Using ICT as a competitive tool for SMEs in Mafikeng

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Keywords

Banking Sector Education Training Authority (BANKSETA)

Business-to-Business (B2B)

Business-to-Consumer (B2C)

Collaboration on International ICT Policy in East and Southern Africa (CIPESA)

Customer relationship management (CRM)

Department of Trade and Industry (DTI)

Diffusion of Innovations (DOI)

Electronic business (e-business)

Electronic commerce (e-commerce)

Enterprise resource planning (ERP)

Google Talk (Gtalk)

Information and Communication Technologies (ICTs)

Information Technology (IT)

Internet Protocol (IP) phone

Open source software (OSS)

Personal Computer (PC)

Personal Digital Assistants (PDAs)

Small to Medium Enterprises (SMEs)

Small, Medium and Micro-sized Enterprises (SMMEs)

Statistical Package for the Social Sciences (SPSS)

Technology Acceptance Model (TAM)

Technology–Organization–Environment (TOE)

Unified Theory of Acceptance and Use of Technology (UTAUT)

Voice over Internet protocol (VoIP)

Abstract

In this day and age ICTs are seen as competing tools for all businesses both big and small, and if adopted and implemented properly, they can bring with them many benefits for businesses. The available literature provides substantial evidence that suggests that the usage of Information and Communication Technologies (ICTs) can play a very significant part regarding the growth and effectiveness of small to medium enterprises (SMEs).

The value the results of this research paper will add to the existing literature regarding ICT adoption in South Africa, particularly in Mahikeng can amongst others be seen as follows:

- The study will make available a clear indication of the current ICT adoption and usage amongst different SMEs in Mahikeng.
- The research findings of this study and the recommendations will assist or make aware different SME owners of the value derived from ICT.

In order to successfully compete with both big and small businesses, small to medium enterprises (SMEs) need to implement ICT as an essential part of their business. However, If SME owners continue being reluctant to embracing technological changes introduced by ICTs, for whatever reason and continue using traditional approaches to conduct business. They stand a chance of not being able to compete and grow in this increasingly competitive market resulting in the loss of customers, and ultimately the closing of their businesses.

This mini dissertation reviews the available literature in order to define ICTs, SMEs and the value of ICT to an SME. This study also determines the the current adoption and use of ICT, the relationship between ICT adoption and SME growth, the importance of ICT adoption and usage by SMEs, plus potential benefits to SMEs as well as barriers hindering the adoption of ICT on different SMEs in Mafikeng.With regard to the methodology, both quantitative and qualitative research methods (mixed methods) were used in this study. Primary data was collected through the usage of questionnaires, participant observations and documents analysis, the questionnaire was randomly distributed to 100 SMEs situated in Mafikeng.

In relation to the current adoption and use of ICT on different SMEs in the Mafikeng area, the researcher found that even though some basic ICT tools and technologies were used, it is

clear that the usage was very low, and this assertion is true because majority of respondents themselves rated the current state of ICT adoption and usage in their SMEs as low. Regarding the relationship between ICT adoption and SME growth, findings of this study show that there is a weak relationship between these two variables.

Findings of this study also show that majority of the respondents indicated that the importance and awareness of ICT in their business operations is low, meaning that respondents don't regard ICT as important in their business and are not aware of benefits of adopting ICT in their SMEs . With regards to the challenges hindering the adoption of ICT majority of the respondents in this study identified cost as the main challenge hindering the adoption of ICT.

Chapter 1

1.1 Introduction

The available literature provides substantial indications to advocate that the usage of Information and Communication Technology (ICT) can play a very significant part regarding the growth and effectiveness of small businesses (Raymond et al., 2005; Qiang et al., 2006 &Matthews, 2007). In that context, various ICT tools can be adopted by SMEs to bring about increased competitiveness, assist them in creating new employment opportunities, and escalate their efficiency and sales through entrance to new and emerging markets (Qureshi, 2005; Matthew, 2007).

The problem is that SMEs are using traditional methods most of the time to conduct business. In addition, some small business owners are not aware of how ICT can make their businesses stay competitive. They are also reluctant to introduce ICT to their business operation. And it is important to highlight that the SME sector is the biggest sector which provides employment in South Africa.

This study reviews the available literature on ICT and SMEs, and also determines the present situation in Mafikeng regarding the adoption and usage of ICT tools by SMEs, plus potential benefits to SMEs as well as barriers hindering the adoption of ICT. This study investigates the attitude business owners have towards ICT use.

It also determines how ICT is being utilized by SMEs as well as how it is being disseminated on different Small Enterprises in Mahikeng in order for them to grow. Heeks and Duncombe (2003) suggested that there is a significant part which ICT plays in providing the necessary data in relation to markets, suppliers and customers.

Today organizations big and small around the world utilize Information and Communication Technologies (ICT). The aim for this utilization is not for only reducing operational costs or improving efficiency, but they also utilize ICT for offering improved customer service (Ashrafi and Muhammed, 2008). Governments across the globe are adopting and using ICT tools and techniques to deliver better basic services efficiently to their communities.

Business today is being affected by Information and Communication Technologies (ICTs) and the usage of ICT amongst businesses is fundamental. ICT tools and techniques are fast modifying production processes, business ways and means, sales processes, and consumption patterns (Alam and Noor, 2009). They further argued that introducing ICT will make available numerous fresh investment opportunities within the local industry, particularly in the SME sector.

Like most successful SMEs around the world, SMEs which exist in the Mafikeng community have to take full advantage of the benefits which come along with the adoption of various ICT tools and techniques. Therefore, ICT utilization by different SMEs in the Mafikeng community has to be encouraged and enhanced if necessary.

1.2. Background and Context

According to Modimogale and Kroeze (2009), there are a number of ways of defining an SME, however in general, in the literature different researchers opt to use the number of employees in defining an SME. According to Southern and Tilley (2000), an SME is a type of business which employs 150 individuals or less, and is not a subsidiary of a public limited company. This is the definition which is be used to define SMEs in this study.

Many researchers concur that Small and Medium Enterprises (SMEs) are increasingly becoming a very important part of different countries' economies in both the developing and developed world (Lukacs, 2005; Beck et al., 2005; Berry et al., 2002; Demirquc-kunt et al., 2007 & Rogerson, 2008). Much of the literature indicates that SMEs play a very critical part in income generation plus job creation in numerous countries. SMEs also contribute significantly to the prosperity and sustainability of these countries' economies.

The ability of SMEs to persevere in this competitive environment is fundamentally based on their ability to use information as a resource in their businesses. Hence, it is significant for new and established SMEs to tactically implement ICT within their business in such a way which will allow them to take full advantage of its benefits (Mutula and Van Brakel, 2006).
Several studies on SMEs and ICT adoption have been conducted in South Africa in general; however, the body of knowledge is not enough with regards to SMEs in Mafikeng. As indicated in the introduction, different researches have been conducted in order to determine the impact of ICT on SMEs (Ashrafi and Muhammed, 2008; Lucchetti and Sterlacchini, 2004; Yusuf, 2013 and Olawale and Garwe, 2010). The findings of many studies indicate the significance of ICT adoption by SMEs as an attempt to stay competitive.

According to Matthews (2007), adoption and integration of ICT in a business is seen as one of the factors which contribute to business growth. This implies that growth can be enabled through the strategic utilisation of ICT as a tool and can be inhibited through poor access or adoption. Matthews argues that ICT is acknowledged for playing a vital role in terms of growth of an enterprise by directly adding to profits and also by offering fundamentals for the development of business operations. It is clear that the correct adoption and integration of ICT tools and techniques can enable a business to grow and be sustained.

According to Olawale and Garwe (2010), in South Africa SMEs are seen as the foremost employment creators as well as being the key driver for the country's economic growth. South Africa today is faced with unemployment crisis, hence many people have started their own small businesses to create income and jobs. These small businesses have to be persevered and sustained to avoid increased economic crisis, unemployment and poverty.
Adoption of ICTs by SMEs is a fundamental reality in many countries around the globe. This is particularly true for developing countries like South Africa. This has the ability to offer remarkable opportunities for poverty alleviation and job creation, and also the ability to develop a nation's economy through making small businesses more available to local and global markets, improve their accessibility to information related to the market, provide information for competitive prices, and lower transaction costs (Yusuf, 2013).

Conducting a study on the adoption of ICT amongst various SMEs which are found in the Mahikeng community will add value to the available body of knowledge related to ICT adoption and utilization amongst SMEs in the country. Results of the study will help define the adoption or dispersal and use of ICT by different SMEs found in Mahikeng.

1.3. Problem Statement

Information and Communication Technologies (ICT's) do have the prospective of adding significant value to the operation and competitiveness of SMEs (Ismail et al., 2011). It is therefore vital for SME's to utilize these ICT tools so that they can compete effectively and succeed in the future. According to Consultrans (2008), ICT include the usage of computers, networking devices, and other equipment used for data storing, processing and transmission, and software.

ICTs are fast changing the universal production, working and business approaches as well as the consumption patterns and trade in and between enterprises and consumers (Alam and Noor, 2009). They further went on and argued that today small businesses around the world are more and more using and adopting ICTs because of improved service delivery, effective ICT related tools, reduced operational costs, and affordable ICT products.

In this day and age ICTs are seen as competing tools for businesses. If employed and utilized correctly, they can bring with them many benefits for businesses (Modimogale and Kroeze, 2009). It is apparent from the available literature that ICTs use does in fact affect SME's and

their ability to compete and render their services to their clients. The usage of ICTs can increase business competitiveness with the internet offering many opportunities for SMEs to be able to compete with big businesses as mentioned by Alberto and Fernando (2007). In their study they went on further and stated that ICT tools including the usage of the internet can able small businesses to expand their target market and be able to compete with big businesses for clients.

However, with the given information of how SME's benefit from adopting and using ICT to conduct business, Ismail et al. (2011) state that they are surprisingly often unwilling to embrace technological changes and rather opt for traditional methods and ways of conducting and operating business. This can mean that there are still business owners who are not aware or convinced by the benefits offered by ICT to their business. In order for SMEs to be able to compete on a broader scale and against both big and small businesses from within and outside of South Africa, ICT adoption and usage needs to be considered by SME owners.

If SMEs owners continue being reluctant to embracing technological changes introduced by ICTs but rather use traditional approaches to conduct business, they stand a chance of losing their customers and making their businesses failing to compete in this competitive market. This becomes a problem because the reality is that as more SMEs fail to stay competitive they will close and more jobs will be lost and the economy will be affected. SMEs are nowadays seen as playing a very vital part in the economies of several countries worldwide mainly for being job creators. Therefore, it is not surprising that many governments all over the world are shifting their attention to the growth of the SME sector in promoting economic growth.

The problem is that SMEs are using traditional methods most of the time to conduct business. In addition, some small business owners are not aware of how ICT can make their businesses stay competitive. They are also reluctant to introduce ICT to their business operation. SMEs fail to enhance themselves by using the available tools and techniques offered by the ICT sector.

Much of the literature on SMEs indicates that there is a need for them to take full advantage of the power of ICT adoption in order to stay competitive, and compete in larger markets for an increased customer base while maintaining businesses. The literature also indicates that

both traditional methods and ICT tools are vital for a small business to stay competitive and keep on conducting business for longer.

In South Africa SMEs are the main job creators and key drivers for the nation's economic development. Nonetheless, as the number of Small Businesses increase in South Africa, competition also increases. SMEs which do not adopt certain methods like using ICT, increase their promotion, improve service/product they offer, or decreasing prices to stay competitive face the possibility of losing customers thus resulting in the business failing. This becomes a problem because South Africa has a high unemployment rate and therefore needs all SMEs to stay competitive and grow as there will be more people employed. In South Africa, SMEs are contributing 56% of employment in the private sector and 36% towards the GDP (Olawale and Garwe, 2010).

According to Kotelniko (2007), ICT is able to play a vital part as it is able to assist SMEs in both creating opportunities for the business and also to contest pressures from competitors. Appropriate adoption and usage of ICT tools can assist an SME reduce costs by way of improving its in-house procedures, refining their products/services through active communication with their clients, and also promoting and dispensing their products/services online.

Kotelniko (2007) further went on to state that profitable market opportunities in the country increase the rate at which SMEs are being created, thus increasing the overall number of SMEs in the country. This increase results in the increase of employment creation and income per capita. As more individuals are employed the consumer market increases, resulting in new market opportunities which will attract the establishment of more SMEs.

Mahikeng is the capital city of the North West Province. Being the capital city in the province, it is expected that there are more SMEs there. This is because the town is full of interesting history, the culture which is rich and a variety of wildlife. Some sites which can be found in Mafikeng include the Kanon Kopje, Botsalano Game Reserve, Manyane Game Lodge, Mafikeng Game Reserve, Cookes Lake, Lotlamoreng Cultural Reserve and Montshiwa Dam to mention a few. Mafikeng also is the home of the provincial parliament and the notable government offices known as Garona. The city also has outstanding hotels, bed and breakfast establishments and excellent guesthouses. One can also find a casino which

is located at the Mmabatho Tusk & Casino Resort. The city also has two golf courses which are the Mafikeng Golf Club and the Leopard Park Golf Club. All these sites attract tourists to town and make the city vibrant, and offer many business opportunities for entrepreneurs.

It becomes a problem if SME owners in Mafikeng do not take complete advantage of the benefits which come along with the adoption of ICT tools and techniques, because failure to take advantage may lead to SMEs staying not competitive and in business. This is because according to Bayo-Moriones, and Lera-Lopez (2007), most current empirical evidence endorses the positive influence of ICT technologies on a business's performance not merely in terms of profit generation, efficiency, market value, but also in performance measures, like cost savings, service quality, process efficiency, customer satisfaction, and business flexibility.

It is also a problem if SMEs in Mafikeng do not change and adopt new ways of conducting business, such as the adoption and use of ICT, because they will not be able to stay competitive and will eventually result in their closure. SME managers who are found to be reluctant in introducing ICT to their businesses need to be made aware of competitive advantages and all other advantages they can gain from the adoption of ICT.

1.4. Research Questions

- What is the Value of ICT to an SME?
- What is the current state of affairs regarding the use of ICT by SMEs in Mafikeng?
- What are the barriers experienced by SMEs when adopting ICT?

1.5. Literature Survey

1.5.1. Definition and significance of ICT

According to Brindley and Ritchie (2005), ICT is defined as mainly the collection of digital technologies which are aimed at collecting, storing, organizing, processing and communicating data/information both internally and externally to a business and, in this instance, SMEs. ICT in this study includes all technologies such as telephones, point-of-sale systems, Computers, networking tools, credit card facilities and the Internet. In addition, Doyle (2008) mentions that ICT involves any type of device or system which has the capabilities of storing, retrieving, transmitting, manipulating and receipt of digital information. ICT covers a comprehensive range of hardware (like computers, printers,

scanners, cameras) and a wide range of software's (such as word processors, systems software, databases, and spread-sheet).

Today organizations big and small are utilizing ICT around the world, and this is not for only reducing costs or improving efficiency, but they also utilize ICT for improving their customer service (Ashrafi and Muhammed, 2008). The introduction of ICT has created new forms of production, consumption and transactions which result in cost-savings, faster and better communications amongst users. There is no doubt that the increased utilization of ICT improves the efficiency and effectiveness of commercial activities, enhances trade relations and gives opportunities for previously inaccessible markets and parties. Thus, ICT is playing an essential role in promoting trade in general and economic development of any country (Mambi, 2010).

1.5.2. What are SMEs?

In this research paper Small Medium Enterprises (SMEs) are defined as any small business which hires less than 150 people, and is not listed as a company. SMEs are very diverse and can be dynamic, innovative and flexible companies, family enterprises, traditional enterprises which are part of a business environment. Importantly, SMEs should not be confused with big established business; this is because an SME is not a scaled-down version of a larger business (Man et al., 2002).

According to Stern (2002), the SME sector has a significant role regarding job creation, poverty reduction and economic development in most developing countries like South Africa. This SME sector is the one which employs the majority of poor people. This SME sector mostly improves the economic growth of various nations and contributes considerably to job creation.

It is clear from the literature that SMEs across the world contribute largely towards growth of different economies, and creates employment. As such, SMEs should continue to grow and be sustained. According to Manuere et al. (2012), the formation of new SMEs offers the basis on which various economies can grow and accelerate socio-economic development, a countries growth and employment creation.

According to Wattanapruttipaisan (2003), the significance of SMEs for development, efficiency and competitiveness of various economies in both developing and developed nations is recognized globally. Therefore, since SMEs can contribute substantially towards local capital formation, they also contribute towards the improved living standards of people and realize higher levels of production.

1.5.3. ICT Value to SMEs.

The value derived from ICT comes in different forms to different SMEs depending on the business environment, nature of market, and the type of SME. Thus the value derived from ICT is seen differently by SME owners. According to Schubert and Leimstoll (2007), there exist two distinct schools of thought regarding the matter of the value derived from ICT. The first school is, referred to as Porter's theories, which state that ICT adoption adds significant value to SMEs. The second school of thought, referred to as Millar's theories, states that ICT adoption does not really add any value an SME. The second school of thought argues that like electricity, ICT is a commodity which is available to everyone. However, both schools concur that the competitiveness of a given SME largely hinges on the ways in which ICT is being utilized in supporting business processes. Therefore, this implies that adopting ICT in an SME does not automatically give that particular SME a competitive advantage, however having, it related to the business procedures and strategies will most likely give the SME a competing advantage.

1.5.4. What are the Barriers experienced by SMEs when adopting ICT?

Owners or managers of SMEs without a doubt play a leading role when it comes to major decision making. As such, owners need to make decisions which will make their business grow, be competitive and reach new markets. According to Manuere et al. (2012), the business owner’s lack of awareness of ICT related technologies and the apparent benefits is one main barrier restricting the adoption and implementation of ICT related solutions. Barriers hindering ICT adoption comes in various different forms. The Lack of awareness on how to utilize ICT related technologies and the lower computer literateness on developing countries are among other factors which contribute towards barriers hindering the adoption of ICT (Manuere et al., 2012).

According to the European Commission (2008), various SMEs around the world may well utilize ICT related solutions as an attempt to expand and to become more competitive.

Therefore, there is a strong need to encourage the usage of ICT related solutions by SMEs and deal with the high costs of ICT tools as it can assist in improving technical and management skills, and make accessible necessary e-business resolutions for SMEs.

Business operations are being conducted differently today in this knowledge economy. Therefore it becomes significant for different SMEs to implement processes which will allow them to deliver services to customers, and that will give them a competing advantage. ICT and its related resources have an important positive effect on business performance and are vital to SMEs (Maldeni and Jayasena, 2009). As such, ICT and all its related resources have become known and accepted as a facilitator and enabler of organizational change. According to Namani (2009), without the proper application of ICT, it could be difficult for SMEs today to compete in the market as ICT has a substantial influence on SMEs business operations, and is claimed to be very critical regarding the persistence and development of economies. The views of Namani (2009) are supported by various other researchers such as Chibelushi (2008) who argues that ICT provides opportunities to transform and grow a business while providing SMEs with the opportunity of conducting business anywhere.

