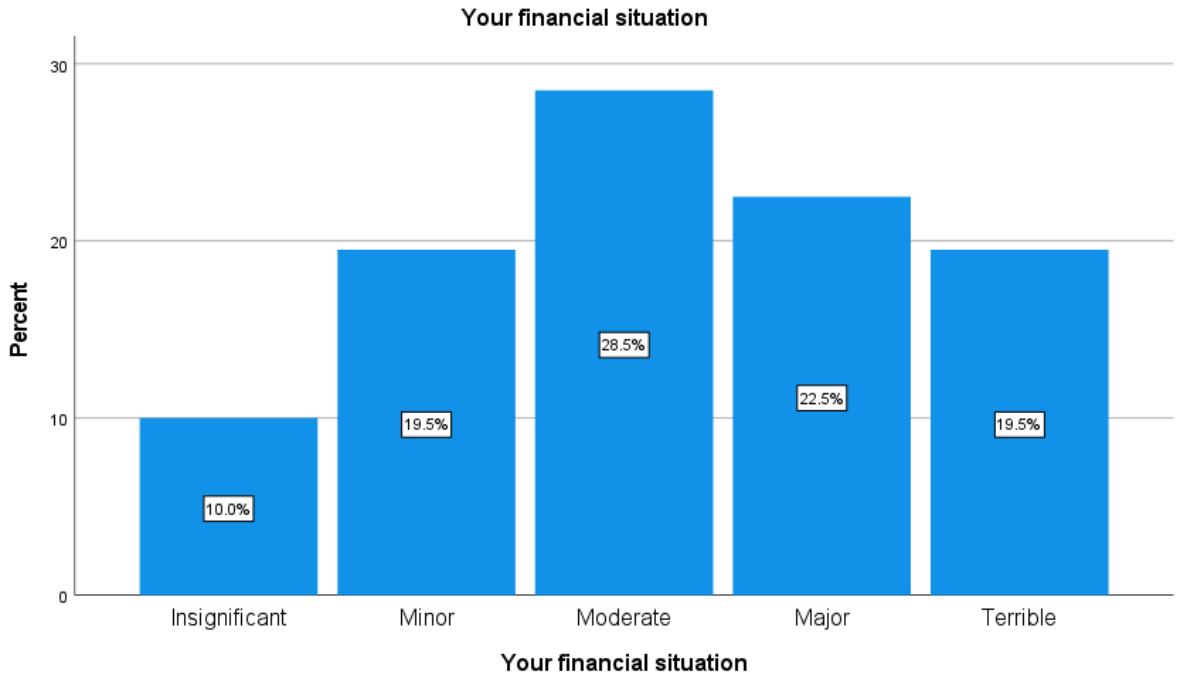

Figure 4–9 Financial situation

c. ***Banking activities***

Figure 4–10 below reveals results on banking activities. They showed that 27.5% of the respondents banking activities were moderately affected by Covid 19, 25.5% indicated that they were affected in a minor way, 20% said that they were affected insignificantly, 16.5% indicated that they were affected in a major way, and 10.5% said that their banking activities were affected terribly by the pandemic.

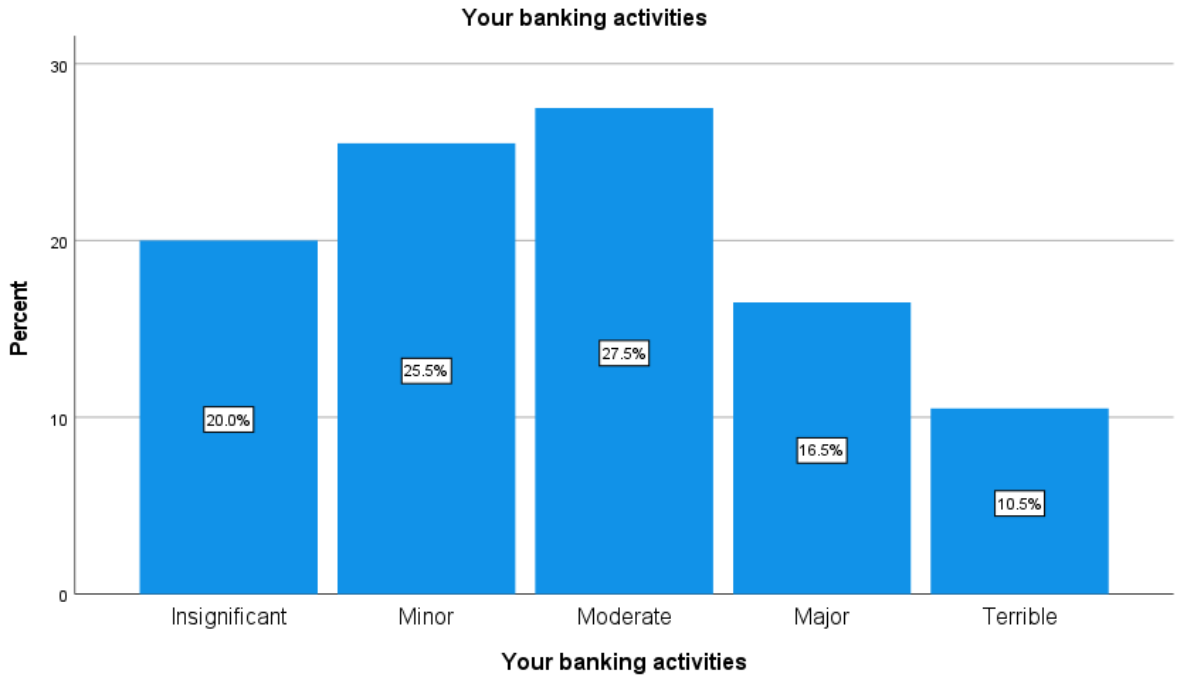

Figure 4–10 Banking activities

4.3.9 *Last participation in mobile banking*

Figure 4–11 reveals the analysis of the respondents' last participation on mobile banking. 38% of the respondents indicated that they participated in mobile banking daily, 24% indicated that they participated in mobile banking a day ago, 22.5% indicated participation a week ago, 10% last participated a month ago, and 5.5% indicated that they never used mobile banking.

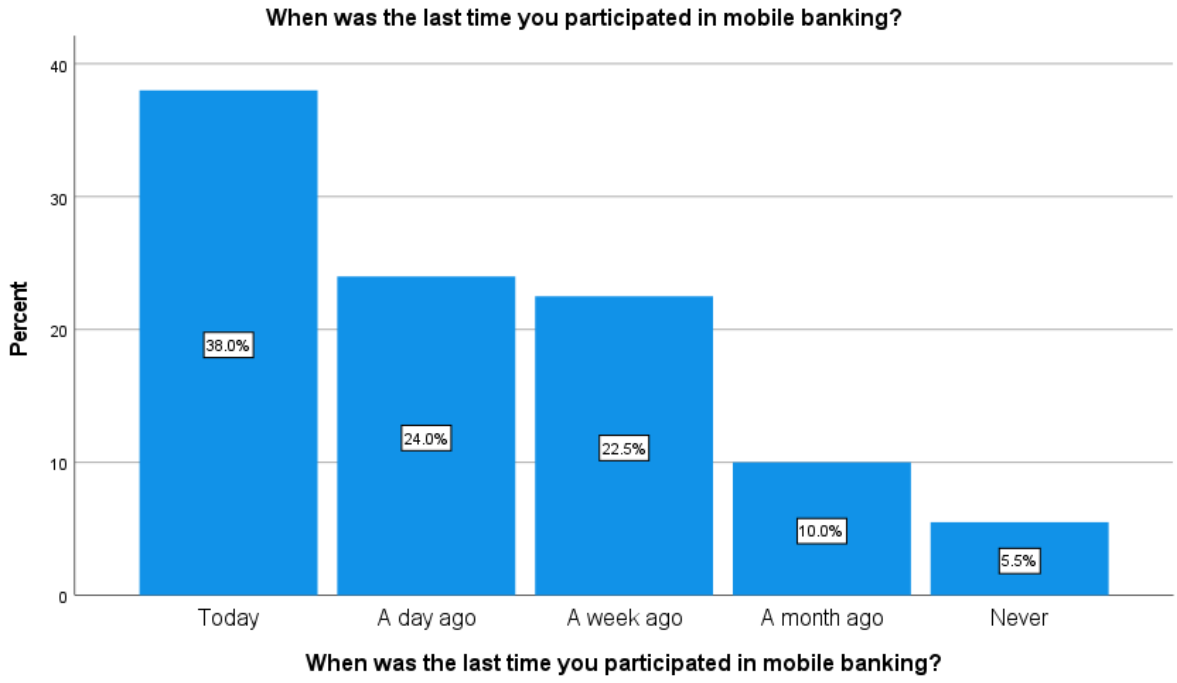

Figure 4–11 Last mobile banking participation

4.3.10 *Mobile banking weekly use*

The results in figure 4–12 below on mobile banking weekly use, indicate that 33.5% of the respondents used mobile banking once a week, 22.5% used mobile banking two times a week, 18.5% used mobile banking four or more times a week, 14.5% used it three times a week, and 11% said they never use mobile banking services.

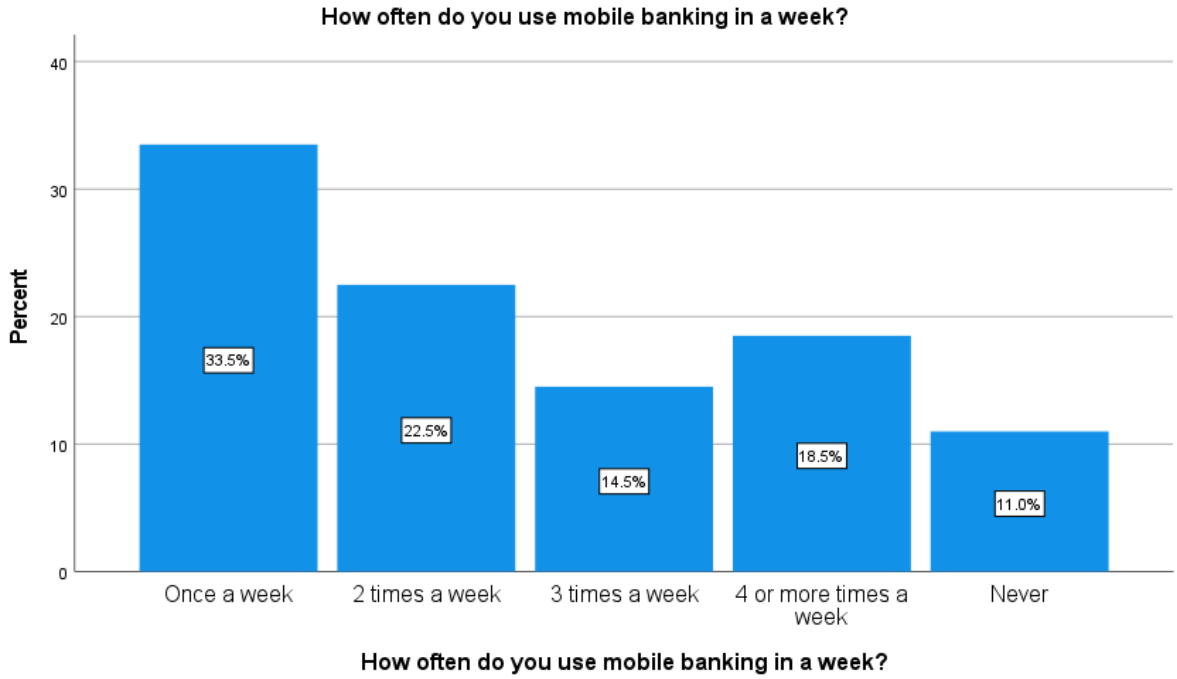

Figure 4–12 Mobile banking weekly use

4.4 Validity of constructs

4.4.1 Validity of instrument scales

Validity refers to the extent to which concepts in a quantitative study are accurately measured, as well as the extent to which the survey measures what was intended (Heale & Twycross, 2015). Exploratory factor analysis was used to test construct validity, but the adequacy of the sample size had to first be confirmed.

