DETERMINANTS OF MOBILE COMMERCE ADOPTION BY SMALL AND MEDIUM ENTERPRISES IN POLOKWANE MUNICIPALITY

by

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ABSTRACT

The aim of the study was to determine the relationships between determinants of mobile commerce adoption and the actual adoption of mobile commerce by Small and Medium Enterprises in Polokwane Municipality. The study utilised the quantitative research approach with 146 SME owner respondents from population of 261 owners using a random sampling technique. The questionnaire was developed from the empirical literature review. The determinants of m-commerce were represented by technological,

organisational and environmental contextual factors. M-commerce was measured using 11 questions against all other contextual factor variables . Data was cleaned to enhance its fitness for further analysis. To attain this, normality, mean and standard deviation, skewness and kurtosis were performed. The data was found to be fit for the purpose of the study. Furthermore, the data was tested for validity and reliability and it satisfied the requirements.

Descriptive statistics, ANOVA and regression analysis were used to analyse the data. ANOVA was used to test for sub-hypotheses and to make a decision on whether to accept or reject the stated hypotheses based on the significance level. Regression analysis was used to test main hypotheses. ANOVA results showed that all technological factors (perceived benefits, perceived costs, perceived compatibility), organisational factors (technology readiness), environ

mental factors (customer pressure, supplier pressure, competitor pressure) and technology acceptance model factors (perceived usefulness) significantly predicted m-commerce adoption. On the other hand, factors such as gender, age, level of education and perceived ease of use were not significant predictors of m-commerce adoption.

Based on the above results, SMEs should improve on their handling of determinants of m-commerce as they effectively influence the adoption of m-commerce. The government also needs to boost the SME sector by introducing several measures which can expose small businesses to enabling business environment.

Keywords: adoption, mobile apps, mobile commerce, SMEs, South Africa

DECLARATION

I declare that “Determinants of Mobile Commerce Adoption by Small and Medium Enterprises in Polokwane Municipality” is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete

references and that this work has not been submitted before for any other degree at any other institution.

Matlakala More Moses 17 November, 2020

Signature:

ACKNOWLEDGEMENTS

I want to thank my supervisor Professor Pelser for believing in me. His guidance and constructive feedback made this journey a success.

I also want to thank my family for supporting all my academic life. They never stopped believing in me from the first day. This made me to work hard and make them happy and never to disappoint them in any manner.

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CHAPTER 1: INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION

Mobile commerce using cell phones (m-commerce) has grown rapidly in the past decade (Waithaka & Mnkandla, 2017). It has turned the world into a global village where physical geographical barriers no longer limit businesses to sell their products locally (Khaskheli, Jun & Bhuiyan, 2017). The wave of adoption has seen several big and global brands such as Uber, Apple Pay, Google wallet, Paypal and Amazon among other top brands shifting from just e-commerce to m-commerce (Molina-Castillo, Lopez-Nicolas & de Reuver, 2020). The new developments show that m-commerce is not a fad but a sustainable technology which is here to change the business terrain. Stafford (2016) asserts that the m-commerce wave has exposed businesses to tough competition and infinite opportunities that can be exploited if a business adapts. It has emerged that due to intense competition for customers, businesses lagging behind in terms of technological sophistication such as m-commerce adoption and optimisation are at risk of failure (Chiu, Chen & Chen, 2017).

According to Waithaka and Mnkandla (2017), m-commerce is characterised by the use of mobile applications using smartphones and other portable devices such as tablets and iPads to transact online. Khaskheli et al. (2017) note that it is mostly smartphones that are compatible with m-commerce because of their portability and affordability and noted that optimisation is the effective utilisation of a given technology. M-commerce adoption and optimisation give SMEs a cutting edge to compete with large firms (Ghobakhloo et al., 2011). As indicated by Stanley (2015), m-commerce enables SMEs to attain efficiency in terms of inventory management, cataloguing and order processing. Other scholars have also pointed to the flexibility of m-commerce in enabling SMEs to use it for several purposes (Pankomera & van Greunen, 2019). According to Pankomera & van Greunen (2019), m-commerce can be used in the production process, educational programmes, banking apps, marketing, entertainment, and managing employees. This means once the m-commerce system is set up, the business can start to explore other uses aside from the expected use. More importantly,

this suffices to say that m commerce can be used by firms in different sectors of the economy. Maduku, Mpinganjira and Duh (2016) assert that m-commerce can be a crucial marketing tool for SMEs in developing countries which may lack financial resources to advertise on expensive media platforms such as television. One of the outstanding benefits of m-commerce is that it enables SMEs to be in direct contact with their customers, resulting in increased sales and profitability using smartphones (Cuomo, 2013). All customers are no longer interested in spending time visiting stores physically or window-shopping but prefer to do everything at the comfort of their homes or offices using mobile applications to make purchasing decisions (Waithaka & Mnkandla, 2017). Due to high smartphone usage in South Africa (Shaban, 2016), investing in m-commerce adoption is likely to improve the profitability and overall performance of SMEs. In addition, Matangira (2015) notes that 60% of the South African population has access to internet and mobile applications.

Regardless of infinite benefits offered by m-commerce, the adoption thereof is very slow among SMEs (Waithaka & Mnkandla, 2017). In developing countries, m-commerce adoption is satisfactorily higher as compared to developing countries (Chau, Deng & Tay, 2020). A similar study notes that the m-commerce strategy has already been tested in developing countries and brought favourable benefits to both businesses and customers. SMEs in developing countries are reluctant towards adopting m-commerce. A significant number of SMEs lack mechanisms and systems to successfully implement m-commerce (Nakhumwa, 2013). Most SMEs do not have websites and the few that have, their websites are not compatible for m-commerce (Okyle, 2016). Lekhanya (2013) also notes that most of these small businesses use mobile applications for non-business purposes. According to Lekhanya (2013), SMEs state that m-commerce adoption is expensive which hinders them from adopting it. Post Covid-19 lockdown, SMEs should not treat m-commerce as an option but as a priority. This is because the Covid-19 regulations brought several changes which restrict physical shop visits, thus, leaving the option for m-commerce to reach out to customers.

Given the extensive benefits of leveraging on m-commerce, it becomes crucial to establish its key determinants among SMEs in South Africa. Nevertheless, little is

known about m-commerce because it is a relatively new concept in most developing countries (Waithaka & Mnkandla, 2017). Despite this, findings regarding the determinants of m-commerce are inconclusive. A study by Ifinedo (2011) reported that factors such as perceived compatibility, customer pressure and supplier pressure were not significant in predicting m-commerce. Yet still, other scholars established that all TOE factors were crucial determinants of m-commerce adoption (Gono, Harindranath & Özcan, 2016; Chau et al., 2020; Lin et al., 2020). Notwithstanding these disagreements in existing empirical findings, a study investigating the determinants of m-commerce is lacking in South Africa. Therefore, this study seeks to establish whether technology-organisational-environmental factors and technology acceptance model factors do influence SME owner/managers to adopt m-commerce in South Africa.

1.2 RESEARCH PROBLEM

SMEs are regarded as catalysts for optimal economic performance globally (Cant & Wiid, 2013). Countries such as China and the USA, and blocks such as the European Union have benefited greatly from small business activities. SMEs also contribute significantly towards economic performance and help to reduce poverty through job creation (Cant & Wiid, 2013). Moreover, the SMEs sector dominates the formal business sector (Fatoki, 2014). This makes it an important sector to back the country's plans to resolve youth unemployment, poverty and accommodating the previously disadvantaged group into the mainstream economic activities. With severe socio-economic challenges confronting the country, policy makers believe that small businesses can be an effective tool to ease challenges such as unemployment, poverty and income inequality (Ayandibu & Houghton, 2017).

However, the survival rate of small businesses is very low. A voluminous number of them are registered every year but struggle to take off and complete the other stages of the business growth cycle (Ramukumba, 2014). The underperformance of the SME sector in South Africa makes it difficult for the country to consider SMEs as a sustainable option to solve a number of challenges faced by the country (SME Growth Index, 2015). A study by Bouazza, Ardjouman and Abada (2015) assert that small businesses are negatively affected by factors in the business environment. Existing

literature is in agreement that critical obstacles faced by small businesses include lack of capital, lack of resources, bureaucracy, crime and poorly developed market for their products. According to Goh (2017), most small businesses are failing because of the inability to adapt to rapid technological advancements such as m-commerce. Waithaka and Mnkandla (2017) assert that m-commerce has changed the way business is done. Those who cannot adapt perish in the industry. SMEs are responding very slowly to m-commerce adoption (Waithaka & Mnkandla, 2017). A significant number of SMEs lack mechanisms and systems to successfully implement m-commerce (Nakhumwa, 2013). Lekhanya (2013) also notes that many of these small businesses use mobile applications for non-business purposes. According to Lekhanya (2013), SMEs state that m-commerce adoption is expensive. A study conducted by Tran (2015) reports that SMEs cite lack of knowledge and skills as the main drawback towards adopting m-commerce. The concept of m-commerce adoption has been explored mainly outside South Africa (Okyle, 2016; Waithaka & Mnkandla, 2017), but there is a scarcity of empirical studies that have investigated m-commerce among SMEs in South Africa. This study seeks to resolve the research problem which is: what are determinants of mobile commerce adoption by SMEs in Polokwane Municipality.

1.3 AIM OF STUDY

The study aimed to determine relationships between determinants of mobile commerce adoption and the actual adoption of mobile commerce by Small and Medium Enterprises in Polokwane Municipality.

1.4 OBJECTIVES OF THE STUDY

The objectives of the study are to:

- Examine the relationship between technology contextual factors and m-commerce adoption.
- Determine the relationship between organisational contextual factors and the level of m-commerce adoption.
- Investigate the relationship between environment contextual factors and the level of m-commerce adoption.

- Assess the relationship between technology acceptance factors and the level of m-commerce adoption.

1.5 HYPOTHESES

This section serves to develop the hypotheses of this study. The hypotheses are developed from proposed relationships among key variables of the study.

Hypothesis 1

H_{o1}: Technological factors do not influence m-commerce adoption among SMEs.

H_{a1}: Technological factors positively influence m-commerce adoption among SMEs.

Hypothesis 2

H_{o2}: Organisational contextual factors do not influence m-commerce adoption among SMEs.

H_{a2}: Organisational contextual factors positively influence m-commerce adoption among SMEs.

Hypothesis 3

H_{o3}: Environmental contextual factors do not influence m-commerce adoption among SMEs.

H_{a3}: Environmental contextual factors positively influence m-commerce adoption among SMEs.

Hypothesis 4

H_{o4}: Technology acceptance factors do not influence m-commerce adoption among SMEs.

H_{a4}: Technology acceptance factors positively influence m-commerce adoption among SMEs.

The hypotheses were further broken down as follows;

Hypothesis 1

Technological factors positively influence m-commerce adoption among SMEs.

H_{1a}: *Perceived benefits positively predict m-commerce adoption among SMEs.*

H_{1b}: *Perceived costs positively predict m-commerce adoption among SMEs.*

H_{1c}: *Perceived compatibility positively predicts m-commerce adoption among SMEs.*

Hypothesis 2

Organisational contextual factors positively influence m-commerce adoption among SMEs.

H_{2a}: *Gender positively predicts m-commerce adoption among SMEs.*

H_{2b}: *Age positively predicts m-commerce adoption among SMEs.*

H_{2c}: *Level of education positively predicts m-commerce adoption among SMEs.*

H_{2d}: *Technological readiness positively predicts m-commerce adoption among SMEs.*

Hypothesis 3

Environmental contextual factors positively influence m-commerce adoption among SMEs.

H_{3a}: *Customer pressure positively predicts m-commerce adoption among SMEs.*

H_{3b}: *Supplier pressure positively predicts m-commerce adoption among SMEs.*

H_{3c}: *Competitor pressure positively predicts m-commerce adoption among SMEs.*

Hypothesis 4

Technology acceptance model factors positively influence m-commerce adoption among SMEs.

H_{4a}: *Perceived ease of use positively predicts m-commerce adoption among SMEs.*

H_{4b}: *Perceived usefulness positively predicts m-commerce adoption among SMEs.*

1.6 DEFINITION OF CONCEPTS

M-commerce

It is defined as the use of mobile applications using smartphones to transact online (Waithaka & Mnkandla, 2017).

Technological context

Technological context factors are variables such as perceived benefits, compatibility and cost associated with a given technology (Rahayu & Day, 2015). To measure this variable, a scale was developed by the author.

Organisation Contextual factors

Organisational contextual factors are characteristics of a firm and its customers that influence individuals' adoption of new technology (Chiu et al., 2017). To measure this variable, a scale will be developed by the author.

Environment contextual factors

Environment contextual factors describe elements beyond the business' control which indirectly pressure the business to adopt new technology to remain competitive (Duan, Deng & Corbitt, 2012). To measure this variable, a scale was developed by the author.

SMEs

Based on Section 1 of the National Small Business Act of 1996 as amended by the National Small Business Amendment Acts of 2019, in South Africa, "*Small enterprise means a separate and distinct business entity, together with its branches or*

subsidiaries, if any, including cooperative enterprises, managed by one owner or more predominantly carried on in any sector or subsector of the economy mentioned in column 1 of the Schedule and classified as a micro, a small or a medium enterprise by satisfying the criteria mentioned in columns 3 and 4 of the Schedule."

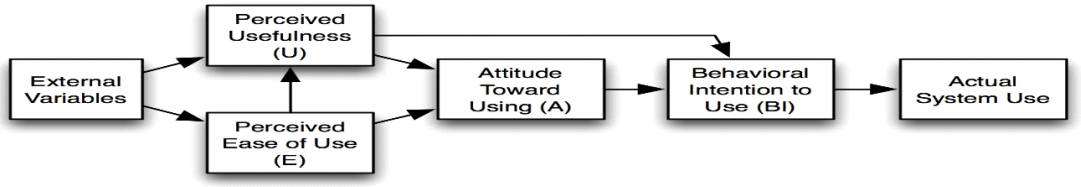
1.7 THEORETICAL FRAMEWORK

Existing literature has pointed to two main theories that have been used by a number of studies to explain the determinants of new technology adoption by SMEs. These theories are as follows:

1.7.1 Technology Acceptance Model

The theory postulates that users of a given technology evaluate it first before its adoption. Davies (1989) postulates that users of a given technology weigh the benefits versus the costs associated with adopting the new technology. These costs and benefits are evaluated in terms of ease of use and scope of improving efficiency and effectiveness. This determines if the technology is considered useful by users. The following figure shows a pictorial view of the TAM.

Figure 1.1: Technology Acceptance Model



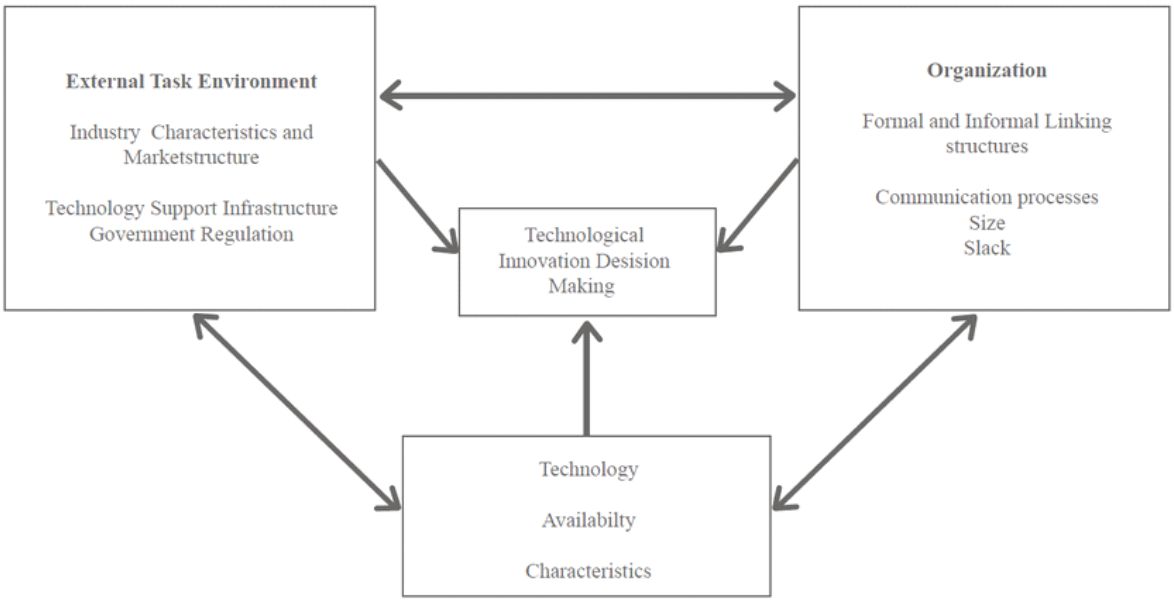
Source: Davis, Bagozzi and Warshaw (1989)

1.7.2 Technology-Organisation-Environment Framework (TOE)

The TOE as it is abbreviated was propounded by Depietro, Wiarda and Fleischer (1990) to explain key determinants of technology adoption in an organisation. The framework is explained by technological, organisational and the environmental variables in which the organisation operates in. The understanding of these variables enables one to have an insight on the key determinants of new technology adoption. The technological context

explains given technology characteristics such as compatibility, cost, complexity and benefits associated with the adoption of such a technology. The organisational context is explained in terms of management philosophy and the type of products and services. Finally, the environment context explains factors such as competitors and key partners whose actions can force a business to adopt a new technology.

Figure 1.2: Technology-Organisation-Environment Framework (TOE)



Source: Erind (2015)

The framework discussed above will assist the researcher to interrogate determinants of m-commerce adoption by SMEs by focusing on the technology, organisation and the environment context.

1.8 Conceptual framework

It was crucial to show how the variables are linked together in order to attain the objectives of the study. Thus, the researcher used a conceptual framework shown below to summarise the study and guide the reader to easily understand the study at a glance. As the figure depicts, the influence of technology, organisation and the environmental contextual factors were measured against m-commerce adoption and

optimisation. Also, the TAM factors were tested against m commerce adoption as shown in the figure below. Altogether, this resulted in four main independent variables with sub-variables which were then tested against m commerce as shown below.

Figure 1.3: Conceptual framework: Determinants of mobile commerce adoption

Source: Author (2020

1.9 EMPIRICAL LITERATURE REVIEW

This section outlines proposed relationships among key variables of the study. On this account, each determinant will be linked to m-commerce adoption and optimisation. This is aimed at assessing how each TOE element affects m-commerce adoption and optimisation.

1.9.1 Technology Contextual Factors and the Adoption and Optimisation of M-Commerce

As indicated above, the technological context relates to variables such as perceived benefits, compatibility and cost associated with a given technology (Rahayu & Day, 2015). In terms of perceived benefits, a business only adopts a certain technology when it is likely to bring advantages in terms of improved sales, more market share and cost advantages (Tiago & Maria, 2010). Based on the empirical literature discussed above, it can be hypothesised that there is a significant positive relationship between technological factors and the adoption of m-commerce among SMEs.

1.9.2 Organisation Contextual factors and M-commerce Adoption

Factors within the business can also determine the possibility of adopting new technology (Chiu et al., 2017). The level in which a firm has invested in IT systems can allow the introduction of mobile applications that determine m-commerce adoption (Rahayu & Day, 2015). This explains the firm's technology readiness. For a firm to be technologically ready, it has to have all m-commerce systems in place, relevant skills and monitoring systems to evaluate its effectiveness. It can, therefore, be hypothesised that there is a significant positive relationship between organisational contextual factors, adoption and optimisation of m-commerce among SMEs.

1.9.3 Environment contextual factors and m-commerce adoption

Environment contextual factors are factors in the business environment that influence technology adoption such as pressure from supply chain partners, customers and or competitors (Duan, Deng & Corbitt, 2012). To remain competitive, the firm should always monitor environmental factors. Based on the empirical literature review above, it can be hypothesised that there is a significant positive relationship between environmental contextual factors and the adoption of m-commerce among SMEs.

1.9.4 Technological acceptance model factors and m-commerce adoption

According to Cheong and Mohammed-Baksh (2019), perceived usefulness and perceived ease of use predict adoption of m-commerce by users. The study found that users were more likely to adopt m-commerce if they perceived it to be of use to them and easy to use. The study concluded that both perceived usefulness and perceived ease of use positively influence the adoption of m-commerce. These findings are also supported by Dlodlo and Mafini (2013), who also found that the TAM factors positively influence users to adopt m-commerce. Their submission was that when users are assured that the technology will be useful to them and without giving them problems, they are likely to adopt it. Based on the evidence above, this study proposes that there is a significant positive relationship between technology acceptance factors and adoption of m-commerce among SMEs.

1.10 RESEARCH METHODOLOGY

The study area was Polokwane Municipality, which was chosen because it has a significant number of SMEs. The study area helped in ensuring that the researcher obtained a sufficient sample size for the study. The study adopted the quantitative research design where a questionnaire was used to collect data in a survey. The questionnaires were hand-delivered to SMEs business owners or managers in Polokwane. The population of the study consisted of 261 SMEs. From the population, a sample of 160 SMEs was randomly selected. Issues related to reliability and validity were also fully addressed by following the crucial steps outlined by other existing scholars. Data were analysed using descriptive statistics, ANOVA and regression analysis. The researcher observed all ethical issues involved in the research. More importantly, the researcher obtained ethical clearance from Turfloop Research and Ethics Committee (TREC) before collecting data.

1.11 SIGNIFICANCE OF THE STUDY

M-commerce is projected to increase sharply over the next few years (Meola, 2016). This presents m-commerce driven SMEs with unlimited benefits such as increased sales and enhanced performance. This study's newness will make a valuable contribution to the body of knowledge on small businesses and m-commerce. The study will also add value in the academic field by contributing empirical findings to using e-technology in the field of small and medium business development, and set precedence for other academics to further interrogate other factors which can improve m-commerce adoption and optimisation by SMEs. Furthermore, this study will be of value to industrial policymakers, small business owners, the government and other stakeholders with a vested interest in the performance of SMEs.

1.12 CHAPTER OUTLINE/FORMAT OF THE STUDY

Chapter one: Introduction and background to the study.

Chapter two: Literature review. This chapter will review both theoretical and empirical literature on the theory technology acceptance model (TAM) and Technology-Organisation-Environment Framework (TOE).

Chapter three: Research methodology. This chapter will focus on the research design, the data collection and analysis methods.

Chapter four: Research results. The purpose of this chapter is to present and interpret empirical findings of this research.

Chapter five: Conclusions and recommendations. The recommendations will be discussed. In addition, the limitations of the study and areas for future research will be stated.

1.13 SUMMARY

The background to determinants of mobile e-commerce adoption and optimisation were outlined by highlighting some of its major benefits to SMEs, particularly in South Africa. The aims and objectives of the research and the research methodology and the significance of the study were explained. The theoretical and empirical literature on Technology Acceptance Model and Technology-Organisation-Environment Framework (TOE) will be reviewed in the next chapter

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

This chapter provides the literature review and the theoretical framework guiding this study. The chapter starts by providing the conceptual framework of the study. Then it shows the key determinants of mobile commerce adoption by SMEs. After that, the chapter discusses the theoretical framework of the study. The Technology Acceptance Model (TAM) and the Technology-Organisation-Environment Framework (TOE) were used as key theories supporting this study. The chapter also explores the concept of SMEs, its definitional aspects, contribution to the economy and challenges faced by this sector in South Africa. Thereafter, the chapter discusses mobile commerce adoption and optimisation as a solution to problems faced by SMEs in South Africa. The last

section of the chapter assesses the relationship between independent and dependent variables of the study.

2.2 THEORETICAL FRAMEWORK

Existing literature on m-commerce is divided into individual and organisational m-commerce adoption (Chau & Deng, 2018). This study focuses on m-commerce adoption at the organisational level as it tries to assess the level of adoption among SMEs in South Africa. Extant literature has pointed to two main theories which have been used to explain determinants of new technology adoption by SMEs (Doolin & Ali, 2008; Chan & Chong, 2013; Chau & Deng, 2018). These theories are as follows:

2.2.1 Technology Acceptance Model

The Technology Acceptance Model by Davies (1989) has been adopted in this study. The theory postulates that users of a given technology evaluate it first before its adoption. Davies (1989) postulates that users of a given technology weigh benefits versus costs associated with adopting the new technology. These costs and benefits are evaluated in terms of ease of use and scope of improving efficiency and effectiveness. The variables determine if the technology is considered useful by users. These two factors are explained in detail as follows:

2.2.1.1 Perceived usefulness

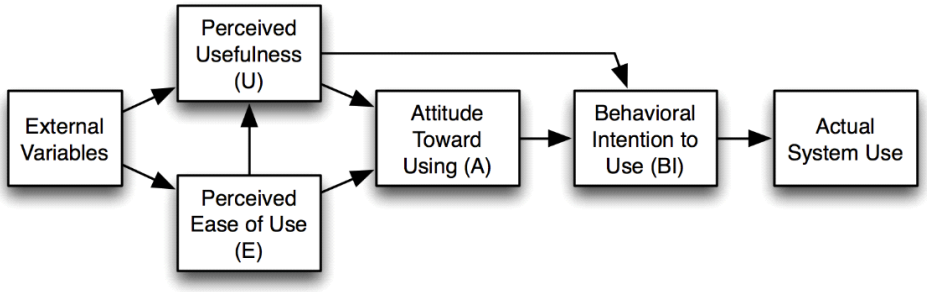
Perceived usefulness is defined as the perception by an individual that adopting a given technology will enhance their performance in a given area (Davies, 1989). For instance, in this study, perceived usefulness may mean SME owners' perception of whether the adoption of m-commerce will enhance their performance. Weak performance has been haunting SMEs in South Africa, and the failure rate is alarming. Therefore, SME owners will evaluate if m-commerce adoption will unlock new opportunities for them, which informs their decision to adopt or reject it. According to Davies (1989), perceived usefulness of new technology can be improved by ensuring that the new technology meets the quality criteria of users. This can positively shape the attitude of users towards adopting the given technology. On the other hand, users can adopt new

technology if they are guaranteed that they will be able to access training on how to use the technology.