Like any form of a business, SMEs are also not prepared to invest money into resources which will not make business operations easier or increase profits. There must be value attached to these various ICT related resources. Chacko and Harris (2005) suggested that the utilization of various ICT resources by SMEs purely depend on the benefits these ICT related tools can bring an SME, which simply mean that its use depends on cost efficiency. In most cases ICT tools which are being adopted and implemented by SMEs only assist as basic tools for communication like using cell-phones or fixed lines. For instance, after the adoption of various ICT tools by SMEs, they also have to use computers (PC) running a specific software. Businesses, particularly SMEs, can enjoy better communication (with customers, employees or suppliers) and process information as required.

1.6. Research Objectives

The objectives of this study are to:

- Determine the current adoption and use of ICT on different SMEs in the Mafikeng area.
- Determine the relationship between ICT adoption and SME growth.

- Determine the importance of ICT adoption and usage by SMEs
- Raise awareness of the benefits which ICT can bring to an SME
- Determine the barriers experienced when adopting ICT by SMEs in Mafikeng.

1.7. Importance/Significance of the Study

Results of this paper are important to the SME owners in the community and all interested parties so as to make informed decisions and take calculated risks.The study is also vital to the community of Mafikeng, the North West Province and South Africa as a whole. This is because the study is aimed at providing relevant information to enhance, grow and help sustain SMEs as they are one the main job creators in South Africa. Much of the literature indicates that in order for SMEs to survive in this more and more competitive environment it is mostly on their ability to implement, use and control different ICT resources in their businesses. Therefore, it becomes vital for SMEs to strategically position ICT within their business in a way which will allow the SME to take full advantage of the benefits associated with ICTs.

After the conclusion of this study, different interested groups (such as SME owners, investors, government, and the community of Mahikeng) will be able to understand the adoption, the value obtained, and barriers obstructing the adoption of ICT adoption by different SMEs in Mafikeng. Interested groups can therefore profile ICT adoption and implementation amongst various SMEs in the community of Mahikeng.

The value the results of this research paper will add to the existing literature regarding ICT adoption and diffusion in South Africa, particularly in Mahikeng can be seen as follows:

- The study will make available a clear indication of the current ICT adoption and usage amongst different SMEs in Mahikeng.
- The research findings of this study and the recommendations will assist or make aware different SME owners of the value derived from ICT.
- Provide possible solutions to address challenges faced by different SME owners.
- Help SME owners take right decisions

1.8. Research Design and Methodology

A mixed research method was followed in collecting and analysing data from participants. According to Creswell and Clark (2011), mixed research method is focused on gathering, analysing, and mixing both qualitative and quantitative data in a single research or series of researches. Its primary basis is that the usage of both qualitative and quantitative methods, in combination, offers an enhanced understanding of research problems than either method used alone.

- Quantitative method

The quantitative research method was used in this because this study is aimed at determining ICT adoption and diffusion amongst various SMEs at Mahikeng. It was also used because in this study data was be gathered, analysed and represented in numbers, tables, charts, correlations and statistics. The primary quantitative data was collected using a questionnaire. According to Gliner et al. (2000), quantitative data are said to be objective, indicating that the behaviours are easy to classify or quantify, either by the research participants or by the researcher. Examples of data which is quantitative include test scores, time and demographic variables like gender and age. This data is usually collected with an instrument (e.g. questionnaire, surveys or a test).

- Qualitative method

The qualitative method was used because the researcher intended to observe respondents in their running of their SMEs because often what people say they do in a given situation and what they actually do are two completely different things. Observational techniques helped the researcher understand what is really going on, and will help the research when interpreting results. The researcher also reviewed available documents which are related to this research, this is because documents are able to provide data on the context in which participants operates, available documents also provide background information as well as historical understanding. Such data/information and historical understanding helped the researcher understand the historical roots of the research problem, and subsequently help the researcher to better interpret the results.

- Research instruments

In General, there are several techniques of collecting data. However, the main tools used in the mixed method researches comprise of closed and open-ended questionnaires, interviews, observations and document analysis. These different ways of collecting data or information

can complement each other and therefore enhance the validity and dependability of the data. In the main, the questionnaire was used as a primary tool for collecting data in this study; the quantitative data will be obtained through closed-ended questions and the qualitative data through open-ended questions in the questionnaires, documents review and through observations made by the researcher. The researcher chose these techniques of data collection because these tools and techniques are best suited to fully answer research questions and meet research objectives mentioned above.

1.8.1 Ethical Requirements

According to DeVita et al. (2008), the primary objective of the ethical requirements is essential to protect research participants, by minimizing exploitation of participants in the research. Participants are a necessary and vital means of obtaining results in a research. Thus, they can be exploited by the researcher or research if not careful.

In this study participants had their basic rights considered (such as the right to privacy and protection from harm), and were given an option of deciding to participate or not. According to Bless and Achola (2006), these rights to privacy and protection are sometimes violated by researchers. Sometimes issues rise in a research which may affect participants in an undesirable way but are not deliberated or thought of by the investigator.

This research is conducted purely for academic purposes and as such confidentiality of participants is assured. The researcher is commitment to adhere to the basic right to privacy and protection, and including the right to decline to participate in this research.

1.8.2 Representative Sampling

The required data for the purposes of concluding this research paper was collected through the use of a questionnaire, participant observations and documents analysis. These data collecting techniques were implemented in a way that all the required data for this study can be obtained and then be analysed.

The designed questionnaire was distributed to different SME owners in the area of Mahikeng. The questionnaire will offer respondents different answers and will require them to select an answer which they consider to be correct for a specific question.

Moreover, the questionnaires contained both open and closed ended questions. However, most of the questions were closed ended so as to make it simpler and quicker for respondents

to respond. The literature shows that mostly closed ended questions are the ones which encourage respondents to participate in a study, and they are simpler to manage during data analysis as opposed to open ended questions. However, open ended questions were used as an attempt of giving respondents a chance to answer questions with what is on their mind without any restrictions.

1.8.3. Data Analysis

This study used the quantitative methods for data analysis, and as such these methods require complex statistical analyses. For data analysis purposes for this study a tool with capabilities to work with almost any type of file is required to be used to generate charts, tables and reports. As such, the researcher will use the statistical package for social science (SPSS) software program for analysing data. SPSS is a widely used tool for data analysis purposes and has the required abilities to manipulate almost any type of a file, and is used to produce graphs, make statistical analysis, and generate charts and tables.

1.9. Demarcations of the Study

This Research project is restricted only to the Mafikeng community which is situated in the North West province, and focuses on the adoption of ICT by different SMEs found in Mafikeng.

Questionnaire respondents are of importance and contribute significantly towards the conclusion of this paper, and as such one major limiting factor could be that questionnaire respondents may chose not to complete or submit the questionnaire. Another factor which can limit the study is the honesty of participants. This is because if participants are honest results will be honest and true, and if participants are not honest results will not be honest.

This research focused specifically on SMEs in Mahikeng the capital city of the North West Province. This is also regarded as one limiting factor because the results of this study cannot refer to all SMEs across the Province. There are differences regarding the lifestyle, environment, culture, lifestyle and the participants across the North West Province.

1.10 Conclusion

The core purpose of this research is to determine the diffusion and impact of ICT on various SMEs in the Mahikeng community. ICT adoption and usage on a business, particularly SMEs are very significant and necessary to be encouraged. The literature show that most researchers agree that using ICT related resources on a business is beneficial and gives a business a competitive edge. However, some SME owners are still reluctant to adopt ICT to their businesses. SMEs are of importance in the economy of a country as they generate much of the employment; as such they need to be sustained.

This research used the quantitative research methodology for gathering data/information and analysing it. A questionnaire was used to collect information across different SMEs in Mahikeng. Furthermore, the statistical package for social science (SPSS) software program was utilized for analysing data and represent information

Chapter2
LITERATURE REVIEW

2.1. Introduction

This part of the paper is aimed at reviewing the literature in line with the research questions the research paper is attempting to answer. This chapter gives an analysis of the research papers relating to the usage of ICT by SMEs so that they can gain competing advantage over their opponents. It attempts to answer questions which may arise concerning the research topic. Much of the literature in fact show that the implementation of ICT by SMEs not only offers the business the competing advantage, it also gives an SME the chance to enter new markets, have improved customer satisfaction, assist owners make more informed and correct decisions, introduce innovative ways of doing business, reduced transactional cost and increased speed & reliability of transactions.

ICT adoption in SMEs varies from one business to another because of certain characteristics of SMEs, for instance resources limitations. Consequently it becomes vital to know the theoretical models used to describe the adoption of ICT in SMEs, to recognize the main factors that influence the adoption and implementation of such ICTs by these firms. This chapter will review the technology innovation literature to explorer the technology, organization and environment theoretical (TOE) framework. The review of the TOE theory is done to better understand the fundamental issues which impact the adoption and use of ICT by SMEs.

The apparent adoption and diffusion of ICTs by different SMEs has been seen to accelerate financial and social change globally and it continues to do so at a fast pace. While the usage of ICTs remains highly intense in developed nations, ICT dispersion is starting to spread to developing nations, as well as disadvantaged rural areas, bringing with it great hopes of optimistic development results (Torero and von Braun, 2006), this finding made by the two researchers makes it clear that SME‘s need to adopt ICT in order to compete in this increasingly digitized market. Promoting the development of SMEs is a vital part of building a country, irrespective of the country in question or its level of development.

The SME sector has a very vital part to play in the poverty eradication, economic development and job creation in developing economies. This SME sector mostly surpasses

the average economic development of nationwide economies in various nations and adds considerably to job creation Esselaar *et al.*, (2007) and Higon (2011).

This review explores the general adoption, diffusion and usage of ICTs on SMEs, and its impact thereof in terms of SME growth. In this review the definition and significance of ICTs on SMEs will be covered, followed by a proper definition of SMEs and their significance in the growth of a country. Further on the review will cover topics relating to the value ICTs can offer to SMEs, and lastly identify those barriers, if any, which deter SMEs in implementing ICT to their SME's. Then the last part of the literature review analyses different approaches which have been suggested by other researchers as an attempt to resolve the problem of lack of ICT adoption by some SMEs.

2.2. Models of ICT Adoption

There are several theories which are concerned with technology adoption which have been used in research related to ICT. A number of researchers, on ICT adoption in SMEs, including (Mutua and Wasike, 2009; Mpofu, Milne and Watkins-Mathys, nd) recommended numerous existing theories and various methods that assist in clarifying and advancing the understanding of ICT implementation in SMEs. Prominent amongst the theories are the 'technology acceptance model' and 'innovation-decision process framework' which addresses the issues impacting the diffusion of innovations and anticipating the attitude of prospective users towards a new technology by concentrating on individual views separately.

The utmost extensively used and accepted theories comprise of the technology acceptance model (TAM) introduced by Davis (1989), the unified theory of acceptance and use of technology (UTAUT) theorised by (Morris, Venkatesh & Davis, 2003). These different theories describe the persons' attitudes toward ICTs, their intents to use, and their approval and acceptance of ICTs (Chen and Li, 2011).

At the business level, the utmost widespread theories utilized on ICT adoption are the TOE framework (DePietro et al., 1990) and the DOI theory (Rogers, 1995). There is a very rich literature on these theories individually and in combination with each other (Ghobakhloo and S.H., 2011; Huy, Huynh, Truex, and Rowe, 2012; Martins and Oliveira 2008). ICT adoption by SMEs varies from bigger businesses precisely because of their

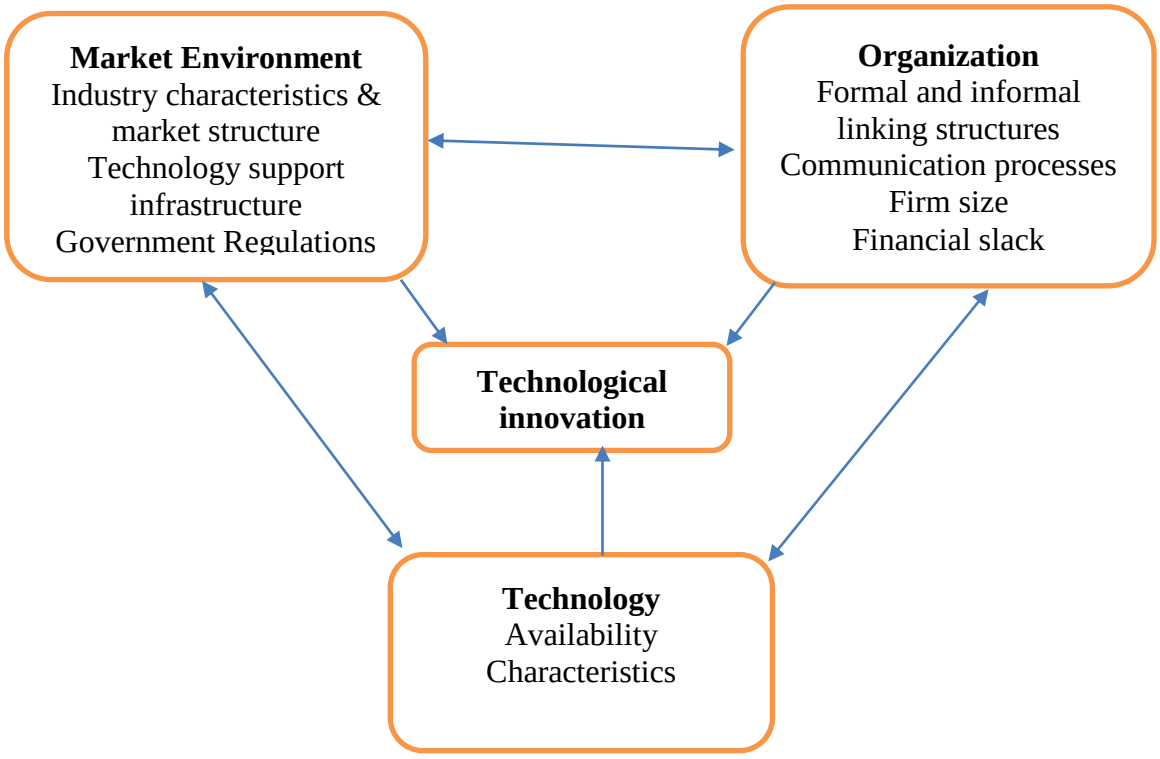
precise features, like resources limitations, and in many cases, restricted access to technology and essential skills and competences (Apulu and Latham, 2009; Avgerou, 2008).

Understanding the theoretical models which have been used to clarify ICT adoption by SMEs is therefore significant to allow better appreciation of the key issues which have been found to determine the implementation of ICTs by SMEs in both developed and developing countries. For the purpose of this study, the TOE framework (DePietro et al., 1990) will be used since it is more related to the research focus area. TOE framework is described as the procedure by which a business adopts and implements technological inventions is influenced by the organizational context, the technological context, and the environmental context (DePietro et al., 1990)

2.2.1 Technology-organization-environment (TOE) framework

The Literature review indicates that the Technology, Organization and Environment (TOE) framework was developed by DePietro et al. (1990). This framework basically recognises three features of a businesses' context that influence the procedure by which it implements and accepts a technological innovation: organizational context, technological context, and environmental context, as Figure 1 illustrates.

Figure 1: Technology, organization, and environment framework (DePietro et al., 1990).



The TOE framework offers a valuable analytical framework that is frequently utilized for learning the adoption and integration of various kinds of ICT invention. The TOE framework has a concrete theoretical foundation, reliable empirical support, and the potential of application to ICT adoption areas.

This TOE framework is in line with the DOI theory, in which Rogers (1995) highlighted distinct characteristics, and both the external and internal characteristics of the business, as influencers of business innovativeness. These are identical to the technology and organization context of the TOE framework, however the TOE framework also comprises of a new and significant part, the environmental context. The environmental context makes available both the restrictions and opportunities for technological innovation.

Technological Context (Technology Availability/ Readiness)

Technological context basically defines the external and internal technologies which are both applicable to the business. Including current processes and tools internal to the business (Starbuck, 1976), along with a set of existing technologies external to the business (Hage, 1980; Khandwalla, 1970; Thompson, 1967).Technology readiness is concerned about a business making sure that it has the technology set-up and IT resources essential for exploiting ICTs (Pan and Jang, 2008; Hong and Zhu, 2006; Zhu and Kraemer, 2005). The ability of a business to incorporate technology to address diverse business demands has been found to increase customer service and the way business is generally (Kraemer, 2006).

Organizational Context

The organizational context concerned with descriptive measures relating to the business like size, scope, and management structure. According to Lee and Xia (2006), business size is one of the most frequently researched factors of ICT adoption. Other various researchers such as Fabiani et al., (2005); Teo and Tan (1998); Morgan et al., (2006) in their studies have discovered a positive correlation between business size and ICT adoption.

Even though some researchers have made known that big businesses are more likely to accept innovation, it must be stated that the adoption of ICT often needs close cooperation and management which is easily attained in small businesses (Martins and Oliveira, 2008). According to Geroski (2000), size of a business is frequently used in the empirical literature on new ICT implementation since it is easier to detect and it functions as an alternative for numerous things, big businesses can make more profits from implementing new ICT as compared to small businesses. Given the dangers and expenses of premature implementation, they are better positioned to implement new ICT since they have less financial limitations and because they are less risk opposed.

Furthermore, concluded researches have constantly discovered that apparent benefits associated with ICT have a vital influence in the adoption of ICT (Pan and Jang, 2008; Lin and Lin, 2008; Beatty, Shim, and Jones, 2001).

Environmental Context

According to DePietro et al. (1990), the environmental context is the area in which a business operates its business based on the industry it is in, dealings, and competitors with the government. Competitive pressure is the pressure felt by the business from its rivals within a particular industry. Empirical proof recommends that competing pressure is an influencer of ICT adoption and dissemination (Grandon and Pearson 2004; Battisti et al., 2007; Al-Qirim, 2007).

2.3. Definition and significance of ICT

According to Selwyn (2002), ICT is a term which includes a comprehensive variety of technological applications; ranging from telecommunications; digital plus electronic information technologies. ICT, consequently, includes a variety of resources, technologies and information which can be utilized by many different businesses to their benefit. Khalifa (2014) defines ICT as a technology-based ways of communicating data, generating information, increasing innovative capacity, reducing costs and growing production. This finding made by Khalifa (2014) correctly illustrates the significance and benefits of ICT. According to the Government Gazette (2016), the South African government observes ICTs as a means to enable inclusive socio-economic transformation of South Africa. The term ICT, in the context of the strategies in the National Integrated ICT policy White Paper, comprises of a comprehensive collection of technologies such as computing and

information technology, communications technology (comprising of wireless and fixed telephony and data communications), audio and audio-visual content, the Internet and more traditional ways of communicating such as postal deliveries.