a. ***Sample Adequacy – Kaiser-Meyer-Olkin Measure (KMO)***

The KMO diagnostic measure determines sampling adequacy by testing whether a sample is adequate for further analysis (Field, 2013). The table below presents the KMO measure of sampling adequacy and the Bartlett's test. The sample adequacy test was conducted using the KMO measure to determine if the sample was a good size for exploratory factor analysis. According to the table presented below, the KMO value of 0.895 was considered a meritorious result because it was greater than 0.5 (Field, 2016). This meant the study could conduct a factor analysis. Bartlett's test compares an observed correlation matrix to the identity matrix. Essentially it checks to see if there is a certain redundancy between the variables that can be summarised with a few factors.

The null hypothesis of the test is that the variables are orthogonal, i.e., not correlated. The alternative hypothesis is that the variables are not orthogonal, i.e., they are correlated enough to where the correlation matrix diverges significantly from the identity matrix. Since p value =0.000 we do not reject the null hypothesis and conclude that the variables are not correlated.

Table 4–1 KMO and Bartlett's test

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.895
Bartlett's Test of Sphericity	Approx. Chi-Square	2630.636
	df	325
	Sig.	.000

b. ***Extraction and rotation***

The number of factors extracted were six (6), with results rotated for ease of interpretation. The results and the promax rotation were used for that purpose and the pattern matrix in Table 4–2 below shows the factor loadings for each of the six factors without PT, which was one of the original factors. The results showed the six factors retained: PC which initially hypothesised four items; PR with all seven of the items which were originally hypothesised; PEOU with four items which were originally

hypothesised; FC one with some of the items that were originally hypothesised; BI eight with all the items that were originally hypothesised; and PT four with all the items that were originally hypothesised.

The Pattern matrix holds correlations between variables and the factors: BIntent1-8; P-risk1-4; P-cost1-4; P-risk5-7; P-ease2-4; and F-conditions1-2, hold significant correlations with respective factors apart from: P-ease1 and F-conditions 3, with correlations which are below 0.5.

Table 4–2 Pattern matrix

Pattern Matrix[a]

	Factor					
	1	2	3	4	5	6
BIntent2	.846					
BIntent3	.842					
BIntent5	.774					
BIntent4	.708					
BIntent8	.694					
BIntent7	.679					
BIntent6	.651					
BIntent1	.608					
P_risk2		.859				
P_risk1		.748				
P_risk3		.744				
P_risk4		.731				
P_cost2			.877			
P_cost3			.771			
P_cost1			.731			
P_cost4			.725			
P_risk6				.837		
P_risk7				.773		

P_risk5				.728		
P_ease4					.687	
P_ease2					.673	
P_ease3					.635	
P_ease1					.425	
F_condition2						.760
F_condition1						.735
F_condition3						.413

Extraction Method: Principal Axis Factoring.

Rotation Method: Promax with Kaiser Normalisation[a]

a. Rotation converged in 7 iterations.

Source: Primary data

c. **Total variance explained**

Field (2013) notes that eigenvalues associated with each factor represent the variance explained by that factor, and the output contains this information translated into percentages. Eigenvalues are constructed in such a way that they are invariant under a (nonlinear) change of coordinates and constitute a generalisation of the linear system concept (Halás and Moog, 2013).

Tables 4–3 below represent the results of the total variance explained by items retained when conducting the EFA. The results show that six factors were retained as per the hypothesis. The retained factors showed a total variance of 66.57% where the first factor accounted for 33.44 % of the variance, the second factor accounted for 11.52 % of the total variance, the third factor provided 6.87 % of the total variance, the fourth factor provided 5.98 of the total variance, the fifth factor provided 4.73 %, and the sixth and final factor contributed 4.015 % of the total variance. Using the Extraction Method (Principal Axis Factoring), factors 7-26 with sums of squared loadings cannot be added to obtain a total variance, hence it was statistically non-significant.

Table 4–3 Total variance explained

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings[a]
Factor	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total
1	8.694	33.440	33.440	8.274	31.823	31.823	7.113
2	2.996	11.522	44.962	2.598	9.991	41.814	3.809
3	1.788	6.877	51.839	1.374	5.286	47.100	5.879
4	1.555	5.981	57.820	1.085	4.172	51.272	4.112
5	1.231	4.736	62.556	.777	2.988	54.260	3.810
6	1.044	4.015	66.571	.607	2.336	56.596	5.081
7	.765	2.940	69.512				
8	.736	2.830	72.341				
9	.725	2.788	75.129				
10	.653	2.512	77.641				
11	.570	2.193	79.834				
12	.556	2.138	81.973				
13	.514	1.977	83.949				
14	.490	1.885	85.834				
15	.431	1.656	87.491				
16	.415	1.598	89.088				
17	.390	1.502	90.590				
18	.357	1.371	91.961				
19	.335	1.287	93.249				
20	.324	1.247	94.496				
21	.293	1.127	95.623				
22	.260	1.000	96.622				
23	.245	.943	97.566				

24	.222	.853	98.418				
25	.211	.812	99.231				
26	.200	.769	100.000				

Extraction Method: Principal Axis Factoring.

a. When factors are correlated, sums of squared loadings cannot be added to obtain a total variance.

Source: Primary data

d. **Scree plot**

Figure 4–13 below indicates the number of factors extracted. The scree plot indicates the inflexion at point six (6). By indicating the number of points extracted, illustrating that six (6) factors were extracted with the chart indicating the flattening out after point (six) 6. The vertical axis, indicate that six (6) factors had eigenvalues greater than 1.

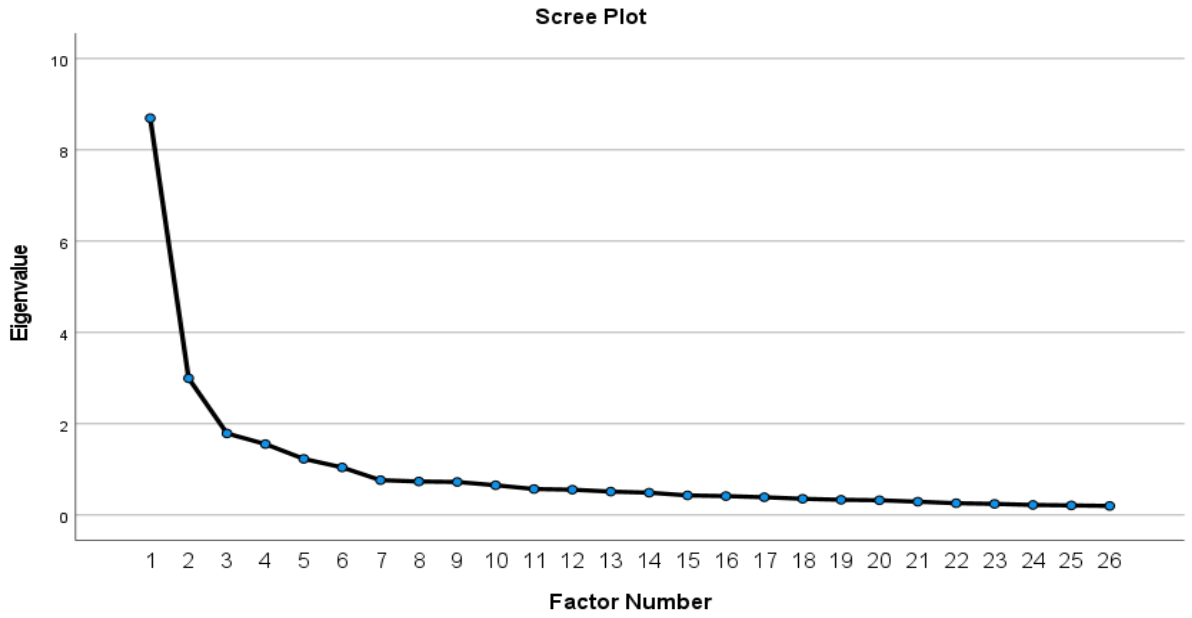

Figure 4–13 Scree plot

4.5 Reliability of measurement scale

The constancy of a measurement is referred to as reliability. Cronbach's Alpha was calculated for each of the six factors/constructs to determine the scale's reliability (Field, 2009). PC (4 items, α = 0.837), PR1 (4 items, α = 0.864), and BI (7 items, α = 0.882) have very high levels of reliability, as shown in Table 4–4. Because the Cronbach's Alpha values were more than 0.8, this was the case (Field, 2009). PEOU (4 items, α = 0.741), PR2 (3 items, α = 0.798), and FC (3 items, α =0.733) all showed acceptable levels of reliability.

The Cronbach Alpha values for all six constructs were greater than the minimum acceptable level of at least 0.7 (Field, 2009). This meant that the composite scale could be aggregated to form a scale per construct, by calculating the average of items within each construct.

Table 4–4 Reliability of measurement scales

Construct	**Items in construct**	**Cronbach's Alpha**	**Reliability level**
Perceived cost	4	0,867	Very good
Perceived ease of use	4	0,741	Acceptable
Perceived risk1	4	0,864	Very good
Perceived risk2	3	0,798	Acceptable
Facilitating conditions	3	0,733	Acceptable
Behavioural intent	7	0,882	Very good

Source: Primary data

4.6 Descriptive statistics and Correlation

Descriptive statistics are used to organise and summarise data from both population and sample investigations (Holcomb, 2016). In the following section the data collected is quantitatively described, the items are rated for each construct and assessed, and the results are presented.

Table 4–5 on descriptive statistics below, indicates that Behavioural Intent has a range of 3.63 which is the least of all the variables, followed by PC with 3.75. The highest minimum statistic among all the variables was 1.38, while the rest of the variables attained a minimum statistic of 1. BI also has the highest Sum statistic of 814.63 with the rest of the variables averaging around 700.