2.2.1.2 Perceived ease of use

Davies (1989) defined perceived ease of use as the perception by an individual that adopting a new technology will result in them using less effort to do something. In the case of m-commerce adoption, perceived ease of use explains how SME owners evaluate mobile applications in terms of being easy to use. For instance, there are some applications that are complex and not user-friendly. Therefore, if mobile applications are perceived as user-friendly and likely to result in less effort in marketing efforts and managing suppliers, they are likely to be adopted for use by SMEs. The following figure shows a pictorial view of the TAM.

Figure 2.1: Technology Acceptance Model



Source:Davis, Bagozzi and Warshaw (1989).

Figure 2.1 above shows the TAM and its elements. Davis et al. (1992;11) explain that *"because new technologies such as personal computers are complex and an element of uncertainty exists in the minds of decision makers with respect to the successful adoption of them, people form attitudes and intentions toward trying to learn to use the new technology prior to initiating efforts directed at using. Attitudes towards usage and intentions to use may be ill-formed or lacking in conviction or else may occur only after preliminary strivings to learn to use the technology evolve. Thus, actual usage may not be a direct or immediate consequence of such attitudes and intentions."* The figure above shows that perceived usefulness and perceived ease of use are major

factors determining one's attitude and behaviour towards the actual use/ adoption of the system. Perceived usefulness and perceived ease of use are also influenced by factors in the external environment such as technological, political and social factors, among others. Trends and changes in the external environment may influence how people perceive a new technology.

TAM is an important theory in explaining the motive and behavioural aspects associated with people finally adopting or rejecting a certain technology. As such, the theory has been used widely in existing literature (Viehland & Leong 2007; Park, 2009; AlQahtani, Beloff & White, 2020).

However, TAM has also received criticisms from other researchers. For instance, Chuttur (2009) criticises it for its unsatisfactory heuristic value, limited explanatory and predictive power, triviality and lack of practical value. This has since made the proponents of the theory to revise it. Additionally, other studies such as Lunceford (2009) criticise TAM for failing to incorporate other important factors such as perceived cost as possible determinants of technology adoption.

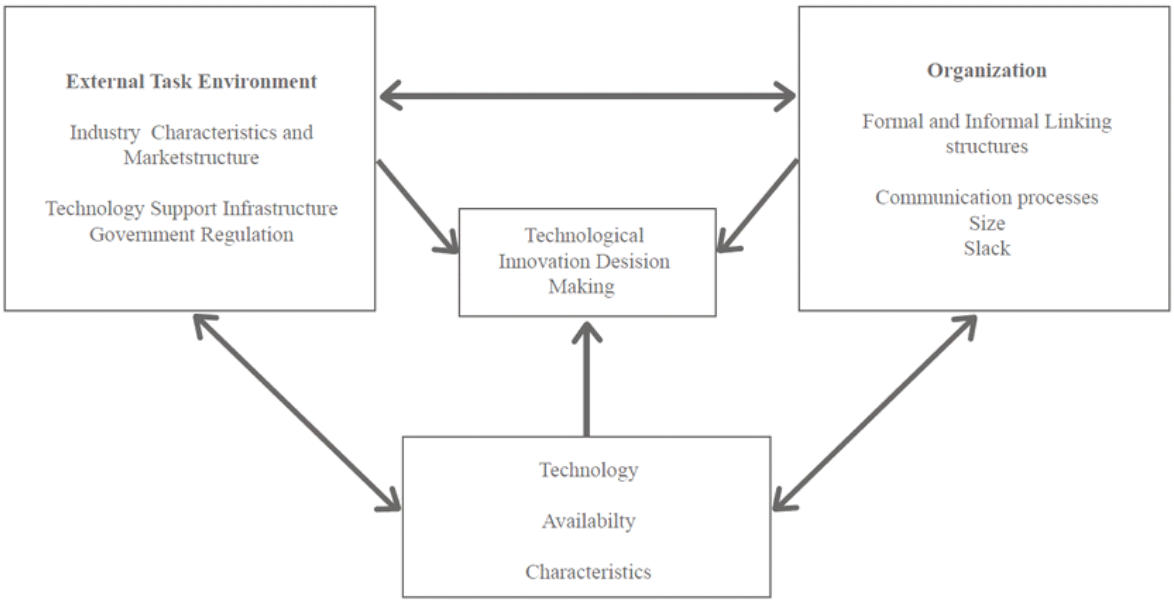
Other studies are of the view that perceived ease of use does not really predict the attitude and usage intention of a given technology such as m-commerce and e-banking (Pikkarainen, 2004; Wu & Wang, 2005). Wu and Wang (2005) found that of all the variables that were tested, perceived ease of use did not have influence on technology adoption. However, it was other factors such as perceived risks and compatibility which strongly influenced the intention to adopt a certain technology.

Questioning the applicability of TAM in explaining behavioural intentions to adopt a certain technology, participants in Okafor, Nico and Azman's (2016) study reported that perceived ease of use was not really a key determinant for their acceptance or adoption of a given technology. They alluded that they could rather learn how a certain technology works when it is difficult to use than reject it. Nevertheless, TAM continues to be a good predictive theory on technology adoption. Hence, the theoretical framework discussed above allows understanding and assessment of determinants of m-commerce adoption by SMEs.

2.2.2 Technology-Organisation-Environment Framework (TOE)

The TOE was propounded by Depietro et al. (1990) to explain key determinants of technology adoption in an organisation. The framework uses three main contextual factors such as technology, organisation and the environment context in which the organisation operates to explain key determinants of technology adoption. An understanding of each factor in the framework can guide users in making correct decisions regarding technology adoption. The TOE framework has been adopted widely in studies interested in understanding how potential users evaluate new technology before actual adoption. The TOE framework has stood as a robust theory to explain technology adoption (Zhu, Kraemer & Xu, 2006). It has been widely adopted by many studies to explain the determinants of technology adoption (Rowe,Truex & Huynh, 2012; Lippert & Govindarajulu, 2015). Chiu et al. (2017) allude that the TOE theory assists SMEs to adopt m commerce in their businesses which enhances their performance. Thus, the TOE was adopted in this study because it assisted the researcher in interrogating the determinants of m-commerce adoption by SMEs by focusing on the technology, organisation and the environment context. The TOE model factors are summarised in Figure 2.2 below.

Figure 2.2: The Technology-Organisation-Environment Framework (TOE)



Source: Erind (2015)

Figure 2.2 shows the TOE framework. As indicated in the figure, the three contextual factors such as technological, organisational and environmental contexts influence one to take decisions about adopting a given technology. Each of these contextual factors consists of several other factors which will be discussed in the next section.

2.2.2.1 Technological context

The technological context explains the given technology characteristics such as compatibility, cost, complexity and benefits and benefits associated with the adoption of such a technology. These factors are explained below.

2.2.2.1.1 Perceived benefits

Perceived benefits are defined as the returns that users of a system or technology expect to get by adopting a certain technology (Salo, Kajalo, Mäntymäki & Islam, 2013). According to Zeeshan et al. (2009), perceived benefits can be in form of “intangible benefits such as enhanced communication, flexibility, better response time, better customer service and effectiveness of the work tasks in the adoption process.” On the other hand, expected profits can be the probable tangible benefits that businesses can expect from adopting m commerce (Zeeshan et al., 2009). The same study further indicates that users are likely to adopt m commerce if it can enhance the business’

effectiveness in achieving its set goals. Lin, Alam, Ho, Al-Shaikh and Sultan (2020) expressed that businesses are more interested in tangible benefits such as an enhanced financial performance which can result from adopting new technology. This means firms SMEs are likely to reject new technology that has small profit margins or long payback periods.

The economic value of such a technology should be clear to a user lest they forego it. In general, perceived benefits influence one's attitude on a given technology (Lin et al., 2020). If the perceived benefits are deemed favourable, users tend to have a positive attitude towards it which finally motivates them to adopt it. Nevertheless, a user can perceive a given technology as beneficial but still fail to adopt based on other criteria which they may consider useful as well in influencing their decision.

2.2.2.1.2 Perceived costs

Perceived costs is another crucial factor under the technological context, and is defined as an evaluation of the cost associated with the adoption of a certain technology (Rahman & Sloan, 2017). Lin et al. (2020) assert that users are likely to reject a new technology if the cost of implementing the technology is high. According to Rahman and Sloan (2017), users are sensitive to costs of adopting a technology. Users in emerging markets are more sensitive to prices given that unemployment and poverty are high (Rahman & Sloan, 2017). This is practically observed in most cases where users of a new technology are few when it is still new and expensive but gain more users when prices go down (Chau & Deng, 2018). This is prominent in the mobile phone industry which is the mainstay of mobile applications.

Perceived costs can be categorised into costs of installation, software development, licensing and outsourcing of mobile app technicians (Ofori & Appiah-Nimo, 2019). Choudhury and Dey (2014) further note that perceived cost may be associated with cost of maintaining systems and processes which support the m-commerce technology. Other studies broadly identify perceived costs to include the switching costs associated with migrating from the current system (Molina-Castillo et al., 2020). The business could

have built networks and process based on the current system, that switching to new technology may mean that they have to start learning about the new technology. Hence, since the business need to incur these costs at a goal, it becomes difficult for those businesses which do not have enough savings to boost them during the transition process. According to Molina-Castillo et al. (2020), this exposes the business to learning costs. Molina-Castillo et al. (2020), defined switching costs as costs associated with transitioning from the old technology to the new one. On the other hand, Kim, Chan and Gupta (2007) described switching costs to mean figuratively mean time wasted or required to learn using the new technology. In some instances, this may mean the commitment and effort required to learn the new technology (Kim et al., 2007).

2.2.2.1.3 Perceived compatibility

Another study by Zhu et al. (2006) pinpoint compatibility as another crucial factor to consider when adopting new technology. Compatibility explains the fit between the new technology and the organisational factors such as technological readiness in terms of infrastructure and culture (Morteza, Daniel & Jose, 2011; Mairura, Ngugi & Kanali, 2016). Organisational culture and values play a crucial role towards perceived compatibility. Another crucial factor in terms of perceived compatibility is the organisation's experience in previously related technologies. If the organisation had a positive experience in handling previous new technology, their perceived compatibility of the new and current technology will be high. However, if the organisation previously had negative experience from technology adoption, they are likely to reject it right away as a way to shed risk (Mairura, Ngugi & Kanali, 2016). New technology is deemed compatible if it fits well in the existing culture and have the characteristics of projects that are perceived as profitable by the business (Zaltman & Lin, 1971). Perceived compatibility is regarded as the most crucial factor when making decisions about adopting a particular new technology (Wu & Wang, 2005; Chiu et al., 2017).

There are several steps that small businesses can follow to make their businesses to be compatible with m-commerce. These are outlined below.

Step 1: Fix your website

Most businesses lose a lot of potential clients because their websites are not compatible with m-commerce. M-commerce users are not patient to unresponsive websites. Therefore, when a business takes a step to align its website to features of m-commerce, users are likely to engage the business in search of its products.

Step 2: Fix your content

Content shared on the business website is key in generating traffic towards the business' website and its products. M-commerce users prefer businesses that display all the information on the website for easy access and comparisons with other brands. It is important for the business to continuously update content on its website to cater for m-commerce users.

Step 3: Fix your payment system

One of the key factors in proceeding with an online transaction is when users perceive the payment system as transparent and user-friendly. In most instances, m-commerce users drop a transaction in the middle whenever they encounter some difficulties. It is crucial for businesses to fix their online payment system in a manner that makes online shopping enjoyable.

Step 4: Do not forget that smartphones are phones

Businesses should try to minimise perceived risks associated with transacting using smartphones. Potential challenges, risks and limitations of smartphones as mediums of conducting transactions should be identified and strategies laid out to avoid unnecessary costs to the business in terms of unprocessed orders and undelivered products.

Step 5: Consider judicious use of SMS

SMS should strictly be business related. Businesses should avoid texting ambiguous SMS to customers as these may have serious consequences on the business.

Step 6: Optimise your emails for mobility

Due to m-commerce, users are now able to access their emails everywhere and anytime. This means that they should optimise on emails to promote their products. However, this should be treated with caution as other users may end up suing the business if they feel that their rights are infringed. For some users, emails with promotional content still excite them because they can get information on trending items and where to get them. In this instance, the business should invest in knowing its customers better.

Step 7: Be sure your offline presence is ready for mobility

M-commerce should allow a business to maximise sells even when offline. The business should develop a system that allows users to access information and transact anytime of the day with any difficulty.

Step 8: Make sure your video is mobile friendly

Several businesses are still stuck on content that is compatible with desktops and laptops, but forget about the growing needs of smartphone users. Therefore, businesses should trim their content, web pages and videos to make it easier for m-commerce users to access and view them without any challenge. Most users now prefer to view product reviews and promotional videos using their phones. This means that whenever users perceive that the business' promotional videos are too big or not user-friendly, they are likely to develop a negative attitude towards the business and its products.

Step 9: Make sure your social media is mobile friendly

Recently, most m-commerce users are on different social media platforms such as WhatsApp, Twitter, Instagram, Facebook and LinkedIn. Users are prompted to shop online whenever they come across something attractive on social media. This means that businesses should make sure that their social media sites are mobile friendly and

well managed. This includes having 24-hour responsive instant messaging that allows users to enquire about different products in their pre-purchase decision-making process.

Step 10: Play nice with other

There are incidences where product owners end up engaging in harsh exchange of words, especially on websites and business social media pages. This can ruin the brand name and image of the business. To harness the benefits of m-commerce, businesses should design strategies to deal with unsatisfied customers before it escalates and make the business to get negative reviews.

Source: Authour

2.2.2.2 Organisational context

The organisation context is explained in terms of management philosophy and the type of products and services (Low et al., 2011). According to Erind (2015), the organizational context consists of elements such as firm size, managerial structure, quality, characteristics and availability of firm's technology and financial resources. Other important factors falling under this category include, top management support, time commitment and product characteristics (Erind, 2015). This study adopted technology readiness and demographic characteristics as factors within the organisational context. This is because these factors have not been tested empirically in South Africa especially when used as determinants for m commerce adoption. Each of these factors is discussed in the next section.

2.2.2.2.1 Technology readiness

Technology readiness is one of the most important factors to consider before adopting a new technology. Most businesses in emerging markets efforts to adopt a technology get wasted away because they lack technology readiness (Ashraf, Thongpapanl, Menguc & Northey, 2017). Therefore, it is crucial for a business to assess its current state before adopting a certain technology. A study by Malak (2016) explained technological readiness as a proxy of availability of technical resources to absorb the new technology, an advanced IT infrastructure and the presence of IT experts in the business.

Accordingly, if one of the above factors is missing, then it means adopting new technology will be a risky activity. A business a well-oiled IT infrastructure and the IT specialist who can ensure that the system is always up and running. Without an active and responsive IT team, all the efforts to implement m commerce can result in a failed business strategy because customers cannot stand mobile application platforms which are not responsive, or which can waste their time.

According to Parasuraman (2000), technological readiness is shaped by the potential users' beliefs and values. These beliefs can be negative or positive which then determines one's propensity to adopt new technology. In existing literature optimism, innovation, discomfort and security are used to measure the technology readiness construct (Parasuraman, 2000; Parasuraman & Colby, 2001). When an individual considers adopting technology, they evaluate it based on these factors.

Optimism and innovation are regarded as drivers towards the adoption of a technology while discomfort and security are regarded as factors which discourage one to adopt new technology (Parasuraman, 2000; Parasuraman & Colby, 2001). Optimism is defined as one's positive feeling that adopting new technology will improve their current status in terms of benefits, while innovation is defined as the perception that adopting a new technology will enable one to be a pioneer and gain competitive advantage in the industry (Parasuraman, 2000; Parasuraman & Colby, 2001). Thus, optimistic individuals are projected to be early adopters of new technology.

On the other hand, Parasuraman (2000) defined discomfort as a feeling one get that they feel pressured to adopt the technology which cause insecurity in the sense that they feel they will not manage to control the technology. In terms of security, several users are not comfortable in adopting technology for security purposes. Other users fear scammers which may possibly hack the new technology and jeopardize the entire business. Thus, if the users perceive that the new technology may expose their business to possible security breach and hacking, it may hinder them from adopting the new technology (Astuti & Nasution, 2014).

2.2.2.2.2 Demographic characteristics

Demographic characteristics such as age, gender and level of education are crucial determinants of m commerce adoption (Chong, 2013; Cullen & Kabanda, 2018). These variables are under researched in South Africa in the context of m commerce adoption (Cullen & Kabanda, 2018). It is documented that the younger generation especially those below 40 years of age utilises m commerce applications and platforms in both Asia, the US and in Africa (Hayden & Webster 2014). This trend is also notable in South Africa has a large percentage of youth those between 15-24 years possess smartphones which in most cases has a mobile application (Beger, Sinha & Pawelczyk, 2012; Shava, Chinyamurindi & Somdyala, 2016). This is mostly because youth perceive m commerce as much cheaper compared to when they browse internet using desktops or laptops. Existing studies point out that m commerce adoption in these different regions is mainly high among males (Cullen & Kabanda, 2018).

In terms of level of education, there is debate on whether education is a key determinant of m commerce adoption. However, logic has it that, the higher the level of education the more chances that one will likely to understand and adopt m commerce. This is because m commerce uses mobile applications which may be complex for someone without knowledge and education.

2.2.2.3 Environmental context

Environment contextual factors are factors in the business environment that influence technology adoption such as pressure from supply chain partners, customers and or competitors (Duan et al., 2012). According to Malak (2016) the competitive an environment cannot be ignored because it consists of the key stakeholders of the business. Thus, a business which fail to keep pace with changes in the business environment risk chances of business failure. The environment contextual factors considered in this study are customer pressure, competitor pressure and supplier pressure.

2.2.2.3.1 Customer pressure

Customers are a significant part of a business (Lin et al., 2020). Any change in their purchase behaviour and trends affect how the business operates. Failure to do so may force the business out of the competitive market. According to Malak (2016) customers actually coerce businesses to adopt new technology. Customer pressure is a resultant of active and rapid adoption of mobile applications by customers (Robayo, Montoya & Berrior, 2017). This entails that customers start to search for companies that meet their technological needs. In the marketing context, this is a forward-backward communication where the market (customers) dictates the pace for technological adoption to different businesses in a given industry. To identify such trends requires serious investment in environmental scanning lest the business loses all its customers.

The new generation of customers is opposed to businesses which only rely on the brick and mortar business model. Rather, the 21st century customers are more inclined towards online based businesses which understand that some customers prefer to conduct their shopping online using their smartphones at the comfort of their homes. Such a type of customers prefers to start and conclude the entire purchase process online using their smartphones. Thus, they expect to deal with businesses which have responsive m commerce websites which provide a clear browsing experience even on the mobile phone while providing scope for purchase, payment and decision making regarding where the product can be delivered. This then requires a strategic shift by SMEs to adopt business models which are driven by m commerce. According to Chivizhe (2019) customers across the globe are migrating towards an online lifestyle. This lifestyle is defined by doing everything online. Among other sectors, this trend is notable in the travel and tourism industry where customers prefer to work with companies with a well-established online system which can enable them to book for flights, accommodation and rental cars using their smartphones.

The above evidence shows that besides the business' own plans and strategies to adopt new technology, the customer pressure is a great force which can coerce decision makers to adopt m commerce instantly. This effect has been noted post Civid-19 where due to strict regulations and the desire to be safe, some customers have now

fully resorted to buying their products/services online using their mobile phones. Consequently, this has forced several businesses to reconsider their business models and opt for more online oriented business models.

2.2.2.3.2 Supplier pressure

Suppliers also play a pertinent role in shaping a business' behaviour towards m commerce adoption (Siau & Shen, 2002). Mobile commerce applications in supply chain management have begun to gain traction. With recent technological advancements and the proliferation of mobile applications, most suppliers have braced this trend. The supply chain is becoming technologically driven that businesses which do not adapt experience serious difficulties in sourcing suppliers (Hewitt, 2016). The supply chain is now requiring businesses to be updated on the developments in the entire supply chain lest they risk business failure.

According to Malak (2016), suppliers can be trading partners with the businesses they supply components or inventory in some way. This means they can dictate the type of technology their trading partners should adopt. For example, in the car parts industry, the supplier of car parts may require all those who stock from them to have a specific technology so that it can be relatively easier to trace to place and track orders. The trading partners can also be forced to adopt new technology for quality purposes. Thus, pressure from suppliers can be a great force which can force decision makers within SMEs to consider adopting the latest technology adopted by their suppliers.

Chivizhe (2019) also explored the concept of supplier pressure in relation to m commerce adoption. According to Chivizhe (2019), suppliers' actions regarding the adoption and use of new technology may indirectly influence m commerce adoption by the rest of their supply chain members. This is because all the players in the supply chain are moving towards the digital world where all transactions are conducted electronically using mobile applications. This entails that businesses which are laggards may find it difficult to secure suppliers which may negatively impact their businesses.

2.2.2.2.3 Competitor pressure

“Competitive pressure is created by other service providers within the industry, which forces competitors to differentiate and add competitive value to their products by adopting new technologies, such as m-commerce” (Alrawabdeh, 2014:161). Competitors are firms who vie for the same clients or same purchasing power of the customers targeted by another business (Malak, 2016). With recent developments in the technological environment and emergence of globalisation, competition has become intense in the business environment.

For instance, some businesses are now able to transact with other businesses abroad using modern technology such as mobile applications. Alibaba Group and Amazon are among one of the best examples of companies which are optimising the online strategy. Based on that, other businesses are also responding to this by adopting mobile applications. For SMEs, the question to adopt m commerce is no longer debatable but a question of when to adopt it. Since, most businesses are thriving to grow, none of them wishes to be taken out of business by the inability to innovate. It follows that competitors’ actions will influence a firm’s stance on technology adoption (Malak, 2016). For instance, if competitors have adopted a certain technology and are realizing profits, this may force the business to imitate to remain competitive.

2.3. EMPIRICAL LITERATURE REVIEW

Specifically, this section aims to define and discuss the crucial role played by SMEs. Thereafter, the section will discuss the concept of m commerce. This is followed by the discussion on the conceptual framework which will then link to hypothesis development

2.3.1 Background of Small and Medium Enterprises

This section discusses the concept of SMEs by assessing how they are understood and defined internationally and in South Africa. Existing studies argue that it is crucial to have insights into the definition of SMEs before attempting to weigh on its contribution to the economy. In this case, it follows that when something is clearly defined, then it becomes easy to understand its dynamics.

2.3.1.1 Definition of SMEs

Globally, SMEs are becoming key players in the overall economic performance of a country. As such, most countries have begun formulating policies to boost this sector. SMEs are defined in several ways globally depending on the metrics agreed upon in a particular country (Bouazza et al., 2015). The same study asserts that there is no single agreed upon definition of SMEs globally. Other studies define SMEs based on the number of employees, value of assets and total annual turnover. Some researchers point this as one of the major reasons behind a lack of a common definition of an SME. Nevertheless, there is agreement that SMEs should be defined based on a quantitative or a qualitative criterion. This has been accepted worldwide and has been used as guidelines to understand SMEs.

In South Africa, SMEs were previously defined in terms of a number of employees, asset value and total turnover. However, new amendments have been made on the definition of SMEs in South Africa (Business Insider SA, 2019). These changes were effected in a bid to see which companies can qualify for certain tenders, hence, invoking the need to categorise businesses into micro, small and medium enterprises (Business Insider SA, 2019). Another important reason for these amendments was to categorise businesses such that it becomes easy to allocate support packages based on the categories. The amendment has seen the asset value being scrapped, leaving only two metrics which are number of employees and total annual turnover as key metrics used to define SMEs in South Africa. Another significant amendment made was the permanent removal of very small businesses, leaving only micro, small and medium and

enterprises. The number of employees as a metric to measure the size of the business was also amended. Beginning in 2019, this metric will be uniform across all sectors. In this regard, micro enterprises will be categorised as businesses employing full time or full time equivalent of a maximum of 10 employees. Small businesses will be categorised as businesses employing full time or full time equivalent of between 10-50 employees, while medium enterprises will be categorised as businesses employing full time or full time equivalent of a maximum of 250 employees. In terms of annual turnover, micro enterprises will be defined as businesses with a maximum annual turnover of R5m in the context of catering business, and medium enterprises will be defined as businesses with a maximum annual turnover of R220m in the context of a wholesale business. The new definition for SMEs in South Africa is shown below.