ICT basically covers a range of technologies such as a simple tele-phone, point-of-sale systems, Computers, Laptops, Printers, Internet, networking environments, and credit card tools. There are also ICT tools which are based or operated via the internet, according to Tech-Terms (2010), internet-based ICT is basically referred to as all the ICT technologies being utilized for accessing and transferring data or information via the Internet.

ICT can be described as a range of predominantly digital technologies intended for collecting, storing, processing , organising and communicating data or information internal and external to a business and, in this instance, SMEs (Ritchie and Brindley, 2005). i concur with that description as there are a lot of researchers who also concur with the above definition such as Beckinsale and Ram (2006) who interprets ICT as a term which consist of any communicating device or tool, which includes cell phones, television, radio, computer networking tools and computers, satellite systems to mention a few, plus other related several services and tools, like e-learning and video-conferencing. In simpler terms ICT is essentially any technology that is being used in supporting data gathering, storing, processing, distribution and usage.

ICTs, mainly the usage of the internet to operate e-business, are rapidly altering the traditional method of running a business amongst brick and mortal companies. With the solid influences of liberalization and globalization globally, ICT is regarded as the best cost-efficient instrument to aid businesses get exposure to larger markets and the capability to compete with bigger businesses in enticing and keeping customers to their products, or services they offer (Tan et al., 2009). Also considering the advantages essential in internet use like user-friendliness, wide accessibility, reduced cost and speed which has made electronic commerce to be gradually dispersed across the globe, which brings different countries together into a global connected economy (Kraemer and Gibbs 2004).

The constant and increasing awareness in ICT adoption is also credited to the fast growing number of internet users globally, with a larger growth reported from users in developing

nations, and also the adoption of ICT brings with it many benefits of strengthening organizational communication with their stakeholders such as customers, their business partners, suppliers, and competitors at lower cost. Moreover regarding benefits, SMEs should be ready to invest in ICT in order to expand upon the features of their websites, communication, enhancing security and increasing bandwidth for business transactions. Although investment in ICT can be considerably huge, the long-run benefits can be tremendous to the SMEs (Khong et al., 2009).

Ramsey et al. (2003) concur with Khong et al. (2009) that ICTs, predominantly the internet, are having an important influence on the processes of SMEs; the internet is said to be vital for the continued existence and growth of countries' economies in overall and SMEs specifically. For example, it is predicted that over the actual usage of ICTs, SMEs will be capable of reaching markets worldwide, trade internationally, and be able to compete well with big corporations.

Cell phones have made available an illustration of advancing technology, whereby evolving technologies have taken internet to the cell phone, consequently removing the requirement to have a Computer in order to connect to the internet. The Africa continent has got the uppermost growing rate of cell phone connections in the entire globe, and the cell phone has turned out to be the core of the continent’s connectivity achievements (CIPESA 2005 and Butler, 2005). According to Goldstuck by the end of 2011 South Africa had around 8.5-million users connected to the Internet. This signified a 25% growth above the 2010 total of 6.8-million, driven by the outburst of smartphones. This increase takes the Internet infiltration in South Africa to around 17%. Even though access to basic infrastructure is still mostly inadequate in urbanised areas, cell phone infiltration is not. Results of his study show that 63-million SIM cards are active, this gives us 126% SIM penetration. Though, the correct user base is round 40-million with penetration of 80%.

All of the above should come across as appealing to any small business trying to stay competitive in the market and generate profit in order to sustain the business, and create jobs. According to Youssef and M’henni (2010), ICT technologies influence the landscape and scope of the business by reducing costs and altering the market’s boundaries. Numerous researches have suggested that businesses and governments must capitalise in

these technologies. Solid proof is discovered amongst the implementation of such technologies and the enhanced performances of businesses globally.

ICT basically offers different organizations a widespread array of options for improving their competitiveness in the market: they offer ways for getting entrance to new emerging market opportunities and dedicated information services like constant training, distance consulting, and new advisory methods, among others. (Fulantelli and Allegra, 2006). ICT has a different meaning to different organizations as they utilize different ICT tools for different purposes. Fulantelli and Allegra (2006) further went on and stated that business make use of ICT for various reasons so as to supplement their business model. Therefore ICT can be characterised into diverse groups in the business, in this instance SME.

Dependent on the business plan, an SME can select a particular group as its ICT direction. Sterlacchini and Lucchetti (2004) classify ICT into the subsequent groups: general-user, market-oriented groups and production-integration. These groupings are related to the roles of ICT or the considered position that ICT can play in a certain SME.

Although access and infrastructure are vital predecessors to the adoption of ICT, they do not assure benefits. But, it is the taking advantage of ICT to advance business objectives that will add to development. Crucial parts which are mostly referred to include networking, resource planning, communication and marketing. Web sites, Social media, e-mail communication and reduced cost phone calls with clients can all add to enhanced customer service and an extended customer base. Web sites are an outstanding communicating technique which can reach new global viewers (Raymond et al., 2005).

This research paper agrees with Modimogale and Kroeze, (2009) as they state that ICTs are seen as a competing tools for businesses and, if applied and utilized properly, can bring with it countless benefits for businesses (Modimogale and Kroeze, 2009). Their paper is well written and is clear. These benefits consist of allowing alliance amongst the ICT implementing firm and other firms and enabling the trade to be quicker through more efficient procedures, plus affording firms the capability of storing, retrieving and processing data far more competently. ICT has shifted from merely being a source which is hardly used in several different businesses to one of great significance today, which various businesses capitalise in in order to gain competing advantage. The key driver

behind this change is because of the view that ICTs improve ubiquity and efficiency and improves a business's strategic value (Carr, 2004).

According to Galloway and Mochrie (2005), it is apparent from the literature that ICT is the enforcer of economic development and job creation which explicates the drive by various governments globally for SMEs to adopt ICT. The motive for this drive is that governments recognise the substantial influence of SMEs towards a countries GDP and overall employment statistics.

2.4. Definition and importance of SME

In the literature there is no unique way of defining SMEs, but largely, researchers use the total number of the workers when defining it. According to Southern and Tilley (2000), an SME is a type of business which hires 150 individuals or less and is not classified as a subsidiary to bigger businesses. This definition is used to define an SME in this study. Many different researchers like (Taylor and Murphy, 2004); (Martin and Matlay, 2001) and (Southern and Tilley, 2000) approve and recognise the fact that SMEs are diverse and have to be treated as such.

According to Gono et al **(**2013), in South Africa SMEs can be categorised as micro, very small, small or medium enterprises (also referred to as SMMEs) with varying sets of thresholds for each specific sector. SMEs play a very crucial part in the overall economy of any nation, particularly in the emerging economies because of employment generation and growth of the social economy for the area. SMEs are in most cases the main driver for a nation's economic development on a given country. It is projected that over 95% of businesses throughout the globe are SMEs, accounting for about 60% of private sector employment (Ayyagari et al., 2011).

It is a well substantiated and supported fact in the literature that the SME sector has a significant part to play in emerging countries economy, eradicate poverty and create jobs in developing countries (Hallberg, 2000). It is also a proven fact that the SME sector is the one sector where majority of the world's underprivileged people get employed (Stern, 2002). As such, governments and contributors similarly have acknowledged the significant role of the SME sector for general growth. Accordingly, several governments draw up strategies which are aimed at assisting the SME sector to growth through a number of

programs which range from technical assistance to tax incentives, from monitoring provisions to policy mediations, educating and other kinds of business expansion services.

According to Thorsten et al. (2005), in order to fast-track development and decrease poverty, the World Bank Group and other global aid organisations offer directed support to SMEs in developing countries. Thorsten et al. (2005) further state that Government policies around SMEs are based on three core arguments. First argument is that, different SME promoters maintain that SMEs directly improve competition and entrepreneurship and thus have external benefits on the productivity growth, innovation, and economy. From this point of view, undeviating government backing of SMEs will assist nations take advantage of the societal benefits from bigger competition and entrepreneurship.

Secondly, SME advocates often state that SMEs are more productive as compared to larger businesses but economic market and additional institutional disasters obstruct SME improvement. Hence, impending monetary and institutional developments, direct government monetary sustenance to SMEs can directly lift economic development and growth. Third and final argument is that, some SME advocates maintain that SME growth boosts employment growth more as compared to larger businesses because SMEs are more labour focused. From this point of view, assisting SMEs may represent a poverty relief tool.

There is increasing acknowledgement of the significant role that SMEs play in economic growth of a country. They are frequently defined as effective employment creators, the sources of big businesses and they help grow economies.

According to BANKSETA (2017), some scholars have projected the total economic yield of SMEs in South Africa to be 50% of GDP. It is also projected that they make available employment to about 60% of the labour force. SMEs are hence an essential contributor to the economy and are regarded as drivers for decreasing unemployment, given that the formal sector continues to shed jobs. This research becomes very important given the fact that in South Africa the SME sector creates a lot of employment. Everything needs to be done to protect and grow this sector like adopting ICTs into the business .BANKSETA went further on and stated that SMEs found in South Africa have to deal with the challenge of a lack of capacity due to the lingering skills scarcity in South Africa and the problems

they face in attaining very much needed finance. Due to these challenges, up-skilling and training of staff is sometimes considered a luxury.

Even in the advanced nations, it is the SME sector and not the big businesses that is the main employer (Abor and Quartey, 2010). They further stated that the concern of what constitutes an SME is a big worry in the literature. Different researchers have generally given different descriptions to this class of business. SMEs have certainly not been overlooked regarding the definition difficulty that is frequently linked with concepts which have numerous components.

2.5. ICT Value to SMEs

ICT use in businesses has taken centre stage particularly in SMEs where its critical role and emergent challenges has led to increased support from governments and different organisations. However, there is increasing research in this area in developing countries, including South Africa. The literature suggests the need for creating a significant targeted body of research on ICT/SMEs in developing country contexts (Gono et al., 2013).

The existing literature suggests and has proven that the better the benefits observed by the SMEs the greater the likelihood of adopting ICT. As such, apparent benefits have to be regarded as one of the issues that may well influence the adoption of ICT in the business. Mario and Giovanni (2003) established that ICT is capable of affording a business a varied collection of options for refining their competitiveness, benefits like providing tools for gaining entrance to new market prospects and specialized information services.

There are many researchers who agree with the above findings such as Sakai (2002) who in his research paper also highlights the fact that the widespread usage of ICT tools can allow small businesses with innovations and technologies to stay small and generating profits or make considerable worldwide sales by take advantage of their intellectual property over the Internet. This in turn allows SMEs to compete with big businesses for customers because of the many benefits which come with adopting ICT by SMEs.

According to Bayo-Moriones and Lera-Lopez (2007), most current empirical evidence validates the positive influence of ICT related technologies on business performance not merely on profits, market value, productivity, and market share, but as well as in intermediate

performance measures like cost savings, service quality, process efficiency, organizational and customer satisfaction, and process flexibility.

In their empirical research conducted to determine the factors that influence SMEs' association with the internet, Dholakia and Ksherti (2004) argue that ICT implementation improves an SME's capability to compete with other businesses, assists to form opportunities for variety amongst entrepreneurs, and offers suitable and easier means of doing business cheaper. Therefore it is of outmost importance that an SME uses some form of ICT in their business operations so as to gain competing advantage. Results of their study also discovered that specific aspects add to the SMEs' participation with the Internet —previous technology usage and the consumer service of apparent competing pressure influence both stages of Internet adoption.

Given the above facts, one can state that today the widespread usages of different ICT tools are shifting the way individuals or businesses function. It is a part of the technological improvements of this age in history where there has been greater invention in data management and communication so that in numerous nations, data, information and facts are easily transferred, retrieved and utilized. Accordingly, the speed of technological revolution and what is accessible for use by businesses has truly changed how they interrelate and run business.

ICTs have a proven valued potential for emerging nations; several SMEs through more active use and enhanced incorporation of ICTs in the business in general, and while supporting them in making more correct choices related to their performance. ICTs have the potential of making changes in SMEs and make them better, inventive, competitive and create development (Hartigan, 2005). In his study, Hartigan (2005) further went on and stated that meanwhile SMEs play a vital part in the economy more particularly considering their positive impact in job creation along with the development of the social-economic status of the public they are situated in. It then becomes necessary for SMEs to be stirred towards implementing new ICTs more speedily, and producing innovative products more competitively. It needs that SMEs have the correct environment to thrive, form a trained labour force and drive the economic development of a country as whole.

According to Alexander (2008), examples of technologies or ICT tools which different SMEs can utilize in order to profit from and that will aid in realising benefits mentioned in this paper are:

- **Video conferencing**

Video Conferencing in a sense allows real time, direct communication with business associates, customers, service providers and workers via a broadband system (Alexander, 2008). Thus, Video conferencing is capable of profiting an SME in many different ways, such as, reduced costs because of less costly journeys and hotel visits, while still offering the valuable content that you would get from a usual phone call, and permitting meetings to be conducted more frequently than planning of trips. Alexander (2008) highlights that the brilliant thing regarding video conferencing is the fact one can utilize technologies like VoIP and OSS, hence you will basically be paying far less for communication. Therefore SMEs do have to spend much in costly communication tools –platforms such as Skype and Gtalk can be utilize. By using these technologies saves businesses travelling expenses.

- **Wireless and mobile technologies**

It is a well-documented fact that wireless and mobile technologies improve effectiveness and efficiency by spreading the footmark of your office, while distributing data, material and required information to your workforce and customers when and anywhere they require it (Alexander, 2008). These wireless technologies enable individuals to get work done remotely with a virtual office. SMEs here gain from saving on rental space, furniture, and other required equipment's. Again the charge of these solutions is inexpensive matched with regular phone, rental and travelling expenses.

- **Customer relationship management (CRM)**

According to Alexander (2008), customer relationship management technologies are intended to aid businesses, in this instance the SME, to better understand its customers. CRM is frequently defined as taking a complete opinion of clients, in other words facts of all the points, suggestions, queries (communication) which clients make with regards to the firm and the capability to analyse them in order to achieve a better comprehension of the client's future needs. For instance, having knowledge of what a particular customer has done a certain type of transaction with the firm, so as to allow the firm to follow up and

suggest more related solutions. Alexander (2008) explains that it is possible to tie your CRM solution with your IP phone, so when a customer calls, it produces the customer's history window. So that prior to answering the call, you already know the history about the individual calling, thus you are able to assist them effectively, accordingly improving the client's experience. The Above mentioned are just a few tools, many tools and technologies are out there.

On the whole, ICT applications have the potential of providing several benefits across a varied collection of business processes and dealings. Undoubtedly, ICT tools can add to improve data and information management in any given business; it can decrease transaction expenses and can improve the swiftness and dependability of transactions for both business-to-consumer (B2C) and business-to-business (B2B) transactions. Moreover, they are efficient tools for refining outside communications and value of services for new and old customers. More specially, SMEs can get an extensive variety of benefits from the implementation of ICT (Cela, 2005).

Amongst these benefits, many researchers such as Brady et al. (2002); Kahn (2001); Ramsey et al. (2003) and Vilaseca (2003) have highlighted more benefits of adopting ICT to a business, benefits like:

1. Improve the efficiency and effectiveness of certain actions or tasks.
2. Assist in the implementation of new strategic, structural and management models.
3. Facilitate entrance to new environments along with the generation of new markets and business models.
4. Increase the qualification and specialization of human resources, which grows competence and efficiency.

The above stated benefits without any uncertainty can enhance any given business and improve its turnaround profits, and they can help save any business which is facing problems, problems which can lead to closure.

In other developing counties like South Africa market access remains a problem for various SMEs, and the adoption of relevant ICT tools can help these SMEs access markets and compete. Researchers such GOK (2005) and KIPPRA (2006) ascertained that restricted entrance to markets remains a serious restriction to SME development and effectiveness

owing to a decrease in the local market due to globalization. Restricted entrance to market information renders SMEs to be less conscious of prospects in the market. Generally total demand for the sector's products or services is small and markets are flooded because of overproduction and abandonment of inexpensive imports.

2.6 What are the ways in which SMEs could use ICT to become competitive?

In their study, Haller and Siedschlag (2008) analysed influencers of the adoption of ICT at firm level by means of using information obtained from Irish manufacturing business over the period of 4 years, results indicated that the adoption and implementation of ICT has been irregular across businesses, industries and space. Averagely, other things were equal, businesses having more skilful employees, businesses functioning in ICT-producing and ICT-using trades, and businesses situated in the capital city have been somewhat more effective in implementing and utilizing ICT. They also discovered a positive correlation between business age and ICT adoption. On the other hand, other studies did not find substantial association between firm age and ICT adoption such as (Lopez, 2007; Bayo-Moriones, and Lera- Khalifa, 2014).

Gaining competing advantage over your competitors is every business goal, this study advocates for the adoption of ICT's by SME's in order to gain competing advantage. According to khalifa (2014), the dissemination of a new technology is also swayed by the degree of pressure from competition. Businesses who do business in a pressurised environment are to be expected to adopt new ICT tools so as to strengthen their performance and survival chances. In relation to ICT, numerous researchers stated that ICT adoption lets a business take a competing advantage by decreasing their expenses and increasing their reactions to the market fluctuations and requirements of customer.

It is a fact that SMEs in South Africa are the main creators of employment; it therefore becomes important to find techniques by which SMEs may possibly use ICT so that they become competitive. According to Schubert and Leimstoll (2007), there exists two schools of thought regarding the matter of ICT significance the first school of thought is, identified as Porter's theories, which stipulates that ICT related tools add value to SMEs and the second school of thought is, identified as Millar's theories, which stipulates that ICT tools do not actually add any value because it is a commodity, such as electricity, accessible by

everybody. Nonetheless in the end they both concur that competitiveness of an SME completely depends on the ways in which ICT is utilized to support business processes. So this means that ICT implementation in a firm does not automatically offer the firm any competing advantage, however linking ICT to the business processes and business plans will most probably give the business a competing edge. This study adopts the thinking of the Porter's theory, which simply believes that ICT adds value to a business.

Overall, it look as if those SMEs which implement ICT according to the critical success factors identified below have a far better opportunity of succeeding according to (Murphy and Taylor 2004). Those critical success factors are as follows:

- Innovation, competitive advantage and flexibility;
- SME owner drive, knowledge and managing skills;
- Knowledge in management growth;
- Access to resources (technology , people and money);
- Close interaction with customers;
- Focusing on profit and not sales; and
- Solid demand and functioning in a growing market.

Murphy and Taylor (2004) in their paper further went on and stated that in order to accomplish the above outlined critical success factors, it is essential for SMEs to embark on the following:

- They must have a very clear and detailed ICT strategy which will manage the implementation procedure within a certain SME.
- The SME needs to be certain that the ICT strategy is in line with the business strategy, meaning that the ICT strategy must assist realizing the desired business objectives.
- The SME must be certain that it hires the correct skilled personnel and determines the title roles that these people will fulfil in making sure that the SME is effective in leveraging ICT.