Eraslan, Karafil & Atay (2017) and George & Mallery (2010) state that when analysing data, a normal distribution is shown when values are between -2 and +2 for skewness and lowness. Hair et al. (2010) indicate that data is normal when the skewness is between -2 to +2 and kurtosis is between -7 to +7.

Clearly, all the variables as shown in Table 4–5 have acceptable skewness statistics which lie between the acceptable range of -2 to +2: BI at -0.623; PR1 at -0.569, PC at 0.246, PR2 at -0.228, PEOU at -0.480, and FC at -0.655. With consideration to kurtosis, all the variables have a statistic between the recommended cut-offs of -7 to +7, hence the data is normally distributed: BI with -0.039; PR1 with -0.173; PC with -1,039; PR2 with -0,453; PEOU with -0.486; and FC 0,297. This shows that the data is suitable for linear regression analysis, as one of the assumptions is that the data is normally distributed.

Table 4–5 Descriptive statistics

Descriptive Statistics

	N	Range	Minimum	Maximum	Sum	Mean		Std. Deviation	Variance	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Behavioural_Intent	200	3.63	1.38	5.00	814.63	4.0731	.05337	.75483	.570	-.623	.172	-.039	.342
Perceived_Risk1	200	4.00	1.00	5.00	670.50	3.3525	.07299	1.03220	1.065	-.569	.172	-.173	.342
Perceived_Costs	200	3.75	1.00	4.75	581.50	2.9075	.07600	1.07487	1.155	-.249	.172	-1.039	.342
Perceived_Risk2	200	4.00	1.00	5.00	700.67	3.5033	.06514	.92124	.849	-.228	.172	-.453	.342
Perceived_Ease_Of_Use	200	4.00	1.00	5.00	774.75	3.8738	.05221	.73839	.545	-.480	.172	.487	.342
Favourable_Condition	200	4.00	1.00	5.00	784.00	3.9200	.06257	.88491	.783	-.655	.172	.297	.342
Valid N (listwise)	200												

Source: Primary data

4.6.1 *Correlation analysis*

Because linear regression analysis implies that the dependent and independent variables have a linear relationship, it is necessary to test for linearity and multicollinearity before continuing with the analysis (Field,2013). The results below are a consolidation depicting a correlation analysis that was done before regression analysis. The results for independent variables and dependent variables, the strength, significance, and direction of the correlation of each factor, is discussed and interpreted below.

a. **Correlation results for behavioural intent and independent variables**

- The results indicated a negative correlation between PR1 and BI (r = -0,207**; p-value < 0.05)
- BI and PC indicated a significant, strong, and negative correlation (r = -0.533**; p<0.05)
- The results indicated a positive correlation between PR2 and BI (r = 0.389; p-value < 0.05)
- BI indicated a significant, strong, and positive correlation with PEOU (r =0.510**; p<0.05)
- BI indicated a significant, positive, and strong correlation to FC (r =0.566**; p-value < 0.05).

4.6.2 *Correlation results among independent variables*

a. *Perceived risk1*

According to the results, Perceived Risk had significant correlations with the following variables:

- PR1 had a significant and positive correlation to PC (r = 0.495**; p <0.01).
- PR1 had a significant and negative correlation to PR2 (r = -0.247**; p <0.05)
- PR1 had a significant and negative correlation to FC (r = -0.217**; p <0.05)
- PR1 had a significant and negative correlation to PEOU (r= -0.175; p <0.05)

b. *Perceived cost*

- PC had a significant negative correlation to FC (r = -0.460**; p <0.05)
- PC had a significant and negative correlation to PR2 (r=0-0.294**; p <0.05)
- PC has a significant and negative correlation to PEOU (r=-0.276**; p <0.05)

The correlation results show that BI had a negative relationship with PR, and a significant, strong, and positive correlation with PEOU and FC. There was a negative correlation between PR and BI. With the relationships between variables confirmed via correlation analysis, a further analysis was conducted with multiple linear regression to test the impact of PR1, PC, PR2, PEOU, and FC, on BI. It is to be noted that the question on PR loaded as PR1 and PR2 as indicated on the table below.

Table 4–6 Correlation

Correlations

		Behavioural_Intent	Perceived_Risk1	Perceived_Costs	Perceived_Risk2	Perceived_Ease_Of_Use	Favourable_Condition
Behavioural_Intent	Pearson Correlation	--					
	N	200					
Perceived_Risk1	Pearson Correlation	-.207**	--				
	Sig. (2-tailed)	.003					
	N	200	200				
Perceived_Costs	Pearson Correlation	-.533**	.495**	--			
	Sig. (2-tailed)	.000	.000				
	N	200	200	200			
Perceived_Risk2	Pearson Correlation	.389**	-.247**	-.294**	--		
	Sig. (2-tailed)	.000	.000	.000			
	N	200	200	200	200		
Perceived_Ease_Of_Use	Pearson Correlation	.510**	-.175*	-.276**	.303**	--	
	Sig. (2-tailed)	.000	.013	.000	.000		
	N	200	200	200	200	200	
Favourable_Condition	Pearson Correlation	.566**	-.217**	-.460**	.372**	.437**	--
	Sig. (2-tailed)	.000	.002	.000	.000	.000	
	N	200	200	200	200	200	200

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Source: Primary data

4.7 Regression assumptions tested

Multiple linear regression has assumptions embedded in it, which if violated, ensues in the results being deemed invalid and unreliable. These assumptions include: no outliers; linearity; no multicollinearity; independence of errors; and normal errors. It is evident in Table 4–5 and Table 4–6 that there was no issue of violation of linearity and normality respectively, thus, the following sections of the study present the results of the remaining assumption tests.

4.7.1 *Boxplots - Outlier*

Field (2018) describes boxplot as a graphical representation of an important set of observations. Six box plots, one for each of the variables, were plotted as indicated in the graph below. From the boxplots below the information for each variable seemed symmetrically distributed, hence there were no outliers that could have had unnecessary influence on the regression model.

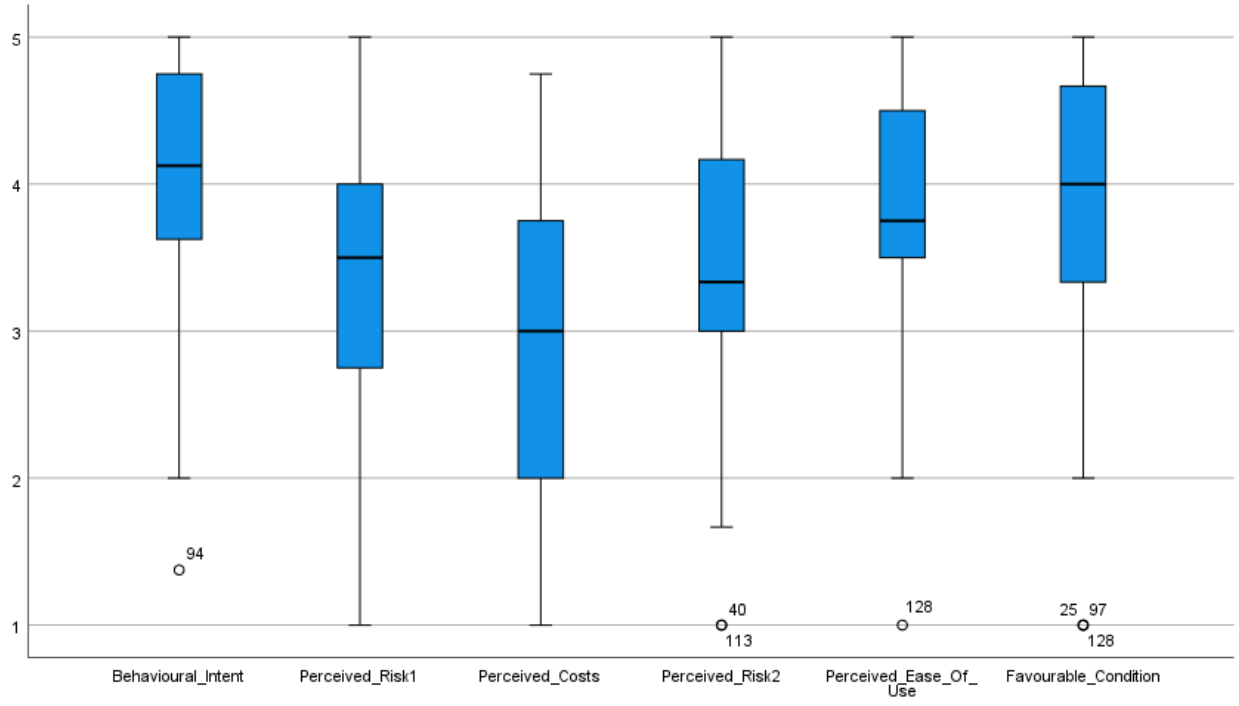

Figure 4–14 Boxplot

4.7.2 *Homogeneous variance*

Testing for regression assumes homogenous variance and Figure 4–15 below shows no explicit pattern thus confirming the homogeneity of the variance in the dataset. This is evidenced by points scattered in consistently.

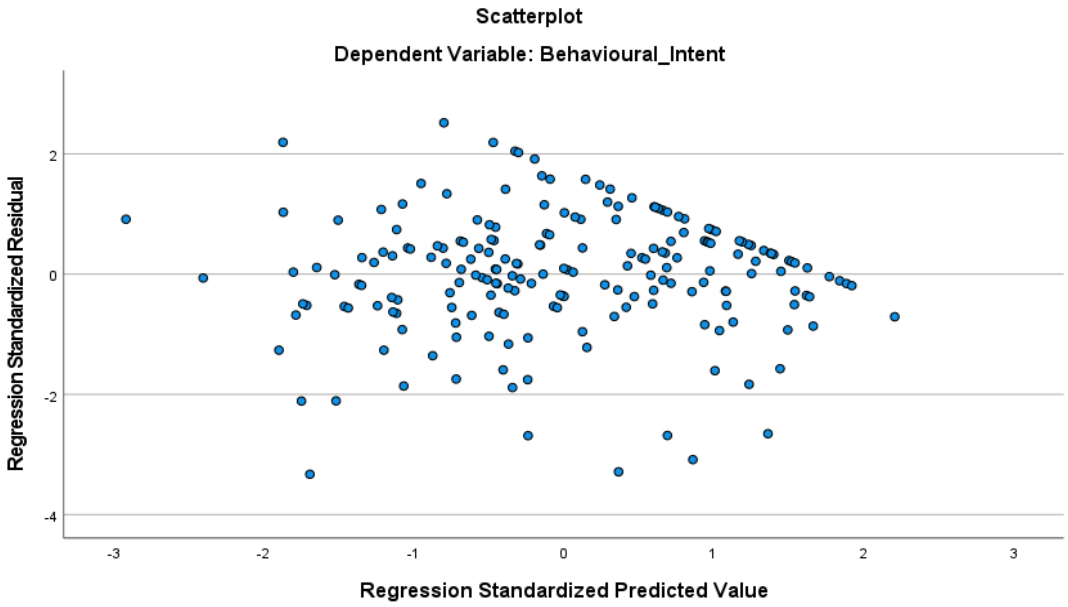

Figure 4–15 Scatterplot

4.7.3 *Test for normality of error terms*

Figure 4–16 shows a histogram indicating the normal distribution of errors, with bars approximately falling under the normal curve (Field,2013). To confirm this, the normal P-P on Figure 4–17 shows that the assumption of normality has not been violated since all the points lie close to the line.