Table 2.1: The new turnover ceilings for each class of business, as broken down into sectors by the small business development department

Sector	Size	Maximum turnover
Agriculture	Medium	R35 million
	Small	R17 million
	Micro	R7 million
Mining and quarrying	Medium	R 210 million
	Small	R50 million
	Micro	R15 million
Manufacturing	Medium	R170 million
	Small	R50 million
	Micro	R10 million
Elecrtricity, Gas, Water	Medium	R180 million
	Small	R60 million

	Micro	R10 million
Construction	Medium	R170 million
	Small	R75 million
	Micro	R10 million
Retail, motor trade, repair	Medium	R80 million
	Small	R25 million
	Micro	R7.5 million
Wholesale	Medium	R220 milliom
	Small	R80 million
	Micro	R20 milliom
Catering, accommodation,other	Medium	R40 million
	Small	R15 million
	Micro	R6 million
Transport,storage, communication	Medium	R140 million
	Small	R45 million
	Micro	R7.5 million
Finance and business service	Medium	R85 million
	Small	R35 million
	Micro	R7.5 million
Community, social, personal service	Medium	R70 million
	Small	R22 million

	Micro	R5 million

Source: Business Insider SA (2019).

2.3.1.2 Contribution of SMEs to the economy

SMEs are highly regarded globally because of their undeniable role towards boosting economic activities in any nation (Asgary, Ozdemir & Özyürek, 2020). There is consensus that SMEs play an important role in both developing and developed countries. SMEs account for approximately 99.8% of all businesses while in Japan this sector accounts for approximately 99.7% of all businesses (European Commission 2015; Mbuyisa & Leonard 2017; Yoshino & Taghizadeh-Hesary 2018; Asgary et al., 2020). This clearly shows that SMEs are a formidable force which can propel any economy in any context. Based on the above, one can attest that SMEs also contribute towards a vibrant private sector. It is difficult for large businesses to flourish if there are no SMEs. This is because SMEs can be subcontracted to produce components and parts used by large organisations. The following section will discuss the importance of SMEs towards superior economic performance.

- **Economic growth and development**

SMEs critically enhance economic growth and development (Bouazza et al., 2015). This important role has won the attention of policy makers globally. Since most African countries are on a path to a rapid economic growth, SMEs are recognised as a crucial force to make that goal a success. Ayandibu and Houghton (2017) note that SMEs significantly contribute towards local economic development, which translates into overall economic growth of a country. Recently, the South African government has made remarkable strides to assist SMEs because of their critical role towards economic growth (Department of Small Business Development Strategic Plan, 2015-2019). Susman (2017) is of the view that SMEs have an undisputed potential to transform the economy of South Africa. This is because SMEs are innovative, numerous and flexible enough to adapt to changes required to attain economic growth in South Africa. With the recent trend in the collapse of large companies such as Basil Read, Group Five,

KPMG and the downsizing by companies such as Edcon and Standard Bank, among others, there is hope that SMEs can rejuvenate the economy of the country.

- **Employment creation**

South Africa has one of the highest unemployment in the world, yet the country is unable to create decent jobs for its people, especially the youth (World Bank Report, 2018). SMEs are credited for their capacity to employ local citizens of a country (Ayandibu & Houghton, 2017). This reduces unemployment, which is among the worst problems faced in developing countries. The same study further acknowledges that SMEs employ semi-skilled employees who find it difficult to penetrate the formal sector. Such a practice creates a balance and broadens the middle class in the context of developing countries. Ayandibu and Houghton (2017) share the view that SMEs use mostly labour-intensive methods of production, which increases the demand for more workers.

New business plays a crucial role in job creation (Fatoki, 2014). It follows that countries with a high rate of new business creation experience low unemployment. This has been witnessed in high growth-oriented economies such as China and the US, among others.

In addition, SMEs constitute majority of businesses in most countries, which makes them to be an active source for job creation. For instance, in South Africa, SMEs constitute 90% of all formal businesses (Small Enterprises Development Agency (SEDA), 2012). Based on this, the South African government expects exponential growth in employment on this sector yearly. This is evidenced by emphasis and resources channelled towards SMEs development in South Africa in both the President's state of the nation address and the minister of finance's 2019 budget speech.

- **Poverty reduction**

Existing studies indicate that South Africa's poverty level is extremely high compared to the world average (World Bank Report, 2018). Even though the country's economy is highly regarded in Africa, a significant number of its population is living in dire poverty. SMEs worldwide continue to offer alternatives towards poverty reduction (Fatoki, 2014).

It is understood that when one family member is employed, the benefits tend to be enjoyed by everyone who is a dependent of the employee. In Africa, SMEs have managed to reduce poverty significantly (Ayandibu & Houghton, 2017) because they tend to operate in rural areas and employ disadvantaged groups such as women and the youth. On this account, SMEs are honoured for their role towards empowering people economically and giving them financial independence.

In South Africa, to some point, depending on government grants was a norm. However, this was not enough, hence, leaving most families impoverished. Currently, with the sprouting of SMEs in the country, some hope is being ignited as households can now earn income that is above the poverty datum line.

In some instances, black owned small businesses have immerged in poverty-stricken townships such as Tembisa, Alexander and Soweto, among others, improving the living standards of the people. In such townships, small businesses such as hairdressing, makeup businesses, waste collection and recycling and retailing are well visible, affording residents a decent life.

- **Income inequality reduction**

Income inequality is one of the common problems in South Africa (World Bank Report, 2018). Income inequality in South Africa has increased since 1994, reaching a pick in 2015 when the Gini coefficient was 0.63 (World Bank Report, 2018). Based on this, South Africa's middle class is very thin, and almost half of the population is in extreme poverty (World Bank Report, 2018). South Africa is ranked among the countries with the worst income inequality in the world. The newspaper notes that 60% of the South African population gets an average of R42 000 per annum. Such a level of inequality is unbelievable given that South Africa is categorised among one of the best economies in developing countries (World Bank Report, 2018). There is both wage and wealth inequality in South Africa. This is a barrier towards ending poverty in South Africa (World Bank Report, 2018). SMEs can play a crucial role towards reducing income inequality (Chimucheka & Mandipaka, 2015; Bushe, 2019). This is because most of these businesses are located in rural areas and townships where low-income groups

stay, hence, giving them a chance to increase their incomes. Furthermore, small businesses tend to employ less skilled people who cannot find jobs in the formal sector. This improves economic inclusion of previously disadvantaged groups, therefore, reducing the income inequality gap.

- **Increase government revenue**

Small businesses are widely reckoned for their active role in expanding government revenue. The government depends largely on taxes paid by workers and businesses to attain its mandate. Given that SMEs form the majority of businesses in South Africa (Bushe, 2019), this means that the government will be relieved from massive borrowing since SMEs can pay tax. Besides the income tax paid to the government by SMEs, indirectly employees working for these businesses are also taxed in their personal capacities, allowing the government to increase its tax base. However, several studies point out that there is high tax evasion among SMEs. Others are of the view that SMEs cannot be relied on since their failure rate is relatively high (Bushe, 2019). This weakens the hopes to leverage on this sector to increase government revenue.

2.3.3 Challenges Faced by SMEs

In the efforts to establish the possible solutions towards the high closure rate of small businesses, it is important to identify the pressing challenges faced by this sector. Trying to prescribe a solution to this sector without understanding their key challenges can brew confusion and retard progress in terms of workable policies to transform this sector. Existing literature points out that SMEs are confronted with a plethora of challenges which hinders their growth and economic performance (Ayandibu & Houghton, 2017). According to Bouazza, Ardjouman and Abada (2015), these challenges emanate from both the internal and external environment. These challenges vary from country to country but there are common challenges which have been identified in the existing literature. These include; lack of finance, lack of managerial skills, lack of proper business premises, stiff competition, low demand for the products/services, high crime rate and red tape among others.

2.3.3.1 Lack of finance

Bouazza et al. (2015) identify problems in accessing finance as the major problem hindering SMEs' growth and performance in most developing countries. Majority of small businesses do not have tangible collateral security required by banks to approve a loan.

The other alternative source of finance for SMEs can be government funding. However, there are irregularities in terms of government funding. Most SMEs find themselves in difficult situations where they cannot easily obtain government funding. Some studies cite corruption as the major factor blocking the easy flow of government funding. In South Africa, it is noted from existing literature that there is lack of coordination among the government departments mandated to assist SMEs.

2.3.3.2 High crime rate

Crime is among one of the top challenges faced by SMEs especially in South Africa (Bushe, 2019). Most SMEs complain that the cost of doing business in South Africa is increasing as they are forced to upgrade the security at their business premises (Bushe, 2019). Others especially those located in rural areas and townships wish that the government should do something to reduce the crime rate in South Africa. For instance, South Africa ranked 5th position globally in terms of crime rate in 2015 (United Nations Office on Drugs and Crime's (UNOCD), 2015). In fact, South Africa's crime rate and murder cases are likened to warzones such as Syria, Yemen and Iraq among others. This retards growth of small businesses especially those who do not have enough money to hire security companies as their business premises are invaded frequently.

2.3.3.3 Red tape

According to Bouaza et al. (2015), the red tape is usually found in the legal and regulatory framework. St-Jean et al. (2008) argue that heavy regulations on the SME sector and high tax rates are hindering the growth and sustainability of majority of SMEs. To support that, the International Finance Corporation (IFC; 2013) conducted a study using 45 000 businesses in developing countries. The results indicated that red tape and high tax rates are among the top challenges faced by most SMEs. In South

Africa, other researchers feel that SMEs should be exempted from paying taxes for them to grow. However, some analysts feel that such a strategy could narrow the tax base of the government and affect the functions of the government as they are mainly funded from tax money.

To overcome the above challenges, there are interesting possible solutions raised in existing literature. Among such technology is m commerce. This technology will be discussed in detail in the next section.

2.3.3.4 Corruption

Corruption is one of the major challenges holding most SMEs back. It has emerged that most governments in Africa allocate a budget every financial year towards small business development. However, these funds are misused and never reach the intended beneficiaries. Other corrupt activities are reported in the tendering and bidding process. In most instances, it is difficult for SMEs to obtain a tender as most of them goes to a few individuals. Recently in South Africa, the minister of Small Business Development suspended 9 officials with immediate effect after whistle blowers pointed to some corrupt activities happening within the department (South African Government, 2019). These 9 officials working within Cooperatives Incentives Scheme (CIS) and Black Business Supplier Development Programme (BBSDP) were implicated in corrupt activities such as in maladministration, misrepresentation of facts, collusion and contravening the programme guidelines and standard operating procedures. (South African Government, 2019). Such corrupt activities are very common in South Africa therefore weakening the performance of SMEs.

2.3.1.3 Definition of M-commerce

“Mobile commerce, also known as m-commerce or wireless e-Commerce, is any transaction involving the transfer of ownership or rights to use goods and services, which is initiated/facilitated/completed by the use of mobile/handheld device and wireless technology” (Pahwa, 2018). According to Singh and Islam (2015), conducting transactions such as mobile banking, payments and making booking using hand handled devices such as smartphones characterises m-commerce. Mobile commerce is

defined as the use of mobile applications using smartphones and other portable devices such as tablets and iPads to transact online (Waithaka & Mnkandla, 2017). According to Aamir (2017), “in practice, this means customers carry the online shops they love in their pockets. From looking at what the latest products are and comparing prices to finding coupons and pressing ‘confirm purchase’ right on a mobile phone, m-Commerce covers the range of purchasing activities people engage in on their mobile devices.”

Mobile applications consist of personal digital assistants (PDAs), mobile tablets and smartphones. Cuomo (2013) notes that the conventional mobile cell phones contains softwares that are compatible with systems such as Enterprise Resource Planning. This allows a business to effectively and efficiently handle resource planning, that is from ordering suppliers to resource planning within the business. Chiu et al. (2017) explicate that mobile applications are the core of m-commerce. These applications allow both customers and the business to transact easily (Stanley, 2015). According to Stanley (2015), in the context of the business, mobile applications enable the business to order their merchandise from suppliers online, stock taking, order taking and to easily manage their payroll systems.

Characteristics of m commerce

M-commerce is characterised by dynamism as technology in mobile applications is always evolving (Hemmati, 2016). According to Hemmati (2016), this new technology has made it possible for users to overcome geographical barriers as it is possible to transact in any location on the condition that the internet is available. This has been considered as an upgrade from the e-commerce era. M-commerce is characterised by flexibility, ubiquity, convenience, personalisation, localisation and publication (Hemmati, 2016).

i) Flexibility

M-commerce is characterised by flexibility. It is highly preferred by users because it allows them to easily receive information, browse through the internet and obtain information. This is made possible through portable smartphones and other hand-held devices at the user’s disposal. This overcomes traditional barriers where the seller and the buyer had to meet physically (Waithaka & Mnkandla, 2017).

ii) Ubiquity

M-commerce does not limit users in terms of transacting, receiving and sending information. They are able to do multiple transactions without limitations based on location (Waithaka & Mnkandla, 2017).

iii) Convenience

M-commerce offers users unlimited benefits in terms of shopping at any time and through online shopping where they can order a product and get it delivered at their doorsteps. Due to busy schedules of 21st century customers, convenience is considered a crucial factor in the customer purchase decision-making process.

Iv) Personalisation

"Organisations with such a competitive advantage grant their workers access to comprehensive data and information on demand, allowing them to use their own mobile devices to view jobs, service histories and customer information, send messages, capture signatures, record asset details and parts usage, view manuals, collaborate with colleagues, and much more" (Stanley, 2015:5). According to Kaur et al. (2016), m-commerce supports personalisation as each customer can place their order straight to the business and detail their specific preferences and features on the product. The high connectivity which characterises m-commerce enables individuals to interact at a personal level with owners of different products using instant messaging (Yu & Buahom, 2013).

v) Localisation

"Localisation is a general term, so that where the people have stood at a certain area such as a store is a characteristic of localisation of mobile commerce" (Hemmati, 2016:557). With localisation, the customer just taps the location on their device to prompt a delivery from suppliers of the product.

vi) Accessibility

Accessibility is one of the key characteristics of m-commerce (Kreutzer, 2009). Users should easily adopt m-commerce because its tools are easily accessible to anyone who

has a smartphone. According to Kaur et al. (2016), since smartphones have inbuilt features which make them to easily connect to the internet, this has expanded the growth of m-commerce users since it is easy for them to access products and information from different stores instantly.

vii) Publication

M-commerce makes it possible for users to publish information to several others at a click (Hemmati, 2016). Based on this, users can quickly access the information and proceed with their online purchasing decisions. Businesses can easily raise their brand awareness and promote their products by publishing the information on different mobile applications which can easily reach a wide range of potential customers.

2.3.1.3.1 Historical Development of M-commerce

M-commerce started as early as 1997 but has not been popular due to low adoption (Pahwa, 2018). It was first implemented by Coca-Cola on their vending machines where customers could buy using an SMS from their phones (Pahwa, 2018). The development of the m-commerce server in 1997 paved the way for further growth in m-commerce (Aamir, 2017). Beginning of 2000, m-commerce started to be recognised and adopted in countries such as Finland, Japan and the Philippines. The adoption of m-commerce grew after the introduction of 3G in 2001 as users could now use it to pay for air tickets and to make reservations. With the launch of an iPhone in 2007, m-commerce began to be seen as a reality rather than just an idea (Aamir, 2017). iPhone made it possible for users to install mobile applications and to transact from their smartphones. In 2008, early adopters of m-commerce such as Amazon launched TextBuyIt to allow its customers to make online purchases using their phones. With the introduction of the 4G between 2009 and 2014, more smartphone owners started using their phones to transact and buy products online because of the speed of the internet on their phones (Aamir, 2017). Several studies link m-commerce development from the introduction of smartphones (Kaur et al., 2016). The growth of smartphones has made people to immediately consider transacting using their smartphones.

Waithaka and Mnkandla (2017) note that m-commerce is rooted in the ever-evolving wireless technology. Kaur et al. (2016) share a similar view and assert that m-commerce is linked to the development and mastery of information communication and technology (ICT). Kaur et al. (2016) are of the opinion that early adopters of ICT are likely to have higher levels of m-commerce adoption.

As shown by Yang (2012), the growth of m-commerce has been made possible by the introduction of the 4G broadband mobile network. In support, Kaur et al. (2016) explain that "the proliferation of the internet has brought the world economic activities closer than ever before; overcoming geographical boundaries, increased availability, eliminating intermediaries, decreased administrative and marketing cost and providing a competitive environment to improve the quality of goods and services".

There is evidence that m-commerce developed from e-ecommerce (Miva, 2011; Singh & Islam, 2015). The concept is almost similar, but the differentiating characteristic is that e-commerce mainly used desktops and internet to enable online transactions. This limited customers to transacting only when they are at home or in the office. M-commerce is considered much cheaper and convenient as compared to e-commerce. As a result, m-commerce adoption has increased rapidly over the years and at a faster rate than e-commerce (Narang & Arora, 2018; Pahwa, 2018). Recently, mobile applications are no longer limited to interaction only, but mainly for business transactions (Chiu et al., 2017).

2.3.1.3.2 Mobile Commerce Adoption in South Africa

Developing countries such as South Africa are characterised by poverty levels and poor access to technology, especially in rural areas. Such issues have been considered serious to drawbacks towards doing business in most developing countries (Cullen & Kabanda, 2018). However, with the emergence of m-commerce, things have completely changed. According to Donner, Marsden and Gitau (2011), rural areas which used to be unreachable in terms of marketing efforts are now accessible because of m-commerce. The rapid adoption of m-commerce among users in developing countries is attributed to the fact that most people in rural areas cannot afford a desktop, which

makes them to use mobile phones for most of their transactions (Cullen & Kabanda, 2018). This has been noted in countries such as Kenya where the use of smartphones to transact using mobile money has rapidly grown, especially in rural areas characterised by people without bank accounts.

Kaur et al. (2016) note that m-commerce has made it easier for people in rural areas to access content and information from different companies. Their study also noted that m-commerce users have grown in rural areas to match those in urban areas in most developing countries due to the affordability of smartphones. Therefore, businesses should harness this trend and convert these mobile users into reliable and repeat customers (Donner et al., 2011). Such a strategy is likely to be successful because the youth have an obsession with their smartphones. This means that it is highly unlikely that they will be able to miss any important advert about a certain product (Kaur et al., 2016).

South Africa is one of the developing countries with the highest number of people with smartphones (Global Mobile Consumer Survey, 2017). These smartphones mostly come with an app store where the user can easily download mobile applications of their choice. This has changed people's lives, how they transact on a daily basis and how they search for information. Recently, there is a growing trend in South Africa where m-commerce is becoming fashionable, especially in conducting transactions and accessing information (Global Mobile Consumer Survey, 2017). With the introduction of mobile applications, people in South Africa now prefer to order their food and book for tickets, taxi services and appointments using their smartphones. Businesses that position themselves to harness the benefits of this rapidly rising trend are likely to gain sustainable competitive advantage. The number of people with smartphones is expected to continue rising (Silver, 2019).

Figure 2.3: Number of smartphone users in South Africa from 2014 to 2023 (in millions)

Source: O'Dea (2019).

Figure 2.3 shows the number of smartphone users in South Africa from 2014 to 2023 (in millions). The figure shows that smartphone users have grown rapidly since 2014, and the trend is expected to continue growing in future as the forecasted years show. Currently, the figure shows that there are 22 million smartphone users in South Africa. Since smartphones are major tools for m-commerce, this entails that m-commerce adoption is also likely to grow as smartphone users are growing every year.

Due to the continuous growth in smartphone usage in South Africa, the number of people using their phones to transact online has also increased (Global Mobile Consumer Survey, 2017). Approximately 84% of money transfers are generated from mobile applications (Global Mobile Consumer Survey, 2017). “About a quarter of consumers are now buying products online using their phones and consumers are more comfortable than ever using mobile as an e-commerce channel” (Global Mobile Consumer Survey, 2017). As such, m-commerce adoption is expected to grow into the future. Global Mobile Consumer Survey (2017) interviewed users on what they use their mobile phones for online. The responses are shown in the figure below.

Figure 2.4: Usage of smartphones for m-commerce

Source: Global Mobile Consumer Survey (2017)

Figure 2.4 shows usage of smartphones for m-commerce by users in South Africa. The figure shows that 37% of smartphone owners use them to browse shopping websites, 30% use their phones to research a product, 24% to read reviews about products or services, 24% to make online purchase of products, 19% to make reservations and bookings, 17% to make an online purchases of services such as ordering pizza at Debonairs, among others, and the remaining 12% use their smartphones to interact with businesses using online applications. The above information shows that there is a huge potential to harness huge profit by investing in m-commerce. Figure 2.4 also shows that it is mainly smartphone users who are adopting m-commerce faster than businesses themselves.

Du Plessis (2018) asserts that South Africa has favourable characteristics to support m-commerce adoption. The recent entry of affordable smartphones such as Huawei and Hisense, among others, has seen the number of people with access to smartphones increasing in the previous year. These devices require less data as compared to a desktop or a laptop, making it easier for users to download applications and transact using their smartphones. For instance, most of its population are confident to perform online transactions using their smartphones (Du Plessis, 2018).

However, the cost of data remains one of the challenges inhibiting users to adopt m-commerce in South Africa (Global Mobile Consumer Survey, 2017). But some users believe that mobile data is relatively cheap as compared to connecting a desktop or a laptop to transact.

Conclusion

The section above provided a background on SMEs. Various definitional challenges were discussed and the new definition in South Africa was finally provided. The section pointed out that SMEs are crucial in terms of contributing towards economic growth, employment and reducing poverty. The section further outlined mobile commerce, its characteristics and historical development. The section also provided an overview of mobile commerce adoption in South Africa. This was supported by presentation of data regarding the number of smartphone users in the country.

2.6 THE CONCEPTUAL MODEL OF THE RESEARCH

In this section, the researcher discusses key elements of the study based on previous studies. This is done in relation to the original explanation of factors together with views expressed by other scholars. The main idea is to enhance understanding of these factors and to elaborate on key determinants of m-commerce adoption. Figure 1 shows the conceptual framework of the study. As the figure depicts, the influence of technology, organisation and the environmental contextual factor will be measured against m-commerce adoption and optimisation.

There is no agreement in existing literature on determinants of m-commerce. According to Chau and Deng (2018:437), “this is due to (a) the lack of empirical evidence for the generalisability of the findings, (b) the lack of consideration of the unique characteristics of SMEs in the adoption of m-commerce, (c) the lack of consideration of the characteristics of developing countries in the adoption of technology, and (d) the lack of empirical results for m-commerce adoption in SMEs in the context of the developing country”. Each of the following sections will discuss empirical findings on m-commerce adoption based on the TOE framework depicted in Figure 2.3 above.

2.3.2 Technological Contextual Factors and M-Commerce adoption

Technological context relates to variables such as perceived benefits, compatibility and costs associated with a given technology (Rahayu & Day, 2015). In terms of perceived benefits, a business only adopts a certain technology when it is likely to bring advantages in terms of improved sales, more market share and cost advantages (Oliveira & Martins, 2010). “As external integrations are required at this stage, issues related to technological integration between the different systems, security and privacy issues resulting from wireless connections will all need to be considered carefully” (Chan & Chong, 2013:1206).

2.3.2.1 Perceived benefits and m commerce adoption

Perceived benefits are defined as returns that users of a system or technology expect to get by adopting a certain technology (Salo, Kajalo, Mäntymäki & Islam, 2013). This

study used eco consciousness, social status and the probability of gaining extra services from adopting a given technology to conceptualise perceived benefits. The economic value of such a technology should be clear to a user lest they forego it. In general, perceived benefits influence one's attitude towards a given technology. If the perceived benefits are deemed favourable, users tend to have a positive attitude towards it, which finally motivates them to adopt it. Nevertheless, a user can perceive a given technology as beneficial but still fails to adopt it based on other criteria which they may consider useful as well in influencing their decision. According to Zeeshan et al. (2009), perceived benefits such as increased customer engagement, flexibility and positive interactivity can enable users to adopt m commerce.

Lin et al. (2020) used the TOE factors to predict new technology adoption among Malaysian SMEs. The study used relative advantage to predict new technology adoption among SMEs. The findings showed that the benefits expected from new technology significantly predict adoption. Lin et al. (2020) emphasised that perceived benefits such as increased profitability play a crucial role in influencing SMEs to adopt new technology. This means that a business can only adopt new technology if its benefits outweighs all the available options.

A study by Grandhi and Wibowo (2016) also examined the possibility of perceived benefits to predict m commerce adoption among businesses in North America. The study found that businesses in this region were likely to adopt m commerce if they perceived that it will make them to unlock benefits such as the ability to maintain a customer database, building a customer loyalty reputation, flexibility and automation of their systems meaning customers can access such platforms at any given time. This confirms that in both developed and developing countries, perceived benefits stands as an important determinant for m commerce adoption. This entails that users can only adopt a new technology if the benefits are sufficient to sustain the business.