SMEs have to clearly outline an ICT strategy relevant to their business. This will in turn assist the SME comprehend the potential of ICT and define the procedures and approaches to be followed during adoption and implementation. It is essential for SMEs to identify the influence of ICT on their business and must invest in efforts to take advantage of it or

capitalize in ICT. Levy et al., (2001), in his study has found out that ICT investment is fruitful once it follows any of the following two formulas: providing efficiency and savings, or enabling added value.

Another important factor is the positioning of SME's business strategy and ICT strategy; lining up the business strategy with the ICT strategy will make certain that ICT is implemented so as to deliver on the SME's goals. The design of the ICT strategy is ought to be founded upon the business strategy, because an SME must not be entirely focused on technology requirements but rather on business requirements. The literature indicates that in the past some researchers on this vital topic were more focused on the ICT side and managing and organizing technology perspectives, neglecting the SMEs perspective, but now the attention is shifting towards the link between ICT and SMEs from the SMEs perspective.

However, according to Perry (2007) in his study entitled "SMEs get CIO-on-call" he discovered that ICT decision making for majority of SMEs is not founded on business strategy but rather on short-term business necessities. Different from large businesses, SMEs have no dedicated chief information officer (CIO) or somebody fulfilling this role to make ICT related decisions from a strategic point of view. He further went on to stress the fact that casual decision making regarding ICT is problematic and is an aspect which should be dealt with in so as to give SMEs competitive ability.

In their study aimed at analysing the role executed by five groupings of influences in ICT adoption or implementation: business structural characteristics, environment , human capital, internal organization , and competing strategy, Bayo-Moriones and Lera-Lopez (2007) discovered that there is a need arising of revising the traditional public backing for ICT adoption or implementation on small offices, together with the presence of complementarities with strategies intended to draw overseas investments and to grow the employees level of education as an attempt to spread ICT adoption. Study results also state that it is essential for managers to align ICT adoption and the strategic focus of the business more constantly in order to utilize ICT competitively.

2.7 Barriers experienced by SMEs when adopting ICT

Kapurubandara and Lawson, (2006) in their study titled 'Barriers to Adopting ICT and e-commerce with SMEs in developing countries: an exploratory study in Sri Lanka' discovered

that various issues recognized as reasons for this unwillingness can be largely categorised as internal barriers and external barriers. Internal Barriers can be fixed within the business by the business itself, whereas External Barriers have to be resolved by either government involvement or by cooperation of SMEs. Some earlier research done on this subject specified that demographic aspects like gender, age and education level decide ICT adoption by business, these demographic factors can thus be classified as internal barriers

Much of the literature shows that e-commerce as a whole offers a promising way for businesses to overcome challenges they face on this constantly changing environment. Nonetheless, a small number of present studies regarding SMEs in developing nations show that SMEs are still left behind and still doubt the adoption of ICT related technologies regardless of their efficiency. Available literature further indicates that many noteworthy reasons contribute towards this unwillingness of ICT adoption as a whole.. Some researchers discovered that young people embrace ICT easily as compared to the older age group (Harrison and Rainer, 1992); kumar et al., 2008; Ongori and Migiro, 2011).

There are numerous barriers or problems which make it challenging for SMEs to accept and use ICTs in their business, despite the great benefits which come along with adopting ICTs. Like many researchers, MacGregor and Vrazalic (2006) acknowledge the fact that the barriers hindering the adopting and use of ICT by SMEs are both technological and socio-economic, by highlighting the fact that the barriers can be caused by many different issues internal and/or external to the business, in this instance the SME.

According to Herselman (2003), a lot of South Africa's rural areas are below survival levels and stay disadvantaged because they do not have access to fundamental infrastructure which is crucial for economic development and growth. Mahikeng area is no exception even though it is a capital city in the North West Province there exist very poor communities in the area. It is understood that the reception and application of ICT in businesses have not had similar results for all kinds of businesses. Therefore, not all SME owners or microbusinesses have implemented ICT nor do they aim to do so in the nearby future (Ramsey et al., 2003).

It is evident that SMEs are faced with many barriers and difficulties which complicate the adoption of ICT. According to Cloete et al. (2002) in their research study focused on SME

adoption and use of e-commerce in South Africa, implementation is greatly influenced by issues inside the business. These issues include no access to computer hardware and software, other computing hardware, at an affordable cost; very low e-commerce usage by competitors and suppliers; anxieties regarding legal and security matters; little knowledge of management and workforce; and not clear benefits from e-commerce were discovered to be the main issues that hinder the adoption of ICT.

Most of the SMEs which were surveyed acknowledged costs as the major factor threatening future investments in ICT (Harindranath et al., 2008). This finding can be better clarified with reference to the funding sources which where accessible by SMEs in the study they conducted. They discovered that majority of SMEs obtained their ICT capital expenditure through retained proceeds. However, in few instances there were other sources of funding such as venture capital and loans used by SMEs. This can be explained by the very careful style that SME owner/managers often chose regarding ICT investments, mostly when they have trouble measuring or forecasting the business benefits that might rise from such investments.

Harindranath et al. (2008) in their study further discovered that various owners/managers of both big and small businesses were not skilled enough with regards to ICT, and often dependent on the guidance of consultants. This tended to affect the confidence with which they approach investment decisions relating to ICT. Part of this careful attitude towards investments which are related to ICT can also be because of the lack of internal ICT skill in these businesses.

ICT is seen as an enabler of business and it has many advantages, as emphasized by Tregurtha and Vink (2002), advantages like reduced cost, network scale and enhanced customer service, however it is very significant to explore the capability of the SMEs in leveraging ICT and getting the best benefit for their specific business model.

The absence of information regarding the strategic use of ICT and lack of the essential IT expertise are the two key barriers. Other barriers are the perceived cost associated with ICT and the forever-changing ICT environment, plus geographical aspects like urban versus rural areas. Tregurtha and Vink (2002) further went on and alluded the facts below:

- **Lack of knowledge about the strategic use of ICT**

Much of the literature indicates that there is a lack of information regarding the possible benefits of ICT and strategies in order to assist SMEs in achieving their business objectives. Most SMEs are confronted with the challenge that mostly they are managed by the owner and the owner makes all or most decisions relating to the business (strategic direction). This is regrettable because the owner's limits also become limitations of the business. This particular challenge can be described as a strategic problem, as ICT needs to be regarded as a strategic player in the SME for attaining its targets.

- **Lack of necessary IT skills**

As previously indicated above, the SME owner/manager is central to the business, making most or all of the decisions in the SME. This basically means that the implementation of ICT by the particular SME rest on the owner's ICT skills, knowledge and attitude towards technology or ICT in general. The Government in South African has formed organisations (SETAs) as an attempt to try and increase ICT skills. Nonetheless, the SME owner's attitudes regarding ICT and its significance needs to change, and each SME needs skills to work with. If SMEs have a well-skilled ICT workforce, SMEs are most likely to implement and use ICT as a competing tool successfully.

- **Perceived high setup cost**

ICT is seen to be very costly by most businesses; therefore, they frequently do not set aside a budget for it. ICT related solutions are usually associated with huge sums of money and stories which are related to ICT solutions being usually of over-budget.

Another problematic issue regarding the cost of ICT is that SMEs might invest in unnecessarily large ICT solutions because of sale pitches, excitement of certain products/services or patterns in the market failing to consider their real need. While they could have bought a less complex, small package or programme which meets their particular needs, and accordingly paid less.

- **Ever-changing ICT environment**

The ICT environment is forever evolving; thus, continuous learning and technological updating is of outmost importance. Technology is always progressing, becoming quicker, smaller, and more great, or digital, for example.

- **Geographical factors**

ICT usage makes it much easier to access rural or isolated areas. But, there are other elements which need to be considered, like lack of suitable infrastructure, there might be no adequate roads or proper address systems. South Africa is faced with the problem of

inequality; on one hand there are rural areas which are underdeveloped and on the other hand there are urban areas which are well-developed.

Much of the literature indicates that challenges hindering the adoption of ICT adoption are mutual amongst SMEs in both the developing and developed nations; however developing nations (such as South Africa) are largely faced with more challenges. According to Tan, et al. (2010), the most often stated challenges are inadequate telecommunications infrastructure, unsuccessful integration of ICT into business procedures, high costs of ICT tools, absence of skilled or limited ICT personnel, and government regulations. However, other researchers have discovered that ICT constraints due to unskilful technicians, including unawareness of the value of ICTs and return on investment have been the main reasons for lower rate of adoption, researchers such as (Duan et al. 2002; Fulantelli and Allegra, 2006; and Hashim, 2007).

Other barriers identified in other studies include lack of government support, increased cost, risk, complex processes, management guidance, benefits and costs , security concerns, legal matters, business difficulty, human capital insufficiency, gross revenue of technical staff, and customer services (Fink and Disterer, 2006; Chong et al., 2001). It is clear and acceptable that different SMEs have different challenges with regards to ICT adoption. In a study by Debrick and Kraemer (2001), they state that the main challenges of ICT adoption by different SMEs include poor transport and distribution, inadequate dispersal of computers, lack of processes for online payment, lack of banking services and unclear tax rules, lack of external pressure from suppliers and customers also prevent ICT adoption.

Some studies indicate that several challenges/barriers can be positively resolved by big business due to the fact that they have the required resources and skilled employees. On the other hand, various SMEs are affected by severe shortage of resources including personnel; therefore it is not surprising that the perceived challenges/barriers of ICT adoption by SMEs may differ significantly from those of larger businesses (Riquelme, 2002). This has resulted in several researchers such as Heung (2003); Tyler and Manica (2007) and Tan et al. (2009) to mention a few to have conducted studies with the main purpose of examining the perceived challenges of ICT adoption by SMEs.

In their study, Chau and Turner (2002) support the reason for conducting this study; they maintain that the SME owner's lack of knowledge about ICT technology and perceived advantages are the main challenges concerning ICT adoption.

According to Martin (2005), the SME owner/manager capability gaps or knowledge gaps can be a barrier regarding new ICT selection and usage.

- Owner enthusiasms, value, abilities and attitudes direct business knowledge. Meaning that if the owner does not create an ICT recognition culture in the SME it will be challenging for the workers to adapt ICT.
- Instinctive and organic styles of managing and operating a business influence considerably on technology assessment and adoption as they make it problematic for the owner/manager to make assured decisions.

South Africa like many other developing nations still has problems regarding infrastructure, Connectivity and many other problems relating to ICT which are being experienced by developing nations. These problems include inadequate communications infrastructure, and such inadequate infrastructure results in poor internet connections and very expensive connectivity costs. Old infrastructure and state-owned equipment regularly result in higher costs with very partial coverage, more specifically in rural areas. This in turn makes SMEs reluctant to adopt even the basic ICTs of fixed lines or cell phones.

2.8 Conclusion

This part of the study (chapter 2) involved the process of reading, analysing and evaluating all the literature related to the usage of ICT by SMEs to become competitive. The literature review had a review of different IT theories/Models of ICT Adoption out there specifically the TOE theory framework as it is more related to the scope of this research paper. The following part of this study (chapter 3) is the research design and methodology which describes the geographical area where the study was conducted, the methods which were used, the population, the study design and the instrument which were used to collect data.

Chapter 3
RESEARCH DESIGN AND METHODOLOGY

3.1. Introduction

In this day and age ICTs are seen as competitive tools for businesses, and if adopted and used correctly, they can bring with them many benefits for businesses. It is evident form the literature that ICT do in fact affect SME's and its ability to compete and render their services to their clients while staying competitive (Modimogale and Kroeze, 2009). The generic problem from which the problem statement of this study stems from is that SMEs are using traditional methods most of the time to stay competitive or conduct business. In addition, some SME owners are not aware of how ICT can make their business stay competitive or reluctant to introduce ICT to their business operation. SMEs fail to enhance themselves by using the available tools and techniques offered by the ICT sector in order to stay competitive.

In this chapter (Chapter 3) the research methodology used in this research is described. The geographic location where the research was conducted, the research design, population and sample are described. This chapter also presents the research philosophy, strategy and approach that form the underpinning basis for this research when choosing the research design methodologies. The tool which was utilized for collecting data is also described, as well as methods applied to preserve validity and reliability of the tool are described.With regard to the methodology, both quantitative and qualitative research methods (mixed methods) were used in this research paper. This mixed research design has philosophical assumptions. As a methodology, it involves philosophical assumptions that guide the collections and analysis of data and the mixture of qualitative and quantitative data in one study.

The mixed research method is a methodology for conducting research that involves collecting, analysing and integrating qualitative and quantitative research. This methodology was chosen amongst other reasons because it provides the researcher and reader a better understanding of the problem. Below is an articulation of how mixed research is going to be executed in this study. Data collection, analysis and reporting will be clearly articulated below.

The qualitative research method was used with the aim of gaining a more thorough understanding of the range of usage of ICTs and their perceived value. In conjunction with the qualitative method, the quantitative research method focused at the statistical significance of the barriers and opportunities faced by SMEs in Mafikeng. It is also used because data was gathered, analysed and represented in numbers, tables, charts, correlations and statistics.

The researcher chose to employ this mixed research approach in this study and no other approach for a variety of reasons such as:

- To increase the scope or breadth of the research;
- To counterbalance the flaws of either research method alone; and
- To get much more data from the research-questionnaire respondents.

According to Creswell and Clark (2007), researchers around the world have been using mixed research methods for a number of years, and referring to it by a number of names.
First researches regarding the use of such designs have referred to them as integrated, multi-method, combined, hybrid, and mixed methodology research.

According to Johnson et al. (2007), the term mixed methods research has gained dominance over alternative names such as integrated research and mixed research. This mixed methods term makes a suggestion that it is the methodologies mixing and not the methods. Johnson et al. (2007) further provide a blended definitions of mixed methods research as the kind of research where a researcher adds together elements of quantitative and qualitative research approaches (e.g., usage of quantitative and qualitative views, data gathering, analysis, inference techniques) for the general purposes of breadth and depth of understanding and support.

3.1.1 Research philosophy

Research philosophy is basically the philosophical assumptions which form the basis from which the research methods and strategies are chosen or designed. The philosophy of research is represented in three forms, i.e. epistemology, ontology and axiology (Easter-smith *et.al*., 2008). The philosophy adopted for this study is the epistemology research philosophy. This is because this study aims to contribute to the body of knowledge. Epistemology is about understanding and knowing the worldview and what truth is derivable. Epistemology is the reflection of the view which is applicable and most appropriate to the world. The research strategy employed in this study is the case study research. This is because case study research

entails logically linking data collection methods to established questions and aims of the research study.And also because this strategy allows the research to carried out by using multiple sources of data which inform a triangulation of evidence.

3.2. Research Questions

- What is the Value of ICT to an SME?
- What is the current state of affairs regarding the use of ICT by SMEs in Mafikeng?
- What are the barriers experienced by SMEs when adopting ICT?

3.3. Research Objectives

- Determining the current adoption and use of ICT on different SMEs in the Mafikeng area.
- Determining the relationship between ICT adoption and SME growth.
- Determine the importance of ICT adoption and usage by SMEs
- Raise awareness of the benefits which ICT can bring to an SME
- Determining the barriers experienced when adopting ICT by SMEs in Mafikeng.

3.4 Data Collection

3.4.1. Instrumentation

Several different research instruments can be utilized to achieve the same research objectives and they are general ways of gathering data. Generally, there are many processes out there of collecting data and information. The leading instruments used for collecting data in the mixed method researches comprise of both closed-ended and open-ended questionnaires, participants' interviews, documents review and classroom observations. These different techniques of collecting information can complement each other and therefore improve the validity and dependability of the data. In the main, the quantitative data are gathered through closed-ended questionnaires and the qualitative data through open-ended questionnaires, interviews, and documents review and also classroom observations. The items or questions contained in the questionnaires are primarily developed based on the research questions and research objectives.

A questionnaire was used as a primary tool for collecting data in this study. The quantitative data was collected through closed-ended questions and the qualitative data through open-ended questions in the questionnaires, documents review and through observations made by

the researcher. The researcher chose these techniques of data collection because these tools and techniques are best suited to answer research questions and meet research objectives mentioned above. Neelankavil (2007) defines a questionnaire as a range of questions on a very specific topic; the questionnaire is based on specific information needs or research goals. According to Henn et al. (2009), collecting data in quantitative research requires certain form of measurements which uses indicators. The indicators can be in the form of scales or categories on a research instrument like questionnaires. A questionnaire is described as a document which contains relevant questions and other sorts of items which are intended to solicit appropriate information for analysis purposes (Acharya, 2010). A questionnaire was chosen to be used in this study because of the following reasons:

- A questionnaire offers the possibility of anonymity as names of participants will not be required.
- Questionnaires require little time and energy for administration.
- There is an assurance of a higher response rate as the questionnaire will be distributed to participants to complete and will be personally collected.

The qualitative data was collected through documents reviews and observations. Document reviews are vital because this technique is easy to do and it often has little to no cost, and it saves time. Observations as a data collection technique was utilized to gain first hand insights into respondent's behaviours, processes, and experiences. The researcher opted for the option of observations as a qualitative data collection technique because often what people say they do in a given situation and what they actually do are two completely different things. Observational techniques can help the researcher understand what is really going on.

Participant observation makes it possible for researchers to check meanings of those terms that research participants use in interviews, notice actions which participants may not be able or not willing to share because when doing so they may seem to be impolite, unwise, or insensitive, and notice situations participants have referred to in interviews, in so doing it will be possible for the research to make participants aware of distortions or incorrectness in description they provided (Marshall and Rossman, 1995).

Document analysis is a methodical or systematic process for studying or assessing documents—both electronic and printed material, and like other techniques used in qualitative research, document analysis also requires that data and information be scrutinized

and interpreted so that meaning is elicited, understanding is gained, and knowledge is developed (Corbin and Strauss, 2008). The researcher opted for the option of document analysis to collect qualitative data in conjunction with participant observation because, available documents supply data on the setting within which participants operates, supply background data as well as historical understanding. Such data and understanding can help the researcher comprehend the historical roots of the research problem.

3.5 Procedure/data analysis

Primary data was gathered through the usage of questionnaires, participant observations and documents analysis. The questionnaire was randomly distributed to 100 SME owners in the Mahikeng area. SME owners were informed that the completion of the questionnaire is on voluntary basis, it is confidential and would not affect their performance or profitability. Anonymity was ensured as the results of the study will not enable their responses to be linked to them personally at the data analysis stage. The participants were required to meet the following standards in order to participate in the study:

- Should be an operating SME owner or full time employee;
- Be prepared to partake in the study; and
- Should be of either sex or any race.

Results of the questionnaire were analysed and represented using the Statistical Package for Social Science (SPSS) software program.

3.6. Population and Sample

Polit and Hungler (1999) states that population is a collection or entirety of all the subjects, members, or objects that fit in to a set of conditions in the research. In this study the population consisted of all SME owners in Mafikeng, regardless of age groups, educational status, socio-economic status, business sector and residential areas.