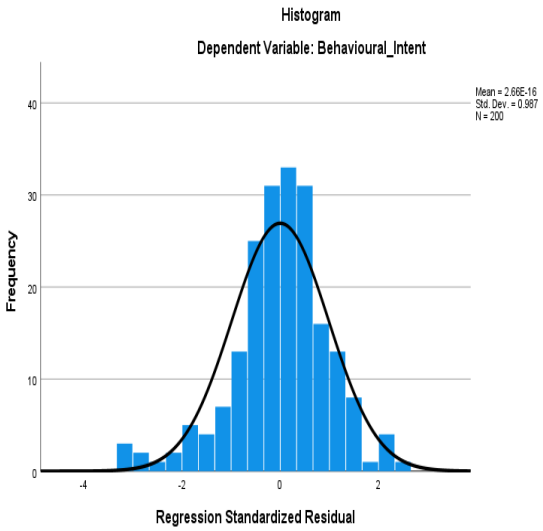

Figure 4–16 Histogram dependent variable: behavioural intent

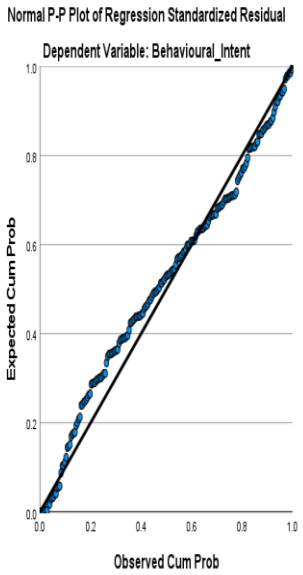

Figure 4–17 P-P Regression standardised residual dependent variables: behavioural intent

4.7.4 *Auto correlation*

In regressions with missing observations, the Durbin-Watson test for serial correlation is used (Dufour and Dagenais,1985) The Durbin-Watson statistic will always have a value ranging between 0 and 4. A value of 1.751 indicates that there is no autocorrelation detected in the model predictor variables. Table 4–7 below indicates that since r-squared = 0.504 this means that the predictor variables explain about 50.4% of the dependent variable, Behavioural Intent

Table 4–7 Model summary

Model Summary*b*

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.710[a]	.504	.492	.53815	1.751

a. Predictors: (Constant), Favourable Condition, Perceived Risk1, Perceived Risk2, Perceived Ease Of Use, Perceived Costs

b. Dependent Variable: Behavioural Intent

Source: Primary data

Table 4–8 below shows that the model is statistically significant since p-value=0.000 < α=0. This means that predictor variables (Favourable Conditions, Perceived Risk1,

Perceived Risk2, Perceived Ease of Use, and Perceived Costs) significantly affect the dependent variable Behavioural Intent.

Table 4–8 ANOVA

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	57.199	5	11.440	39.501	.000[b]
	Residual	56.184	194	.290		
	Total	113.384	199			

a. Dependent Variable: Behavioural Intent

b. Predictors: (Constant), Favourable Condition, Perceived Risk1, Perceived Risk2, Perceived Ease of Use, Perceived Costs

Source: Primary data

4.8 Hypothesis testing

The coefficient results on Table 4–9 are used to analyse the hypotheses for the study, to see if they were supported or not.

Hypothesis1: PC has a significant negative effect on BI towards the use of MB

Since p-value=0.00 < α=0.05, this means that PC (Beta = -0.350) has a negative significant effect on BI towards the use of MB.

Hypothesis 2: PEOU has a significant positive effect on BI towards the use of MB

Since p-value=0.00 < α=0.05, this means that PEOU (Beta = 0.280) has a significant positive effect on BI towards the use of MB.

Hypothesis 3: PR1 has a significant negative effect on BI towards the adoption of MB

Since p-value=0.079 > α=0.05, this means that PR1 (Beta= 0.043) has no significant effect on BI towards the adoption of MB.

Hypothesis 4: PR2 has a significant negative effect on BI towards the adoption of MB.

Since p-value=0.020 < α=0.05, this means that PR2 (Beta= 0.046) has a significant effect on BI towards the use adoption of MB.

Hypothesis 5: FC have a significant positive effect on BI towards the use of MB

Since p-value=0.000 < α=0.05, this means that FC (Beta= 0.053) has a significant positive effect on BI towards the use of MB services.

Based on the collinearity results, all variables have results which fall within the collinearity guidelines (T < 1 and VIF is < 10), thus, it is evident that there is no collinearity problem

Table 4–9 Coefficients

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95,0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	2.189	.342		6.402	.000	1.515	2.864		
	Perceived_Risk1	.076	.043	.104	1.765	.079	-.009	.160	.741	1.349
	Perceived_Costs	-.246	.045	-.350	-5.450	.000	-.335	-.157	.619	1.614
	Perceived_Risk2	.108	.046	.132	2.349	.020	.017	.199	.809	1.236
	Perceived_Ease_Of_Use	.286	.058	.280	4.895	.000	.171	.401	.781	1.280
	Favourable_Condition	.219	.053	.256	4.092	.000	.113	.324	.651	1.536

a. Dependent Variable: Behavioural_Intent

Source: Primary data

4.9 Comparative analysis

The main objective of this analysis was to compare any differences that existed between ‘Age and Ease of Use’ and ‘Income and Cost’, on Behavioural Intention towards the adoption of mobile banking among lower income groups in Gauteng.

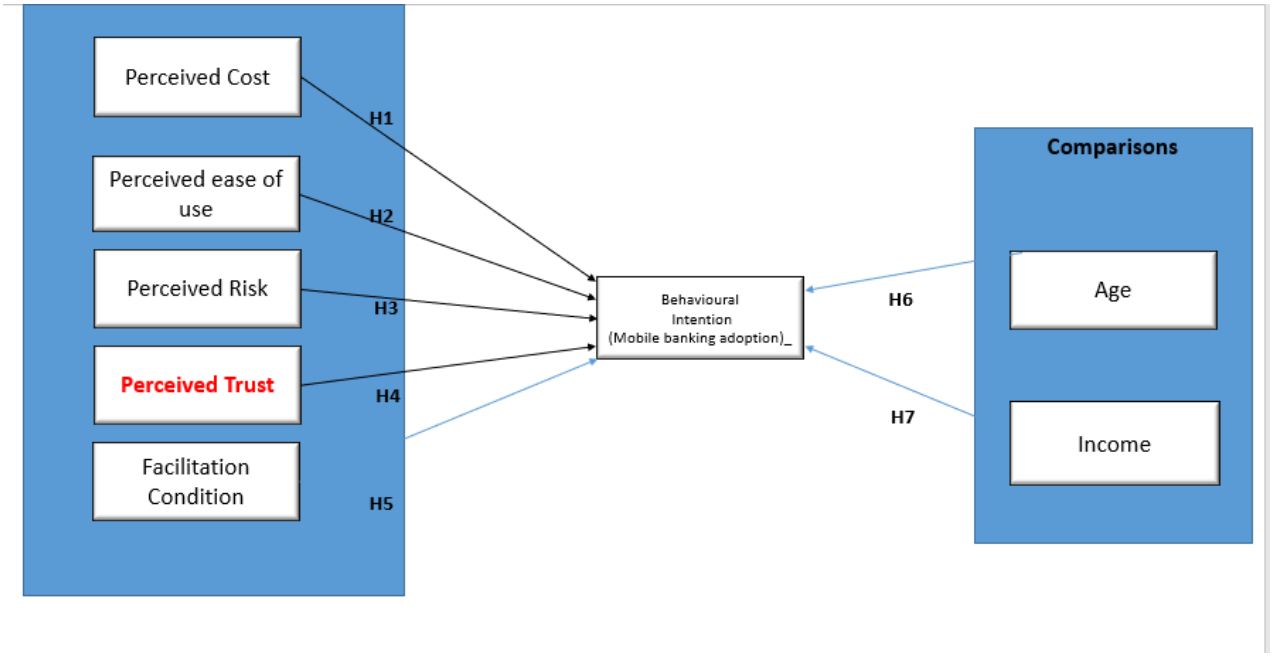

Figure 4–18 Summarised Conceptual model with Age and Income

The comparison included testing the following hypotheses:

4.9.1 *Age and income groups*

Hypothesis 6: Age has a moderate positive influence towards PEOU of MB towards BI

- Since p-value=0.705> α=0.05, Age and the PEOU variable had no significant relationship.
- Since p-value=0.123> α=0.05, Age and the PC variable had no significant relationship.
- Since p-value <α=0.01, Age and the Income Group variable had a significant relationship.

Hypothesis 7: There is negative relationship between Income and PC of MB services resulting in a negative BI

Since p-value < α=0.01, PC and the PEOU variable had a significant relationship

Since p-value < α=0.01, Income Group and the PC variable had a significant relationship

Since p-value=0.028 < α=0.05, Income Group and the PEOU variable had a significant relationship

Table 4–10 Nonparametric Correlations

			Age	Perceived Ease Of Use	Perceived Costs	Income Group
Kendall's tau_b	Age	Correlation Coefficient	1.000	.021	-.084	.319**
		Sig. (2-tailed)	.	.705	.123	<.001
		N	200	200	200	200
	Perceived Ease of Use	Correlation Coefficient	.021	1.000	-.216**	.122*
		Sig. (2-tailed)	.705	.	<.001	.028
		N	200	200	200	200
	Perceived Costs	Correlation Coefficient	-.084	-.216**	1.000	-.236**
		Sig. (2-tailed)	.123	<.001	.	<.001
		N	200	200	200	200
	Income Group	Correlation Coefficient	.319**	.122*	-.236**	1.000
		Sig. (2-tailed)	<.001	.028	<.001	.

		N	200	200	200	200
Spearman's rho	Age	Correlation Coefficient	1.000	.030	-.109	.382**
		Sig. (2-tailed)	.	.675	.123	<.001
		N	200	200	200	200
	Perceived Ease of Use	Correlation Coefficient	.030	1.000	-.299**	.155*
		Sig. (2-tailed)	.675	.	<.001	.028
		N	200	200	200	200
	Perceived Costs	Correlation Coefficient	-.109	-.299**	1.000	-.300**
		Sig. (2-tailed)	.123	<.001	.	<.001
		N	200	200	200	200
	Income Group	Correlation Coefficient	.382**	.155*	-.300**	1.000
		Sig. (2-tailed)	<.001	.028	<.001	.
		N	200	200	200	200

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Source: Primary data

4.9.2 *Perceived Cost and Income Groups*

Table 4–11 below indicates that respondents were grouped into low and high income (1 to 3 = Low income of R1 to R3 999, and 4 and above = high income of R4000 and above).