A study by Sin Tan, Choy Chong, Lin and Cyril Eze (2009) conducted among SMEs in Malaysia and another study by Alshamaila, Papagiannidis and Li (2013) in the eastern

parts of England also strongly confirmed that perceived benefits play an important role influencing users to adopt new technology.

Malak (2015) also reported that the benefits expected from adopting a new technology may influence decision makers towards adopting it. The study found that expected benefits such as increased profits and flexibility in reaching out to customers push business owners towards adopting new technology. New technology without clear benefits stands as a risk and profit oriented businesses may scrap it completely from their strategic plans.

An analysis of the above varied findings in terms of context clearly shows that the benefits expected from a new technology can influence the users' decision towards actual adoption of the technology. perceived benefits. As rational beings, users prefer to adopt new technology that can possibly increase their profits or to help them increase their market share. Therefore, this study proposes that;

H_{1a}: *Perceived benefits positively predict m-commerce adoption among SMEs.*

2.3.2.2 Perceived costs and m commerce adoption

Aragoncillo and Orus (2018) submit that perceived costs play a key role in users' adoption of any technology. Rahayu and Day (2015) also further note that costs associated with a certain technology is one of the key determinants, especially among SMEs' adoption of new technology. SMEs are likely to ditch technology which comes at a higher price due to their financial constraints. Chan and Chong (2013) found that perceived costs is a crucial determinant of m-commerce adoption. This was also confirmed by Rind, Hyder, Saand, Alzabi, Nawaz and Ujan (2017) who reported that costs associated with adopting new technology for example, transaction costs, installation costs and maintenance costs have an effect on the users attitude and final decision on m commerce adoption. Molina-Castillo et al. (2020) also found that costs associated with learning how to use the new technology may also play a critical role in predicting m commerce adoption among businesses. Users are more likely to lack interest in adopting new technology if the projected learning costs are high.

Lin et al. (2020) used the TOE factors to predict new technology adoption among Malaysian SMEs. The study used expected cost as one of the determinants of new technology adoption. The findings showed that the expected costs significantly predict new technology adoption. However, Chau and Deng (2018) are of the view that perceived cost should not hinder SMEs from adopting m-commerce since the gains may outweigh the costs in the long run. The above assertion is supported by other studies for example, Moorthy, Ling, Fatt, Yee, Yin, Yee and Kok Wei (2017) have explored perceived costs as a possible barrier to m commerce adoption. This study expressed that the cost associated with adopting new technology can deter some businesses from adopting it. Surprisingly, the same study found that perceived costs were not a significant factor in determining m commerce adoption. The study concluded that m commerce technology maybe considered relatively affordable by users who have saved enough. Therefore, they can easily adopt it without checking the costs to deter them.

The findings from Chivizhe (2019) reported that perceived cost is a significant determinant for m commerce adoption decisions among SMEs. The participants in the study expressed that the cost of m commerce applications should be reasonable if they are to adopt it. This is because SMEs are confronted with financial problems, hence, anything which comes at a higher cost can eliminate the possibility of their survival. This study aims to empirically test if perceived cost influences the adoption of m-commerce by SMEs. Therefore, the hypothesis is;

H_{1b}: *Perceived costs positively predict m-commerce adoption among SMEs.*

2.3.2.3 Perceived compatibility and m commerce adoption

Perceived compatibility is regarded as the most crucial factor when making decisions about adopting a particular new technology (Wu & Wang, 2005; Chiu et al., 2017). Doolin and Ali's (2008) empirical study showed that there is a positive relationship between perceived compatibility and m-commerce adoption. However, some studies argue that this varies from one organisation to another. Sin Tan et al. (2009) argued that the importance of each technological contextual factor in determining the final adoption of a given technology may differ from one region to another.

Lin et al. (2020) found that compatibility is a key determinant of new technology adoption. Johnson, Woolridge, Wang and Bell (2020) also concur and indicate that compatibility is a crucial factor in determining whether a user should adopt a given technology or not. A compatibility check should be conducted in terms of what the business does and the type of industry the business is affiliated. It follows that some technology may not be compatible to a certain business affiliated in a particular industry for example in railways.

A study by Kang, Mun and Johnson (2015) also examined the effect of technology compatibility on m commerce adoption in the retail sector. The study found that perceived compatibility was a significant factor in determining m commerce adoption. The reasoning of the study was that potential users are likely to adopt mobile applications if it will assist them in meeting their needs. In the context of SMEs, if the owners perceive that m commerce will help them to meet their needs such as increased sales, flexibility in transacting and tracking their inventory from suppliers, they are likely to adopt the technology.

In actual fact, compatibility is rated among the key determinants of m commerce adoption (Chau et al., 2020). Lack of compatibility means that the business may not be able to unlock the full benefits of the new technology. This assertion is supported by several scholars who empirically tested this relationship in different contexts. For example, Zhu, Dong, Xu and Kraemer (2006) investigated the association between perceived compatibility and actual adoption of new technology. The study was conducted among European businesses and the results showed that compatibility was a strong factor in determining actual adoption of new technology. This will mean that the business will end up discontinuing the new technology. This study maintains that the more compatible m commerce is with the SME owners' values, culture and personal goals, the more likely they are to adopt it.

Gono, Harindranath and Özcan (2016) also investigated the effect of the TOE factors on ICT adoption. The study found that compatibility was one of the crucial factors on the TOE model which influences adoption of new technology. The findings of Gono et al.

(2016) are supported by Jere and Ngidi (2020) who also investigated a similar study among SMEs in Pietermaritzburg. The study confirmed that compatibility is a significant determinant for new technology adoption. Jere and Ngidi (2020) indicated that SMEs are likely to adopt new technology if it is compatible with other existing business processes and systems. A study by Gareeb and Naicker (2015) also attested that compatibility is an important factor which has been used by several scholars to predict new technology adoption among SMEs. However, this study noted that the role of compatibility on new technology adoption may vary depending on other factors such as the sector and size of the business. It is from this understanding and argument that this study proposes the following hypothesis;

H_{1c}: *Perceived compatibility positively predicts m-commerce adoption among SMEs.*

2.3.3 Organisational contextual factors and m commerce adoption

The organisation context is explained in terms of management philosophy and the type of products and services. According to Erind (2015), the organisational context consists of elements such as firm size, managerial structure, quality, characteristics and availability of firm's technology and financial resources. Other important factors falling under this category include top management support, time commitment and product characteristics (Erind, 2015). The characteristics of a firm and its customers can also influence the adoption of m-commerce (Chiu et al., 2017).

This study adopted technology readiness and demographic characteristics as factors within the organisational context. Demographic characteristics such as age, level of education and gender are crucial determinants of m-commerce adoption (Chong, 2013; Cullen & Kabanda, 2018). These variables are under-researched in South Africa in the context of m-commerce adoption (Cullen & Kabanda, 2018).

2.3.3.1 Gender and m commerce adoption

Many studies have suggested that compared to men, women are less likely to adopt new technology, and if adopted, they tend to use it to a lesser degree than men. Wood and Li (2005) found that males were more willing to adopt new technologies than

females. Studies of mobile commerce online purchasing habits have also demonstrated different levels of adoption between males and females. They suggest that emotion, trust and convenience are three critical factors that influence women and men's participation in mobile commerce adoption.

In terms of gender, existing literature indicates that there are gender differences in the adoption of the internet and mobile applications (Cullen & Kabanda, 2018). Ukpere et al. (2014) highlight that the response to new technology among females is very slow compared to males. Other studies also report that males use online mobile transactions more than females (Hasan, 2010). Generally, m-commerce adoption and use is still higher among males than females (Stork, Calandro & Gillwald, 2013).

According to Donner et al. (2011), females are a little bit sceptical when it comes to m-commerce use than males. Donner et al. (2011) found that females usually ask their male counterparts to assist them in transacting using mobile transactions as they are afraid to make mistakes and risk losing their money. Similar studies such as North, Johnston and Ophoff (2014) also revealed a low usage of m-commerce tools among females than males. It can be noted that males are highly likely to use m-commerce more than females.

This study is based on the understanding that gender has an effect on m commerce adoption among SMEs. The argument is that males are likely to adopt m commerce as compared to females. Therefore, the following hypothesis is proposed;

H_{2a}: *Gender positively predicts m-commerce adoption among SMEs.*

2.3.3.2 Age and m commerce adoption

It is documented that the younger generation especially those below 40 years of age utilise m-commerce applications and platforms in both Asia, the US and in Africa (Hayden & Webster 2014). This trend is also notable in South Africa, where there is a large percentage of youth between 15-24 years who possess smartphones, which in most cases, have mobile applications (Beger, Sinha & Pawelczyk, 2012; Shava, Chinyamurindi & Somdyala, 2016). This is mostly because youth perceive m-commerce

as much cheaper compared to when they browse the internet using desktops or laptops.

Existing studies point out that m-commerce adoption in several regions is mainly high among males (Cullen & Kabanda, 2018). Smith, Spence and Rashid (2011) and McGaughey, Zeltmann and McMurtrey (2013) note that younger people tend to adopt mobile applications more than older people. Younger people are assumed to be risk taking and always ready to try new things than old people (Hayden & Webster, 2014). Similarly, Cullen and Kabanda (2018) report that m-commerce adoption and use is higher among the youth in both Taiwan and the United States. Vserv (2015) found that mobile commerce was high among people with 30 years and below in Malaysia.

In developing countries, a study conducted by Hayden and Webster (2014) also found that m-commerce was high among the youth than old people. In South Africa, "adolescents and the youth are the first adopters of mobile technology, with 72% of 15-to 24-year olds having a cell phone" (Beger et al., 2012:3). Shava et al. (2016) identified regular mobile commerce users as students who prefer to access information and do transactions instantly on their smartphones. Several studies agree that the younger generation is more active on the use of internet and mobile applications than the older generation. This suggests that businesses should focus their marketing efforts on the younger generation if they are to harness the benefits of m-commerce (Kaur et al., 2016). Chong (2013) found a significant negative relationship between age and m-commerce. However, other studies such as Hew, Leong, Ooi and Chong (2016) did not find any significant effect of age on m-commerce adoption.
Based on the evidence above, this study argues that;

H_{2b}: *Age positively predicts m-commerce adoption among SMEs.*

3.3.3.3 Education and m commerce adoption

In terms of level of education, there is a debate on whether education is a key determinant of m-commerce adoption. However, logic has it that the higher the level of education, the more chances that one will likely understand and adopt m-commerce.

This is because m-commerce uses mobile applications which may be complex for someone without knowledge and education. Arif and Aslam (2014) argue that people with a university degree tend to be earlier adopters of m-commerce than those without tertiary education (Arif & Aslam, 2014). Based on level of education, Chong (2013) found a positive relationship between level of education and m-commerce adoption. Chong (2013) revealed that users of m-commerce usually adopt it to transact online. Therefore, this leads to the following hypothesis;

H_{2c}: *Level of education positively predicts m-commerce adoption among SMEs.*

2.3.3.1 Technology readiness and m commerce adoption

The characteristics of a firm and its customers can also influence the adoption of m-commerce (Chiu et al., 2017). The level in which a firm has invested in IT systems can allow the introduction of mobile applications that determine m-commerce adoption (Rahayu & Day, 2015). This explains the firm's technology readiness. For a firm to be technologically ready, it has to have all the m-commerce systems in place, relevant skills and monitoring systems to evaluate its effectiveness. Doolin and Ali (2008) reported that technology readiness is an important determinant of m-commerce adoption, and is one of the most important factors to consider before adopting a new technology. Most businesses in emerging markets efforts to adopt a technology get wasted away because they lack technology readiness (Ashraf, Thongpapanl, Menguc & Northey, 2017). Therefore, it is crucial for a business to assess its current state before adopting a certain technology.

A study by Malak (2016) also found that the business' preparedness in terms of the presence of an IT infrastructure and knowledgeable IT specialists positively influence new technology adoption. Malak (2016) also explained that availability of technical resources is also important to determine how ready a business is to adopt new technology.

H_{2d}: *Technological readiness positively predicts m-commerce adoption among SMEs.*

2.3.4 Environmental contextual factors and m commerce adoption

According to Lin et al. (2020), a business does not work in isolation but in a system where the actions of other players can affect it indirectly. This clearly captures the dynamics in the external environment of the business. To survive, a firm should brace for changes in the external environment. The firm should always monitor environmental factors to remain competitive. The dynamic nature of the external business environment dictates the type of new technology to be adopted at that particular time.

2.3.4.1 Customer pressure and m commerce adoption

Recently, customers have become so technologically acclimatised that they use their smartphones for many purchases (Maduku et al., 2016). Due to work commitments and less time, customers now prefer to shop online using applications on their smartphones. SMEs are forced to change their business models in order to adapt to this new trend of customer demands. For example, in South Africa, most customers have mobile applications on their smartphones. This calibre of customers is now preferring businesses with websites that are compatible with m-commerce. This means that businesses are forced to adjust their offerings to suit the demands of the 21st customer. Alrawabdeh (2014) also examined the determinants of m commerce adoption among businesses in Jordan. Specifically, the study examined environmental factors of the TOE model. The study found that pressure from customers can significantly push firms to adopt m commerce. Lin et al. (2020) also established that pressure from customers can coerce SMEs to adopt new technology. This is because customers can be well ahead in adopting new technology which they believe can ease their purchase decisions. In that case, they may want to force businesses to introduce that technology.

A study by Gareeb and Naicker (2015) conducted in South Africa also found that pressure from customers can shape the adoption decisions of SMEs. In most instances, customers are impatient and if their needs are not met, they can consider other competing brands which may be a loss to the existing business. That is the reason why several successful businesses end up building close relationships and collaborations with customers so that it can be relatively easier to project their changing needs and taste.

Chivizhe (2019) also investigated the determinants of m commerce adoption among SMEs in the hospitality industry. The study found that customer pressure played a role in pushing SME owners to adopt mobile applications. The respondents of this study expressed that they got suggestions from customers if they could introduce m commerce platforms in their websites. This shows that customers can sometimes play an educative role to the business in terms of new technology adoption. Based on the above findings, this study makes the following hypothesis;

H_{3a}: *Customer pressure positively predicts m-commerce adoption among SMEs.*

2.3.4.2 Supplier pressure and m commerce adoption

Suppliers also play an important role in shaping a business' behaviour towards m-commerce adoption (Siau & Shen, 2002). With recent technological advancements and the proliferation of mobile applications, most suppliers have braced this trend. The supply chain is becoming technologically driven that businesses that do not adapt experience serious difficulties in sourcing suppliers (Hewitt, 2016). The supply chain is now requiring businesses to be updated on the developments in the entire supply chain lest they risk business failure.

Due to the desire to speed transactions and for standardisation, some suppliers require their customers to have the same applications they use in their business. For example, Wal-Mart has demanded that firms in its value chain use wireless tracking. When pressure from trading partners get intense, SMEs are likely to adopt m-commerce (Duan et al., 2012). Picoto, Bélanger and Palma-dos-Reis (2014) found that suppliers and other supply chain partners are crucial determinants of m-commerce adoption. This is because some of the supply chain process will be massed with certain technology which forces all businesses that what to be affiliated in that network to adopt the required technology (Zeeshan, Cheung & Scheepers, 2009; Darbanhosseiniamirkhiz & Wan Ismail, 2012).

A study by Malak (2016) also attested that supplier pressure positively influences m commerce adoption decisions. This study noted that supplier may want to improve the

entire supply chain by pushing all their supply chain members to adopt new technology. This means they will likely to reject supply chain partners who do not progress as expected.

Therefore, the proposition for this study is;

H_{3b}: *Supplier pressure positively predicts m-commerce adoption among SMEs.*

2.3.4.3 Competitor pressure and m commerce adoption

Competitors are firms that vie for the same clients or same purchasing power of customers targeted by other businesses (Miao & Tran, 2018). With recent developments in the technological environment and the emergence of globalisation, competition has become intense in the business environment. For instance, some businesses are now able to transact with other businesses abroad using modern technology such as mobile applications. Alibaba Group and Amazon are among some of the best examples of companies that are optimising the online strategy. Based on this, other businesses are also responding to this by adopting mobile applications.

For SMEs, the question to adopt m-commerce is no longer debatable but a question of when. Since most businesses are thriving to grow, none of them wishes to be taken out of business by the inability to innovate. It follows that competitors' actions will influence a firm's stance on technology adoption (Sin, Osman, Salahuddin, Abdullah, Lim & Sim, 2016). For instance, if competitors have adopted a certain technology and are realising profits, this may force the business to imitate to remain competitive. Competitors can also influence a firm's decision to adopt m-commerce. For example, if competitors are earlier adopters of a certain technology, this will force the SME under consideration to adopt similar technology to remain competitive (Miao & Tran, 2018). According to Miao and Tran (2018), the effect of competitor pressure on m commerce adoption tend to be well pronounced in developed countries than in developing countries. This is because of the level of technological knowledge and level of importance in these different business contexts.

In South Africa, other companies have already started using mobile applications to reach out to their customers. This means that other SMEs are forced to invest in m-

commerce to remain relevant in the business environment. There is a positive relationship between competitors' pressure and the adoption of m-commerce (Picoto et al., 2014). According to Lin and Yazdanifard (2014), competitors doing well in m-commerce can force other businesses to adopt it to avoid losing market share. This is also supported by Alrawabdeh (2014) who established that businesses in Jordan agreed that pressure from competitors is crucial in shaping their decisions regarding adopting m commerce. Competitor pressure came out as the strongest factor which determines m commerce adoption among businesses among the factors which were examined.

Ifinedo (2011) also reported that SMEs operating in competitive industries are consequently forced to adopt m commerce to remain in business. According to Malak (2016), several businesses may end up adopting new technology because they do not wish to inherit the weak competitor status. The fear of financial loss in terms of lost customers to competitors may force businesses to imitate the technology and new systems adopted by their competitors (Mellat-Parast, 2015). Thus, market leaders in certain industries have a strong effect on their followers' attitude and decisions to imitate their technology. The positive association between pressure from competitors and actual adoption by the concerned business is well documented (Cavusoglu, Cavusoglu, Son & Benbasat, 2015). This clearly shows that competitors may shape the internal strategies of other businesses. This assertion is well explained by the Porter 5 forces model. Failure to predict competitors' actions may be dangerous to a business which wish to remain competitive and profitable. A study by Yoon and George (2012) also emphasized the importance of competitor pressure in influencing decisions towards adopting new technology by SMEs.

Chivizhe (2019) also established that competitors can positively influence the business to adopt new technology. In a study by Chivizhe (2019), the participants indicated that they adopted m commerce because they had discovered that their competitors were making profits because of leveraging on the mobile applications strategy.
Based on the above supporting evidence, this study proposes that;
H_{3c}: *Competitor pressure positively predicts m-commerce adoption among SMEs.*

2.3.4.4 Technological Acceptance Model Factors and M-commerce Adoption

The TAM has also been used by several studies to predict m commerce adoption. The two factors such as perceived usefulness and perceived ease of use have been reported to influence users towards adopting new technology.

2.3.4.4.1 Perceived usefulness and perceived ease of use

According to Cheong and Mohammed-Baksh (2019), perceived usefulness and perceived ease of use predict the adoption of m-commerce by users. The study found that users were more likely to adopt m-commerce if they perceived it to be of use to them and to be easy to use. The study concluded that both perceived usefulness and perceived ease of use positively influence the adoption of m-commerce.

These findings are also supported by Dlodlo and Mafini (2013), who also found that the TAM factors positively influence users to adopt m-commerce. Their submission was that when users are assured that the technology will be useful to them and will not give them problems, they are likely to adopt it. In a study conducted by Salimon, Bamgbade, Nathaniel and Adekunle (2017), the hypothesis that perceived usefulness and perceived ease of use predict the adoption of m-commerce was fully supported by the findings.

Putra (2018) examined the determinants of m commerce using the TAM factors in Indonesia. The study found that TAM factors such as perceived usefulness and perceived ease of use predicts m commerce. According to Putra (2018) the TAM factors have an effect on the potential users' behaviour and attitude which drives them to adopt m commerce. Similarly, Wiradinata (2018) assessed the impact of the TAM framework on m commerce adoption among SMEs. The study found that both perceived usefulness and perceived ease of use significantly predicted m commerce adoption. The study concluded that SMEs should also improve on these two factors when trying to market their products as these factors also influence their potential customers' attitude towards adopting the new technology required to enjoy the products of these businesses.

Other studies have used effort expectancy to explain ease of use. These studies express that potential users are likely to adopt m commerce if they are assured that it will reduce their effort when transacting. For example, Kim, Yoon, and Han (2016) reported that perceived ease of use is a key determinant when it comes to decisions regarding m commerce adoption.

On the other hand, Shaw and Sergueeva (2019) used performance expectation to describe perceived usefulness. The study found that users can only adopt new technology if it is useful to them. According to Shaw and Sergueeva (2019), users can consider adopting new technology if it can save them time on the task they have to perform or if it can eliminate inefficiencies and increase productivity.

The hypothesis that TAM factors critically influence users to adopt m commerce is widely accepted as evidenced by studies in different sectors. For example, Oliveira, Thomas, Baptista and Campos (2016) as well as Shaikh, Glavee-Geo and Karjaluoto, (2018) investigated the issue using mobile banking application users. Both studies confirmed that indeed perceived ease of use is a crucial determinant for m commerce adoption across all contexts and sectors.

Rind et al. (2017) also studied the effect of TAM model factors on m commerce adoption within the context of Pakistan businesses. The study found that both perceived usefulness and perceived ease of use successfully determine m commerce adoption. This entails that SME owners may only adopt new technology if it can improve their performance and efficiency in linking the business with its customers.

This study is based on the argument that m commerce applications are relatively easy to use because there are several mobile application technicians and companies willing to install the systems and train the users. This is supported by existing literature which indicates that users are more likely to adopt new technology if they can easily get more information and training on how to use it. Practically, there is evidence that m commerce is ease to use as several companies South Africa have already adopted it. This include, Mr D, which deliver food, Uber eats, Debonairs pizza among others. In terms of perceived usefulness, this study expresses that several users who have adopted mobile

applications in South Africa all attest that m commerce enhances their performance. Such tangible evidence should positively influence SMEs to adopt m commerce in South Africa.

Based on the evidence above, this study proposes that;

***H_{4a}**:Perceived ease of use positively predicts m commerce adoption among SMEs in South Africa.*

***H_{4b}**:Perceived usefulness positively predicts m commerce adoption among SMEs in South Africa.*

2.3.4 4.2 Intention to adopt m-commerce

Behavioural intention to use new technology is one of the key items in the TAM. According to Fishbein and Ajzen (1975:12), behavioural intention is defined as "the strength of one's intention to perform a specific behaviour." Zarmpou, Saprikis, Markos and Vlachopoulou (2012) describe behavioural intention as the degree to which one is likely to adopt a particular technology. Behavioural intention determines the actual adoption of new technology. Strong behavioural intention to use a new technology results in the individual adopting the technology. Ntsafack, Kamdjoug and Wamba (2018) found a positive relationship between behavioural intention and the actual adoption of m-commerce.

However, there are studies that argue that intention and actual adoption may not be correlated. This might be caused by the fact that sometimes an individual may have an intention to do something but fails to convert the intention to actual adoption. Hence, empirical findings of this study will shed more light on this phenomenon.

2.3.4 4.3 Actual adoption of m- commerce

Actual adoption is the final step where the individual or firm has adopted the technology. The decision to finally adopt the technology is reached after the firm or individual is certain that the new m-commerce technology will bring more benefits to the firm than

costs. In this instance, the firm starts to utilise the technology for different purposes to enhance performance in the business.

There is a general shift in focus from intention towards actual m commerce adoption. Several studies are point that m commerce adoption has become the cornerstone of marketing strategies for most SMEs. Focusing on intention to adopt m commerce does not bear fruit in terms of progressive policy making because potential does not always materialize based on a variety of reasons. Thus, it is important to understand actual adoption decisions by SMEs so that clear cut policies can be formulated in order to support this sector.

The researcher has noted that several studies which investigated this concept are distributed in developed countries. This justify the need for this study in South Africa. Since m-commerce is still a new concept in South Africa, this study is interested more in its actual adoption. It is through actual adoption that SMEs can start to enjoy benefits associated with this disruptive technology and be able to survive in the 4^{th} industrial revolution. At his juncture where the government is interested in sustaining the SMEs sector, it is important to understand their actual adoption of m commerce than an intention.

2.3.5 Benefits of M-commerce Adoption for SMEs in Developing Countries

According to Waithaka and Mnkandla (2017), m-commerce disrupts the traditional way of doing business. Explaining this point, Waithaka and Mnkandla (2017) remark that m-commerce eliminates limitations associated with operating hours and distance barriers to shops. Customers can easily shop online, anytime and compare different brands and prices from several shops by just a click on their smartphones. The same study further explains that this flexibility can also be enjoyed by SME owners as they can make sales anytime without time constraints and physical barriers.