The owners of SMEs are selected as appropriate respondents for the questionnaire in agreement with the findings of Martin (2005), which states that the SME owner is the one who makes most of the decisions concerning the SME, accordingly they would have a good understanding of matters concerning the SME. According to Patten (2004), obtaining a sample which is not unbiased is the main principle when one evaluates the adequacy of a particular sample. Patten (2004) further recognizes an unbiased sample as one in which every participant of a population is given an equal opportunity of being nominated in the sample.

Every SME owner got an equal opportunity of being selected in this study because the researcher chose 100 SME owners randomly to be respondents.

The sample consisted of 100 SMEs who were part of the study the reason for selecting 100 SMEs is because the total population size is too large, it will be costly and time consuming to include all SMEs in Mafikeng. Therefore, random sampling was used in this study because it is regarded as the perfect technique of probability sampling. Each affiliate of the population is given an equal and known chance of being nominated.

3.7. Reliability and Validity

As this research involves the usage of both quantitative and qualitative data, the notions used to define reliability and validity are broader as compared to those usually used in quantitative research. When dealing with qualitative data, the notions of dependability, honesty, credibility, and transferability are also used.

Healy and Perry (2000) state that the value of a research in a respective paradigm must be judged by its specific paradigm's terms. For example, even though the terms Validity and Reliability are important conditions for quality in quantitative paradigms, in qualitative paradigms the terms Dependability, Neutrality, Credibility, and Applicability are to be an important condition for quality.

According to De Vos (1998), reliability is a criterion which refers to the consistency of data stemming from the usage of a particular research method. A study is reliable to the extent that repeated application of it under the same conditions yields the same results. Reliability can be ensured in various ways and one way is to control data collector bias. According to Babbie and Mouton (2010), the following are some of the ways in which the reliability of a study can be compromised. These include:

- the researchers subjectivity;
- asking difficult questions and confusing the questionnaire respondents;
- asking questions to which respondent has no answers; and
- Misinterpreting information from participants under observation.

According to Onwuegbuzie and Johnson (2006), in the case of quantitative research, the significance of validity has been long established. While in qualitative research, deliberations regarding validity have been more argumentative and various typologies and ideas have been

formed. In mixed research methods, in which qualitative and quantitative methodologies are joint, deliberations regarding validity issues are still in their early stages. Onwuegbuzie and Johnson (2006) further maintain that because mixed research consist of merging complementary strengths and non-overlapping weaknesses of both qualitative and quantitative research, evaluating the validity of study outcomes is mostly difficult. In order to ensure the reliability and validity of the questionnaire contents, the questionnaire was reviewed by a statistician. The subsequent practises of guaranteeing reliability and validity, legitimizing the data, and lastly providing credibility to the research report were used for this research.

- **Triangulation**

Cohen, Manion and Morrison (2000) describe triangulation as the usage of two or more procedures of collecting information in order to study a specific phenomenon. Jakob (2001) specifies that by merging several theories, approaches, observers, and experimental materials, researchers can hope to defeat the weakness or inherent unfairness and the difficulties that emerge from single-theory, single-method, and single-observer studies. Regularly the aim of triangulation in particular situations are to get validation, ensure reliability and validity of research results through merging of various perceptions. The point at which the perceptions meet is seen to represent the truth.

Triangulation was applied when evaluating data and findings, the researcher as indicated in chapter 1 will gather data through numerous techniques: questionnaires, observations and document analysis. Collecting data using one technique can be weak, questionable, and biased. But, gathering data from a range of sources and with a variety of techniques can endorse findings.

According to Denzin (1994), there are four types of triangulation. However, only two types of triangulation were used in this research, namely the methodological triangulation and data triangulation. Data triangulation is concerned with the usage of several data sources, and in this research study, questionnaires, observations and document reviews were used. Methodological triangulation is concerned with the usage of both quantitative and qualitative methods in the same study.

- **Peer review**

The second process for guaranteeing reliability and validity in this research is peer review. According to Creswell and Miller (2000), peer review is basically the assessment of the research process and data by an individual who has familiarized themselves with the research or the phenomena being researched. A peer reviewer basically offers support, tests the researcher‘s interpretations, assumptions, and conclusions, drives the researcher to the ensuing step, and enquires about interpretations and methods. This process was used during data collection, interpretation and conclusion phases of this paper. The first peer reviewer was an experienced friend who has already completed his master’s degree at the North-West University. The second reviewer was my supervisor who has extensive knowledge and experience regarding the subject matter. Both reviewers have extensive knowledge and understanding of the topic of this research and provided the needed excellent guidance and advice.

- **Thick description**

Thick description is a process that is usually applied in qualitative research to guarantee reliability and validity. This process is focused on defining the respondents, the setting, and the subjects of a qualitative research in more detail. The reason for reporting research findings using thick description is to offer much more detail to everyone who is going to read this paper. It also allows the readers to make conclusions about the applicability of the findings to other sceneries or similar contexts. In this research study, the researcher defined in detail the key concepts in chapter 1, which are ICT, SMEs and the value of ICT on SMEs, the background of Mafikeng, and all the samples of research participants have been carefully defined.

In addition to the three processes listed above of ensuring validity and reliability, the researcher’s bias was minimized by the researcher being the only individual to manage questionnaires. In order to make sure that the reliability of this study is not compromised, participants were given the questionnaire in an environment which ensured privacy, confidentiality and physical comfort. The researcher formulated the questions in the questionnaires to be easily understandable by respondents.

Questions found on the questionnaire are founded on information collected during the literature review so as to make sure that they capture the relevant and required information

from the respondents. As for content validity, it was guaranteed by consistency in the administration of questionnaires. Furthermore, all questionnaires were personally delivered to respondents and the researcher was present when respondents answered the questionnaire. This was done to avoid respondents allowing other people to complete the questionnaire on their behalf. Clear instructions were given to SME owners verbally. Furthermore, questionnaires were accompanied by instructions so that respondents can correctly answer the questionnaire. Furthermore in order to strengthen validity

For confidentiality purposes, participants were not required to provide their names when completing the questionnaire.

3.8. Ethical Issues

Ethical considerations are of the utmost importance when one is conducting research which involves human participants (Goddard and Melville, 2001). It is compulsory upon researchers to design a study in which the principles of integrity, a respect for persons and justice are demonstrated. Research ethics entails all requirements on day-to-day work, the safeguard of subjects' dignity and the publication of information in the study according to (Fouka and Mantzorou, 2011). According to McNamara (1994), there are ethical concerns which have to be taken to consideration when one is conducting research; these areas of concern include that there will be no harm in whatever way to respondents, voluntary participation, confidentiality and anonymity.

Confidentiality implies that the dignity of a subject in a study should be respected. Therefore, it is important that participants have no doubt that any identifying information provided would be regarded as confidential.Confidentiality of responses is assured in this study and the research is conducted for academic purposes only. The researcher is committed to adhere to the right to privacy including the right to decline to participate in this research. Threfore SMEs owners were not pressured to do so. Again, the names of participants in the study will not be directly linked to the results of the study; by doing so participants anonymity will be satisfied.

The researcher accepts the declaration that this research adds to the available information and that business and technological advances are based on this knowledge. Particularly, it is accepted that educational research should contribute to better the competive advantage of different SMEs.

3.9 Conclusion

This part of the study, chapter 3, described the procedure/data analysis, outlined the research questions and objectives, data collection instruments and procedures which will be followed in analysing the data. The study's reliability and validity were discussed and in conclusion there was a discussion of ethical issues to be considered in the study.

The chapter also justified the choice of measuring instrument, the selection and construction of questionnaire, the data analysis process and the statistical package which will be used for statistical analysis. The results of the data collected in this research are presented and interpreted in the following chapter (Chapter 4).

Chapter 4
DATA ANALYSIS AND RESEARCH FINDINGS

4.1 Introduction

This chapter presents the analysis of the study followed by a detailed discussion of the research findings and finally the chapter summary respectively. As pointed out this study uses mixed method research approach, thus Integration becomes a key process in the final stages of this study. In this case qualitative and quantitative data will be compared for similarities and differences, integrated or combined if appropriate. The findings are related to the research questions that steered this study. Data were analysed to determine the current status of SMEs in Mafikeng in relation to the adoption of ICT in an attempt to stay competitive and in business. Data were obtained from interview-based questionnaires, observations made by the researcher and documents available. The questionnaire was completed by 73 SME owners or full time employees (n=73), a 73% response rate of a sample size of 100 was achieved.

The objectives of this study were to:

- Determine the current adoption and use of ICT on different SMEs in the Mahikeng area.
- Determine the relationship between ICT adoption and SME growth.
- Determine the barriers experienced when adopting ICT by SMEs in Mafikeng.
- Raise awareness of the benefits which ICT can bring to an SME

The questionnaire was given to SME owners, in few cases were the owners were not accessible a permanent employee who is charged with managing and making decisions on a daily basis was given the questionnaire to respond to.

The data from the questionnaire was statistically analysed by a statistical program known as SPSS. The findings are discussed according to the sections of the questionnaire. The four broad sections of the questionnaire were:

Section A: General Information

Section B: Current State of ICT within the SME

Section C: ICT Capability

Section D: Challenges

This chapter at the onset determines the background of the participants by analysing their demographic information/ general information. This is followed by the research findings and analysis of data, and finally the summary. The findings and analysis has incorporated general

and cross tabulation analysis primarily on four broad themes as outlined above. Tables and diagrams have been used to enable a simple reader-friendly writing. Finally, the conclusion of this chapter is provided.

4.2 Methods of data analysis and data presentation

This study uses the quantitative methods for data analysis, and as such these methods require complex statistical analyses. For data analysis purposes for this study, a tool with capabilities to work with almost any type of file was used to generate charts, tables and reports required. As such, the researcher used the statistical package for social science (SPSS) software program for data analysis. The descriptive data statistical analysis was used to identify different frequencies and percentages to render answers to questions which appeared on the questionnaire.

4.3 Analysis of the respondent's background information

Even though it was not necessarily part of the purpose of the research, this information was planned to basically give a thick description of the respondent's demographic data and to evaluate for any effect on the study results. The demographic data comprised of age, owner qualification, SME size, years of experience in business and market focus to mention a few.

4.3.1 Age of SME owner

Some previous research studies have discovered that demographic aspects like gender, age, and education of SME owners decide ICT adoption. Young people are adopting ICT much easier as compared to the older age group (Harrison and Rainer, 1992; Kumar et al., 2008; Ongori and Migiro, 2011).Questionnaire participants were requested to tick the age category applicable to them (see table 4.1 below).

All participants responded to the question (73 responses or 100%). The table shows that 32.9 % of the respondents fall in the 31-40 age category of which it constitutes a large number of the sample, Followed by 26 % of the respondents falling in the age category of 41-50. Twenty one point nine (21.9 %) of the respondents are found in the age category of Over 50 years, and lastly 19.2 % fall in the age category of 21-30 years respectively. These findings indicate that the majority of respondents are below 40 years who are relative young and should be adopting ICT easily as stated by many researchers as stated above.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	21-30	14	19.2	19.2	19.2
	31-40	24	32.9	32.9	52.1
	41-50	19	26.0	26.0	78.1
	Over_50	16	21.9	21.9	100.0
	Total	73	100.0	100.0	

Table 4.1

4.3.2 Qualification of SME owners

Although business owners do not need to earn a 3 or 4 year university degree, there are different degree programs that prospective owners can complete which can provide them with a better understanding of what owning and running a business entails and may make their businesses more successful. Business owners are accountable for making the decisions that affect a company, including what goods or services their business will be offering to their clients and how they convey those services/goods.

As indicated in chapter 2, for this study, the TOE framework was used as a guide. The TOE framework basically looks at the technological, organizational, and environmental circumstances of an organization. Each of these three contexts influences the process by which a business adopts implements and utilizes technological innovations (DePietro et al., 1990). The Qualifications of the SME owner was very relevant in this research in the sense that it can directly impact the technological decisions the owner makes in relation to the business success and competitiveness. Education brings vast amount of exposure and knowledge which include exposure to technology.

Qualification of the Owner

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Primary School	2	2.7	2.7	2.7
	Middle School	9	12.3	12.3	15.1
	High School	27	37.0	37.0	52.1
	College/University	35	47.9	47.9	100.0
	Total	73	100.0	100.0	

Table 4.2

The above table 4.2 presents the results of the qualifications SME owners have in this study. From the total of 73 respondents 47.9 % of the respondents indicated that they have some college/university qualification which constitutes a large number of the sample. This is

followed by 37 % of respondents indicating that they have a high school qualification. 12.3 % indicated that they have middle school, and only 2.7 % primary school respectively. From the results represented, it is evident that respondents do actually have some sort of college/ university qualifications which help them run their business.

Since 64.4% (Figure 4 below) of the questionnaire respondents have shown that the owner/manager is the one making decision in terms of ICT in the SME, it is vital to determine if there is any relationship between qualification of the owner and the usage of ICT to gain competitive advantage by the SME. As illustrated in table 4.3 below, there is a significant relationship between qualification of the owner and the usage of ICT to gain competitive advantage, r = 0.239, n = 73, p = 0.042. This in overall means that an increase in the owner's qualifications results in an increase in the usage of ICT to gain competitive advantage.

Table 4.3

		Qualification of the Owner	Usage of ICT to Gain Competitive Advantage
Qualification of the Owner	Pearson Correlation	1	.239*
	Sig. (2-tailed)		.042
	N	73	73
Usage of ICT to Gain Competitive Advantage	Pearson Correlation	.239*	1
	Sig. (2-tailed)	.042	
	N	73	73

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

4.3.3 Level of education SME employees have

According to BANKSETA (2017), SMEs which exist in South Africa have to overcome the challenge of a lack of capacity because of the shortage of chronic skills in South Africa and the problems they are faced with when trying to obtain desperately needed finance. Because of these challenges, up-skilling and training of employees is at times seen as a luxury. From the table below 4.4 presents the results in relation to the education of the work force of the SMEs studied here. The results indicate that of the surveyed SMEs, 74 % of respondents have a high school qualification which is a large number of the sample, followed by 15.1 % who have a middle school. Only 11 % of the respondents have a tertiary or higher education qualification.

What is the Average Level of education of your Work-Force

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Middle School	11	15.1	15.1	15.1
	High School	54	74.0	74.0	89.0
	Tertiary/Higher Education	8	11.0	11.0	100.0
	Total	73	100.0	100.0	

Table 4.4

4.3.4 Business size

Due to monetary factors, the size of the business is one of the main issues regarding IT adoption (Pan and Jang, 2008). This means that it is an essential feature concerning the adoption of ICT. Business size is regularly used in the empirical literature on new technology implementation this is because it is much easier to observe and it functions as a proxy for a number of things (Geroski, 2000). A positive correlation between ICT adoption and business size is found in several empirical studies (Morgan et. al., 2006; Fabiani et al., 2005; Teo and Tan, 1998). However, other researchers, in contrast, have discovered a weak or not significant relationship between the adoption of ICT and business size (Love et. al., 2005; Lefebvre et al., 2005; Teo et al., 1997).

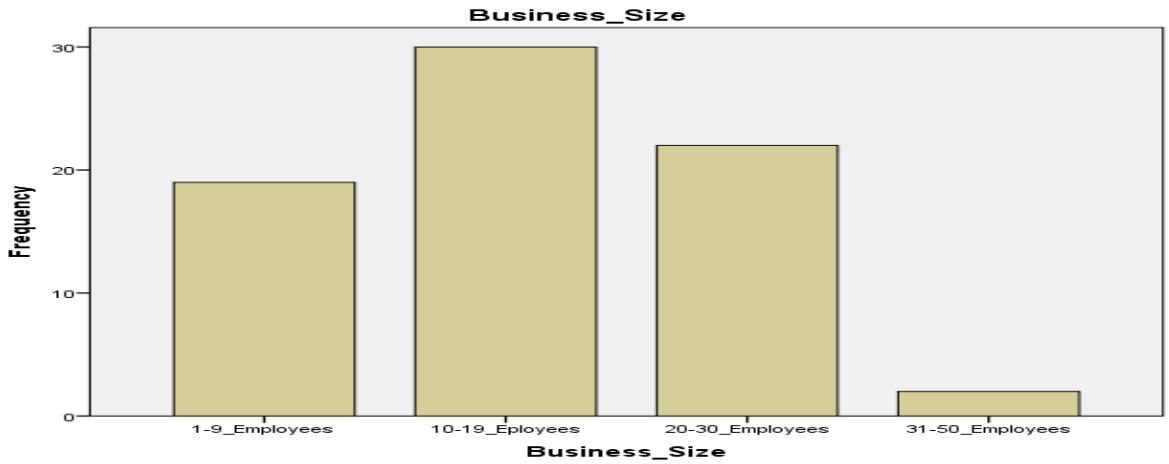


Figure 1: Business size

In this research study the business size was measured using the number of employees in the business. The above figure (Figure 1) indicates that from the surveyed 73 SMEs, 30 respondents (41.1%) indicated that they have between 10-19 employees, followed by 22 respondents (30.1%) indicating that they have between 20-30 employees. 19 respondents (26%) indicated they have between 1-9 employees, and only 2 (2.7%) of the respondents indicated that they have between 31-50 employees in their work-force. It is evident from

these results that most SMEs who took part in this study have between 10-19 employees in their work-force.

Since one of the objectives of this study was to determine the relationship between ICT adoption and SME growth, a Pearson correlation between the business size and the use of some form of ICT in the business was conducted. Table 4.5 below present's results from the correlation. As illustrated there is a weak relationship between these two variables r = 0.021, n = 73, p = 0.860. This finding means that increases or decreases in business size does not significantly relate to increases or decreases in the use of some form of ICT in the Business.

According to Oliveira and Martins (2008), even though some researchers have revealed that big businesses are more likely to accept innovation, it must be highlighted that the adoption of ICT often needs close teamwork and management which can be easily achieved in small businesses.