PC had a higher effect on Income Group 1 with an average of 3.1604, than it had on Income Group 2 with an average of 2.6223.

Table 4–11 Group Statistics

	Income - 2Groups	N	Mean	Std. Deviation	Std. Error Mean
Perceived Costs	1.00	106	3.1604	1.06077	.10303
	2.00	94	2.6223	1.02308	.10552

Source: Primary data

4.10 Summary of the Results

Table 4–12 is an updated consistency table that compares the results from the study, research questions, and hypotheses.

When summarised, PC was found to have a significant negative effect on BI towards the use of MB. On the other hand, it was noted that PEOU had a significant positive effect on BI towards the use of MB, meaning that PEOU strengthened BI toward respondents adopting the use of MB.

When looking at PR1, it was found that it had no significant effect on BI towards the adoption of MB, while PR2 was found to have significant effect on BI towards the adoption of MB. FC was found to have had a significant positive effect on BI towards the use of MB services, meaning that FC strengthened the BI towards the adoption of MB.

The summary also shows that the Age and PEOU variables, and Age and the PC variables, had no significant relationship. However, Age and Income Group variables

had a significant relationship. Furthermore, the PC and PEOU variables and Income Group and PC variables showed a significant relationship.

Table 4–12 Findings of literature review comparison

Table 4–12 Findings of literature review comparison

hyp#	Hypotheses states	Outcome	Study findings
1.	Perceived cost has a negative effect on behavioural intention towards the use of mobile banking	Accept	Perceived cost had a negative effect on behavioural intention towards the use of mobile banking
2.	Perceived ease of use has a significant positive effect on behavioural intention towards the use of mobile banking	Accept	Perceived ease of use had a significant positive effect on behavioural intention towards the use of mobile banking.
3.	Perceived risk has a significant negative effect on behavioural intention towards the use adoption of mobile banking	Reject Accept	Perceived Risk1 had no significant effect on behavioural intention towards the use adoption of mobile banking **AND** Perceived Risk2 had significant effect on behavioural intention towards the use adoption of mobile banking
4.	Enabling conditions have a significant positive effect on behavioural intention towards the use of mobile banking services	Accept	Facilitating condition had a significant positive effect on behavioural intention towards the use of mobile banking services.

5.	Age has a moderate positive relationship towards ease of use of mobile banking on behavioural intention.	Reject	Age and Perceived Ease of Use variables had no significant relationship
6.	There is a negative relationship between income and cost of mobile banking services resulting in a negative behavioural intention	Reject	Income and Perceived costs variables had a significant relationship

CHAPTER 5. DISCUSSION OF THE RESULTS

5.1 Introduction

This chapter discusses the results presented in chapter 4, with a correlation drawn between the literature review and the results of the study. The chapter focuses on the demographics of the sample in relation to their impact on the adoption of mobile banking, a discussion of all the hypotheses and their findings, and a conclusion.

5.2 Demographic profile of respondents

The largest group of respondents in the study was the 25-34 years of age group, making up 35.5% of the respondents. Sohail and Al-Jabri (2014) state that young people value convenience and time saving and are more inclined to adopt banking services than older customers. They further stated that the demographic characteristics of individuals are factors predetermining attitude to MB adoption. Overall, 98% of the respondents indicated that they had used MB previously.

5.3 Discussion of findings

5.3.1 *Hypothesis 1: PC has a negative effect on BI towards the use of MB.*

The results confirmed the initial hypothesis that PC has a significant negative effect on BI towards the use of MB. This means that hypothesis 1 was supported. The above hypothesis suggests that PC can be a reason for customers not to take up MB services. This is supported by a previous study by Kabir (2013), which found that PC plays a significant role in deciding which MB services to use and that banking fees are the most important factor in encouraging MB. Shallone, Chitungo & Munongo (2013) further support this argument in a study of factors influencing the unbanked in rural communities in Zimbabwe, where cost had a significant negative effect on adoption of mobile banking services. Mirza (2014) also asserts that PC significantly negatively affected BI.

In contrast, Bidar, Fard, Salman, Tunga and Cheng (2014) indicated that PC had no significance in accepting MB. These results are supported by Ramlugun and Issuree (2014), who asserted in a similar study in Pakistan that PC had no significant

relationship to BI. Additionally, a paper by Palmer and Moll (2010) also indicated that cost could not be proven to directly have an effect on respondents' intention to adopt MB. The results of this study show that the problem of limited participation in MB among lower-income groups can possibly be solved by financial institutions lowering fees.

5.3.2 *Hypothesis 2: PEOU has a significant positive effect on BI towards the use of MB.*

The results confirm the initial hypotheses, and they are supported. Hassan & Wood (2020) confirm a positive relationship between PEOU and intention to use MB. The findings are also supported by Rind, Hyder, Saand, Alzabi, Nawaz & Ujan (2017), and Ramlugun & Issuree (2014) who found that PEOU was highly significant towards the adoption of MB. This suggests that if banking systems have helpful and user-friendly features, they will be adopted easily (Verma & Sinha, 2017).

However, the findings differed from those of Yu (2012), who indicated that PEOU is not a significant factor in the decision to adopt MB. PEOU has a significant negative effect on MB uptake, according to (Raza, Umer & Shah,2017). In a study on predicting young customers' adoption of MB services, (Koenig-Lewis, Palmer & Moll, ,2010) could not prove that PEOU had a significant direct effect on respondents' intention to adopt MB.

5.3.3 *Hypothesis 3: PR has a significant negative effect on BI towards the adoption of MB*

The results for PR1 show no significant effect on BI toward the use and adoption of MB, and perceived risk2 had a significant effect on BI toward the use of mobile banking. The results were unexpected because Kabir (2013) found that perceived risk significantly affected the uptake of MB services. In addition, Ahmed, Mutahar & Daud (2018), in a study on the effect of awareness and perceived risk of technology, also found that perceived risk significantly predicted PEOU and perceived usefulness. Krishanan, Khin, Teng & Chinna (2016) further state that risk is a significant predictor to attitude towards using MB.

However, a study on innovation for the poor found that PR did not have a significant effect on customers staying at BOP for MB (Ismail & Masinge, 2012). McGovern, Lambert & Verrecchia (2019) confirm that in Ireland, PR was found to not be statistically significant in relation to BI. Milly, Xun, Meena & Cobbinah (2021) concluded that PR is estimated to have a negative impact on intention to use.

It is concluded that perceived risk1 does not show a significant effect on BI toward the use of MB and the hypothesis is therefore rejected. The results for perceived risk2 show a significant effect on BI toward the use and adoption of MB, therefore the hypothesis is supported.

5.3.4 *Hypothesis 4: FC has a significant positive effect on BI towards the use of MB services.*

Gharib and Arshad (2018) in a study on MB in Jordan, found FC to be the main variable affecting the use of MB. This is supported by Yu (2012) who found that technology enabled conditions significantly impact the ability to control perceived behaviour, attitudes, and subjective norms. These findings are further supported by Baabdullah, Alalwan & Rana (2019) in a study of MB is Saudi Arabia, who found FC to have a significant impact on BI to use.

However, the opposite was true in a study by Karanja, (2018) and Rahia, Ghanib & Ngahc (2018) where FC are not statistically significant. This is supported by Martins, Oliveiraa & Popovic (2014) in a study on MB, who found FC not to be statistically significant.

Hypothesis 4 is supported as FC having a significant positive effect on BI towards the use of MB services.

5.3.5 *Hypothesis 5: Age has a moderate positive influence towards PEOU of MB on BI.*

Sohail & Al-Jabri (2014) found that young people value convenience and time saving and are more inclined to adopt MB services than older customers. Morris and Venkatesh (2000), in a study of age differences in technology adoption decisions, found that both younger and older people can be looked at differently in terms of

technology usage, with technology usage amongst younger people being influenced by attitude toward the technology and usage amongst older people being influenced by perceived behavioural control. In contrast, Redda & Surujlal (2019) found that age had no influence on customer perceptions. This is supported by Laukkanen (2015), confirming that age did not appear to moderate the effects of MB.

Hypothesis 5 is thus rejected since age and ease of use did not have a significant relationship.

5.3.6 *Hypothesis 6, Income Group and PC variables have a significant relationship.*

Rideout & Katz, (2016) indicated that while low- and moderate- income families have internet, many are under connected with inconsistent connectivity. The authors further state that affordability is the reason why families at the bottom of the pyramid do not have access to the internet and mobile banking service. Cudjoe, Anim & Nyanyofio, (2015) found that perceived financial cost was the major setback regarding customers adoption of MB services.

In this case, income is linked to affordability and price sensitivity. Kansal (2016) describes affordability as referring to circumstances that stop a person from using the service, and price sensitivity to imply that at the bottom of the pyramid, cost would influence MB and perceived use.

For this reason, Hair, Krupka & Vlašić (2021) suggested the private sector and businesses look at low-income earners at the bottom of the pyramid as a market that can be reached with business strategies and services that cost less.

Hypotheses 6, that Income Group and Perceived costs variables have a significant relationship, is rejected.

5.4 Conclusion

The intention of the study was to identify factors that influence the adoption of mobile banking among lower-income groups in Gauteng. The initial hypotheses for the following constructs were supported: PC was accepted to have a negative effect on

BI; PEOU was accepted to have a significant positive effect on BI; perceived risk2 was found to have a significant effect on BI; and FC had a significant positive effect on BI. However, the initial hypothesis for perceived risk1 was rejected because it had no significant effect on BI. Age and PEOU use variables had no significant relationship, and the hypothesis of income and PC having a significant relationship was also rejected.

The issue of cost plays an important role in customers at the bottom of the pyramid not taking up mobile banking services. Financial institutions can look at: reducing banking fees to encourage customers at the BOP to take up mobile banking services; making it easier for participants in lower-income groups by increasing awareness and education on the use of mobile devises; and by improving the ease of use for their client base, resulting in the facilitation of better interaction with the customer base.

CHAPTER 6. CONCLUSIONS & RECOMMENDATIONS

6.1 Introduction

After the discussion of the results, this chapter presents the conclusion of the study, limitations, and suggestions for further studies and recommendations.

6.2 Conclusion in relation to research objective 1

This study focused on the factors that influence the adoption of MB among lower income groups in Gauteng. Research objective 1 was to investigate the role of PC towards MB adoption on BI.

The results showed that PC had a negative effect on BI towards the use of MB. This could mean that financial institutions should consider lowering banking fees and making financial transactions like the making and receiving of payments on MB platforms affordable and accessible to the lower income groups for financial inclusion. This could possibly encourage lower income customers to use mobile services and avoid human interaction at financial institutions which comes at a higher cost for this segment of the population.

Covid- 19 has also increased the need for all sectors of society to be digitally and financially included. This can be done at an affordable cost to customers and a sustainably for financial institutions.