Another outstanding benefit of leveraging on m commerce is its ability to enhance customer experience (AlQahtani, Beloff & White, 2020). Recently, customers are now highly regarding businesses which offer them a unique shopping experience. A unique

customer experience can be through flexibility offered by business owners through responsive mobile applications and platforms which eliminates ques and shorten the purchase decision making. Brands which can successfully build customer experience are likely to be profitable since satisfied customers can become loyal to the brand to an extent that they can easily spread a positive word of mouth for the brand which increases market share. According to AlQahtani et al. (2020), m commerce enables SMEs to customize messages which they can easily use to target their customers. Such messages can also be used to inform customers about the businesses products which gives the customers ample time to interact with the brand owners to inform their purchase decisions.

M-commerce has since enabled growth and development to small businesses in developing countries that have adopted it (Waithaka & Mnkandla, 2017). The same study notes that m-commerce adoption gives SMEs a competitive advantage over their laggards counterparts. M-commerce has a double impact in terms of customer attraction as compared to traditional ways of doing business (Nikou & Mezei, 2013). According to Unhelkar and Murugesan (2010), through the utilisation of mobile applications, m-commerce increases a firm's efficiency, effectiveness and flexibility. More importantly, it unlocks value and creates new markets. This eliminates the lack of markets by SMEs which has been recorded as a challenge confronting several SMEs.

Mu, Spaargaren and Lansink (2019) also noted that mobile applications are instrumental in almost every sphere of business. On this account, the study notes that recently, customers' use of applications has increased significantly, meaning that businesses should do likewise to harness profits and benefits emanating from speeded up transactions. Mu et al. (2019) found that the emerging trend towards green consumers requires businesses to develop applications which can assist them in decision-making. For example, applications should assist customers by quickly helping them to locate nearby restaurants, good price quality restaurants, restaurants with vegetarian options, restaurants with green practices, restaurants with green procurement and knowledgeable personnel.

A study by Stafford (2016) asserts that mobile application adoption and optimisation gives a business an unmatched competitive advantage. This further enables the business to be a market leader in the industry and to enjoy benefits associated with being a first mover. AlQahtani et al. (2020) concur and assert that m commerce enables SMEs to be profitable. This study notes that SMEs can be profitable by marketing their products in several mobile apps used by their targeted customers. This study was conducted in a developing country context and it found that SMEs can actually leverage on m commerce as the number of smartphone users is increasing rapidly.
Sesinye (2019) urges firms in South Africa to leverage on technology to mitigate the severity of problems they are confronted with daily. The study indicates that SMEs should move along with rapid technological advancement being brought forward by the fourth industrial revolution. Such technological advancements have levelled the ground in terms of competition between SMEs and large businesses. This means that SMEs can adopt the new technology to compete globally and broaden their market base.

A study by Chiu et al. (2017) submits that m-commerce enhances the speed of business transactions. Instead of queuing to pay or purchase raw materials, with m-commerce, transactions can be conducted electronically using smartphones. This is based on the fact that smartphones now can be used to download mobile banking applications, which makes transacting much easier. For instance, in South Africa almost all banks have mobile banking applications that users can download and install in their smartphones. Key examples include FNB, Standard Bank and Capitec, among others.

Khaskheli, Jun and Bhuiyan (2017) use the Uber Company as a practical example of a business that has profiteered from the adoption and optimisation of m-commerce over the past 3 years. Through the use of mobile applications on smartphones, the company has changed how things are done in the taxi industry, leading to efficiency and increased customer satisfaction. Another mobile app business recognised in South Africa is Yoco, which was established to facilitate easier access for entrepreneurs to get card payment services but has expanded to provide many other software and hardware solutions, including Post of Sale software for small businesses in South Africa.

Regardless of the importance of m-commerce towards improving business success, the adoption thereof is relatively low among SMEs in most developing countries (Chau & Deng, 2018). According to Chau and Deng (2018), the current status of m-commerce adoption among SMEs in developing countries is unsatisfactory. The study notes that most SMEs are still lagging in terms of m-commerce adoption. Crucial m-commerce enabling tools such as websites are still poor and incompatible with m-commerce. South African SMEs are also not actively embracing m-commerce to enhance their business transactions. The Kenyan government, for instance, has already started to put support structures for m-commerce after realising its benefits to SMEs and the economy at large (Waithaka & Mnkandla, 2017). Based on this, Hayden and Webster (2014) are of the view that SMEs can be profitable if they can make their websites and systems compatible form-commerce. To achieve this, Hayden and Webster (2014) recommend the following steps for businesses that plan to harness the finite benefits of m-commerce.

2.6 SUMMARY

This chapter provided a discussion of the literature review and theoretical framework guiding this study. The TAM and TOE frameworks were major theories adopted to guide the study. The TAM explained that users of a new technology evaluate it before the final adoption. The new technology is evaluated in terms of perceived benefits and costs. It follows that when the benefits in terms of ease of use, affordability and its power to improve effectiveness and efficiency in the organisation outweigh the costs, then the new technology is considered useful and is adopted. On the other hand, the TOE explains that there are three major determinants of a new technology. These are technology context, organisational context and environmental context. The chapter also

discussed SMEs in terms of their definitional issues, importance to the economy and the challenges faced by this sector. M-commerce was introduced as a solution to the random and high failure rate of SMEs in South Africa. It was understood that m-commerce gives a business an unmatched competitive advantage which enhances its performance. Relationships between key variables of the study were also discussed by reviewing existing empirical studies. The literature provided inconclusive findings on the proposed relationships signaling the need for more empirical studies to add more clarity to the existing debate. The following chapter will discuss the research methodology of this study.

CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

Chapter 3 presents the methodology which was used in this study. This methodology was guided by the research problem and research objectives of the study. In this chapter, the study area, research design and population of the study are discussed. The chapter also outlines the sampling method used and the sample size of the study. Thereafter, data collection methods and data collection procedures are outlined. The chapter also outlines the statistical tests used to analyse the data. This is followed by a section where issues related to reliability and validity of data collection instruments are

discussed. The chapter eventually discusses ethical issues which were taken into consideration when conducting the study.

3.2 STUDY AREA

A population is a constituency of people or items from which the researcher wishes to investigate a certain phenomenon within the group. The population included all registered SMEs in Polokwane. The study was conducted in Limpopo Province in South Africa. Owner/managers of SMEs formed the population of the study. The target population was represented by either the owner's or management of the enterprise. The study area is presumed to have the age (mostly youth), gender (50:50) and qualification (mostly matric and higher) profile of the respondents of the study. Demarcating the study area is crucial in research. This is because it determines characteristics of the subjects to be included in the survey. The city has a significant number of SMEs, which is sufficient for the purpose of this study.

3.3 RESEARCH DESIGN

This research is quantitative, which is numerical in nature (Queirós, Faria & Almeida, 2017). Quantitative research is derived from the scientific research field which believes that a phenomenon is best understood when it is approached objectively. The quantitative research design focuses on aspects of the phenomenon which can be quantified and analysed statistically (Rahman, 2017). According to Martin and Bridgmon (2012), the quantitative research design aims to generate verifiable findings since statistical methods are used to compute and analyse the data. Based on this, the quantitative research design utilises numbers and quantifiable data, which is further analysed to make generalisations from the results. Some of the characteristics of the quantitative research design are that it starts from hypotheses guided by a theoretical framework which is later tested to approve or disapprove the theory (Queirós et al., 2017).

The quantitative research design was chosen in this study because it has several advantages which were deemed important by the researcher. The quantitative research design is objective since it uses numerical datasets, which make it easy to verify

(Borrego, Douglas & Amylin, 2009). In this study, generalisability of results was very crucial. The results found in the representative sample could easily be generalised to other samples in other provinces with the same characteristics as Limpopo Province. Furthermore, as stated by Martin and Bridgmon (2012), the quantitative research design enabled the researcher to use a huge sample size which is usually not possible under a qualitative research design. This enhances the quality of the results (Powers & Powers, 2015). According to Hoy and Adams (2015), the structured approach utilised in the quantitative research design enhances its robustness and usefulness to readers as it makes it easy to comprehend. The quantitative research method is also relatively easy to conduct as data can easily be collected using questionnaires and analysed easily using different statistical packages (Rahman, 2017).

However, the quantitative research methodology may have its own limitations which the researcher was aware of. The quantitative research design uses structured procedures to collect and analyse data. This may cause inflexibility in the research process as there is no scope for participants to express their feelings and emotions about the particular topic (Blaikie, 2007). Furthermore, the quantitative research design may not provide reasons as to why such results were found as compared to a qualitative research where the participant is there to provide strong evidence through additional probing. Besides the noted limitations of a quantitative research, this strategy remained the perfect research method for this study. This is because the researcher intended to gather quantitative data to achieve the objectives of the study.

3.4 POPULATION OF STUDY

The population of this study was 261 SMEs in Polokwane. This number consists of SMEs from all sectors, that is, agriculture, manufacturing, retail, tourism and the service sector.

3.4.1 Sample and Sampling Method

A sample is defined as representative portion of the total population (Saunders et al., 2009). According to Bell, Bryman and Harley (2018), in a quantitative study, the sample

size should be sufficient if generalisation of the research findings is to be accurate. A sampling is considered in research to save both time and resources. This is because it is not feasible to survey everyone in the population framework. This study used a sample size of 160 SMEs. The sample size was calculated using a formula suggested by Agrasuta (2013). The formula takes into consideration 5% margin of error, a 95% confidence level population size. The sample size was calculated as shown below.

Where:

	N = Population	261
Where:	E = Precision	0.05
	n = number	330

n = 157, = approximately 160

Bell et al. (2018) identify probability and non-probability sampling methods as major sampling methods in research. Probability sampling is defined as sampling where participants have equal chances of being included in the sample, while non-probability sampling deals with subjective criteria to sampling. Consequently, there is no representativeness of the sample to the total population characteristics (Bell et al., 2018). Participants were randomly selected. This technique was used in this study because it made it possible for each SME to have an equal chance of being selected in the survey. In addition, it made the sample to be representative of the total population.

3.5 DATA COLLECTION METHODS

A self-administered closed ended questionnaire was used to acquire the raw data from participants. The questionnaire was designed by the researcher from existing literature and consisted of closed ended questions. These were meant to prompt participants to select an option which best suited their situation in terms of m-commerce adoption. The scale used was a Likert scale where: SD = strongly disagree; D = disagree; N= neutral; A = agree and SA = strongly agree. A closed ended questionnaire was adopted because of the advantages it presents to researchers. One of these advantages is that

it is relatively easy to administer and analyse. This saves time and resources. The questionnaire was developed by populating questions from existing literature. The questionnaire was divided into the following sections:

Section A: Biographical information

In this section, the researcher intended to collect data about participants' gender, age and the level of education. These variables were included because they formed part of the determinants of m-commerce which were tested in this study.

Section B: Mobile Commerce Questions

This section consisted of 20 questions which were designed to measure mobile commerce adoption by SMEs. This was used following other similar studies (Wamuyu & Maharaj, 2011; Zamfiroiu, 2014; Waithaka & Mnkandla, 2017). The questions in this section were structured in the form of Likert scale questions. Thus, participants were asked to mark with an X the answer which closely resembled the extent to which they agreed or disagreed to a particular statement related to m-commerce adoption.

In Table 3.1 all questions with their applicable references is shown. This is to indicate where the questions originate from and that they are based on results from empirical literature review.

Table 3.1: Table of question items with references

Section B: Determinants of mobile commerce adoption

Questions	**Reference**
Technological factors	
Perceived benefits	

1. M-commerce eliminates limitations associated with operating hours and distance barriers to shops	Waithaka & Mnkandla (2017)
2. M-commerce makes it easy for customers to shop online, anytime and compare different brands	Waithaka & Mnkandla (2017)
3. M-commerce speeds business transactions	Chiu et al. (2017)
Perceived costs	
4. M-commerce is cost-effective	Rahman & Sloan (2017).
5. The costs of installation, software development, licensing and outsourcing of mobile app technicians use is affordable	Rahman & Sloan (2017).
6. Users are sensitive to costs of adopting a technology	Wu & Wang (2005)
Perceived compatibility	
7. M-commerce is compatible with our systems	Zhu et al. (2006)
8. Our business has the required infrastructure to support mobile applications	Mairura, Ngugi & Kanali (2016)
9. Our organisational culture supports adoption of new technology	Zaltman & Lin, (1971)
10. We have had positive experience from the adoption of new technology in the past	Mairura, Ngugi & Kanali (2016)
Organisational factors	
Technological readiness	
11 We have relevant technological skills to implement m-	Parasuraman &

commerce	Colby (2001)
12. We are optimistic about new technology	Parasuraman & Colby (2001)
13. We are comfortable in initiating new projects with new technology	Parasuraman & Colby (2001)
14. We feel comfortable in using m-commerce	Parasuraman & Colby (2001)
Environmental factors	
Customer pressure	
15. Customer demand app for m-commerce	Duan, Deng & Corbitt (2012)
16. We respond to changing customers' shopping behaviour	Duan, Deng & Corbitt (2012)
17. Customers now prefer to shop online using applications on their smartphones.	Duan, Deng & Corbitt (2012)
Supplier pressure	
18. Our suppliers are using m-commerce technology	Duan, Deng & Corbitt (2012)
19. M-commerce is becoming a requirement from our suppliers	Li, Wang, Zhang and Chu (2010)
20. Mobile commerce is effective in product and service distribution	Parasuraman & Colby (2001)
Competitor pressure	

21. M-commerce can be used to counter actions of our competitors	Lin (2014)
22. M-commerce can be used to monitor activities of our competitors	Picoto, Bélanger & Palma-dos-Reis (2014)
M-commerce is used to have a greater market share than our competitors	Duan, Deng & Corbitt (2012)

Section C: Technology acceptance model (Perceived ease of use and perceived usefulness)

Questions	**Reference**
Perceived ease of use	
1. M-commerce is easy to use	Kalinic & Marinkovic (2016)
2. M-commerce is understandable and clear	Kalinic & Marinkovic (2016)
3. M-commerce requires minimum effort	Kalinic & Marinkovic (2016)
4. Learning to use m-commerce is easy	Kalinic & Marinkovic (2016)
Perceived usefulness	
5.M-commerce improves my work performance	Kalinic & Marinkovic (2016)
6. M-commerce improves my productivity	Kalinic & Marinkovic (2016)
7. M-commerce enhances my effectiveness in my work	Kalinic & Marinkovic (2016)

Section D: M-commerce adoption

Read the items below and indicate where you would rate yourself on the scale from 1 to 5. Check only one box for each item.

Questions	**Reference**
1. We have installed applications which aid mobile payment	Stanley (2015)
2. We have built applications to help us in invoicing	Stanley (2015)
3. We have installed applications to boost our online sales	Cuomo (2013)
4. We have built-in applications to track inventory	Stanley (2015)
5. We have installed applications to track supplier dates	Stanley (2015)
6. I am willing to use a cell phone, PDA or tablet to conduct online transactions in the future	Waithaka & Mnkandla (2017)
7. In the previous year, we conducted a number of transactions using a cell phone, a PDA or a tablet	Waithaka & Mnkandla (2017)
8. We have put encryption and other technological security features to protect both our business and customers from hackers	Stanley (2015)
9. We have installed systems to evaluate the effectiveness of m-commerce	Waithaka & Mnkandla (2017)

3.6 PILOT STUDY

A pilot study was done to test the questionnaire. A pilot study refers to an initial test of the questionnaire to determine whether it is feasible or non-feasible as a measuring procedure by using participants who closely resemble the targeted study population. The pilot study indicated questions to be included in the questionnaire. The purpose of this approach was to determine whether respondents find any difficulties from ambiguous questions so that they can be eliminated. Furthermore, the pilot study enabled the researcher to detect possible mistakes. On this account, all errors and biased questions were highlighted and corrected.

3.7 DATA COLLECTION PROCEDURES

Before the commencement of the data collection process, the researcher obtained ethical clearance from Turfloop Research Ethics Committee (TREC). After this, the researcher approached the municipality management to get a list of SMEs in Polokwane as well as permission to conduct the study. 160 participants were randomly selected from the population of 260 using random numbers. This technique was used because it made it possible for each SME to have an equal chance of being selected in the survey. In addition, it made the sample to be representative of the total population.

The researcher distributed the questionnaires to the SME owner/managers in Polokwane. The respondents were given three weeks to complete the questionnaire after which the researcher collected the filled questionnaires.

3.8 DATA ANALYSIS

Data analysis forms a crucial element in scientific research. After gathering the data, it is only through analysis that meaningful patterns are extracted. In a quantitative study, data analysis takes the form of different statistical tests run on the data. Data analysis involved descriptive statistics and inferential statistics as the study intended to test certain hypotheses. The data was tested for normality before doing inferential statistical analyses. This study utilised frequencies, percentages, pie charts and tables to present demographic information. Descriptive statistics such as mean and standard deviation were used to analyse key variables of the study. Inferential statistics such as Chi-

square, ANOVA and regression were used to test the relationships among independent and dependent variables. The independent variables included determinants of m-commerce and the dependent variable related to mobile commerce adoption.

3.9 RELIABILITY AND VALIDITY

According to Mohajan (2017:1), “reliability and validity are the two most important and fundamental features in the evaluation of any measurement instrument or tool for a good research.” Reliability and validity are also crucial measures of the quality of research (Saunders et al., 2009). Other researchers such as Kimberlin and Winterstein (2008) assert that ensuring high levels of reliability and validity improves the integrity of the study. Thus, care should be exercised to ensure that each of these two elements is effectively addressed in a study.

3.9.1 Reliability

Reliability is defined as the consistency of measures. “In quantitative research, reliability refers to the consistency, stability and repeatability of results, that is, the result of a researcher is considered reliable if consistent results have been obtained in identical situations, but different circumstances” (Mohajan, 2017:67). This entails that the data collection tool should produce similar findings consistently over time. In research emphasis is made on reliability because it has an impact on the final results of the study (Babbie, 2013). To achieve high reliability, objective measures should be used when designing the data collection tool. This makes it easier to determine the consistency of constructs in the data collection tool. In this study, reliability of scales was measured using the Crobach’s alpha. According to Mohajan (2017), reliability scores ranges from 0-1. A reliability score of 0.7 and above is considered to be reliable whereas scores towards 0 indicate that the constructs are not reliable. In this study, the Cronbach’s alpha scores of all the constructs were above 0.7. This shows that the data collection instrument was reliable.

3.9.2 Validity

Validity is used to measure if the data collection instrument managed to capture what it was intended to (Robson, 2011). Therefore, researchers should ensure that the questions are crafted in a way that they address what the study intends to achieve. According to Pallant (2011), validity is measured using content validity, face validity, construct validity and criterion related validity. To ensure content validity in this study, the researcher ensured that the questions were aligned to the research objectives. Furthermore, to ensure face validity, the questionnaire was sent for evaluation and proofreading by the research committee for approval.

3.10 ETHICAL CONSIDERATIONS

It is a requirement for all studies to consider ethical issues in the particular field in which research is undertaken (Farrimond, 2012). In some instances, researchers end up paying less attention to ethical issues in research. This has negative connotations as it may expose the researcher to possible lawsuits by those who may feel that their rights were infringed (Rahman, 2017). In this study, ethical issues were taken seriously. Ethical issues considered in this study include permission to conduct the study, informed consent, voluntary participation, confidentiality, and benefits expected from participating in the study and minimising harm. The internet respondents were not included since it was discovered that SME owners do not have time to open their emails.

3.10.1 Permission to Conduct the Study

It is important for a researcher to obtain permission to conduct the study from relevant authorities. Therefore, before commencing with data collection, the researcher applied for ethical clearance from Turfloop Research and Ethics Committee (TREC). This was issued to the researcher and formed part of the documents the researcher used to show participants when collecting data. The researcher also approached Capricorn District

Municipality to obtain a list of SMEs in Polokwane and to seek permission to conduct the study with targeted businesses.

3.10.2 Informed Consent

According to Hammersley and Traianou (2012), researchers should seek informed consent from participants to collect data ethically. When the data collection started, participants were given a brief background and purpose of the study. They were also presented with a consent form which gave them a chance to decide whether they wanted to participate or not.

3.10.3 Voluntary Participation

Participation in the study was voluntary. Participants were assured that they could withdraw from the survey anytime without giving reasons. Furthermore, they were assured that they could not face any obligation or fine from withdrawing from the survey.

3.10.4 Confidentiality

The researcher assured participants that their names would not appear in any part of the research, and that the information they provided would be treated as confidential. Furthermore, participants were assured that the information they provided was intended for research purposes only and the questionnaires were to be locked in a place accessible by the researcher only.

3.10.5 Benefits Expected from Participating in the Study

Participants were told that there were no financial benefits associated with participating in the study. However, the researcher promised to share the findings of the study with any of the participants who would be interested. Largely, participants were told that they may benefit indirectly through recommendations made from the study which can help them to improve their businesses.

3.10.6 Minimising Harm

Hammersley and Traianou (2012) assert that participants should not feel that their life is put at risk due to participating in the study. Therefore, researchers should ensure that

they minimise potential risks by warning participants of possible risks associated with participating in the survey. In this study, there were no possible risks associated with their participation in the study. However, the researcher provided them with his contact details in case there were elements in the questionnaire which exposed them to emotional risks.

3.11 FRAMEWORK FOR THE RESEARCH

The conceptual framework was now extended to outline the whole process. This allows the researcher to check whether all the processes were in fact applied. It also provided a roadmap for the rest of the research.

Figure 3.1: The Research Process

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Source: Author (2020)

Figure 3.1 above presents the conceptual research framework. It summaries the entire study by outlining the critical steps followed by the research from conceptualising the topic, objectives, literature search, methodology and data analysis. The objectives of this study revolved around determinants of m-commerce. These included technology acceptance model factors and Technology-Organisation-Environment model factors. It was also from these objectives that hypotheses were formulated. Henceforth, the researcher embarked on literature review to understand what is already known and to identify a research gap. It was discovered that knowledge about determinants of mobile commerce adoption was lacking, which created a research gap for the study. The quest to understand key determinants of m-commerce also guided the researcher to come up with a suitable research methodology to answer the research problem and contribute towards achieving the objectives of the study. The quantitative research method was then adopted. The sample was derived from a pool of SMEs in South Africa. These sampled SMEs were reached using self-administered questionnaires which were then coded for further analysis. The analysis produced new empirical knowledge which contributed to the body of knowledge and helped to close the research gap regarding determinants of mobile commerce adoption in a developing country such as South Africa.

3.12 SUMMARY

Chapter 3 discussed the research methodology used in this study. The chapter outlined the study area and the research design of the study. The research design of this study

was quantitative in nature. This is because it intended to utilise numerical data to solve the research problem and to attain the objectives of the study. The population of the study was 261 SMEs in Polokwane. The study utilised a sample size of 146 SMEs. The random sampling technique was used to survey participants. The chapter also outlined the data collection methods used in this study. Thus, a closed ended questionnaire was used to collect data. Data analysis methods included descriptive statistics and inferential statistics such as correlation and regression analysis. The chapter also discussed issues related to reliability and validity. Lastly, ethical considerations were elaborated on. Ethical issues such as permission to conduct the study, informed consent, voluntary participation, confidentiality, benefits expected from participating in the study and minimising harm were elaborated on by indicating how the researcher managed each issue during data collection.

CHAPTER 4: PRESENTATION, INTERPRETATION AND DISCUSSION OF FINDINGS

4.1 INTRODUCTION

This chapter presents research results. The results are grouped into sufficiency of responses and profile of respondents, test for normality, demographic information of participants and findings from hypothesised relationships. Descriptive statistics are intended to present results from demographic information of participants. On the other hand, ANOVA and regression analysis are used to test hypothesised relationships. The chapter will also present results related to response rate, normality of data and reliability analysis of the data collection instrument. The following section will present the response rate.

4.2 ANALYSES OF RESPONSES

4.2.1 Response Rate

Table 4.1: Response rate

Number of questionnaires distributed	Number of questionnaires received back
160	146

The survey that was undertaken accommodated 160 participants. These are the ones where questionnaires were distributed. Consequently, 146 questionnaires were completed properly and handed back to the researcher. All in all, a response rate of 91% was achieved.

4.2.2 Profile of Respondents

4.2.2.1 Gender

Figure 4.1: Gender of participants

Figure 4.1 shows the gender distribution of participants. Findings show that 56% of participants were male, while 44% were female.

4.2.2.2 Age of Participants

Table 4.2: Age of Participants

Age					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 15	3	2.1	2.1	2.1
	15-20	46	31.5	31.5	33.6
	21-25	67	45.9	45.9	79.5
	26-35	28	19.2	19.2	98.6
	36-40	2	1.4	1.4	100.0
	Total	146	100.0	100.0	

Table 4.1 shows the age distribution of the participants. Findings show that 2% of participants were less than 15 years old, 32% were between 15-20 years, 46% were between 21-25 years old, 19% were between 26-35 years old and 1% were between 36-40 years.

4.2.2.3 Level of Education

Figure 4.2: Level education of the Participants

Figure 4.2 presents findings on the level of education of participants. Findings show that 9% of participants held matric, while 46% held diplomas and 45% were holders of bachelor's degrees.