Table 4.5

		Business Size	The use of some form of ICT in the Business
Business Size	Pearson Correlation	1	.021
	Sig. (2-tailed)		.860
	N	73	73
The use of some form of ICT in the Business	Pearson Correlation	.021	1
	Sig. (2-tailed)	.860	
	N	73	73

4.3.5 Business age

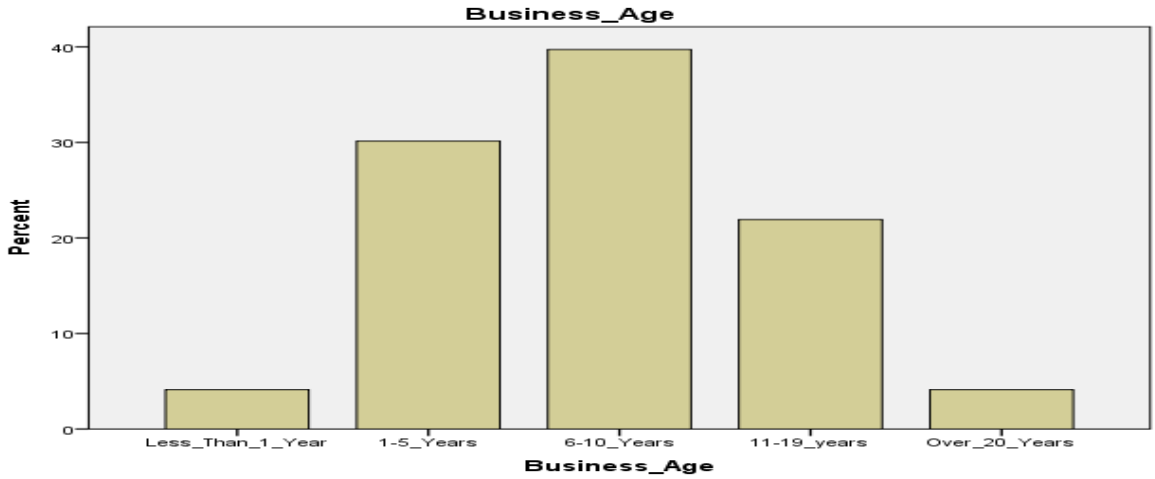


Figure 2: Business Age

There are uncertain inferences in relation to the relationship between business age and the adoption of ICT. On their study, Youssef and M'henni (2010) from a sample of Tunisian manufacturing businesses, found a positive correlation between these two variables. Haller

and Siedschlag (2008) from their results information regarding Irish manufacturing businesses, also identified a positive influence of business age on the adoption and use of Internet and electronic trade. Nonetheless, other studies did not find significant relationship between business age and the adoption of ICT such as (Lera-Lopez, 2007; Bayo-Moriones, and Khalifa, 2014).

The above Figure (Figure 2) presents the results of the questionnaire regarding the SME age. A large percentage of respondents at 39.7% shows that their SME has been in business for between 6-10 years, followed by 30.1% indicating they have been in business for between 1-5 years. This is followed by 21.9% of the respondents indicated that they have been in business for about 11-19 years, while 4.1% indicated that they have been operating for over 20 years Lastly, 4.1% of the respondents indicated that they have been in business less than a year.

Table 4.6

		Business Age	The use of some form of ICT in the Business
Business Age	Pearson Correlation	1	.281*
	Sig. (2-tailed)		.016
	N	73	73
The use of some form of ICT in the Business	Pearson Correlation	.281*	1
	Sig. (2-tailed)	.016	
	N	73	73

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

Business age is determined by the number of years an SME has been in existence. A Pearson correlation coefficient was computed in order to measure the relationship between the business age and the use of some form of ICT in the business. As illustrated in table 4.6 above, there is a positive moderate correlation between the two variables, $r = 0.281$, $n = 73$, $p = 0.016$. Overall, the results show that there is a moderate, positive correlation between the two variables. Increases in business age are correlated with increases in the use of some form of ICT in the business.

4.3.6 Market

As one would expect, most SMEs focus on the local market for business. The figure 3 below indicates that 80.8% of the respondents do their business within the local market, followed by just 12.3% of respondents expanding their market to the regional area. Just 5.5% of the respondents indicated that they reach the national market, and only 1.4% reaching the international market.

The Internet offers SMEs many opportunities to compete effectively in both the local and the international markets (Kapurubandara and Lawson, 2006). These findings in a way tell us that the majority of respondents are not utilizing their ICT capabilities to expand their markets. Restricted market entrance remains a serious limit to various SMEs growth and competitiveness while ICT offers huge opportunities for improved market access (GOK 2005 and KIPPRA, 2006). Internet-based ICTs are defined as those technologies utilized to gain access to and communicate information via the Internet (TechTerms, 2010).

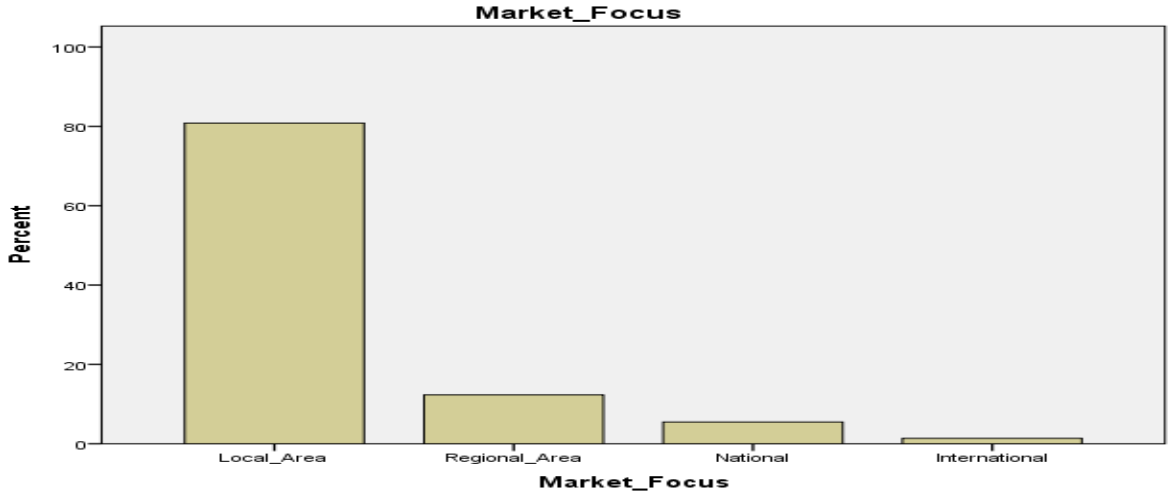


Figure 3: Market focus

4.3.7 The use of some form of ICT in the business

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Applicable	9	12.3	12.3	12.3
	Low	30	41.1	41.1	53.4
	Fairly High	29	39.7	39.7	93.2
	High	4	5.5	5.5	98.6
	Highly Important	1	1.4	1.4	100.0
	Total	73	100.0	100.0	

Table 4.7

ICT comprises of all types of technology, stretching from computers, websites, and networks, to telephones, cell-phones and other wireless portable devices (Mpofu, Milne and Watkins-Mathys, n.d.). As it has been stressed in this paper, in the 21st century, ICT is seen by many researchers as a success factor for any type of business, in particular SMEs, because it affords SMEs to stay competitive. According to Alam and Noor (2009), in order for any SME to guarantee competitiveness, they must integrate ICT into their businesses. As indicated in the literature review, Dholakia and Ksherti (2004) argue that ICT improves an SME's capability to contest with other businesses, assists in creating opportunities for diversity amongst entrepreneurs, and provides a convenient and easy way of conducting business more cost-efficiently. Therefore it is of outmost importance that an SME uses some form of ICT in their business in order to gain competitive advantage.

Table 4.7 presents results from the respondents regarding the use of some form of ICT in their SME. Of the total of 73 respondents, 41.1% of them indicated that the usage of ICT in their SME is low, followed by 39.7 % who indicated that the usage is fairly high. However, 12.3% of the respondents indicated that the use of ICT in their business is not applicable while 5.5% show that it is high, and only 1.4% indicated that the use of some form of ICT in their business is highly important. These results, even though a higher percentage of the respondents indicated that the usage of some form of ICT in their SME is low, are closely followed by a percentage number of respondents who show that the usage is fairly high.

Table 4.8

		The use of some form of ICT in the Business	Usage of ICT to Gain Competitive Advantage
The use of some form of ICT in the Business	Pearson Correlation	1	.589**
	Sig. (2-tailed)		.000
	N	73	73
Usage of ICT to Gain Competitive Advantage	Pearson Correlation	.589**	1
	Sig. (2-tailed)	.000	
	N	73	73

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

As indicated above, of the total of 73 respondents, 41.1% of them indicated that the usage of ICT in their SME is low, closely followed by 39.7 % who indicated that the usage is fairly high. These statistical findings makes one to wonder if there is any relationship between the

usages of some form of ICT in the SME and the usage of these ICTs to gain competitive advantage.

To determine if there is any relationship between these two variables, a Pearson correlation coefficient was computed in order to assess the relationship between the two variables. As illustrated in table 4.8 above, there is a significant relationship between respondent's usage of some form of ICT in the business and the usage of ICT to gain competitive advantage, r = 0.589, n = 73, p = 0.000. These results indicate that there is a strong, positive correlation between these two variables. This means that as the usage of some form of ICT in the business increases there is also an increase in the usage of ICT to gain competitive advantage by the SME.

4.3.8 Who makes or help make decisions with regard to ICT/IT in the business

As it has been the case with many research studies in this topic, the owner/manager is the one who make decision in the SME regarding the acquiring and implementation of ICT in their business. Figure 4 below shows that 64.4% of the questionnaire respondents have shown that the owner/manager is the one making decision in terms of ICT in the SME, then followed by 15.1% who say that consultants are brought in to help make decisions, 13.7% of respondents indicated that the friends or family members help make decision. Finally, 5.5% indicated that they get help from ICT specialists employed by the SME, while (1.4%) indicated that they go to IT shops.

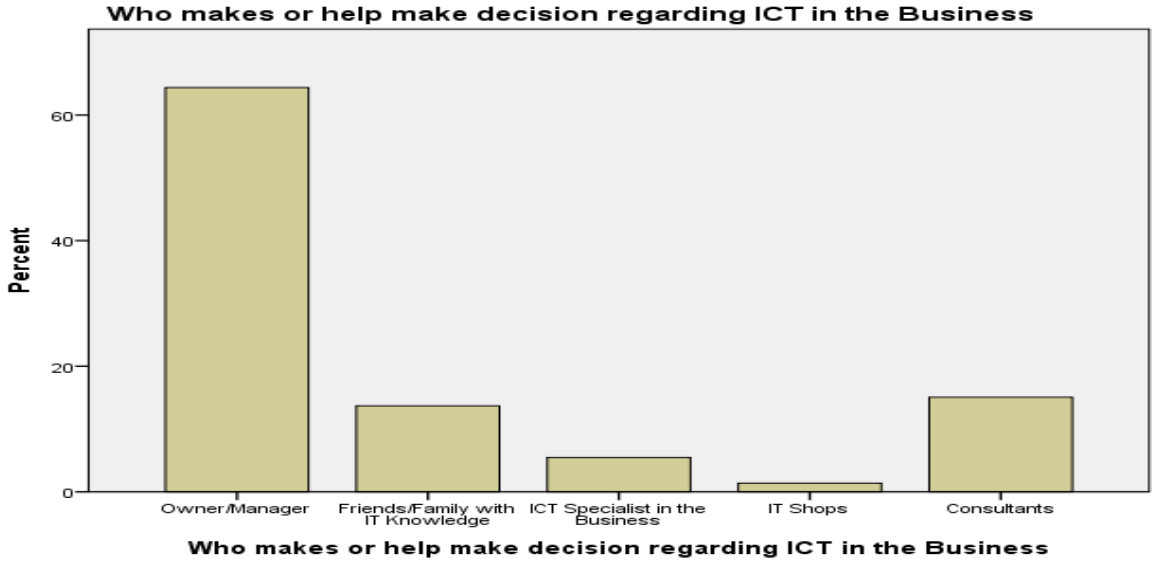


Figure 4: Decision Maker

Since owners/managers are the main decision makers regarding ICT in the business it is vital to determine the current state of ICT adoption and usage in the SME. As illustrated in Table 4.9, a very higher percentage of respondents at 61.6% indicated that the current state of ICT adoption and usage in their business is low. This is followed by 17.8% indicating the adoption and usage is fairly high, 9.6% indicated that adoption and usage is high, 6.8% saying it is very high, and only 4.1% saying the adoption and usage of ICT is not applicable to their business operations.

These findings indicate that the majority of owners/managers as the main decision makers in the SMEs are adopting and utilizing ICTs in their SMEs at a very low pace.

4.3.9 The Current State of ICT adoption & Usage in the Business

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Applicable	3	4.1	4.1	4.1
	Low	45	61.6	61.6	65.8
	Fairly High	13	17.8	17.8	83.6
	High	7	9.6	9.6	93.2
	Very Highly	5	6.8	6.8	100.0
	Total	73	100.0	100.0	

Table 4.9

4.4 Analysis of the current state of ICT within the SMEs

In order to determine the current state of ICT in the SMEs, respondents were asked in the questionnaire to rate the different basic types of ICT tools on how they use them in their business to stay competitive. The aim was to determine if the different types of ICT tools and technologies were used at all, and if so they had to indicate if the usage was low, fairly high, high or highly important in their business operations.

4.4.1 Desktop Computer

Computers over time have immensely improved the way businesses are conducted in different industries. Over the years computer technology has progressed so much that those who are not utilizing computers in their businesses are at a huge disadvantage against their business competitors. Particularly seeing that there are numerous essential advantages that computers can offer SMEs.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Applicable	6	8.2	8.2	8.2

	Low	17	23.3	23.3	31.5
	Fairly High	16	21.9	21.9	53.4
	High	19	26.0	26.0	79.5
	Highly Important	15	20.5	20.5	100.0
	Total	73	100.0	100.0	

Table 4.10

As illustrated in Table 4.10 above, there is a larger number of respondents who indicated that there is a high usage of desktop computers in their business at 26%, followed by 23.3% who show that the usage of a computer in their business is low. 21.9 % of respondents indicated that the usage is fairly high, 20.5% rated computer usage in their business as highly important, followed by 8.2% of respondents who indicated that computer usage is not applicable in their business.

Even though the majority of respondents indicated a high usage of desktop computers in their SMEs, they are not necessarily using those computers to run business management software's or systems. As it is evident from the results presented in the Table 4.11 below, the majority (63%) of respondents do not support the usage of business management software's or systems such as (ERP, CRM, HR, Database systems). However 27.4% of respondents indicated that the support for such systems is low, 8.2% indicating that the support is fairly high, and only (1.4%) indicating the support to be very high.

4.4.2. Support for Business Management Software's/Systems

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Applicable	46	63.0	63.0	63.0
	Low	20	27.4	27.4	90.4
	Fairly High	6	8.2	8.2	98.6
	Very Highly	1	1.4	1.4	100.0
	Total	73	100.0	100.0	

Table 4.11

These systems or software packages are essentially designed to be used by businesses to increase productivity, to measure productivity and to perform other business functions more accurately. Therefore, any SME or business which utilize them can have an advantage over its competitors who are not using them in their business operations.

4.4.3Telephone system/switchboard

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Applicable	2	2.7	2.7	2.7
	Low	12	16.4	16.4	19.2
	Fairly High	24	32.9	32.9	52.1
	High	20	27.4	27.4	79.5
	Highly Important	15	20.5	20.5	100.0
	Total	73	100.0	100.0	

Table 4.12

As predictable, the usage of a Telephone in an SME is of crucial importance as is the means of communication. As illustrated in table 4.12 above, a larger number of questionnaire respondents at 32.9% indicated that the usage of a telephone in their business is fairly high, closely followed by 27.4% of responded who rated the usage as high. 20.5% rated a telephone as highly important, and 16.4% rated it as low, and lastly only 2.7% rated a telephone as not applicable to their business.

4.4.4 Portable devices

In this study a portable device is defined as any device that can easily be carried such as (smartphones, Laptop, notebook computers, PDAs). It is a smaller form of a computing device that is created to be able to be held and used in the hands. According to (forbes, n.d). It does not matter what industry your business operates in. Whatever your industry, mobile technology is changing your business. Since mobile devices were first introduced in the market, costs have dropped. That drives amazing growth, as these facts and figures show:

- Two-thirds of SMEs save over 150 hours a year by using mobile technology.
- The top 25 percent of SMEs are realizing big gains from mobile technologies. They're making twice the revenue growth and up to eight times more jobs being created.
- In some parts of the world, more than 94 percent of SMEs use their smartphone to help manage their business
- customers can find your business location – and find out more about you – fast and easily
- read glowing reviews from other customers

It is of paramount importance that SMEs in this day and age utilize the mobile technologies available in the market not only to stay competitive but to survive. As illustrated Table 4.13

below, of the total number of respondents, 38.4% of them indicated that the usage of portable devices in their business is low, followed by 32.9% who indicated that they don't use any portable device in their business. 12.3% rated the usage as fairly high, 8.2% rated the usage as high, and also the remaining 8.2% rated the usage as highly important in their business.

It is a worrying factor that so such a large number of respondents do not utilize the usage of mobile technology to stay competitive. This technology offers a great opportunity for SMEs to generate new sales. It also offers easier ways of managing the businesses day-to-day operations, and most importantly for the business to stay competitive.

Portable Devices(Smart-Phones, Laptop, Notebooks, PDA's)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Applicable	24	32.9	32.9	32.9
	Low	28	38.4	38.4	71.2
	Fairly High	9	12.3	12.3	83.6
	High	6	8.2	8.2	91.8
	Highly Important	6	8.2	8.2	100.0
	Total	73	100.0	100.0	

Table 4.13

4.4.5 Cash register

A cash register is defined as a traditional electronic device for registering and calculating transactions at a point of sale. Most cash registers consist of a keyboard which is used for inputting entries, a scanner, a drawer that is used to store cash, and a device for printing receipts. Every business has to decide if it uses a cash register or an elaborate computerized point of sale (POS) system to process transactions.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Low	1	1.4	1.4	1.4
	Fairly High	4	5.5	5.5	6.8
	High	47	64.4	64.4	71.2
	Highly Important	21	28.8	28.8	100.0
	Total	73	100.0	100.0	

Table 4.14

As illustrated in the above table 4.14, a larger number of respondents at 64.4% rated the usage of a traditional cash register as high in their business, followed by 28.8% who rated it as highly important, 5.5% rated the usage of a cash register as fairly high in their business,

while only 1.4% rated the usage as low. It is clear from the results that the usage of a traditional cash register for transaction processing is high amongst SMEs in this study.

4.4.6 Printers, copiers, faxes and scanners

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Applicable	7	9.6	9.6	9.6
	Low	22	30.1	30.1	39.7
	Fairly High	18	24.7	24.7	64.4
	High	13	17.8	17.8	82.2
	Highly Important	13	17.8	17.8	100.0
	Total	73	100.0	100.0	

Table 4.15

All these machines (Printers, Copiers, faxes & scanners, all in one printers) provide vital functions for a business. Table 4.15 above represents results from questionnaire respondents, as illustrated 30.1% of respondents rated the usage of these machines as low on their business usage, followed by 24.7% who indicated that the usage of these machines is fairly high. 17.8% of the respondents rated them as high, while 7% rated them as not applicable to their business.

4.4.7 Internet

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Applicable	24	32.9	32.9	32.9
	Low	20	27.4	27.4	60.3
	Fairly High	12	16.4	16.4	76.7
	High	8	11.0	11.0	87.7
	Highly Important	9	12.3	12.3	100.0
	Total	73	100.0	100.0	

Table 4.16

Since its advent, the internet has in many ways levelled the playing field for SMEs to be able to compete with big businesses. The internet has allowed new businesses to increase both visibility and revenue, reaching a potential new customer population never before seen in history. An SME owner who is aware of the benefits of utilizing the Internet when conducting business and applies the practices can maximize the potential of his organization, and thus gain competitive advantage. Table 4.16 above presents results from respondents, as illustrated a larger number at 32.9% of respondents indicated that they don't use the internet in their business, followed by 27.4% who rated the usage of the internet as low in their business, 16.4% rated the usage as fairly high, while 11% rated it as high, and the remaining

12.3% of the respondents rated the usage of the internet in their business as highly important. As it is evident from these results, a higher number of respondents do not use the internet, and it is a worrying fact as the usage of the internet does not only give an SME a competitive advantage over other SMEs in their industry it also allows them to compete with big businesses for customers.