6.3 Conclusion in relation to research objective 2

Research objective 2 was to investigate the role of PEOU towards MB adoption on BI. The results show that PEOU has a significant positive effect on BI towards the use of MB. This implies that ease of use strengthens BI toward respondents adopting the use of MB. When mobile banking services are easy to use and not intimidating, customers in the lower income segment will find it easy to take up due to the degree of difficulty being reduced. This can help to improve customer experience because customers can use the services anywhere and at any time. This also means that financial institutions, by making MB services easy to attain and use, can grow their customer base and

increase revenue where a volume versus cost strategy can be applied to grow their businesses.

6.4 Conclusion in relation to research objective 3

Research objective 3 was to investigate the role of PR towards mobile banking adoption on BI. The results for Perceived Risk were presented as PR1 and PR2 from the analysis.

PR1 was found to have no significant effect on BI towards the adoption of mobile banking. This means that some of the respondents in Gauteng did not see PR1 as important in their decision to adopt MB. This could have been due to respondents having familiarised themselves with the innovation of mobile banking services, reducing their perception of risk. This is not withstanding the efforts by government and financial institutions to make digital infrastructure available and safe to use leading to greater effort by customers to use mobile services. Financial institutions must continue to protect and promote digital services for the inclusion of all people in society.

PR2 was found to have a significant effect on BI towards the use adoption of MB. This means that respondents found PR to affect their use of mobile banking services. From the results it is deduced that PR2 is important in encouraging the belief and intentions of consumers to take up MB. Financial institutions in the early stages of customer acquisition should work towards reducing the perception of risk in their customer base to motivate the lower income earners to adopt mobile banking services. It also stands to reason that if PR2 is reduced then consumers will find it easy to trust the MB services.

6.5 Conclusion in relation to research objective 4

The fourth research objective was to investigate the role of PT towards mobile banking adoption on BI. PT was excluded from the analysis because it was found not to significantly affect the dependent variable Behavioural Intention, and as a result was not analysed further.

6.6 Conclusion in relation to research objective 5

The fifth research objective was to investigate the role of FC towards mobile banking adoption on BI. The results show that FC have a significant positive effect on BI towards the use of MB services. This means that FC strengthened the behavioural intention towards the adoption of MB. This could mean that financial institutions need to simplify the new technologies to attract customers in the lower income groups especially older customers who might face more challenges when interacting with technology. The results also imply that when consumers have an excellent experience it can lead to them adopting the technology and understanding it better.

6.7 Conclusion in relation to research objective 6

Research objective 6 investigates the relationship that exists between age and PEOU of MB adoption on BI. The results show that Age and PEOU have no significant relationship. This means that PEOU is not determined by the age of the customer in the lower income group category in Gauteng towards MB behavioural intention. The age differences in both younger and older people and ease of use can be looked at differently is terms of MB use, where technology use might be influenced by the attitude of younger people, whilst among older people the influencing factor might be perceived behavioural control.

6.8 Conclusion in relation to research objective 7

Research objective 7 investigates the relationship that exists between income and the cost of mobile banking adoption on BI. The results show that Income and PC have a significant relationship towards MB on behavioural intention. This means that the relationship between income and PC is strengthened when it comes to MB towards behavioural intention. Financial Institutions should come up with products and services that cost less to cater for consumers in the lower income groups. This is at the heart of the research topic, to find out if customers at the lower end of the base who earn less are indeed catered for. This will be good feedback to financial institutions in

Gauteng to come up with strategies and will assist them in gaining traction in acquiring a new customer base and increasing the revenues that they so desperately need

6.9 Limitations of the study

This research has the following limitations:

- The research was not a technical study on mobile banking but rather a behavioural based assessment that examined the adoption behaviour of a sample population in Gauteng, South Africa.
- Although the study was based on South Africa (Gauteng) as a developing country, the results may not be generalised to other developing countries.
- The study used a quantitative method and a survey only. This approach might prove limited in that it does not give a detailed understanding of the research problem. A qualitative study such as a field study, might be a better option to gain a more comprehensive understanding of the research problem.
- Although more research has been done on the adoption of mobile banking in developed countries, further research must be carried out in developing countries where demographics and cultural factors play a role in determining buying patterns.
- The study focused on only six variables as possible influencers in the adoption of mobile banking behavioural intention, and it will be interesting to see the research results that includes additional variables.

6.10 Suggestions for further studies

The factors that influence the adoption of mobile banking among lower-income groups in Gauteng are noted in the study. The findings can be used as a base for later studies, and further research and analysis on the extent of their influence of these factors.

For further research the following can be considered:

- The sample size of the study was small and might have impacted the results observed. The recommendation is that the study be repeated with a much larger sample.

- The survey did not ask respondents to identify according to gender lines and it will be beneficial and interesting to see how the results would fare if gender was included as a possible factor influencing the adoption of mobile banking. A comparative study can be done to see if the differences between genders are significant or not.
- The focus of the study was on factors influencing mobile banking using perceived cost, perceived ease of use, perceived risk, facilitating conditions, age, and income. It will be interesting to see the results of further studies on the same subject but with different variables such as Perceived usefulness and hedonic motivation.

6.11 Recommendations

The study analysed factors that influence adoption of mobile banking among lower-income groups in Gauteng. According to the findings presented, banks should continuously educate their customer base about the use of mobile banking, especially for customers in the lower-income brackets. Furthermore, the study found that Age and Perceived Ease of Use had no significant relationship, which was very interesting and indicated that South Africans (Gauteng) have their own culture and are unaffected by the opinions of others. To this end, banks should continue to make mobile applications simple and easy to use to compliment the users' lifestyle demands. Since the Income and Perceived costs variables had a significant relationship, financial institutions should look at making banking fees more affordable to people in the lower-income bracket, to ensure that they can afford mobile banking services.

REFERENCES

Abbas, S. K., Hassan, H. A., Asif, J., Junaid, H. M., & Zainab, F. (2018). What are the key determinants of mobile banking Adoption in Pakistan? *International Journal of Scientific & Engineering Research*, *9*(2), 841–848. https://doi.org/10.14299/ijser.2018.02.012

Acharya, A. S., Prakash, A., Saxena, P., & Nigam, A. (2013). Sampling: why and how of it? *Indian Journal of Medical Specialities*, *4*(2). https://doi.org/10.7713/ijms.2013.0032

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179–211. https://doi.org/10.1016/0749-5978(91)90020-t

Alalwan, A. A., Dwivedi, Y. K., & Rana, N. P. (2017). Factors influencing adoption of mobile banking by Jordanian bank customers: Extending UTAUT2 with trust. *International Journal of Information Management*, *37*(3), 99–110. https://doi.org/10.1016/j.ijinfomgt.2017.01.002

Alam, M. M. (2014). Factors affecting consumers' adoption of mobile banking in Bangladesh: an empirical study. *TNI Journal of Business Administration and Languages*, *2*(2), 31-37

Alsamydai, M. J. (2014). Adaptation of the technology acceptance model (TAM) to the use of mobile banking services. *International Review of Management and Business Research*, 3(4), 2039.

Assensoh-Kodua, A., Migiro, S., & Mutambara, E. (2016). Mobile banking in South Africa: a systematic review of the literature. *Banks and Bank Systems*, *11*(1), 34–41. https://doi.org/10.21511/bbs.11(1).2016.04

Baabdullah AM, Alalwan AA, Rana NP et al (2019) Consumer use of mobile banking (M-Banking) in Saudi Arabia: Towards an integrated model. *International Journal of Information Management*. 44: 38-52.

Barrantes, R., Galperin, H., Agüero, A., & Molinari, A. (2007). Affordability of mobile phone service in Latin America. *The World Dialogue on Regulation for Network Economies (WDR)*.

Bidar, R., Fard, M. B., Salman, Y. B., Tunga, M. A., & Cheng, H. I. (2014, February). Factors affecting the adoption of mobile banking: Sample of Turkey. In *16th international conference on advanced communication technology* (pp. 1278-1282). IEEE

Carolina Martins a, Tiago Oliveiraa, Alesˇ Popovicˇ. Understanding the Internet banking adoption: A unified theory of acceptance and use of technology and perceived risk application, *International Journal of Information Management*. (34) 1-13

Couper, M. P., Traugott, M. W., & Lamias, M. J. (2001). Web survey design and administration. Public opinion quarterly, 65(2), 230-253.

Chigada, J. M., & Hirschfelder, B. (2017). Mobile banking in South Africa: A review and directions for future research. *SA Journal of Information Management*, *19*(1). https://doi.org/10.4102/sajim.v19i1.789

Chitungo, S. K., & Munongo, S. (2013). Extending the technology acceptance model to mobile banking adoption in rural Zimbabwe. *Journal of Business Administration and Education*, *3*(1).

Chong, A.Y.L, Ooi, K., Lin, B., & Tan, B. (2010). Online banking adoption: an empirical analysis. *International Journal of Bank Marketing*, *28*(4), 267–287. https://doi.org/10.1108/02652321011054963

Cudjoe, A. G., Anim, P. A., & Tetteh Nyanyofio, J. G. N. (2015). Determinants of Mobile Banking Adoption in the Ghanaian Banking Industry: A Case of Access Bank Ghana Limited. *Journal of Computer and Communications*, *03*(02), 1–19. https://doi.org/10.4236/jcc.2015.32001

Dakduk, S., Santalla-Banderali, Z., & Siqueira, J. R. (2020). Acceptance of mobile commerce in low-income consumers: *evidence from an emerging economy*. *Heliyon*, *6*(11), e05451. https://doi.org/10.1016/j.heliyon.2020.e05451

Dauda, S.Y, & Lee, J. (2015). Technology adoption: A conjoint analysis of consumers′ preference on future online banking services. *Information Systems*, *53*, 1–15. https://doi.org/10.1016/j.is.2015.04.006

Davis, F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance of Information Technology. *MIS Quarterly*, *13*(3), 319. https://doi.org/10.2307/249008

Dufour, J. M., & Dagenais, M. G. (1985). Durbin-Watson tests for serial correlation in regressions with missing observations. *Journal of Econometrics,* 27(3), 371-381.

Deloitte (2017). digital financial services. Retrieved fromhttps://www2.deloitte.com/za/en/pages/digital/topics/digital-financial-services.html?icid=nav2_digital-financial-services&gclid=CjwKCAjwwqaGBhBKEiwAMk-FtD_LXBIUoO4KQPIuxO7W832NYiXDhfY1NSv1qJ2ExtghNhpGxHGs1hoCeR0QAvD_BwE&gclsrc=aw.ds.

Eraslan, M., Karafil, A. Y., & Atay, E. (2017). Evaluation of strategies for managing stress among muay thai sportsmen participating in intervarsity sports competitions. *Journal of Human Sciences,* 14(3), 2915-2924.

Eyisi, D. (2016). The usefulness of qualitative and quantitative approaches and methods in researching problem-solving ability in science education curriculum. *Journal of Education and Practice*, *7*(15), 91-100.