4.2.2.4 Type of Device Used by Participants

Table 4.3: Type of Device Used by Participants

Device					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Smartphone	27	18.5	18.5	18.5
	Personal computer	59	40.4	40.4	58.9
	Tablet	60	41.1	41.1	100.0
	Total	146	100.0	100.0	

Table 4.3 presents results on the type of device used by participants. Findings show that 19% used smartphones, 40 used personal computers and 41% used tablets. Findings further show that of participants surveyed, 19%+41% use devices which are compatible with m-commerce. This is because m-commerce uses handheld devices such as smartphones and tablets to transact online.

4.2.3 Results of Pilot study

Results from a pilot study showed that participants were willing to participate because the participation rate was favourable. However, some participants were not familiar with some words which they considered too technical to understand. Therefore, the

researcher took this into consideration and changed the language to suit the level of comprehension of participants on the final questionnaire.

4.2.4 Test for Reliability

The researcher used the Cronbach's alpha to test for reliability. This was run on all the constructs on the questionnaire. A Cronbach's alpha of 0.7 upwards is recommended (Taber, 2018). As shown in Table 4.3, the Cronbach's alpha on all constructs were above 0.7. This shows that the data collection instrument was reliable.

Table 4.4: Test for Reliability

Constructs	Cronbach's Alpha
Perceived benefits	.787
Perceived costs	.797
Perceived compatibility	.770
Technology readiness	.784
Customer pressure	.796
Supplier pressure	.781
Competitor pressure	.781
Perceived ease of use	.782
Perceived usefulness	.791
M-commerce adoption	.792

4.2.4 Validity

To ensure validity of the study, the researcher ensured that the questions were aligned with the research objectives. Furthermore, to ensure face validity, the questionnaire was sent for evaluation and proofreading by the research committee in the Department of Business Management of the University of Limpopo before it was printed. Furthermore, all variables were identified from the empirical review of articles in academic journals.

This enabled the researcher to extract material which could answer the research problem and achieve the objectives of the study.

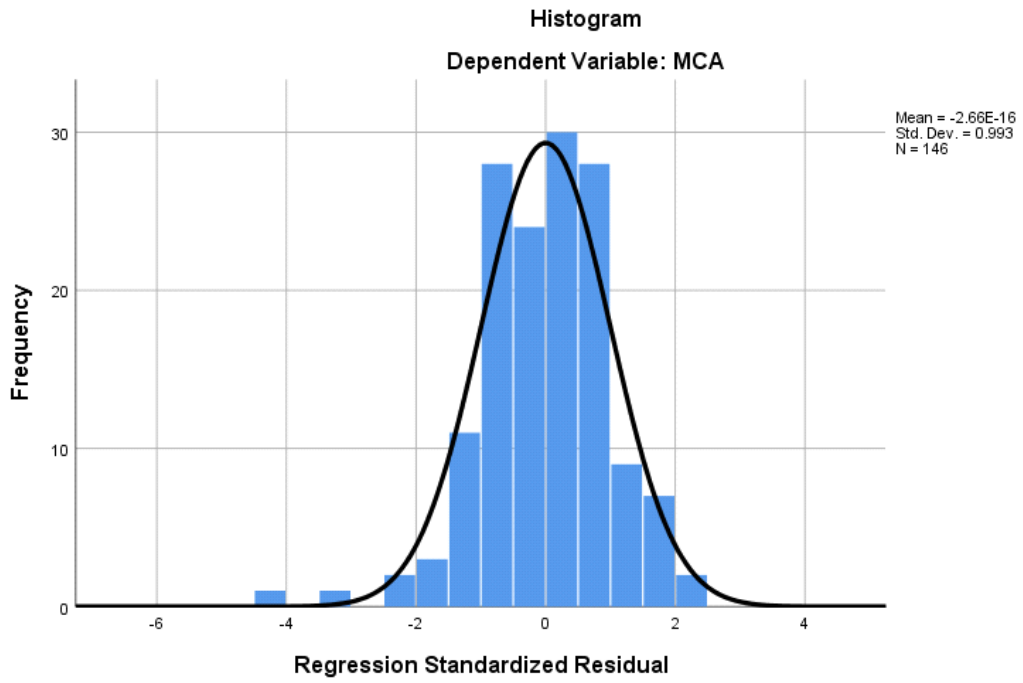
4.3 TESTS FOR NORMALITY

It was crucial to test if the data was normally distributed to improve the quality of research results. To test for normality of data, the researcher used Kolmogorov-Smirnov's test. The test was conducted on all variables. The value of the test (sig; 0.192) was above 0.05, showing that normality was assumed on the dependent variable (mobile commerce adoption). Furthermore, the test for normality on independent variables also showed that the data was normally distributed. This is because all the value of the Kolmogorov-Smirnov's test were above 0.05. The results are outlined in Table 4.4 below.

Table 4.5: Tests for Normality

Constructs	Kolmogorov-Smirnov[a]		
	Statistic	df	Sig.
Mobile commerce adoption	.093	73	.192
Perceived benefits	.225	73	.120
Perceived costs	.102	73	.157
Perceived compatibility	.114	73	.219
Technology readiness	.167	73	.130
Customer pressure	.122	73	.309
Supplier pressure	.170	73	.111
Competitor pressure	.178	73	.122
Perceived ease of use	.152	73	.131
Perceived usefulness	.187	73	.133

This is confirmed by the histogram below, which depicts the normality of the dependent variable.



Conclusion on normality

The test indicated that normality was assumed as all the values of the Kolmogorov-Smirnov's test were above 0.05. This shows that the data can be considered fit for further statistical tests.

4.4 DESCRIPTIVE STATISTICS

The table 4.6 below presents descriptive statistics of key variables of the study. The descriptive statistics include mean, standard deviation, skewness and kurtosis. These elements all measure how the data is distributed from the norm (Hair, Hult, Ringle & Sarstedt, 2017). According to Hair et al. (2017:61), "**Skewness** assesses the extent to which a variable's distribution is symmetrical while **Kurtosis** is a measure of whether the distribution is too peaked (a very narrow distribution with most of the responses in the center)." The general rule is that for data to be normal, the values for both Skewness and Kurtosis should lie within +1 and -1. Any figure beyond this shows that the data might have outliers. As shown by table 4.5, all values for both Skewness and

Kurtosis lie within the range of +1 and -1. This shows that the data is normal and can further be considered for inferential statistics.

Table 4.6: Descriptive statistics

	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
Perceived benefits	12.1507	2.21530	-.204	.281	.667	.555
Perceived costs	10.3014	2.09950	-.051	.281	.440	.555
Perceived compatibility	15.5205	2.57719	-.585	.281	-.120	.555
Technological readiness	15.8356	2.57668	-.885	.281	.633	.555
Customer pressure	10.9863	2.51381	-.345	.281	-.420	.555
Supplier pressure	11.8082	1.80783	-.604	.281	.356	.555
Competitor pressure	11.7534	2.03975	-.514	.281	-.114	.555
M-commerce adoption	34.2192	5.59575	-.215	.281	.042	.555
Perceived ease of use	16.6575	2.37592	-.435	.281	-.548	.555
Perceived usefulness	12.4110	2.01960	-.782	.281	.457	.555
Valid N (listwise)						

Conclusion

The demographic characteristics show that the data had features which the researcher expected. These included the level of education and gender distributions of owners of SMEs. The sample was representative of the total population of SMEs in Polokwane. Crucially, the data was found to be normally distributed. The mean and standard deviation was also tested, and values of the standard deviation showed that the data did not deviate from the norm. Furthermore, all values of both Skewness and Kurtosis lie

within the range of +1 and -1, showing that the data is normal and can further be considered for inferential statistics.

4.5 CONCEPTUAL MODEL

Figure 4.3: Conceptual model

Source: Author (2020)

The above figure shows the hypothesised relationships. As depicted, different determinants of m-commerce will be tested against m-commerce. To test these relationships, the researcher adopted Pearson correlation and regression analysis. Regression analysis was used to either reject or accept the stated hypotheses. Correlation analysis results are presented first and then regression analysis will be introduced to determine relationships and to make hypotheses decisions.

4.5.1 Relationship between Technological Factors and Adoption of M-Commerce among SMEs

Hypothesis 1: Technological factors positively influence m-commerce adoption among SMEs.

The sub-hypotheses for hypothesis 1 are:

H_{1a}: *Perceived benefits positively predict m-commerce adoption among SMEs.*

H_{1b}: *Perceived costs positively predict m-commerce adoption among SMEs.*

H_{1c}: *Perceived compatibility positively predicts m-commerce adoption among SMEs.*

4.5.1.1 Perceived benefits and m-commerce adoption

M-commerce is characterised by the use of mobile applications using smartphones to transact online (Waithaka & Mnkandla, 2017). Perceived benefits (PB) are defined as returns that users of a system or technology expect to get by adopting a certain technology (Salo et al., 2013).

Table 4.7: Perceived benefits and m-commerce adoption

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	240.628	3	240.628	8.483	.000[b]
	Residual	2013.865	71	28.364		
	Total	2254.493	72			
a. Dependent Variable: Mobile commerce adoption						
b. Predictors: (Constant), Perceived benefits						

The ANOVA test above which is 0.000< α at .05 shows that the results are statistically significant. The F-statistic value of ($F = 8.483$, $p < .000$) also shows that the results are significant. This indicates that the alternative hypothesis is accepted. This shows that the relationship between perceived benefits and m-commerce adoption is positive and significant; and that the actual adoption of m-commerce is determined by the perceived benefits that the users expect to derive from the use of the new technology. The findings of the current study are supported by other existing empirical studies. Chau Deng and Tay (2020) assessed the determinants of m commerce among SMEs in Vietnam. Perceived benefits came out strongly among the key determinants of m commerce. Since Vietnam is a developing country, the Chau et al. (2020) argued that their findings can be applied among SMEs in other developing countries. Lin et al. (2020) used the TOE factors to predict new technology adoption among Malaysian SMEs. The study used relative advantage to predict new technology adoption among SMEs. The findings showed that the benefits expected from new technology significantly predict adoption. Lin et al. (2020) emphasised that perceived benefits such as increased profitability play a crucial role in influencing SMEs to adopt new

technology. This means that a business can only adopt new technology if its benefits outweighs all the available options. A study by Grandhi and Wibowo (2016) also examined the possibility of perceived benefits to predict m commerce adoption among businesses in North America. The study found that businesses in this region were likely to adopt m commerce if they perceived that it will make them to unlock benefits such as the ability to maintain a customer database, building a customer loyalty reputation, flexibility and automation of their systems meaning customers can access such platforms at any given time. This confirms that in both developed and developing countries, perceived benefits stands as an important determinant for m commerce adoption. This entails that users can only adopt a new technology if the benefits are sufficient to sustain the business. A study by Sin Tan, Choy Chong, Lin and Cyril Eze (2009) conducted among SMEs in Malaysia and another study by Alshamaila, Papagiannidis and Li (2013) in the eastern parts of England also strongly confirmed that perceived benefits play an important role influencing users to adopt new technology. Malak (2015) also reported that the benefits expected from adopting a new technology may influence decision makers towards adopting it. The study found that expected benefits such as increased profits and flexibility in reaching out to customers push business owners towards adopting new technology. New technology without clear benefits stands as a risk and profit-oriented businesses may scrap it completely from their strategic plans.

4.5.1.2 Perceived costs and m-commerce adoption

Perceived costs (PC) are defined as an evaluation of the cost associated with the adoption of a certain technology (Rahman & Sloan, 2017).

Table 4.8 Perceived costs and m-commerce adoption

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	353.986	1	353.986	13.224	.001[b]
	Residual	1900.508	71	26.768		
	Total	2254.493	72			

a. Dependent Variable: Mobile commerce adoption
b. Predictors: (Constant), Perceived costs

The ANOVA test above which is 0.000< α at .05 shows that the results are statistically significant. The F-statistic value of ($F = 13.224$, $p < .001$) also shows that the results are significant. This indicates that the alternative hypothesis is accepted. The results showed that there is a significant positive relationship between perceived costs and mobile commerce adoption. The results of this study are in line with existing empirical studies. Rahayu and Day (2015) note that costs associated with a certain technology are some of the key determinants especially among SMEs' adoption of new technology. Users are sensitive to costs of adopting a technology (Wu & Wang, 2005; Wei, Marthandan, Chong & Arumugam, 2009). Users in emerging markets are more sensitive to prices given that unemployment and poverty are high (Rahman & Sloan, 2017).

Molina-Castillo et al. (2020) also found that costs associated with learning how to use the new technology may also play a critical role in predicting m commerce adoption among businesses. Users are more likely to lack interest in adopting new technology if the projected learning costs are high. Lin et al. (2020) used the TOE factors to predict new technology adoption among Malaysian SMEs. The study used expected cost as one of the determinants of new technology adoption. The findings showed that the expected costs significantly predict new technology adoption. However, Chau and Deng (2018) are of the view that perceived cost should not hinder SMEs from adopting m-commerce since the gains may outweigh the costs in the long run. The above assertion is supported by other studies for example, Moorthy, Ling, Fatt, Yee, Yin, Yee and Kok Wei (2017) have explored perceived costs as a possible barrier to m commerce adoption. This study expressed that the cost associated with adopting new technology can deter some businesses from adopting it. Surprisingly, the same study found that perceived costs were not a significant factor in determining m commerce adoption. The study concluded that m commerce technology maybe considered relatively affordable by users who have saved enough. Therefore, they can easily adopt it without checking the costs to deter them. The findings from Chivizhe (2019) reported that perceived cost

is a significant determinant for m commerce adoption decisions among SMEs. The participants in the study expressed that the cost of m commerce applications should be reasonable if they are to adopt it. This is because SMEs are confronted with financial problems, hence, anything which comes at a higher cost can eliminate the possibility of their survival.

4.5.1.3 Perceived compatibility and m-commerce adoption

Perceived Compatibility (PCOM) explains the fit between the new technology and organisational factors such as technological readiness in terms of infrastructure and culture (Ghobakhloo et al., 2011; Mairura et al., 2016).

Table 4.9 Perceived compatibility and m-commerce adoption

ANOVA[a]						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	524.177	1	524.177	21.509	.000[b]
	Residual	1730.316	71	24.371		
	Total	2254.493	72			
a. Dependent Variable: Mobile commerce adoption						
b. Predictors: (Constant), Perceived compatibility						

The ANOVA test above which is 0.000< α at .05 shows that the results are statistically significant. The F-statistic value of ($F = 21.509$, $p < .000$) also shows that the results are significant. This indicates that the alternative hypothesis is accepted; and that perceived compatibility and m-commerce adoption are positively and significantly related. This shows that perceived compatibility strongly influences mobile commerce. Perceived compatibility is regarded as the most crucial factor when making decisions about adopting a particular new technology (Wu & Wang, 2005; Chiu et al., 2017). Doolin and Ali's (2008) empirical study showed that there is a positive relationship between perceived compatibility and m-commerce adoption.

Lin et al. (2020) found that compatibility is a key determinant of new technology adoption. Johnson, Woolridge, Wang and Bell (2020) also concur and indicate that compatibility is a crucial factor in determining whether a user should adopt a given

technology or not. A compatibility check should be conducted in terms of what the business does and the type of industry the business is affiliated. It follows that some technology may not be compatible to a certain business affiliated in a particular industry for example in railways.

A study by Kang, Mun and Johnson (2015) also examined the effect of technology compatibility on m commerce adoption in the retail sector. The study found that perceived compatibility was a significant factor in determining m commerce adoption. The reasoning of the study was that potential users are likely to adopt mobile applications if it will assist them in meeting their needs. In the context of SMEs, if the owners perceive that m commerce will help them to meet their needs such as increased sales, flexibility in transacting and tracking their inventory from suppliers, they are likely to adopt the technology. In actual fact, compatibility is rated among the key determinants of m commerce adoption (Chau et al., 2020). Lack of compatibility means that the business may not be able to unlock the full benefits of the new technology. This assertion is supported by several scholars who empirically tested this relationship in different contexts. For example, Zhu, Dong, Xu and Kraemer (2006) investigated the association between perceived compatibility and actual adoption of new technology. The study was conducted among European businesses and the results showed that compatibility was a strong factor in determining actual adoption of new technology. This will mean that the business will end up discontinuing the new technology. This study maintains that the more compatible m commerce is with the SME owners' values, culture and personal goals, the more likely they are to adopt it. Gono, Harindranath and Özcan (2016) also investigated the effect of the TOE factors on ICT adoption. The study found that compatibility was one of the crucial factors on the TOE model which influences adoption of new technology. The findings of Gono et al. (2016) are supported by Jere and Ngidi (2020) who also investigated a similar study among SMEs in Pietermaritzburg. The study confirmed that compatibility is a significant determinant for new technology adoption. Jere and Ngidi (2020) indicated that SMEs are likely to adopt new technology if it is compatible with other existing business processes and systems. A study by Gareeb and Naicker (2015) also attested that compatibility is an important factor which has been used by several scholars to predict new technology adoption

among SMEs. However, this study noted that the role of compatibility on new technology adoption may vary depending on other factors such as the sector and size of the business

4.5.1.4 Regression results for hypothesis 1

The three sub-hypotheses are combined into hypothesis 1, which states that there is a significant positive relationship between technological factors and the adoption of m-commerce among SMEs. To test hypothesis 1, regression analysis was done and presented as follows.

Table 4.10: The relationship between technological factors and adoption of m-commerce among SMEs

Model Summary[b]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.521[a]	.271	.256	3.93028	1.900
a. Predictors: (Constant), PCOM, PC, PB					
b. Dependent Variable: MCA					

Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	15.259	2.898		5.266	.000
	PB	.195	.170	.087	1.147	.002
	PC	.561	.166	.252	3.378	.001
	PCOM	.740	.159	.358	4.655	.000

M-commerce adoption is 0.195PB+0,561PC + 0,74PCOM + 15.259

R Square = .271

R is the percentage variation explained by the two variables. Hence, the results show that 27.1% of mobile commerce adoption variance is explained by the independent variables (perceived benefits, perceived costs and perceived compatibility) in the model.

Considering the unstandardised coefficients, findings show that all the independent variables (perceived benefits, perceived costs and perceived compatibility) are significant predictors of the dependent variable (m-commerce adoption). Findings further show that there is a significant positive relationship between technological factors and the adoption of m-commerce among SMEs, which leads to the decision to accept the alternative hypothesis.

Conclusion on hypothesis 1

This hypothesis was tested using a regression model. Findings show that all independent variables (perceived benefits, perceived costs and perceived compatibility) were significant predictors of the dependent variable (m-commerce adoption). The conclusion is that there is a positive relationship between technological factors and the adoption of m-commerce among SMEs

Table 4.11: Conclusion on hypothesis 1

Tested hypotheses	Final decision
H: *Technological factors positively influence m-commerce adoption among SMEs.*	Accepted
H_{1a}: *Perceived benefits positively predict m-commerce adoption among SMEs.*	Accepted
H_{1b}: *Perceived costs positively predict m-commerce adoption among SMEs.*	Accepted
H_{1c}: *Perceived compatibility positively predicts m-commerce adoption among SMEs.*	Accepted

4.5.2 Relationship between organisational contextual factors and adoption of m-commerce among SMEs

Hypothesis 2: Organisational contextual factors positively influence m-commerce adoption among SMEs.

The sub-hypotheses for hypothesis 2 are:

H_{2a}: *Gender positively predicts m-commerce adoption among SMEs.*

H_{2b}: *Age positively predicts m-commerce adoption among SMEs.*

H_{2c}: *Level of education positively predicts m-commerce adoption among SMEs.*

H_{2d}: *Technological readiness positively predicts m-commerce adoption among SMEs.*

4.5.2.1 Gender and m-commerce adoption

The Chi-Square test was used to test the effect of gender on m-commerce adoption. The Square was used because data related to gender was ordinal.

Table 4.12: The relationship between gender and m-commerce adoption among SMEs

	Chi-square		
	Value	Df	Asymptotic significance (2-sided)
Pearson Chi-Square	48.811	46	.361
Likelihood ratio	50.159	46	.312
Linera-by Linear Association	1.044	1	.307
N of valid cases	73		

Based on the results of the Chi-Square test, the significance level of 0.361 shows that gender does not determine the level of m-commerce adoption. Based on this, the alternative hypothesis is rejected. This study expected to find gender differences with m-commerce being more inclined towards males since it is assumed that males tend to

adopt new technology than females because of their proclivity to risk taking. Nevertheless, findings of this study differ from other existing empirical findings.

Many studies have suggested that compared to men, women are less likely to adopt new technology, and if adopted, they tend to use it to a lesser degree than men. Wood and Li (2005) found that males were more willing to adopt new technologies than females. Studies of mobile commerce online purchasing habits have also demonstrated different levels of adoption between males and females. They suggest that emotion, trust and convenience are three critical factors that influence women and men's participation in mobile commerce adoption. In terms of gender, existing literature indicates that there are gender differences in the adoption and optimisation of the internet and mobile applications (Cullen & Kabanda, 2018). Ukpere et al. (2014) highlight that the response to new technology among females is very slow compared to males. Other studies also report that males use online mobile transactions more than females (Hasan, 2010). Generally, m-commerce adoption and use is still higher among males than females (Stork et al., 2013). According to Donner et al. (2011), females are a little bit sceptical when it comes to m-commerce use than males. Donner et al. (2011) found that females usually ask their male counterparts to assist them in transacting using mobile transactions as they are afraid to make mistakes and risk losing their money. Similar studies such as North et al. (2014) also revealed low usage of m-commerce tools among females than males.

4.5.2.2 Age and m-commerce adoption

Table 4.13: Age and m-commerce adoption

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6.599	1	6.599	0.208	.649[b]
	Residual	2247.894	71	31.660		
	Total	2254.493	72			
a. Dependent Variable: MCA						
b. Predictors: (Constant), Age						

The ANOVA test above which is 0.649< α at .05 shows that the results are insignificant. The F-statistic value of ($F = 13.224$, $p < .001$) also shows that the results are significant. This indicates that the alternative hypothesis is rejected. In this case, the results show that m-commerce adoption is not dependent on age. The findings of the study are supported by Hew et al. (2016), which reported no significant effect between age and m-commerce adoption.

The current study differs from other empirical studies. For example, it is documented that the younger generation, especially those below 40 years of age, utilise m-commerce applications and platforms in both Asia, the US and in Africa (Hayden & Webster, 2014). This trend is also notable in South Africa where a large percentage of youth between 15-24 years possess smartphones which, in most cases, have mobile applications (Beger et al., 2012; Shava et al., 2016). This is mostly because youth perceive m-commerce as much cheaper compared to when they browse the internet using desktops or laptops. Existing studies point out that m-commerce adoption in these different regions is mainly high among males (Cullen & Kabanda, 2018). Smith et al. (2011) as well as McGaughey et al. (2013) note that younger people tend to adopt mobile applications more than older people. They are assumed to be risk taking and always ready to try new things than old people (Hayden & Webster, 2014). Similarly, Cullen and Kabanda (2018) report that m-commerce adoption and use is higher among the youth in both Taiwan and the United States. Vserv (2015) found that mobile commerce was high among people with 30 years and below in Malaysia. In developing countries, a study conducted by Hayden and Webster (2014) also found that m-commerce was high among the youth than old people. In South Africa, “adolescents and the youth are the first adopters of mobile technology, with 72% of 15- to 24-year

olds having a cell phone" (Beger et al., 2012:3). Shava et al. (2016) identified regular mobile commerce users as students who prefer to access information and do transactions instantly on their smartphones. Several studies agree that the younger generation is more active on the use of the internet and mobile applications than the older generation.

By assessing disagreements between the current study and some existing empirical findings, the researcher is of the view that mostly it is the consumer side where young people are leading in terms of m-commerce adoption. Nevertheless, there seems to be differences when it comes to m-commerce adoption where age was found to be an insignificant determinant. Instead, young consumers who are active adopters of m-commerce can be potential clients for SMEs. This suggests that businesses should focus their marketing efforts on the younger generation if they are to harness the benefits of m-commerce (Kaur et al., 2016).

4.5.2.3 Level of education and m-commerce adoption

Since data related to level of education was ordinal, a Chi-Square was used to analyse the data.

Table 4.14: Level of education and m-commerce adoption

Chi-Square			
	Value	**Df**	**Asymptotic significance (2-sided)**
Pearson Chi-Square	29.584	23	.162
Linear-by Linear Association	.481	1	.488
N of valid cases	73		

Based on the Chi-Square results above, the significance level of 0.162 shows an insignificant relationship between the level of education and MCA. This means that the

level of education does not influence MCA on the surveyed SMEs. Based on this, the alternative hypothesis is rejected. Findings of this study differ from other existing studies. For example, Chong (2013) found a positive relationship between the level of education and m-commerce adoption. The difference could be due to differences in the context in which these studies were conducted.