4.4.8 Social-Network

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Applicable	40	54.8	54.8	54.8
	Low	19	26.0	26.0	80.8
	Fairly High	6	8.2	8.2	89.0
	High	4	5.5	5.5	94.5
	Highly Important	4	5.5	5.5	100.0
	Total	73	100.0	100.0	

Table 4.17

According to Mangold and Faulds (2009), at first social media/network where regarded by some as a passing "fashion". Something the youth were using that business could never gain advantage from. However over-time, sceptics were proved to be wrong. Today there are over 3 billion people using the internet, and well over 2 billion of them have active social media accounts. The most popular social network platforms have become giants in marketing, offering different businesses valuable data regarding their customers and most importantly a free channel to reach them. Social media is no longer optional for businesses, it is a must. Mangold and Faulds (2009) further outlined key points as to how social networks can benefit a business by:

- Finding out what your competitors are doing;
- An increase in brand awareness and customer loyalty;
- Gaining valuable customer perceptions;
- Providing rich customer experiences;
- Sharing information faster and easier; and
- Building relationships.

Table 4.17 above presents findings from respondents regarding social networks. As illustrated, a high number at 54.8% of respondents do not use social networks for business, followed by 26% who indicated that the usage is low, 8.2% indicated that the usage is fairly high, while 5.5% indicated that the usage is high, and also 5.5% of the respondents indicated that the usage is highly important. One can conclude form these findings that of the total

respondents a higher percentage of them do not recognise the benefits social networks can bring to their SMEs.

4.4.9 Website

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Applicable	43	58.9	58.9	58.9
	Low	18	24.7	24.7	83.6
	Fairly High	6	8.2	8.2	91.8
	High	2	2.7	2.7	94.5
	Highly Important	4	5.5	5.5	100.0
	Total	73	100.0	100.0	

Table 4.18

Apart from having an online presence, there are many tried and tested benefits for a small business to have a website in this 21st century. As illustrated in the above table (Table 4.18) 58.9% which is a large percentage of respondents indicated that the usage of a website is not applicable to their business, followed by 24.7% who rated the usage of a website low, 8.2% rated the usage as fairly high, 2.7% high, and only 5.5% of respondents rated it as highly important. It is a worrying fact that in this day and age that the majority of these SMEs do not have a business website.

4.4.10 Credit card machines

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Applicable	7	9.6	9.6	9.6
	Low	3	4.1	4.1	13.7
	Fairly High	26	35.6	35.6	49.3
	High	26	35.6	35.6	84.9
	Highly Important	11	15.1	15.1	100.0
	Total	73	100.0	100.0	

Table 4.19

As illustrated in the above table (Table 4.19), a much large percentage of respondents at 35.6% have rated the usage of credit card machines in their business as both high and fairly high, followed by 15.1 % who rated it as highly important, 9.6% rated it as not applicable, and only 4.1% have rated it as low. These results prove that most SME do in fact use these machines to process credit transactions. Consumers want speed and convenience when they shop, and credit card machines play a vital role in this expectation. Businesses that do not accept credit and debit cards are likely to draw the same mild resentment from customers.

These results prove that the SMEs in this study are indeed recognizing the advantages of these transaction processing technologies.

4.5 Analysis of the ICT capabilities in the SMEs

Section C of the questionnaire was aimed at understanding ICT capabilities within the SMEs. It was intended to determine if respondents realised and appreciated the importance or value of ICT in their business operation in order to stay competitive. Respondents had to determine if the different listed indicators in the questionnaire applied to them at all, and if so they had to indicate using a scale of 1(Not applicable) to 5(highly important).

4.5.1 Importance/Value of ICT in the SME Operations

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Applicable	5	6.8	6.8	6.8
	Low	29	39.7	39.7	46.6
	Fairly High	14	19.2	19.2	65.8
	High	18	24.7	24.7	90.4
	Very Highly	7	9.6	9.6	100.0
	Total	73	100.0	100.0	

Table 4.20

According to Brindley and Ritchie (2005), supported by Sterlacchini and Lucchetti (2004), ICT plays a very vital part in the present "knowledge economy". Therefore it is important for SMEs to form part of this knowledge economy so that they are able to compete and succeed in the future. As it was proven in great detail in chapter 2 of this study it is evident from the literature that in this day and age it is a must for SMEs to implement ICT so as to stay competitive. As illustrated in the above table 4.20, the majority of the respondents at 39.7% indicated that the importance of ICT in their business operations is low, followed by 24.7% who indicated that the importance is high, 19.2% say the value of ICT is fairly high, 9.6% very highly important, and 6.8% indicated that the value of ICT is not applicable to their business operation.

From the results, it's very worrying that such a high percentage of respondents indicated that the importance or value of ICT in their business operation is low. This tells us that respondents are not aware of the advantages ICT can bring to their business in order to stay competitive.

4.5.2 Getting the Business engaged in ICT issues

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Applicable	15	20.5	20.5	20.5
	Low	33	45.2	45.2	65.8
	Fairly High	15	20.5	20.5	86.3
	High	7	9.6	9.6	95.9
	Very Highly	3	4.1	4.1	100.0
	Total	73	100.0	100.0	

Table 4.21

One of the research questions of this study was to determine ways in which SMEs could use ICT to become competitive. Getting the business engaged in ICT issues is important and can answer the question as both employers and employees can be aware of the technologies and ways they can adopt and use ICT in order to stay competitive. Table 4.21 above presents results from the respondents. As illustrated a high number of respondents at 45.2% indicated that getting the business engaged in ICT issues is low in their business, followed by 20.5% who indicated that it is fairly high, while an equal number at 20.5% indicated that engaging in ICT issues in their business is not applicable, 9.6% of respondents indicated that engaging in ICT issues in their business is high, and only 4.1% indicating that engagement is very high. These results are not surprising as a higher percentage of respondents have also indicated that the importance or value of ICT in there is low. Results presented in the above table 4.21 are not unexpected as the majority of respondents also indicated that the importance or value of ICT is low on their SMEs, and as a result they don't get their business engaged in ICT issues.

4.5.3 Usage of ICT to Gain Competitive Advantage

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Applicable	11	15.1	15.1	15.1
	Low	36	49.3	49.3	64.4
	Fairly High	16	21.9	21.9	86.3
	High	7	9.6	9.6	95.9
	Very Highly	3	4.1	4.1	100.0
	Total	73	100.0	100.0	

Table 4.22

This indicator "Usage of ICT to Gain Competitive Advantage" forms the backbone of this research paper, and as a result the responses from the questionnaire respondents are important. This indicator was put deliberately to respondents in order to determine if they realise that they can get competitive advantage by using ICT tools, and to determine the

usage of ICT by SMEs to stay in business and competitive as is one of the objectives of this study.

The above table (Table 4.22) illustrates that 49.3% of respondents indicated that the usage of ICT to gain competitive advantage is low in their SMEs, followed by 21.9% indicating that the usage of ICT to gain competitive advantage is fairly high, 5.1% indicating that they don't use ICT to gain competitive advantage, 9.6% indicating the usage is high, only 4.1% indicating that the usage of ICT to gain competitive advantage is very high.

These results are not surprising given the fact that a higher number of respondents have also indicated that importance of ICT in their business is low, and also a higher number of respondents indicated that the current state of ICT adoption and usage in their SME is low.

Correlations

Table 4.23

		Usage of ICT to Gain Competitive Advantage	Awareness of the Benefits of ICT in the Business
Usage of ICT to Gain Competitive Advantage	Pearson Correlation	1	.541**
	Sig. (2-tailed)		.000
	N	73	73
Awareness of the Benefits of ICT in the Business	Pearson Correlation	.541**	1
	Sig. (2-tailed)	.000	
	N	73	73

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

Furthermore, empirical studies have constantly discovered that perceived benefits have a substantial impact in ICT adoption (Beatty, Shim and Jones, 2001; Lin and Lin, 2008; Pan and Jang, 2008). Since the majority of respondents in this study indicated that the usage of ICT to gain competitive advantage is low in their respective SMEs. It makes one wonder if they are aware of the benefits ICT can bring in their businesses, and also if there is any relationship between the usage of ICT to gain competitive advantage and the awareness of the benefits of ICT in the business. In order to determine if there is any relationship between these two variables, a Pearson correlation coefficient was computed in order to assess the relationship between these two variables. As illustrated in table 4.23 above, there is a significant positive relationship between the usage of ICT to gain competitive advantage and the awareness of the benefits of ICT in the business $r = 0.541$, $n = 73$, $p = 0.000$. These results indicate that there is a strong positive correlation between these two variables. This

means that as the awareness of the benefits of ICT in the business increases there is also an increase in the usage of ICT to gain competitive advantage.

The literature review indicates that lack of awareness regarding the benefits of ICT in the SMEs can be a barrier to adopting ICT. According to Chau and Turner (2002), SME owner's lack of information regarding ICT or technology and perceived advantages are the main challenges with regards to the adoption of ICT tools.

4.5.4. Future Intentions for Adopting & Utilizing ICT in the Business

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Applicable	2	2.7	2.7	2.7
	Low	17	23.3	23.3	26.0
	Fairly High	27	37.0	37.0	63.0
	High	20	27.4	27.4	90.4
	Very Highly	7	9.6	9.6	100.0
	Total	73	100.0	100.0	

Table 4.24

From the above results, it is evident that a higher number of respondents have indicated that importance of ICT in their business is low, and also a higher number of respondents indicated that the current state of ICT adoption and usage in their SME is low. Majority of the respondents have also indicated that the usage of ICT to gain competitive advantage is low in their SMEs. It becomes important to determine if there are any future intentions for adopting and utilizing ICT in their SMEs.

As illustrated from the results presented in Table 4.24 above, 37% of the respondents indicated that the intention of adopting and utilizing ICT in their business is fairly high, followed by 23.3% indicating the intention to be low, and while 9.6% indicates the intention is very high. From these results one can conclude that there are some intentions to adopt and use ICT in the future with a majority of respondents showing there are high and fairly high future intentions to adopt ICT in their SMEs. These results are promising as at least respondents do acknowledge that in the future they will adopt some form of ICT in their SMEs.

Results from the above table 4.24 are promising as the majority of the respondents have indicated fairly high and high intentions for adopting and utilizing ICT in the business. So these results in a way indicate that there is some form of awareness by respondents of the

benefits associated with ICT. The below table presents results from respondents regarding the awareness of the benefits of ICT in their SME

4.5.5. Awareness of the Benefits of ICT in the Business

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Applicable	3	4.1	4.1	4.1
	Low	25	34.2	34.2	38.4
	Fairly High	20	27.4	27.4	65.8
	High	18	24.7	24.7	90.4
	Very Highly	7	9.6	9.6	100.0
	Total	73	100.0	100.0	

Table 4.25

As indicated from the results presented in table 4.25 above, the awareness of the benefits of ICT in the business is low at 34.2%, closely followed by 27.4% of respondents indicating that the awareness of benefits is fairly high, 24.7% of the respondents indicating the awareness to be high, while 9.6% indicated the awareness to be very high, and only 4.1% indicating that the awareness is not applicable to their them.

From these results in table 4.25, it is clear that more awareness needs to be created so that more SME owners are aware of the benefits ICT can bring to their businesses, and it is precisely one of the objectives of this study to raise that awareness.

4.6 Challenges faced by SME owners/Managers

It is clear from the literature review of this (chapter 2) study that SMEs face numerous challenges and obstacles when adopting ICT into their business. According to Cloete et al. (2002), in their research study concerned with the adoption of e-commerce by in South Africa, they discovered that adoption is mostly driven by influences within and outside the business like the of lack access to computers, software, other hardware, adoption cost, low ICT usage by competitors and suppliers, and unclear benefits. As indicated in chapter 2 of this study, MacGregor and Vrazalic (2006) states the fact that the barriers to implementing ICT by SMEs are both technological and socio-economic , they also pointed out that the barriers can be caused by many different issues which are internal and/or external to the business, in this instance the SME.

Section D of the questionnaire was aimed at understanding challenges faced by SMEs when adopting ICTs. Most common challenges were selected from the literature and

respondents were asked to indicate if they (Strongly disagree, disagree, neither agree nor disagree, agree, or strongly agree) with the statement or challenge.

	Strongly Disagree		Disagree		Neither Agree nor Disagree		Strongly Agree		Agree		Total	
	Count	Row N %	Count	Row N %	Count	Row N %	Count	Row N %	Count	Row N %	Count	Mean
Limited Resources in Terms of Finances	10	13.7%	23	31.5%	3	4.1%	17	23.3%	20	27.4%	73	3.19
Low Level of Literacy Among SME Owners	18	24.7%	38	52.1%	3	4.1%	4	5.5%	10	13.7%	73	2.32
Lack of the Technical Know How	13	17.8%	22	30.1%	5	6.8%	16	21.9%	17	23.3%	73	3.03
Lack of Awareness on ICT	21	28.8%	21	28.8%	0	0.0%	8	11.0%	23	31.5%	73	2.88
Employee Skill Too Low	8	11.0%	28	38.4%	2	2.7%	9	12.3%	26	35.6%	73	3.23
High Cost of Internet Connectivity	1	1.4%	13	17.8%	2	2.7%	27	37.0%	30	41.1%	73	3.99
Inadequate Telecommunication Infrastructure	4	5.5%	19	26.0%	8	11.0 %	15	20.5%	27	37.0%	73	3.58
Lack of Government Support	6	8.2%	24	32.9%	18	24.7 %	10	13.7%	15	20.5%	73	3.05
Unconvincing Benefits to the Organization	10	13.7%	21	28.8%	1	1.4%	23	31.5%	18	24.7%	73	3.25
Low Level of Technology Usage within the Organization	9	12.3%	20	27.4%	1	1.4%	16	21.9%	27	37.0%	73	3.44

Table 4.26 Frequency table of Challenges

From the above table 4.26 the challenges/barriers faced by SMEs when adopting ICTs in order to conduct business and as a result gain competitive advantage – that were rated the highest are the high cost of internet connectivity (mean = 3.99). This is followed by the

inadequate telecommunication infrastructure (mean = 3.58) and the low level of technology usage within the organization (mean = 3.44).

Other challenges include the unconvincing benefits to the organization (mean = 3.25); employee skills too low (mean = 3.23); limited resources in terms of finances (mean = 3.19); Lack of Government Support (mean = 3.05); lack of the technical know-how (mean = 3.03.); lack of awareness on ICT (mean = 2.88); and low level of literacy among SME owners with (mean=2.32).

Statistics

	N				
	Valid	Missing	Mean	Std. Deviation	Sum
Limited Resources in Terms of Finances	73	0	3.1918	1.47815	233.00
Low Level of Literacy Among SME Owners	73	0	2.3151	1.28967	169.00
Lack of the Technical Know How	73	0	3.0274	1.48111	221.00
Lack of Awareness on ICT	73	0	2.8767	1.68280	210.00
Employee Skill Too Low	73	0	3.2329	1.53225	236.00
High Cost of Internet Connectivity	73	0	3.9863	1.13643	291.00
Inadequate Telecommunication Infrastructure	73	0	3.5753	1.36339	261.00
Lack of Government Support	73	0	3.0548	1.27900	223.00
Unconvincing Benefits to the Organization	73	0	3.2466	1.45087	237.00
Low Level of Technology Usage within the Organization	73	0	3.4384	1.51828	251.00

Table 4.27: Mean values of challenges of ICT adoption

For the purposes of determining the degree to which a questionnaire respondent agrees or disagrees with the statements, the mean values were calculated in table 4.27 above. On the scale ranging from 1 to 5, eight statements had mean values higher than the middle value which is (3) which indicates that only those eight statements described challenges/barriers relate to the respondents. The other two statements had a mean value which is lower than the middle value of the scale; this means they tend more toward disagreeing with the statements being a barrier to ICT adoption and usage.

4.6.1 Cronbach's Alpha (α) on challenges or obstacles faced by SMEs when adopting ICTs

Cronbach's alpha is essentially the most commonly used measure of internal consistency or reliability. It is used most commonly when you have many Likert questions in a survey or questionnaire that form a scale and you wish to determine if the scale can be relied upon.

In this case the researcher formulated ten-question as part of the questionnaire to measure challenges or obstacles faced by SMEs when adopting ICTs into their businesses. Each question was a 5-point Likert item from "strongly disagree" to "strongly agree". As an attempt to determine whether these questions all reliably measure the same latent variable (challenges) (so a Likert scale was constructed), a Cronbach's alpha was run on a sample size of 73 SMEs.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.834	.831	10

Table 4.28

The first vital table is the Reliability Statistics table which provides the actual value for Cronbach's alpha, as shown in the above table 4.28. As illustrated in table 4.24, the Cronbach's alpha is 0.834, which indicates a high level of internal consistency for our scale with this specific sample.

The next important table to consider is the Item-Total Statistics table which essentially presents the "Cronbach's Alpha if item deleted" in the final column, as shown below in table 4.29 below. This column presents the value that Cronbach's alpha would be if that particular item was to be deleted from the scale. It can be observed that the removal of any question would result in a lower Cronbach's alpha. Therefore, we would not want to remove these questions. Removal of question 6 would lead to a small decrease in Cronbach's alpha, and we can also see that the "Corrected Item-Total Correlation" value was at the lowest (0. 349) for this item.

Overall, the Cronbach's alpha showed the questionnaire questions to reach acceptable reliability, $\alpha = 0.834$. All items appeared to be worthy of retention, resulting in a decrease in the alpha if deleted.

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Limited Resources in Terms of Finances	28.7534	67.188	.516	.367	.820
Low Level of Literacy Among SME Owners	29.6301	69.459	.501	.440	.821
Lack of the Technical Know How	28.9178	68.160	.472	.414	.824
Lack of Awareness on ICT	29.0685	62.565	.619	.439	.809
Employee Skill Too Low	28.7123	63.652	.650	.466	.806
High Cost of Internet Connectivity	27.9589	73.790	.349	.378	.833
Inadequate Telecommunication Infrastructure	28.3699	68.014	.534	.556	.818
Lack of Government Support	28.8904	71.682	.396	.352	.830
Unconvincing Benefits to the Organization	28.6986	67.102	.533	.397	.818
Low Level of Technology Usage within the Organization	28.5068	63.892	.646	.469	.806

Table 4.29

4.7 Conclusion

This chapter presented data analysis and research findings. Data from questionnaire respondents were analysed to determine the current status of SMEs in Mafikeng in relation to the adoption of ICT in an attempt to stay competitive and in business. Research findings and analysis were discussed according to the sections of the questionnaire starting with background of the respondents their demographic details/ general information. This was followed by findings and analysis of data like the current state of ICT within the SME, analysis of the current state of ICT within the SMEs, ICT capability of the SME, and challenges faced by these SMEs when adopting ICTs. The following part of this study is chapter 5 which entails the research summary, conclusions, and recommendations.