Findley, M. G., Kikuta, K., & Denly, M. (2021). External Validity. *Annual Review of Political Science*, *24*(1), 365–393. https://doi.org/10.1146/annurev-polisci-041719-102556

Foon, Y. S., & Fah, B. C. Y. (2011). Internet banking adoption in Kuala Lumpur: an application of UTAUT model. *International Journal of Business and Management*, 6(4), 161.

Gao, S., Krogstie, J., & Siau, K. (2011). Developing an Instrument to Measure the Adoption of Mobile Services. *Mobile Information Systems*, *7*(1), 45–67. https://doi.org/10.1155/2011/831018

Gogtay, N. J., & Thatte, U. M. (2017). Principles of correlation analysis. *Journal of the Association of Physicians of India*, *65*(3), 78-81.

Goldstuck, A. (2012). Internet matters: The quiet engine of the South African economy. *World Wide Worx*, 236.

Gumussoy, C. A. (2016). Factors affecting users' decision to continue using mobile banking in Turkey. *International Journal of Mobile Communications*, *14*(4), 411. https://doi.org/10.1504/ijmc.2016.077341

Gupta, S., Yun, H., Xu, H., & Kim, H. W. (2017). An exploratory study on mobile banking adoption in Indian metropolitan and urban areas: a scenario-based experiment. *Information Technology for Development*, *23*(1), 127–152. https://doi.org/10.1080/02681102.2016.1233855

Halás, M., & Moog, C. H. (2013). Definition of eigenvalues for a nonlinear system. *IFAC Proceedings Volumes*, 46(23), 600-605.

Hanafizadeh, P., Keating, B. W., & Khedmatgozar, H. R. (2014). A systematic review of Internet banking adoption. *Telematics and Informatics*, *31*(3), 492–510. https://doi.org/10.1016/j.tele.2013.04.003

Hassan, H. E., & Wood, V. R. (2020). Does country culture influence consumers' perceptions toward mobile banking? A comparison between Egypt and the United States. *Telematics and Informatics*, *46*, 101312. https://doi.org/10.1016/j.tele.2019.101312

Heale, R., & Twycross, A. (2015a). Validity and reliability in quantitative studies. *Evidence Based Nursing*, *18*(3), 66–67. https://doi.org/10.1136/eb-2015-102129

Heiervang, E., & Goodman, R. (2009). Advantages and limitations of web-based surveys: evidence from a child mental health survey. *Social Psychiatry and Psychiatric Epidemiology*, *46*(1), 69–76. https://doi.org/10.1007/s00127-009-0171-9

Hoehle, H., Scornavacca, E., & Huff, S. (2012). Three decades of research on consumer adoption and utilization of electronic banking channels: A literature analysis. *Decision Support Systems*, *54*(1), 122–132. https://doi.org/10.1016/j.dss.2012.04.010

Holcomb, Z. (2016). Fundamentals of descriptive statistics. Routledge.

Hornsby, J. S., Kuratko, D. F., Holt, D. T., & Wales, W. J. (2013). Assessing a Measurement of Organizational Preparedness for Corporate Entrepreneurship. *Journal of Product Innovation Management*, *30*(5), 937–955. https://doi.org/10.1111/jpim.12038

Hoy, W. K., & Adams, C. M. (2015). *Quantitative research in education: A primer*. Sage Publications.

Isaac, O., Mutahar, A. M., Daud, N. M., Ramayah, T., & Aldholay, A. H. (2018). The effect of awareness and perceived risk on the technology acceptance model (TAM): mobile banking in Yemen. *International Journal of Services and Standards*, *12*(2), 180. https://doi.org/10.1504/ijss.2018.10012980

Ismail, T., & Masinge, K. (2012). Mobile banking: Innovation for the poor. *African Journal of Science, Technology, Innovation and Development*, *4*(3), 98-127.

Ivatury, G., & Pickens, M. (2006). Mobile phone banking and low-income customers. *Washington, DC: CGAP, Vodafone Group Foundation, et United Nations Foundation (en collaboration avec le FinMark Trust)*.

Jabareen, Y. (2009). Building a conceptual framework: philosophy, definitions, and procedure. *International Journal of Qualitative Methods*, *8*(4), 49-62.

Javed, F., Afzal, M. K., Sharif, M., & Kim, B. S. (2018). Internet of Things (IoT) operating systems support, networking technologies, applications, and challenges: *A comparative review. IEEE Communications Surveys & Tutorials*, 20(3), 2062-2100.

Joseph F. Hair, Marcelo Gabriel, Vijay Patel. (2015) AMOS Covariance-Based Structural Equation Modeling (CB-SEM): Guidelines on Its Application as a Marketing Research Tool: *Brazilian Journal of Marketing*, 13(2), March 2014

Kansal, P. (2016). Factors affecting adoption of mobile banking at the bottom of the pyramid in India. *International Journal of Marketing & Business Communication*, *5*(3).

Karanja, J. N. (2018). Adoption of Cloud Services and Performance of Insurance Firms in Kenya (Doctoral dissertation, university of nairobi).

Kemp, S. (Producer). (2020, February 11). DIGITAL 2020: SOUTH AFRICA. Datareportal. Retrieved from https://datareportal.com/reports/digital-2020-south-africa

Kewo, A., Munir, R., & Lapu, A. K. (2015). IntelligEnSia based electricity consumption prediction analytics using regression method. *2015 International Conference on Electrical Engineering and Informatics (ICEEI)*. https://doi.org/10.1109/iceei.2015.7352556

Koenig-Lewis, N., Palmer, A., & Moll, A. (2010). Predicting young consumers' take up of mobile banking services. *International Journal of Bank Marketing*, *28*(5), 410–432. https://doi.org/10.1108/02652321011064917

Krishanan, D., Khin, A. A., Teng, K. L. L., & Chinna, K. (2016). Consumers' perceived interactivity & intention to use mobile banking in structural equation modelling. *International Review of Management and Marketing*, *6*(4), 883-890.

Leibbrandt, M., Wegner, E., & Finn, A. (2011). The policies for reducing income inequality and poverty in South Africa.

Lin, W. R., Wang, Y. H., & Hung, Y. M. (2020). Analyzing the factors influencing adoption intention of internet banking: *Applying DEMATEL-ANP-SEM approach. PLOS ONE, 15(2), e0227852.* https://doi.org/10.1371/journal.pone.0227852

Li, Y. H., & Huang, J. W. (2009). Applying theory of perceived risk and technology acceptance model in the online shopping channel. *World Academy of Science, Engineering and Technology*, 53(1), 919-925.

Luarn, P., & Lin, H. H. (2005). Toward an understanding of the behavioral intention to use mobile banking. *Computers in human behavior,* 21(6), 873-891.

Mago, S., & Chitokwindo, S. (2014). The impact of mobile banking on financial inclusion in Zimbabwe: A case for Masvingo Province. *Mediterranean Journal of Social Sciences*, *5*(9), 221.

Martins, C., Oliveira, T., & Popovič, A. (2014). Understanding the Internet banking adoption: A unified theory of acceptance and use of technology and perceived risk application. International journal of information management, 34(1), 1-13.

McGovern, P., Lambert, J., & Verrecchia, M. (2019). Mobile Banking Adoption: An Exploration of The Behavioural Intention of Consumers in Ireland. *Journal of Accounting & Finance (2158-3625)*, *19*(8).

Milly, N., Xun, S., Meena, M. E., & Cobbinah, B. B. (2021). Measuring Mobile Banking Adoption in Uganda Using the Technology Acceptance Model (TAM2) and Perceived Risk. *Open Journal of Business and Management*, *09*(01), 397–418. https://doi.org/10.4236/ojbm.2021.91021

Moghavvemi, S., Salleh, N. A. M., & Standing, C. (2016). Entrepreneur's adoption of information system innovation: The impact of individual perception and exogenous factors on entrepreneurs' behavior. *Internet Research*.

Morris, M. G., & Venkatesh, V. (2000). Age differences in technology adoption decisions: Implications for a changing work force. *Personnel Psychology*, *53*(2), 375–403. https://doi.org/10.1111/j.1744-6570.2000.tb00206.x

Muluka, K. E., Munyolo, W., Oteki, E. B., & Wanyama, E. W. (2016). Influence of Affordability of Digital Banking on Customer Satisfaction: *A Case of National Bank of Kenya Bungoma County*.

Murphy, J. (2017). Christof Wolf, Dominique Joye, Tom W. Smith, and Yang-chih Fu, eds. The SAGE Handbook of Survey Methodology. Thousand Oaks, CA: Sage Publications Ltd. 2016. 740 pp. $170.00 (cloth). *Public Opinion Quarterly*, *81*(1), 201–204. https://doi.org/10.1093/poq/nfw058

Nandhi, M. A. (2012). Effects of mobile banking on the savings practices of low-income users. The Indian experience. *Institute for Money, Technology and Financial Inclusion, University of California, Irvine*.

Noble, H., & Smith, J. (2015). Issues of validity and reliability in qualitative research. *Evidence Based Nursing*, *18*(2), 34–35. https://doi.org/10.1136/eb-2015-102054

O'Dwyer, L. M., & Bernauer, J. A. (2013). *Quantitative research for the qualitative researcher*. SAGE publications.

Olsson, F., & Gall, G. (2012). How do the predictors of switching intention influence switching behavior?: A quantitative study of students' switching behavior in the retail banking context.

PWC (2020). SA major bank analysis. Retrieved from https://www.pwc.co.za/en/press-room/major-banks-analysis-dec-2020.html

Ramavhona, T. C., & Mokwena, S. (2016). Factors influencing internet banking adoption in South African rural areas. *SA Journal of Information Management*, *18*(2). https://doi.org/10.4102/sajim.v18i2.642

Ramlugun, V. G., & Issuree, H. (2014). Factors determining mobile banking adoption in Mauritius. *International Journal of Innovation Research & Development*, *3*(1), 193-202.

Raza, S. A., Umer, A., & Shah, N. (2017). New determinants of ease of use and perceived usefulness for mobile banking adoption. International Journal of Electronic Customer Relationship Management, 11(1), 44-65.

Redda, E. H., & Surujlal, J. (2019). The role of selected demographic variables on perceptions of internet banking service quality, value, satisfaction, and

loyalty. *Journal of Management Information and Decision Sciences*, *22*(3), 262-272.

Rehman, Z. U., & Shaikh, F. A. (2020). Critical Factors Influencing the Behavioral Intention of Consumers towards Mobile Banking in Malaysia. *Engineering, Technology & Applied Science Research*, *10*(1), 5265–5269. https://doi.org/10.48084/etasr.3320

Rideout, V., & Katz, V. S. (2016). Opportunity for all? Technology and learning in lower-income families. In *Joan Ganz Cooney Center at Sesame Workshop*. Joan Ganz Cooney Center at Sesame Workshop. 1900 Broadway, New York, NY 10023.