4.5.2.4 Technological readiness and m-commerce adoption

Table 4.15: Level of education and m-commerce adoption

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	400.647	1	400.647	15.344	.000[b]
	Residual	1853.846	71	26.111		
	Total	2254.493	72			
a. Dependent Variable: Mobile commerce adoption						
b. Predictors: (Constant), Technology readiness						

The ANOVA test above which is 0.000< α at .05 shows that the results are statistically significant. The F-statistic value of ($F = 15.344$, $p < .000$) also shows that the results are significant. The results showed that there is a significant positive relationship between technology readiness and m-commerce adoption. This means that technology readiness influences m-commerce adoption on the surveyed SMEs. Technology readiness is one of the most important factors to consider before adopting a new technology. Most businesses in emerging markets efforts to adopt a technology get wasted away because they lack technology readiness (Ashraf et al., 2017). Therefore, it is crucial for a business to assess its current state before adopting a certain technology. In existing literature optimism, innovation, discomfort and security are used to measure the technology readiness construct (Parasuraman, 2000; Parasuraman & Colby, 2001).

Doolin and Ali (2008) reported that technology readiness is an important determinant of m-commerce adoption and is one of the most important factors to consider before adopting a new technology. A study by Malak (2016) also found that the business' preparedness in terms of the presence of an IT infrastructure and knowledgeable IT specialists positively influence new technology adoption. Malak (2016) also explained

that availability of technical resources is also important to determine how ready a business is to adopt new technology.

4.5.2.5 Regression results for hypothesis 2

Organisational contextual factors consisted of gender, age, level of education and technology readiness. Since gender and level of education were ordinal, they were not included in the regression model. Thus, the regression model included only age and technology readiness.

Table 4.16: Regression results on the relationship between organisational contextual factors and adoption of m-commerce among SMEs

Model Summary[b]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.429[a]	.184	.161	5.12505	1.972
a. Predictors: (Constant), Technology readiness, Age					
b. Dependent Variable: Mobile commerce adoption					

Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	21.44	4.199		12.770	.000
	age	-.683	.898	-.082	-.761	.449
	TR	.927	.235	.427	3.947	.000

M-commerce adoption is 0.927TR+ 21.44

R Square = .184

R is the percentage variation explained by the two variables. Hence, the results show that 18.4% of mobile commerce adoption variance is explained by technology readiness. Considering the unstandardised coefficients, findings show that it is only technology readiness which is a significant predictor of the dependent variable. Findings further show that SMEs can leverage on technology readiness as it is a significant determinant of m-commerce. This means that technology readiness influences mobile commerce on the surveyed SMEs. Technology readiness is one of the most important

factors to consider before adopting a new technology. Most businesses in emerging markets efforts to adopt a technology get wasted away because they lack technology readiness. Therefore, it is crucial for a business to assess its current state before adopting a certain technology.

Conclusion on hypothesis 2

Table 4.17: Conclusion on hypothesis 2

Tested hypotheses	Final decision
H_{2a}: *Gender positively predicts m-commerce adoption among SMEs.*	Rejected
H_{2b}: *Age positively predicts m-commerce adoption among SMEs.*	Rejected
H_{2c}: *Level of education positively predicts m-commerce adoption among SMEs.*	Rejected
H_{2d}: *Technological readiness positively predicts m-commerce adoption among SMEs.*	Accepted

4.5.3 Relationship between Environmental Contextual Factors and Adoption of M-Commerce among SMEs

Hypothesis 3: Environmental contextual factors positively influence m-commerce adoption among SMEs.

The sub-hypotheses for hypothesis 3 are:

H_{3a}: *Customer pressure positively predicts m-commerce adoption among SMEs.*

H_{3b}: *Supplier pressure positively predicts m-commerce adoption among SMEs.*

H_{3c}: *Competitor pressure positively predicts m-commerce adoption among SMEs.*

4.5.3.1 Customer pressure and m-commerce adoption

Customers are key stakeholders of a business because they are the ones who buy the business' products.

Table 4.18: Customer pressure and m-commerce adoption

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	368.056	1	368.056	13.853	.000[b]
	Residual	1886.437	71	26.570		
	Total	2254.493	72			
a. Dependent Variable: Mobile commerce adoption						
b. Predictors: (Constant), Customer pressure						

The ANOVA test above which is 0.000< α at .05 shows that the results are statistically significant. The F-statistic value of ($F = 13.853$, $p < .000$) also shows that the results are significant. This indicates that the alternative hypothesis is accepted. Results showed that there is a significant positive relationship between customer pressure (CP) and MCA. The findings of this research project are supported by existing findings. Most customers are no longer interested in spending time visiting stores physically or window-shopping but prefer to do everything at the comfort of their homes or offices using mobile applications to make purchasing decisions (Waithaka & Mnkandla, 2017). Chau et al. (2020) also confirms the findings of this study. The study established that customers' pressure is a significant determinant for m commerce adoption among SMEs in developing countries. The study expressed that customers now prefer businesses which have m commerce platforms which eases their purchasing decision making process by allowing customers to easily compare prices online and finally make a purchase decision. This entails that customers are most likely to abandon businesses which do not have m commerce platforms. Given that South Africa is the number one country in Africa with regard to smartphone usage (Shaban, 2016), investing in m-commerce adoption is likely to improve the profitability and overall performance of SMEs. In addition, Matangira (2015) notes that 60% of the South African population has access to internet and mobile applications.

Alrawabdeh (2014) also examined the determinants of m commerce adoption among businesses in Jordan. Specifically, the study examined environmental factors of the TOE model. The study found that pressure from customers can significantly push firms to adopt m commerce. Lin et al. (2020) also established that pressure from customers can coerce SMEs to adopt new technology. This is because customers can be well ahead in adopting new technology which they believe can ease their purchase decisions. In that case, they may want to force businesses to introduce that technology. A study by Gareeb and Naicker (2015) conducted in South Africa also found that pressure from customers can shape the adoption decisions of SMEs. In most instances, customers are impatient and if their needs are not met, they can consider other competing brands which may be a loss to the existing business. That is the reason why several successful businesses end up building close relationships and collaborations with customers so that it can be relatively easier to project their changing needs and taste.Chivizhe (2019) also investigated the determinants of m commerce adoption among SMEs in the hospitality industry. The study found that customer pressure played a role in pushing SME owners to adopt mobile applications. The respondents of this study expressed that they got suggestions from customers if they could introduce m commerce platforms in their websites. This shows that customers can sometimes play an educative role to the business in terms of new technology adoption.

4.5.3.2 Supplier pressure and m-commerce adoption

Suppliers also play an important role in shaping a business' behaviour towards m-commerce adoption (Siau & Shen, 2002).

Table 4.19: Supplier pressure and m-commerce adoption

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	554.025	1	554.025	23.132	.000[b]
	Residual	1700.468	71	23.950		
	Total	2254.493	72			
a. Dependent Variable: Mobile commerce adoption						
b. Predictors: (Constant), Supplier pressure						

The ANOVA test above which is 0.000< α at .05 shows that the results are statistically significant. The F-statistic value of ($F = 23.132$, $p < .001$) also shows that the results are significant. This indicates that the alternative hypothesis is accepted. This means that supplier pressure influences mobile commerce adoption on the surveyed SMEs. In support of current findings, Li et al. (2010) reported that Wal-Mart has demanded that firms in its value chain use wireless tracking. When pressure from trading partners get intense, SMEs are likely to adopt m-commerce (Duan et al., 2012). Picoto et al. (2014) found that suppliers and other supply chain partners are crucial determinants of m-commerce adoption. This is because some of the supply chain process will be massed with certain technology which forces all businesses that what to be affiliated in that network to adopt the required technology (Zeeshan, Cheung & Scheepers, 2009; Darbanhosseiniamirkhiz & Wan Ismail, 2012). A study by Malak (2016) also attested that supplier pressure positively influences m commerce adoption decisions. This study noted that supplier may want to improve the entire supply chain by pushing all their supply chain members to adopt new technology. This means they will likely to reject supply chain partners who do not progress as expected.

4.5.3.3 Competitor pressure and m-commerce adoption

Competitors are firms who vie for the same clients or same purchasing power of customers targeted by another business.

Table 4.20: Competitor pressure and m-commerce adoption

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	408.803	1	408.803	15.726	.000[b]
	Residual	1845.690	71	25.996		
	Total	2254.493	72			
a. Dependent Variable: Mobile commerce adoption						
b. Predictors: (Constant), Competitor pressure						

The ANOVA test above which is 0.000< α at .05 shows that the results are statistically significant. The F-statistic value of ($F = 15.726$, $p < .000$) also shows that the results are significant. This indicates that the alternative hypothesis is accepted. This means that competitor pressure influences mobile commerce adoption on the surveyed SMEs. The findings of the current study are supported by other studies conducted in different contexts and regions.

Other scholars express that competitors' actions positively influence a firm's stance on technology adoption (Sin, Osman, Salahuddin, Abdullah, Lim & Sim, 2016). For instance, if competitors have adopted a certain technology and are realising profits, this may force the business to imitate to remain competitive. Competitors can also influence a firm's decision to adopt m-commerce. For example, if competitors are earlier adopters of a certain technology, this will force the SME under consideration to adopt similar technology to remain competitive (Miao & Tran, 2018). According to Miao and Tran (2018), the effect of competitor pressure on m commerce adoption tend to be well pronounced in developed countries than in developing countries. This is because of the level of technological knowledge and level of importance in these different business contexts.

In South Africa, other companies have already started using mobile applications to reach out to their customers. This means that other SMEs are forced to invest in m-commerce to remain relevant in the business environment. There is a positive relationship between competitors' pressure and the adoption of m-commerce (Picoto et al., 2014). According to Lin and Yazdanifard (2014), competitors doing well in m-commerce can force other businesses to adopt it to avoid losing market share. This is also supported by Alrawabdeh (2014) who established that businesses in Jordan agreed that pressure from competitors is crucial in shaping their decisions regarding adopting m commerce. Competitor pressure came out as the strongest factor which determines m commerce adoption among businesses among the factors which were examined. Ifinedo (2011) also reported that SMEs operating in competitive industries are consequently forced to adopt m commerce to remain in business. According to Malak (2016), several businesses may end up adopting new technology because they

do not wish to inherit the weak competitor status. The fear of financial loss in terms of lost customers to competitors may force businesses to imitate the technology and new systems adopted by their competitors (Mellat-Parast, 2015). Thus, market leaders in certain industries have a strong effect on their followers' attitude and decisions to imitate their technology. The positive association between pressure from competitors and actual adoption by the concerned business is well documented (Cavusoglu, Cavusoglu, Son & Benbasat, 2015). This clearly shows that competitors may shape the internal strategies of other businesses. This assertion is well explained by the Porter 5 forces model. Failure to predict competitors' actions may be dangerous to a business which wish to remain competitive and profitable. A study by Yoon and George (2012) also emphasized the importance of competitor pressure in influencing decisions towards adopting new technology by SMEs. Chivizhe (2019) also established that competitors can positively influence the business to adopt new technology. In a study by Chivizhe (2019), the participants indicated that they adopted m commerce because they had discovered that their competitors were making profits because of leveraging on the mobile applications strategy.

4.5.3.4 Regression results for hypothesis 3

Environmental factors consisted of customer pressure, supplier pressure and competitor pressure. The three sub-hypotheses are combined into hypothesis 3, which states that there is a significant positive relationship between environmental contextual factors and adoption of m-commerce among SMEs. To test hypothesis 3, regression analysis was done and presented as follows.

Table 4.21: Regression results on the relationship between environmental contextual factors and adoption of m-commerce among SMEs

Model Summary[b]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.448[a]	.201	.184	4.11664	1.824
a. Predictors: (Constant), CMP, CP, SP					
b. Dependent Variable: MCA					

Model		Unstandardised Coefficients		Standardised Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	17.928	3.064		5.851	.000
	CP	.591	.166	.275	3.563	.001
	SP	.669	.213	.248	3.145	.002
	CMP	.255	.168	.117	1.516	.001

M-commerce adoption is 0.591CP+0.669SP + 0,255CMP + 17.928

R Square = .201

R is the percentage variation explained by the two variables. Hence, the results show that 20.1% of mobile commerce adoption variance is explained by the independent variables in the model. Considering the unstandardised coefficients, findings show that all the independent variables (customer pressure, supplier pressure and competitor pressure) are significant predictors of the dependent variable (m-commerce adoption). Findings further show that there is a significant positive relationship between environmental contextual factors and the adoption of m-commerce among SMEs, which leads to the decision to accept the alternative hypothesis.

Conclusion on hypothesis 3

Table 4.22: Conclusion on hypothesis 3

Hypotheses tested	**Final decision**
Environmental contextual factors positively influence m-commerce adoption among SMEs.	Accepted
H_{3a}: *Customer pressure positively predicts m-commerce adoption among SMEs.*	Accepted
H_{3b}: *Supplier pressure positively predicts m-commerce adoption among SMEs.*	Accepted
H_{3c}: *Competitor pressure positively predicts m-commerce adoption*	Accepted

among SMEs.	

4.5.4 Relationship Between technology acceptance model and M-Commerce adoption Among SMEs

Hypothesis 4: Technology acceptance model factors positively influence m-commerce adoption among SMEs.

The sub-hypotheses for hypothesis 4 are:

H_{4a}: *Perceived ease of use positively predicts m-commerce adoption among SMEs.*

H_{4b}: *Perceived usefulness positively predicts m-commerce adoption among SMEs.*

4.5.4.1 Perceived ease of use and m-commerce adoption

Davies (1989) defined perceived ease of use as the perception by an individual that adopting a new technology will result in them using less effort to do something.

Table 4.23: Perceived ease of use and m-commerce adoption

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	307.421	1	307.421	11.210	.001[b]
	Residual	1947.072	71	27.424		
	Total	2254.493	72			
a. Dependent Variable: Mobile commerce adoption						
b. Predictors: (Constant), Perceived ease of use						

The ANOVA test above which is 0.001< α at .05 shows that the results are statistically significant. The F-statistic value of ($F = 11.210$, $p < .001$) also shows that the results are significant. This indicates that the alternative hypothesis is accepted. The significant level of 0.001 shows that perceived ease of use positively influences the level of m-commerce adoption.

4.5.4.2 Perceived usefulness and m-commerce adoption

Perceived usefulness is defined as the perception by an individual that adopting a given technology will enhance their performance in a given area (Davies, 1989).

Table 4.24: Perceived usefulness and m-commerce adoption

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	247.180	1	247.180	8.743	.004[b]
	Residual	2007.313	71	28.272		
	Total	2254.493	72			
a. Dependent Variable: Mobile commerce adoption						
b. Predictors: (Constant), Perceived usefulness						

The ANOVA test above which is 0.004< α at .05 shows that the results are statistically significant. The F-statistic value of ($F = 8.743$, $p < .004$) also shows that the results are significant. This indicates that the alternative hypothesis is accepted. The significant level of 0.004 shows that perceived ease of use positively influences the level of m-commerce adoption. According to Cheong and Mohammed-Baksh (2019), perceived usefulness and perceived ease of use predict the adoption of m-commerce by users. The study found that users were more likely to adopt m-commerce if they perceived it to be of use to them and to be easy to use. The study concluded that both perceived usefulness and perceived ease of use positively influence the adoption of m-commerce. These findings are also supported by Dlodlo and Mafini (2013), who also found that the TAM factors positively influence users to adopt m-commerce. Their submission was that when users are assured that the technology will be useful to them without giving them problems, they are likely to adopt it. In a study conducted by Salimon et al. (2017), the hypothesis that perceived usefulness and perceived ease of use predict the adoption of m-commerce was fully supported by findings. Abdallah, Iqbal, Alkhazaleh, Ibrahim, Tawfik Zeki, Habli and Abdallah (2020) also assessed the effect of the TAM model on m commerce adoption among a group of consumers. The study found out that both perceived usefulness and perceived ease of use significantly predicted m commerce. Abdallah et al. (2020) argued that these findings have crucial implications for marketers.

Specifically, Abdallah et al. (2020) expressed that small businesses should try to make their websites user friendly and ease to use by their targeted customers. Also, the study submitted that marketers should make their platforms to be informative so that the customers can easily extract the usefulness of using such platforms.

Putra (2018) examined the determinants of m commerce using the TAM factors in Indonesia. The study found that TAM factors such as perceived usefulness and perceived ease of use predicts m commerce. According to Putra (2018) the TAM factors have an effect on the potential users' behaviour and attitude which drives them to adopt m commerce. Similarly, Wiradinata (2018) assessed the impact of the TAM framework on m commerce adoption among SMEs. The study found that both perceived usefulness and perceived ease of use significantly predicted m commerce adoption. The study concluded that SMEs should also improve on these two factors when trying to market their products as these factors also influence their potential customers' attitude towards adopting the new technology required to enjoy the products of these businesses.

Other studies have used effort expectancy to explain ease of use. These studies express that potential users are likely to adopt m commerce if they are assured that it will reduce their effort when transacting. For example, Kim, Yoon, and Han (2016) reported that perceived ease of use is a key determinant when it comes to decisions regarding m commerce adoption. On the other hand, Shaw and Sergueeva (2019) used performance expectation to describe perceived usefulness. The study found that users can only adopt new technology if it is useful to them. According to Shaw and Sergueeva (2019), users can consider adopting new technology if it can save them time on the task they have to perform or if it can eliminate inefficiencies and increase productivity.

The hypothesis that TAM factors critically influence users to adopt m commerce is widely accepted as evidenced by studies in different sectors. For example, Oliveira, Thomas, Baptista and Campos (2016) as well as Shaikh, Glavee-Geo and Karjaluoto, (2018) investigated the issue using mobile banking application users. Both studies confirmed that indeed perceived ease of use is a crucial determinant for m commerce adoption across all contexts and sectors. Rind et al. (2017) also studied the effect of

TAM model factors on m commerce adoption within the context of Pakistan businesses. The study found that both perceived usefulness and perceived ease of use successfully determine m commerce adoption. This entails that SME owners may only adopt new technology if it can improve their performance and efficiency in linking the business with its customers.

This study is based on the argument that m commerce applications are relatively easy to use because there are several mobile application technicians and companies willing to install the systems and train the users. This is supported by existing literature which indicates that users are more likely to adopt new technology if they can easily get more information and training on how to use it. Practically, there is evidence that m commerce is ease to use as several companies South Africa have already adopted it. This include, Mr D, which deliver food, Uber eats, Debonairs pizza among others. In terms of perceived usefulness, this study expresses that several users who have adopted mobile applications in South Africa all attest that m commerce enhances their performance. Such tangible evidence should positively influence SMEs to adopt m commerce in South Africa.

4.5.4.3 Regression results for hypothesis 4

Technology acceptance model factors consisted of perceived ease of use and perceived usefulness. The two sub-hypotheses are combined into hypothesis 4, which states that there is a significant positive relationship between technology acceptance model factors and the adoption of m-commerce among SMEs. To test hypothesis 4, regression analysis was done and presented as follows.

Table 4.25: shows the relationship between technology acceptance model factors and m-commerce among SMEs

Model Summary[b]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.307[a]	.094	.082	4.36630	1.960
a. Predictors: (Constant), PU, PEOU					
b. Dependent Variable: MCA					

Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	22.835	3.356		6.803	.000
	PEOU	.586	.239	.218	2.455	.015
	PU	.311	.196	.141	1.589	.114

M-commerce adoption is 0.586PEOU + 22.835

R Square = .094

R is the percentage variation explained by the two variables. Hence, results show that 9.4% of mobile commerce adoption variance is explained by perceived ease of use only in the model. Considering the unstandardised coefficients, findings show that it is mainly perceived ease of use which significantly predicts m-commerce adoption. The implication of these findings is that maybe the respondents view PEOU as more important than useful.

Conclusion on hypothesis 4

Table 4.26: Conclusion on hypothesis 4

Tested hypotheses	**Final decision**
Technology acceptance model factors positively influence m-commerce adoption among SMEs.	Rejected
H_{4a}: *Perceived ease of use positively predicts m-commerce adoption among SMEs.*	Accepted
H_{4b}: *Perceived usefulness positively predicts m-commerce adoption among SMEs.*	Accepted

4.6 SUMMARY

This chapter presented findings of the study. These findings were presented in graphs, figures and tables. ANOVA results showed that technological factors (perceived benefits, perceived costs, perceived compatibility), organisational factors (technology readiness), environmental factors (customer pressure, supplier pressure, competitor pressure) and technology acceptance model factors (perceived ease of use, perceived usefulness) significantly predicted m-commerce adoption. On the other hand, factors such as gender, age and level of education were not significant predictors of m-commerce adoption. The next chapter summarises the whole research study.

CHAPTER 5: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

The present chapter provides summaries of key sections of the study. Findings from regression analysis and ANOVA are presented briefly. The chapter covers limitations and recommendations. In actual fact, the essence of this chapter is to pinpoint major findings of the study and crucial deductions which came from such findings. This is aimed at guiding readers to quickly grasp the direction of the study and key findings which they can use for their different needs.

5.2 SUMMARY OF FINDINGS

5.2.1 Relationship between Technological Factors and Adoption of M-Commerce among SMEs

Hypothesis 1: Technological factors positively influence m-commerce adoption among SMEs.

Findings show that all independent variables (perceived benefits, perceived costs and perceived compatibility) were significant predictors of the dependent variable (m-commerce adoption). The findings confirmed that there is a significant positive relationship between technological factors and the adoption of m-commerce among SMEs, which leads to the decision to accept the alternative hypothesis.

The Sub-hypotheses for hypothesis 1 are:

All the sub-hypotheses were tested using ANOVA. Findings from different sub-hypotheses are summarised below.

H_{1a}: Perceived benefits positively predict m-commerce adoption among SMEs.

Results showed that the relationship between perceived benefits and m-commerce adoption was positive and significant. This shows that the actual adoption of m-commerce is determined by the perceived benefits that the users expect to derive from the use of the new technology.

H_{1b}: Perceived costs positively predict m-commerce adoption among SMEs.

The results showed that there is a significant positive relationship between perceived costs and mobile commerce adoption. These results are in line with existing empirical studies.

H_{1c}: Perceived compatibility positively predicts m-commerce adoption among SMEs.

The finding is that perceived compatibility and m-commerce adoption are positively and significantly related. This shows that perceived compatibility strongly influences mobile commerce and is the most crucial factor when making decisions about adopting a particular new technology. This is fully supported by other scholars.

Overall, all the hypotheses were fully supported by findings. The conclusion is that technological factors significantly predict m-commerce adoption. Thus, perceived benefits, perceived costs and perceived compatibility are crucial factors considered by SME owners before they adopt m-commerce.

5.2.2 Relationship between organisational contextual factors and adoption of m-commerce among SMEs

Hypothesis 2: Organisational contextual factors positively influence m-commerce adoption among SMEs.

Regression results showed that commerce adoption variance was explained by technology readiness only. Thus, it was only technology readiness which was a significant predictor of the dependent variable. The findings show that SMEs can leverage on technology readiness as it is a significant determinant of m-commerce.

The sub-hypotheses for hypothesis 2 are:

H_{2a}: Gender positively predicts m-commerce adoption among SMEs.

The Chi-Square results showed that gender does not determine the level of m-commerce adoption. The findings were in agreement with other existing findings.

H_{2b}: Age positively predicts m-commerce adoption among SMEs.

The finding is that m-commerce adoption is not dependent on age. This was supported by other existing studies but differed from a few empirical findings. By assessing the disagreements between the current study and existing empirical findings, the researcher is of the view that mostly it is the consumer side where young people are leading in terms of m-commerce adoption. Nevertheless, there seems to be differences when it comes to m-commerce adoption where age was found to be an insignificant determinant. Instead, these young consumers who are active adopters of m-commerce can be potential clients for SMEs. This suggests that businesses should focus their marketing efforts on the younger generation if they are to harness the benefits of m-commerce.

H_{2c}: Level of education positively predicts m-commerce adoption among SMEs.

The finding is that the level of education does not influence MCA on the surveyed SMEs. The findings of this study differ from other existing studies. The difference could be due to differences in the context in which these studies were conducted.

H_{2d}: Technological readiness positively predicts m-commerce adoption among SMEs.

The results showed that there is a significant positive relationship between technology readiness and mobile commerce adoption. This means that technology readiness influences mobile commerce on the surveyed SMEs. Technology readiness is one of the most important factors to consider before adopting a new technology. Most businesses in emerging markets efforts to adopt a technology get wasted away

because they lack technology readiness. Therefore, it is crucial for a business to assess its current state before adopting a certain technology.

In conclusion, one can say that most organisational factors are not significant predictors of m-commerce adoption. The results showed that practically, organisational factors such age, gender and level of education do not influence SMEs to adopt m-commerce. Nevertheless, the findings supported that technological readiness is a significant predictor of m-commerce adoption. This means that the level in which SMEs have invested in technological platforms already may influence their final decision on m-commerce adoption. Based on the above findings, the alternative hypothesis can be rejected.

5.2.3 Relationship between Environmental Contextual Factors and Adoption of M-Commerce among SMEs

Hypothesis 3: Environmental contextual factors positively influence m-commerce adoption among SMEs.

Considering the unstandardised coefficients, the findings show that all the independent variables (customer pressure, supplier pressure and competitor pressure) are significant predictors of the dependent variable (m-commerce adoption). The findings show that there is a significant positive relationship between environmental contextual factors and the adoption of m-commerce among SMEs, which leads to the decision to accept the alternative hypothesis.

The sub-hypotheses for hypothesis 3 are:

H_{3a}: Customer pressure positively predicts m-commerce adoption among SMEs.