Rind, M. M., Hyder, M., Saand, A. S., Alzabi, T., Nawaz, H., & Ujan, I. (2017). Impact Investigation of perceived cost and perceived risk in mobile commerce: analytical study of Pakistan. *International Journal of Computer Science and Network Security*, *17*(11), 124-130.

Samant, D., Matter, R., & Harniss, M. (2013). Realizing the potential of accessible ICTs in developing countries. *Disability and Rehabilitation: Assistive Technology*, *8*(1), 11–20. https://doi.org/10.3109/17483107.2012.669022

Sarfaraz, J. (2017). Unified theory of acceptance and use of technology (UTAUT) model-mobile banking. *Journal of Internet Banking and Commerce*, *22*(3), 1-20.

Samar Rahia, Mazuri Abd. Ghanib, Feras MI Alnasera and Abdul Hafaz Ngah. Investigating the role of unified theory of acceptance and use of technology (UTAUT) in internet banking adoption context*, Management Science Letters* 8 (2018) 173–186

Schindler, P. S. (2019). *Business research Methods*. Wittenberg University, New York: McGraw-Hill/Irwin. 13th ed.

Shaikh, A. A., Karjaluoto, H., & Chinje, N. B. (2015). Consumers' perceptions of mobile banking continuous usage in Finland and South Africa. *International Journal of Electronic Finance*, *8*(2/3/4), 149. https://doi.org/10.1504/ijef.2015.070528

Sharma, B. (2016). A focus on reliability in developmental research through Cronbach's Alpha among medical, dental and paramedical professionals. *Asian Pacific Journal of Health Sciences*, 3(4), 271-278.

Simiyu, S. C., & Kohsuwan, P. (2019). Understanding consumers' mobile banking adoption through the integrated technology readiness and acceptance model (TRAM) perspective. *Human Behavior, Development and Society*, 20(4), 29-40.

Slack, M. K., & Draugalis Jr, J. R. (2001). Establishing the internal and external validity of experimental studies. *American journal of health-system pharmacy*, 58(22), 2173-2181.

Sohail, M. S., & Al-Jabri, I. M. (2014). Attitudes towards mobile banking: are there any differences between users and non-users? *Behaviour & Information Technology*, *33*(4), 335–344. https://doi.org/10.1080/0144929x.2013.763861

Sripalawat, J., Thongmak, M., & Ngramyarn, A. (2011). M-banking in metropolitan Bangkok and a comparison with other countries. *Journal of computer information systems*, 51(3), 67-76.

Taherdoost, H. (2018). A review of technology acceptance and adoption models and theories. *Procedia Manufacturing*, *22*, 960–967. https://doi.org/10.1016/j.promfg.2018.03.137

Van Deventer, M., de Klerk, N., & Bevan-Dye, A. (2017a). Influence of perceived integrity and perceived system quality on Generation Y students' perceived trust in mobile banking in South Africa. *Banks and Bank Systems*, *12*(1), 128–134. https://doi.org/10.21511/bbs.12(1–1).2017.05

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS quarterly*, 425-478

Venkatesh, V., & Zhang, X. (2010). Unified theory of acceptance and use of technology: US vs. China. *Journal of global information technology management*, 13(1), 5-27.

Venkatesh, Morris, Davis, & Davis. (2003). User Acceptance of Information Technology: Toward a Unified View. *MIS Quarterly*, *27*(3), 425. https://doi.org/10.2307/30036540

Venter De Villiers, M., Chuchu, T., & Chavarika, G. V. (2020). An Investigation on Mobile Banking and Co-creation Services Adoption Intention in South Africa. *International Journal of Interactive Mobile Technologies (iJIM)*, *14*(11), 137. https://doi.org/10.3991/ijim.v14i11.13755

Verma, P., & Sinha, N. (2017). Role of attitude as mediator of the perceived ease of use and behavioural intention relationship. *International Journal of Management Concepts and Philosophy*, *10*(3), 227. https://doi.org/10.1504/ijmcp.2017.085831

Wolf, C., Joye, D., Smith, T. E., Smith, T. W., & Fu, Y. C. (Eds.). (2016). The SAGE handbook of survey methodology. Sage.

Xiao, L., Fu, B., & Liu, W. (2018). Understanding consumer repurchase intention on O2O platforms: an integrated model of network externalities and trust transfer theory. *Service Business*, 12(4), 731-756.

Yu, C. S. (2012). Factors affecting individuals to adopt mobile banking: Empirical evidence from the UTAUT model. *Journal of Electronic Commerce Research*, *13*(2), 104.

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APPENDICES

APPENDIX A – ETHICS APPROVAL LETTER

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/DB334941/467**

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

Project title	**Factors influencing the adoption of mobile banking among the lower income groups in Gauteng**
Investigator / Researcher	**Mr Bongani Msimanga**
Nature of Project	**MM (Digital Business)**
Decision of the Committee	**Approved, provided stakeholders and participants are guaranteed anonymity and confidentiality.**
Issue Date of Certificate	**2021-11-02**
Expiry date	**Date of submission of the project 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.

Msimanga — Signature

02 November 2021 — Date:

APPENDIX B – RESEACH INSTRUMENT

Mobile banking adoption

Q1
Dear Respondent

My name is Bongani Msimanga, and I am a Masters student at the Wits Business School at the University of Witwatersrand, Johannesburg. As part of my studies I have to undergo a research project, and I am investigating factors influencing adoption of mobile banking among the lower-income groups in Gauteng under the supervision of Ayanda Magida.

This research aims to find out the extent that affordability and accessibility affects the adoption of mobile banking among lower income groups in Gauteng. As part of the project I would like to invite you to take part in answering the questionnaire.

This activity will include approximately 30 questions and will take around 15-20 minutes to complete. Kindly note the following:

- Your participation if voluntary
- Responses are completely confidential and anonymous
- There will be no personal costs or direct benefits to your participation
- The information provided will be held securely and not disclosed to anyone else
- The survey does not ask any identity information like names or ID numbers, therefore cannot be traced back to you.

Should you require further details regarding the study, please contact me on mosimabr@gmail.com / 334941@students.wits.ac.za or by telephone on 076 639 6810. For your reference my supervisor can be contacted on ayanda.magida@wits.ac.za

Kindly click "I agree" below to give consent and complete survey

- ○ I agree
- ○ I disagree

Page 1 of 13

Q21 How best would you describe yourself?

- ○ Black
- ○ White
- ○ Indian
- ○ Coloured
- ○ other

Q26 How best would you describe yourself?

- ○ Black
- ○ White
- ○ Indian
- ○ Coloured
- ○ other

Q25 How best would you describe yourself?

- ○ Black
- ○ White
- ○ Indian
- ○ Coloured
- ○ other

Q24 How best would you describe yourself?

- Black
- White
- Indian
- Coloured
- other

Q23 How best would you describe yourself?

- Black
- White
- Indian
- Coloured
- other

Q2 Please select your age group

- 18-24
- 25-34
- 35-44
- 45-54
- 54-above

Page Break

Q24 How best would you describe yourself?

- ○ Black
- ○ White
- ○ Indian
- ○ Coloured
- ○ other

Q23 How best would you describe yourself?

- ○ Black
- ○ White
- ○ Indian
- ○ Coloured
- ○ other

Q2 Please select your age group

- ○ 18-24
- ○ 25-34
- ○ 35-44
- ○ 45-54
- ○ 54-above

Page Break

Q19 Do you have a mobile device?

- ○ Yes
- ○ No

Q6 Have you used mobile banking previously?

- ○ Yes
- ○ No

Q22 When using mobile banking, do you use

- ☐ Cellphone banking
- ☐ Mobile banking over mobile application (APP)
- ☐ Mobile banking over SMS (also known as SMS banking)
- ☐ Mobile banking over Unstructured supplementary Services (USSD)
- ☐ None of the above

Q7 If you have used mobile banking previously, what device did you use for your mobile banking, your phablet or laptop or smart phone?

- [ ] Phablet (i.e. phone + tablet combo)
- [ ] Laptop
- [ ] Smart phone
- [ ] Tablet
- [ ] other

Q8 How has the COVID-19 pandemic affected the following aspects of your life...?

	Insignificant	Minor	Moderate	Major	Terrible
Your physical health	○	○	○	○	○
Your financial situation	○	○	○	○	○
Your banking activities	○	○	○	○	○
How often you partake in banking activities	○	○	○	○	○
The type of banking activity you use	○	○	○	○	○

Q9 When was the last time you participated in mobile banking?

- ○ Today
- ○ A day ago
- ○ A week ago
- ○ A month ago
- ○ Never

Q10 How often do you use mobile banking in a week?

- ○ Once a week
- ○ 2 times a week
- ○ 3 times a week
- ○ 4 or more times a week
- ○ Never

Page Break

Q11 How has your experience been on the cost of Mobile banking?

	Strongly disagree (1)	Somewhat disagree (2)	Neither agree nor disagree	Somewhat agree	Strongly agree
The cost of doing mobile banking is higher than using other banking types	○	○	○	○	○
The data fee is expensive when using mobile banking	○	○	○	○	○
The mobile device setup to using mobile banking charges me lot of money	○	○	○	○	○
Using mobile banking services is a cost burden to me	○	○	○	○	○

Q12 What has your experience been on the use of mobile banking?

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Where I live I can access mobile banking	○	○	○	○	○
Where I work I can access mobile banking	○	○	○	○	○
Using mobile banking is compatible with my life	○	○	○	○	○
Help is available when I get a problem using mobile banking	○	○	○	○	○

Q13 When using mobile banking

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I'm concerned that my personal information will be shared or sold to others when accessing mobile banking service platform	○	○	○	○	○
I'm concerned that banking services platform collect too much personal information about me	○	○	○	○	○
I'm concerned that mobile banking platforms are not safe to use	○	○	○	○	○
I'm concerned that sharing personal banking information cannot ensure my personal safety	○	○	○	○	○
I believe my information is kept confidential	○	○	○	○	○

I believe my transactions are secured	○	○	○	○	○
I believe my privacy would not be divulged	○	○	○	○	○

Q14 I could use mobile banking

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
	○	○	○	○	○
If it had a built in help guidance for assistance	○	○	○	○	○
If I trust the systems reliability and availability	○	○	○	○	○
If I have seen someone use it	○	○	○	○	○

Q15 Some of the conditions for using mobile banking are that

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
The place where I live supports me in using mobile banking	○	○	○	○	○
My work environment supports me to use mobile banking	○	○	○	○	○
Using mobile banking works for me	○	○	○	○	○
Help is available when I get a problem using mobile banking	○	○	○	○	○

Q16 When dealing with banking affairs

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I prefer to use mobile banking	○	○	○	○	○
I intend to use mobile banking	○	○	○	○	○
I use mobile banking	○	○	○	○	○

Q17 In conducting banking affairs

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Using mobile banking would improve my banking	○	○	○	○	○
Using mobile banking would save my time	○	○	○	○	○
I would use mobile banking anyplace	○	○	○	○	○
I would find mobile banking useful	○	○	○	○	○