The results showed that there is a significant positive relationship between customer pressure (CP) and mobile commerce adoption. The findings of this research project are supported by existing findings. Most customers are no longer interested in spending time visiting stores physically or window-shopping, but prefer to do everything at the

comfort of their homes or offices using mobile applications to make purchasing decisions.

H_{3b}: Supplier pressure positively predicts m-commerce adoption among SMEs.

It was found that supplier pressure influences mobile commerce adoption on the surveyed SMEs. This means that pressure from trading partners and other supply chain may force SMEs to adopt m-commerce.

H_{3c}: Competitor pressure positively predicts m-commerce adoption among SMEs.

The findings indicate that the alternative hypothesis is accepted. This means that competitor pressure influences mobile commerce adoption on the surveyed SMEs.

Overall, it can be concluded that environmental contextual factors are crucial determinants of m-commerce adoption. It was found that all environmental factors such as customer pressure, suppliers' pressure and competitors' pressure positively influence SME owners to adopt m-commerce adoption. It has been noted that because of technologically savvy customers, SMEs are forced to align their business models with the needs of their customers, meaning they have to adopt m-commerce. More so, other suppliers are also forcing other businesses to adopt m-commerce because of the online ordering and delivery systems that they use to ease procurement processes. On the other hand, it means SMEs are forced to adopt m-commerce if their competitors are already using it to avoid going out of business.

5.2.4 Relationship Between technology acceptance model and M-Commerce adoption Among SMEs

Hypothesis 4: Technology acceptance model factors positively influence m-commerce adoption among SMEs.

The regression results showed that it is mainly perceived ease of use which significantly predicts m-commerce adoption. The implication of these findings is that maybe the respondents view PEOU as more important than useful.

The sub-hypotheses for hypothesis 4 are:

H_{4a}: Perceived ease of use positively predicts m-commerce adoption among SMEs.

The findings indicated that the alternative hypothesis is accepted. Thus, it was concluded that perceived ease of use positively influences the level of m-commerce adoption.

H_{4b}: Perceived usefulness positively predicts m-commerce adoption among SMEs.

This indicates that perceived ease of use positively influences the level of m-commerce adoption. In conclusion, all the hypotheses are fully supported. One can suggest that technology acceptance model factors are good predictors of m-commerce adoption. This means that factors such as perceived benefits and perceived usefulness of the new technology significantly impact m-commerce adoption among SMEs.

5.3 LIMITATIONS

The study used a sample of SMEs from one province and one city only. This reduces the quality of findings in terms of generalisability of all SMEs in South Africa. Nevertheless, the population in Polokwane is representative of all big cities and towns except metropoles. Therefore, the results are useful to all other cities.

5.4 RECOMMENDATIONS

The recommendations suggested in this study are arranged based on key objectives and factors which were investigated in this study. Recommending in this manner narrows the focus to key areas which can add value to SMEs if they are to adopt some of the suggestions. This is because SMEs are primary beneficiaries of findings of this study.

5.4.1 Recommendations Related to Technological Factors

Based on the outcomes of this study, it was found that all technological factors such as perceived benefits, perceived costs and perceived compatibility do influence m-commerce adoption. Thus, SMEs are recommended to assess benefits and costs associated with adopting m-commerce adoption. Based on existing studies, it was found that the benefits of adopting m-commerce greatly outweigh the costs given the era and business environment which SMEs operate in. Therefore, the researcher recommends SMEs to fully adopt m-commerce to harness its benefits. Nevertheless, SMEs should also ensure that their businesses are compatible with the types of mobile commerce applications they may wish to adopt. In this case, they are urged to adapt their websites to accommodate customers who use their smartphones to purchase products online. Hence, the website should be user-friendly and responsive.

5.4.2 Recommendations Related to Organisational Contextual Factors

It was found that it is mainly technology readiness which is a key determinant of m-commerce adoption among all organisational factors. Thus, this study recommends SMEs to adopt proactive measures to enhance their technology readiness. This can make it easier for them to adopt and implement business models that support m-commerce. More so, given the prominent role played by SMEs, the government should invest seriously in this sector. The forms of support can be in terms of IT training and development and skills development to improve technology readiness among SMEs. The government should also curb corruption, especially in departments that fund SMEs. Mechanisms should be put in place to ensure that the funds are channelled where they are needed most, which is SME development. Other stakeholders such as well-established Tech companies are also encouraged to mentor SMEs, especially regarding technology readiness. Hence, they can help SMEs to set up the m-commerce infrastructure and make them to improve their technological readiness.

5.4.3 Recommendations Related to Environmental Contextual Factors

It was found that majority of SA citizens have smartphones. This means majority of customers prefer to use mobile apps to browse and compare prices, compare brands online and finally make a purchase online. Therefore, the researcher recommends

SMEs to optimise their social media campaigns. This is because approximately 80% of South Africans go online using Facebook, LinkedIn and Instagram. Therefore, SMEs should have a strategy to harness these customers and generate leads for their products and services.

The researcher recommends SMEs to adapt to the changes in the business environment, especially with regards to mobile commerce and other online tools among trading partners and other supply chain partners. It was found that suppliers can influence SMEs to adopt m-commerce. Therefore, SMEs should check the technology adopted by their supply chain partners so as to ease the procurement process, that is, from ordering stock to delivery. Attaining such can add a competitive advantage to SMEs as they cannot afford stock out or losing track of their merchandise.

5.4.4 Recommendations Related to Technology Acceptance Model Factors

Findings showed that it was mainly perceived usefulness which was a significant predictor of m-commerce adoption. Hence, SMEs are recommended to evaluate the perceived usefulness of the m-commerce and assess its ease of use. The ability to assess these two factors can help SMEs to determine the exact combinations or best approach to adopt m-commerce so that it can ease the way they conduct their business.

5.4.5 Integrated Recommendations

Overall, the researcher recommends SMEs to leverage on key determinants of m-commerce adoption identified to be significant in this study. This can enable them to harness benefits presented by m-commerce adoption. For instance, SMEs should ensure that their systems and the entire business model is compatible with m-commerce before adoption. Also, SMEs are encouraged to do environmental scanning in order to keep pace with environmental factors such as customer pressure, suppliers and competitors. This can help them to benchmark their level of m-commerce adoption to remain competitive and profitable.

5.5 LESSONS LEARNED

The researcher derived several lessons from conducting this study. The feeling from conceptualisation of the topic and the entire study brought excitement and new skills which I never thought I could accumulate. More interestingly, the constructive feedback and dialogue from my supervisor made me to learn new research skills which helped me to have a clear understanding of how to construct and lay out a research dissertation.

Considering the SMEs, which was the key focus of the study, the researcher learnt that this sector is innovative and willing to try new technologies such as adopting mobile commerce. Nevertheless, a significant number of SMEs still lack proper infrastructure which can help them set up business models which fully support m-commerce adoption.

Overall, the researcher learnt that m-commerce has gained momentum, especially this year when lockdown was introduced, and people were forced to work from home. Several businesses that adopted m-commerce remained afloat as some of their services or products could be accessed online. This means SMEs should not treat m-commerce as an option but as a priority if they wish to remain in business.

5.6 AREAS FOR FUTURE RESEARCH

This study found that organisational contextual factors (gender, age, level of education) and technology acceptance model factor (perceived usefulness) do not determine m-commerce adoption. Therefore, future studies can further investigate these factors for a clear conclusion. Future research can also investigate the effect of m-commerce on the performance of SMEs in South Africa.

5.7 SUMMARY

This study assessed determinants of m-commerce adoption. The study managed to achieve its objectives. It employed the quantitative research method and used questionnaires to collect data from SMEs. Data was analysed using descriptive statistics, ANOVA and regression analysis. Findings showed that technological factors (perceived benefits, perceived costs, perceived compatibility), organisational factors (technology readiness), environmental factors (customer, supplier pressure, competitor

pressure) and technology acceptance model factors (perceived ease of use) significantly predicted m-commerce adoption. On the other hand, factors such as gender, level of education, age and perceived usefulness were not significant predictors of m-commerce adoption. More importantly, the findings of the study managed to contribute towards closing the research gap identified during the literature review. Crucially, new empirical findings were generated which can positively contribute to the body of knowledge. The findings of this study are also expected to shed light on the SME sector regarding determinants of m-commerce. Understanding crucial factors to consider before adopting m-commerce can help them avoid common pitfalls in this sector. This study also made important recommendations to assist SMEs and redirect the way the government deploys its services towards the SME sector.

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APPENDICES

Appendix A- Questionnaire

PARTICIPANTS CONSENT LETTER

Department of BusinessManagement

University of Limpopo

Private X1106

Sovenga

0727

Date: _____

Dear participant

My name is More Moses Matlakala (201308626) a Masters student in the Department of Business Management at the University of Limpopo. I am writing to invite you to participate in my research in the form of a questionnaire. It is entitled Determinants of Mobile Commerce Adoption by Small and Medium Enterprises in Polokwane Municipality. This questionnaire is for academic purposes only and confidentiality will be highly maintained. As a respondent you are not obliged to disclose your name. I am humbly requesting you to assist me by answering the following set of questions which will take about twenty minutes. However, completion of the questionnaire is voluntary.

Thank you for agreeing to take part in this study which focuses on **DETERMINANTS OF MOBILE COMMERCE ADOPTION BY SMALL AND MEDIUM ENTERPRISES IN POLOKWANE MUNICIPALITY**. The aim and objective(s) of this study is to:

(1) Assess how SME owners perceive m-commerce.

(2) Examine the relationship between technology contextual factors and m-commerce adoption.

(3) Establish the relationship between the organisation contextual factors and the level of m-commerce adoption.

(4) Investigate the relationship between environment contextual factors and the level of m-commerce adoption.

Kindly answer all questions as honesty as you can. Your responses will remain strictly confidential. You are free to answer any question. Participation is voluntary and you are therefore free to withdraw from this study at any time. Thank you for your cooperation.

CONSENT FORM

Research title: **DETERMINANTS OF MOBILE COMMERCE ADOPTION BY SMALL AND MEDIUM ENTERPRISES IN POLOKWANE MUNICIPALITY**

Researcher: **MATLAKALA MORE MOSES (201308626)**

I, _____hereby voluntarily agree to participate in the following project: “DETERMINANTS OF MOBILE COMMERCE ADOPTION BY SMALL AND MEDIUM ENTERPRISES IN POLOKWANE MUNICIPALITY.”

I understand that:

1. My responses will be treated with confidentiality and only be used for the purpose of the research.

2. No harm will be posed to me.

3. The research project aim has been explained to me.

4. I do not have to respond to any question that I do not wish to answer for any reason.

5. Access to the records that pertain to my participation in the study will be restricted to persons directly involved in the research.

6. Any questions that I may have regarding the research, or related matters, will be answered by the researcher.

7. Participation in this research is entirely voluntary and I can withdraw my participation at any stage.

8. I understood the information regarding my participation in the study and I agree to participate.

Signature of interviewee Signature of witness

_____ _____

Signature of interviewer

_____

Signed at_____ on this ____ day of _____20_____

Please mark the right answer with an X

Section A: Biographical information

- What is your gender?

Male	1
Female	2

- What is your age?

20 and below	21-25	26-35	36-40	41-69	70 and above
1	2	3	4	5	6

- What is your level of education?

Matric	Diploma	Degree
1	2	3

- Which mobile device does the business use?

Smartphone	Personal computer	Tablet
1	2	3

Section B: Determinants of mobile commerce adoption

Read the items below and indicate agreement with by rating on the scale from 1 to 5. Check only one box for each item. SD = strongly disagree; D = disagree; N= neutral; A = agree and SA = strongly agree

Item 1: You are requested to indicate statements that may influence your decision to adopt mobile commerce in your business	Reference	SD 1	D 2	N 3	A 4	SA 5

Technological factors						
Perceived benefits						
1. M-commerce eliminates the limitations associated with operating hours and distance barriers to the shops.	Waithaka and Mnkandla (2017)					
2. M-commerce makes it easy for customers to shop online, anytime and compare different brands.	Waithaka and Mnkandla (2017)					
3. M-commerce speeds business transactions.	Chiu et al. (2017)					
Perceived costs						
4. m-commerce is cost effectiveness	Rahman & Sloan, 2017).					
5. The costs of installation, software development, licensing and outsourcing of mobile app technicians use is affordable.	Rahman & Sloan, 2017).					
6. Users are sensitive to the costs of adopting a technology	(Wu, J. & Wang, 2005)					
Perceived compatibility						
7. M-commerce is compatible with our systems	Zhu et al. (2006)					
8. Our business has the required infrastructure to support mobile applications	Mairura, Ngugi &					

	Kanali, 2016					
9. Our organisational culture supports adoption of new technology.	Zaltman & Lin, 1971					
10. We have had positive experience from the adoption of new technology in the past.	Mairura, Ngugi & Kanali, 2016					
Organisational factors						
Technological readiness						
11 We have relevant technological skills to implement m-commerce	Parasuraman & Colby, 2001					
12. We are optimistic about new technology.	Parasuraman & Colby, 2001					
13. We are comfortable in initiating new projects with new technology.	Parasuraman & Colby, 2001					
14. We feel comfortable in using m-commerce	Parasuraman & Colby, 2001					
Environmental factors						
Customer pressure						
		SD	D	N	A	SA
15. Customer demand app for m-commerce	Duan, Deng & Corbitt,					

	2012					
16. We respond to changing customers' shopping behaviour	Duan, Deng & Corbitt, 2012					
17. Customers now prefer to shop online using applications on their smartphones.	Duan, Deng & Corbitt, 2012					
Supplier pressure						
18. Our suppliers are using m-commerce technology	Duan, Deng & Corbitt, 2012					
19. m-commerce is becoming a requirement from our suppliers.	Li, Wang, Zhang and Chu (2010)					
20. mobile commerce is effective in product and service distribution	Parasuraman & Colby, 2001					
Competitor pressure						
21. m-commerce can be used to counter the actions of our competitors	Lin (2014)					
22. m-commerce can be used to monitor the activities of our competitors	Picoto, Bélanger & Palma-dos-Reis, 2014					
m-commerce is used to have a greater	Duan, Deng & Corbitt,					

market share than our competitors	2012					

Section C: Technology acceptance model factors (Perceived usefulness and perceived ease of use)

Read the items below and indicate where you would rate yourself on the scale from 1 to 5. Check only one box for each item.

Item 1 My perception of M-commerce is that;	Reference	SD 1	D 2	N 3	A 4	SA 5
1 M-commerce is easy to use.	Kalinic and Marinkovic (2016).					
2. M-commerce is understandable and clear.	Kalinic and Marinkovic (2016).					
3. M-commerce requires minimum effort.	Kalinic and Marinkovic (2016).					
4. Learning to use m-commerce is easy	Kalinic and Marinkovic					

	(2016).					
5.M-commerce improves my work performance.	Kalinic and Marinkovic (2016).					
6. M-commerce improves my productivity.	Kalinic and Marinkovic (2016).					
7. M-commerce enhances my effectiveness in my work	Kalinic and Marinkovic (2016).					

Section D: M-commerce adoption

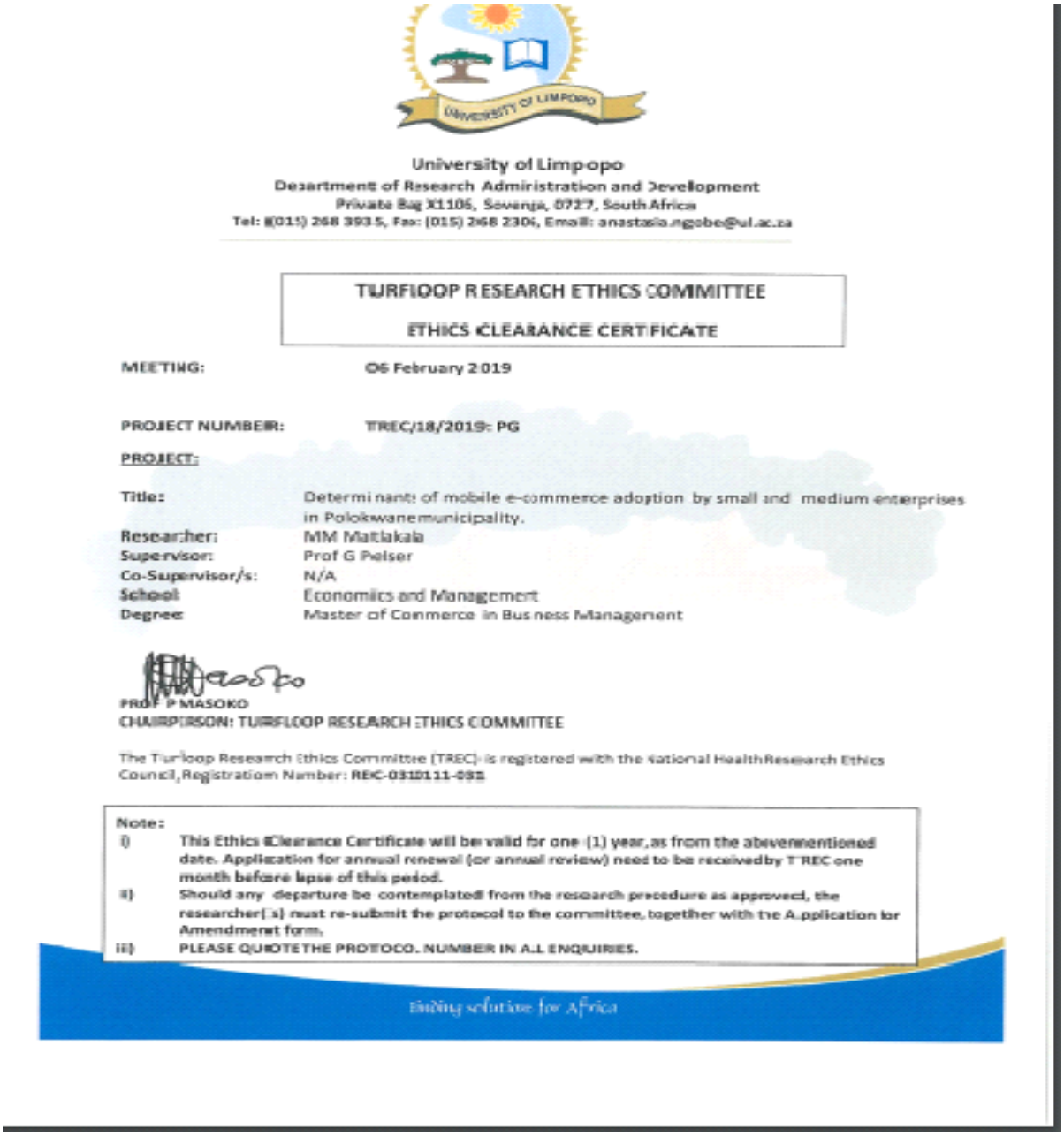
Read the items below and indicate where you would rate yourself on the scale from 1 to 5. Check only one box for each item.

Item 2	SD 1	D 2	N 3	A 4	SA 5
1. We have installed applications which aid mobile payment					
2. We have built applications to help us for invoicing					
3. We have installed applications to boost our online sales					
4. We have built-in applications to track inventory					

5. We have installed applications to track supplier dates					
6. I am willing to use a cell phone, PDA or tablet to conduct online transactions in the future.					
7. In the previous year, we conducted a number of transactions using a cell phone, a PDA or a tablet.					
8.We have put encryption and other technological security features to protect both our business and customers from hackers.					
9. We have installed systems to evaluate the effectiveness of m-commerce					

Thank you

Appendix B- Ethical Clearance Letter



University of Limpopo
Department of Research Administration and Development
Private Bag X1106, Sovenja, 0727, South Africa
Tel: (015) 268 3935, Fax: (015) 268 2306, Email: anastasia.ngobe@ul.ac.za

TURFLOOP RESEARCH ETHICS COMMITTEE

ETHICS CLEARANCE CERTIFICATE

MEETING: 06 February 2019

PROJECT NUMBER: TREC/18/2019: PG

PROJECT:

Title:	Determinants of mobile e-commerce adoption by small and medium enterprises in Polokwane municipality.
Researcher:	MM Matlakala
Supervisor:	Prof G Pelser
Co-Supervisor/s:	N/A
School:	Economics and Management
Degree	Master of Commerce in Business Management

PROF P MASOKO
CHAIRPERSON: TURFLOOP RESEARCH ETHICS COMMITTEE

The Turfloop Research Ethics Committee (TREC) is registered with the National Health Research Ethics Council, Registration Number: REC-0310111-031

Note:
i) This Ethics Clearance Certificate will be valid for one (1) year, as from the abovementioned date. Application for annual renewal (or annual review) need to be received by TREC one month before lapse of this period.
ii) Should any departure be contemplated from the research procedure as approved, the researcher(s) must re-submit the protocol to the committee, together with the Application for Amendment form.
iii) PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES.

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Appendix C- Faculty Approval Letter

University of Limpopo
Faculty of Management and Law
OFFICE OF THE EXECUTIVE DEAN
Private Bag X1106, Sovenga, 0727, South Africa
Tel:(015) 268 2558, Fax: (015) 268 2873, Email: frikkie.ponelis@ul.ac.za

Mr Matlakala M.M (201308626)

26 November 2018

SCHOOL OF ECONOMICS AND MANAGEMENT

Masters of Commerce (Business Management)

Dear Mr Matlakala M.M,

FACULTY APPROVAL OF PROPOSAL

I have pleasure in informing you that your Masters proposal served at the Faculty Higher Degrees Committee meeting on **06 November 2018** and your title was approved as follows:

"Determinants of Mobile E-Commerce Adoption by Small and Medium Enterprises in Polokwane Municipality"

Note the following: The study

Ethical Clearance	**Tick One**
Requires no ethical clearance Proceed with the study	
Requires ethical clearance (Human) (TREC) (apply online) Proceed with the study only after receipt of ethical clearance certificate	✓
Requires ethical clearance (Animal) (AREC) Proceed with the study only after receipt of ethical clearance certificate	

Yours faithfully,

27/11/18

Prof MP Sebola

Chairperson: Faculty Higher Degrees Committee

CC: Supervisor, Prof G Pelser, Prof OO Fatoki, HoD, and Prof MP Sebola, Acting Director of School of Economics and Management.

Appendix D- Letter from English Editor

University of Limpopo
Department of Linguistics, Translation and Interpreting
School of Languages and Communication Studies
Private Bag x1106, Sovenga, 0727, South Africa
Tel: (015) 268 3707, Fax: (015) 268 2868, email:kubayij@yahoo.com

01 October 2020

Dear Sir/Madam

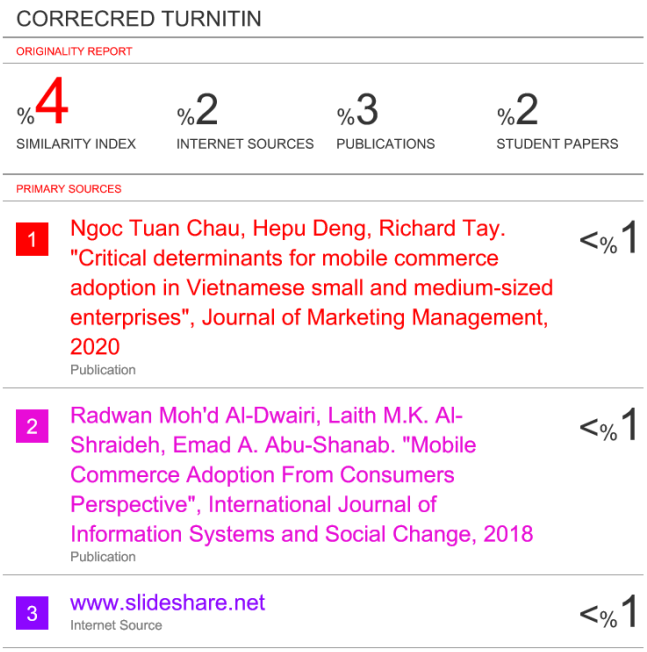
SUBJECT: EDITING OF DISSERTATION

This is to certify that the dissertation entitled 'Determinants of mobile commerce adoption by small and medium enterprises in Polokwane Municipality' by More Moses Matlakala (201308626) has been copy-edited, and that unless further tampered with, I am content with the quality of the dissertation in terms of its adherence to editorial principles of consistency, cohesion, clarity of thought and precision.

Kind regards

Prof. SJ Kubayi (DLitt et Phil - Unisa)
Associate Professor
Membership No. 1002606

Appendix E- Similarity Index Report



CORRECRED TURNITIN

ORIGINALITY REPORT

%4	%2	%3	%2
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Ngoc Tuan Chau, Hepu Deng, Richard Tay. "Critical determinants for mobile commerce adoption in Vietnamese small and medium-sized enterprises", Journal of Marketing Management, 2020 Publication	<%1
2	Radwan Moh'd Al-Dwairi, Laith M.K. Al-Shraideh, Emad A. Abu-Shanab. "Mobile Commerce Adoption From Consumers Perspective", International Journal of Information Systems and Social Change, 2018 Publication	<%1
3	www.slideshare.net Internet Source	<%1