Chapter 5
RESEARCH CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter provides the research conclusion and recommendations based on the findings of the study. In the research conclusions, there is a conclusion regarding the respondents and SME background information, the current state of ICT within SMEs, followed by ICT capabilities of SMEs in this study, and challenges/barriers experienced by SMEs when adopting ICT. The final part of this chapter presents the recommendations of this study, recommendations for further research, and finally the chapter summary.

5.2 Research conclusions

5.2.1 Respondent's and business background information

Even though it was not necessarily part of the purpose of the research, this information was planned to basically define demographic data of the sample and to evaluate for any effect on the research results. The demographic data consisted of age, owner qualification, SME size, years of experience in business and market focus to mention a few.

- **Age of SME owner**

Majority of previous research studies which were dedicated in determining the barriers of ICT adoption have found that demographic factors like gender age, and education of SME owners decide ICT adoption. It was found that the younger generation adopts ICT easily as compared to the older generation (Harrison and Rainer, 1992); (kumar et al., 2008); (Ongori and Migiro, 2011). As indicated in table 4.1, the majority (32.9%) of respondents indicated that they fall in the age category of between 31- 40. These findings indicate that the majority of respondents are below 40 years who are relative young and should be adopting ICT easily as stated by many researchers. However this assertion is not true in this study as a high percentage of respondents at 61.6% indicated that the current state of ICT adoption and usage in their business is low (see table 4.9).

- **Qualification of SME owners**

Research findings show that 64.4% (see Figure 4) of the questionnaire respondents have shown that the owner/manager is the one making decision in terms of ICT in the SME.

Therefore, the qualifications of the SME owner are relevant in this research in the sense that it can directly impact the technological decisions the owner makes in relation to the business success and competitiveness. Education brings vast amount of exposure and knowledge which include exposure to ICT tools.

The majority of respondents at 47.9% o indicated that they have some college/university qualification which constitutes a large number of the sample (see table 4.2). Furthermore, it was important to determine if there is any relationship between qualification of the owner and the usage of ICT to gain competitive advantage by the SME. As illustrated in table 4.3, there was a significant positive relationship between qualification of the owner and the usage of ICT to gain competitive advantage.

- **Business size**

A positive correlation between business size and ICT adoption is discovered in several empirical studies such as (Morgan et al., 2006; Fabiani et al., 2005; Teo and Tan, 1998). In this research the business size was measured using the number of employees in the SME. Majority of the respondents (41.1%) indicated that they have between 10-19 employees (see figure 1).

One of the objectives of this research was to determine if there is any relationship between ICT adoption and the growth of an SME. A Pearson correlation between the business size and the use of some form of ICT in the business was conducted (see table 4.5). As it is apparent from the table, there is a weak positive relationship between these two variables, meaning that an increases or decreases in business size does not significantly relate to increases or decreases in the use of some form of ICT in the Business.

- **Business Age**

The literature indicates that there are different conclusions with regards to the relationship between business age and the adoption of ICT. Some researchers have found a positive correlation between these two variables (Youssef and M'henni, 2010; Haller and Siedschlag, 2008). However, other studies did not find significant relationship between ICT adoption and business age (Bayo-Moriones and Lera-Lopez, 2007; Khalifa, 2014).
In this study business age is determined by the number of years an SME has been in existence. The findings of this study show that the majority of respondents at 39.7% indicated

that their SME has been in business for between 6-10 years. In order to determine a relationship between the business age and the use of some form of ICT in the business a Pearson correlation coefficient was computed, as illustrated in table 4.6 there is a positive significant moderate correlation between the two variables. Increases in business age are correlated with increases in the use of some form of ICT in the business.

- **The use of some form of ICT in the business**

According to Dholakia and Ksherti (2004), ICT actually increases an SME's ability to compete with other businesses; it assists in creating opportunities for variety amongst entrepreneurs, and provides convenient and easier ways of conducting business more cost-efficiently. One of the research question sought to determine the value of ICT on SMEs, and the literature review has indicated that ICT is very valuable to SMEs if implemented correctly. However, it is apparent from the findings of this study that the majority of respondents at 41.1% indicated that the usage of ICT in their SME is low. Even though closely followed by 39.7% of respondents indicating the usage is fairly high these statistics are still worrying. This finding that the majority of respondents indicated that the usage of ICT in their SME is low indicates that majority of SMEs in Mafikeng do not recognise the value of ICT in their business.

Furthermore, a Pearson correlation was computed so as to make a determination if there existed a relationship between the usages of some form of ICT in the SME and the usage of these ICTs to gain competitive advantage. As illustrated in table 4.8, there is a significant positive relationship between these two variables, meaning that as the usage of some form of ICT in the business increases there is also an increase in the usage of ICT to gain competitive advantage by the SME.

5.2.2 The current state of ICT within the SME's

One of the research question was to determine the current state of ICT in the SMEs. As an attempt to determine this, respondents were asked in the questionnaire to rate the different basic types of ICT tools on how they use them in their business to stay competitive. The main aim was to determine if the different types of ICT tools and technologies were used at all, and if so respondents had to indicate if the usage was low, fairly high, high or highly important in their business operations.

From the analysis of the results in chapter 4 regarding the current state of ICT in their SMEs, one can conclude that the majority (26%) of respondents indicated that they have the computer and the usage is high (see table 4.10). However, given the fact that the most respondents indicated that the usage of computer is high in their business, majority (63%) of them are not using it to run different business management software's or systems in order to stay competitive. Another worrying conclusion which can be drawn from the results concerning the current state of ICT in SMEs in this study is that even though the majority of them have a desktop computer they are not connected to the internet. Majority (32.9%) of respondents indicated that the usage of the internet is not applicable to their business (see table 4.16). In relation to the internet there are certain internet based ICT tools which require the internet to be implemented (such as social networking, and running of a business website). It is not unexpected that the majority (54.8%) of respondents indicated that the usage of social networks in their SME is not applicable (see table 4.17). Majority (58.9%) of respondents also indicated that the usage of a website is not applicable to their SME (see table 4.18). According to Mangold and Faulds (2009), in today's technology obsessed world, social media's have become an avenue where retailers can extend their marketing campaigns to a wider range of consumers.

In this study a portable device is defined as any device that can easily be carried such as (smartphones, Laptop, notebook computers, PDAs). It is a smaller form of a computing device which can be used as a substitute to a desktop computer. It is concluded that in this study the majority (38.4%) of respondents are not yet using portable devices in order to run their business efficiently as the majority indicated that the usage is low in their SMEs (see table 4.13). It is a worrying fact that so many respondents do not utilize the usage of mobile technology to stay competitive. This technology offers a great opportunity for SMEs to generate new sales and offers easier ways of managing the businesses day-to-day operations.

With regards to transactions processing, majority (64.4%) of SMEs in this study still use the traditional cash register to process transaction as opposed to using elaborate computerized point of sale (POS) system (see table 4.14). It is also apparent that the majority (35.6%) of respondents make use of credit card machines to facilitate process of credit transactions conveniently (see table 4.19). Regarding communications in the business it can be concluded

that a telephone is important as majority (32.9%) of respondents indicated that the usage of a telephone is fairly high in their business operations (see table 4.12).

In relation to ICT tools such as stand-alone (printers, copiers, faxes, scanners) or all in one printers most (30.1%) of the respondents indicated that the usage of such tools is low (see table 4.15). With regards to the current state of ICT in SMEs in Mafikeng it is concluded that even though different types of ICT tools and technologies were used it is clear that the usage was low, and this assertion is true as also respondents were specifically asked in section A of the questionnaire to rate the current state of ICT adoption & usage in their SMEs and majority (61.1%) of them rated it as low (see table 4.9).

5.2.3 ICT capabilities of SME's

One of the objectives of this study was to raise awareness of the benefits which ICT can bring to an SME in order for it to stay competitive and in business, and the other objective was to determine the importance of ICT adoption and usage by SMEs. It is vital to determine if respondents realized and appreciated the importance and value of ICT in their business operation in order to stay competitive. Section C of the questionnaire was crafted specifically to determine ICT capabilities or know-how within the SMEs. Respondents had to determine if the different listed indicators in the questionnaire applied to them at all, and if so they had to indicate using a scale of 1(Not applicable) to 5(highly important).

One of the research questions of this study was to determine the value of ICT on SMEs. As an attempt to answer this research questions respondents were asked to indicate the level of awareness of the benefits of ICT in their SME and majority (34.2%) of them indicated that the awareness is low. Subsequently they were asked to indicate the level of importance/value of ICT in their SME operations and majority (39.7%) of them indicated that the importance of ICT is low in their SME. These results compel one to conclude that these respondents don't realize the value ICT can bring to their SMEs because their awareness of the benefits of ICT is low.

Furthermore respondents were then asked to rate the level of usage of ICT in order to stay competitive in their SMEs. This was one of the objectives of this study, and not unexpectedly majority (49.3%) of them rated the usage as low.

One of the research questions of this study was to determine ways in which SMEs could use ICT to become competitive. Getting the business engaged in ICT can answer the question as both employers and employees can be aware of the technologies and ways they can adopt and use ICT in order to stay competitive. In relation to getting the business engaged in ICT issues, the majority (45.2%) of respondents indicated that getting engaged in ICT issues is low in their SMEs. With regards to future plans or intentions for adopting and utilizing ICT in their SMEs majority (37%) of respondents indicated that future plans for adopting ICTs are fairly high.

Given the above analysis of ICT capabilities or know-how, it is concluded that majority of SMEs in Mafikeng don't engage in ICT issues in their SMEs, they lack awareness of the benefits ICT can bring in their SMEs, and they don't realize the importance/value of ICT thereof. It is also concluded that they don't use ICT as a means to gain competitive advantage, however what is promising is the fact that majority of them indicated that future intentions of adopting and using ICT in their SMEs are fairly high.

5.2.4 Challenges/barriers experienced by SMEs when adopting ICT

It is apparent from the literature review of this study that SMEs face numerous challenges and obstacles when adopting ICT into their business operations. One of the research questions was seeking to determine the barriers experienced by SMEs when adopting ICT. Section D of the questionnaire was intended at understanding challenges faced by SMEs when adopting ICTs. Most common challenges were selected from the literature and respondents were asked to indicate if they (Strongly disagree, disagree, neither agree nor disagree, agree, or strongly agree) with the statement or challenge, and they were given space to add any other challenge they were faced with which didn't appear in the questionnaire.

According to Cloete et al. (2002), in their research concerned with the adoption of e-commerce by SME in South Africa, they discovered that adoption is deeply affected by influences found within the business. Results of this study regarding challenges concur with discoveries made by (Cloete et al., 2002) in their study because the challenge which was rated the highest is the high cost of internet connectivity (mean = 3.99). This is followed by the inadequate telecommunication infrastructure (mean = 3.58) and the low level of technology usage within the organization (mean = 3.44).

Other challenges include the unconvincing benefits to the organization (mean=3.25); employee skills too low (mean=3.23); limited resources in terms of finances (mean=3.19); Lack of Government Support (mean = 3.05); lack of the technical know-how (mean=3.03.); lack of awareness on ICT (mean = 2.88); and low level of literacy among SME owners with (mean=2.32) (see table 4.26). As stated in the literature review, Harindranath et al. (2008) discovered that most SMEs which were studied acknowledged costs as the main issue threatening future investments in ICT. The finding of this study also in a way concurs as cost of internet connectivity was rated the highest challenge in this study.

As stated in chapter 2 of this study, according to Herselman (2003), several of South Africa's rural areas are below survival levels and remain disadvantaged, this is because they don't have access to basic infrastructure which is crucial for economic development and growth.
The results of the challenges in this study concurs with the findings of Herselman (2003) in the sense that challenge which was rated the highest in this study is the high cost of internet connectivity, followed by the inadequate telecommunication infrastructure.

5.3 Summary of the Research findings

This summary of the research findings is made based on the objectives of this research paper. These summaries are made so that the reader can better understand the above research findings, research conclusions, and relate to the below recommendations.

5.3.1 Determining the current adoption and use of ICT on different SMEs in the Mafikeng area.

The first objective of this study was to determine the current state of ICT adoption and usage amongst different SMEs in the Mafikeng area. As an attempt to determine this, respondents were asked in the questionnaire to rate different basic types of ICT tools/services on how they use them in their business to stay competitive. From the analysis of the findings in chapter 4 regarding the current state of ICT in their SMEs, it is concluded that the majority (26%) of respondents indicated that they have the computer and the usage is high. However even though most respondents indicated that the usage of a computer is high on their SMEs, research findings also show that the adoption and usage of some computer based ICT tools/services are lacking such as:

- Majority of respondents (63%) indicated that they don't use different business management software's or systems in their SMEs.

- Majority (32.9%) of respondents indicated that the usage of the internet is not applicable to their business.
- In relation to the internet, there were certain internet based ICT tools such as (social networking, and business website) which featured in the questionnaire. So it is not unexpected that the majority (54.8%) of respondents indicated that the usage of social networks in their SME is not applicable. Majority (58.9%) of respondents also indicated that the usage of a website is not applicable to their SME.

Research findings also show that the majority (38.4%) of respondents are not yet using portable devices in order to run their business efficiently as the majority indicated that the usage is low in their SMEs. With regards to transactions processing, majority (64.4%) of SMEs in this study still use the traditional cash register to process transaction as opposed to using elaborate computerized point of sale (POS) system. It is also apparent from the findings that the majority (35.6%) of respondents make use of credit card machines to facilitate the process of credit transactions conveniently. Regarding means of communications in the business research findings show that a telephone is a popular means of communication as majority (32.9%) of respondents indicated that the usage of a telephone is fairly high in their business operations. Findings also reveal that ICT tools such as stand-alone (printers, copiers, faxes, scanners) or all in one printers most (30.1%) of the respondents indicated that the usage of such ICT tools is low.

In conclusion regarding the current state of ICT adoption and usage in SMEs in Mafikeng, the researcher found that even though different types of ICT tools and technologies were used, it is clear that the usage was low, and this assertion is true as also respondents were specifically asked in section A of the questionnaire to rate the current state of ICT adoption & usage in their SMEs and majority (61.1%) of them rated it as low.

This finding regarding the current state of ICT adoption and usage from the questionnaire respondents was expected by the researcher. This is because observations made by the researcher showed that the adoption and use of ICT was very low. The researcher observed that most SMEs in this study had a standalone computer but not connected to the internet, therefore the usage of Internet based ICT tools/services would be poor. The researcher also observed that most owners and employees had cell-phones, but they are only using it for

personal purposes not for the running of the businesses. It was also observed that the usage of printers, laptops, scanners, and other portable devices was very poor with the exception of internet cafes.

These findings concur with the findings made by other researchers in the literature review such as (Modimogale and Kroeze, 2009) who conducted a study to determine how SMEs can implement ICT in order to become competitive in South Africa. Regarding the current state of ICT on SMEs, Modimogale and Kroeze, (2009) stated that some simple technologies like fax machines, telephones, and desktop computers are already implemented for other sections of the SMEs. This means that the some basic technologies exists in SMEs however Internet connections and mobile technologies still need to be improved.

5.3.2 Determining the relationship between ICT adoption and SME growth.

The second objective of this study was to determine the relationship between ICT adoption and SME growth. In this study the business size was measured using the number of people employed in the SME. The researcher made an observation that in SMEs where there are many employees the business is much bigger and offers many products and services. It is a common cause that when a business employs more people it is a sign that the business is growing and expanding; therefore, a Pearson correlation between the business size and the use of some form of ICT in the business was conducted. Findings show that there is a weak relationship between these two variables, meaning that an increases or decreases in business size does not significantly relate to increases or decreases in the use of some form of ICT in the SME.

This finding is consistent with findings made by other researchers on this topic who have discovered a weak or non-significant relationship between the adoption of ICT and business size researchers such as (Hollenstein, 2004, Love et. al., 2005; Lefebvre et al., 2005; Teo et al., 1997;). Moreover, Hollestein (2004) states that the relationship is non-linear. He discovered that in the case of a sample of Swiss businesses, business size is positively correlated with initial, and rigorous usage of ICT only in businesses with up to 200 personnel. This might explain the insignificant relationship found between these two variables in this study. Majority of the respondents (41.1%) indicated that they have between 10-19 employees.

However, the literature review also shows that this finding does not concur with findings made by other researchers because a positive correlation between ICT adoption and business size is found in several studies such as (Morgan et al., 2006; Fabiani et al., 2005; Teo and Tan, 1998).

5.3.3 Determine the importance of ICT adoption and usage by SMEs

The third objective of this study was concerned with determining the importance of ICT adoption and usage by SMEs in this study. As an attempt to determine this objective, respondents were asked to rate the importance of ICT in their business. Findings of this study show that majority of the respondents (39.7%) indicated that the importance of ICT in their business operations is low. This finding explains why the current state of ICT adoption and usage is low in SMEs in this study that is majority of respondents don't recognise the importance of ICT. This also tells us that respondents are not aware of the advantages ICT can bring to their business in order to stay competitive.

Contrary to this finding, the literature review indicates that many researchers advocate for the adoption of ICT by SMEs in order to compete effectively. Researchers such as Brady et al., (2002); Kahn (2001); Ramsey et al. (2003) and Vilaseca (2003) to mention a few, have highlighted the value of adopting ICT to a business.

Although many SMEs show keenness towards the adoption and use of ICT and have the capability to do so as they are flexible in terms of their processes, systems and structure numerous SMEs are still unwilling (Ritchie and Brindley, 2005; Tan et al., 2010;). The advancement of a number of SMEs towards the implementation and usage of ICTs has remained slow due to the fact that they encounter several challenges or are yet to realise any benefits (Ritchie and Brindley, 2005; Tan et al., 2010;). According to Hashim (2007), the total number of SMEs adopting and using ICTs is still poor, nonetheless it is anticipated that as SMEs become more aware of the benefits associated with the usage of ICT this trend will be reversed.

According to Alam and Noor (2009), the adoption of ICT depends on four variables, namely, skills of the employees and ICT knowledge, alleged benefits and costs involved, external influences and, lastly, support from the government. Earlier researches underlines that the

more benefits that SMEs appear to get, the greater the likelihood of it implementing ICT; similarly, the higher the costs involved, the more hesitant SMEs are to implement ICT (Alam and Noor, 2009). This notion by Alam and Noor (2009) may be true to this study because majority of respondents in this study indicated cost as the number one barrier hindering the adoption of ICT to their SMEs. Furthermore, Alam and Noor (2009) state that SMEs normally have a tendency of avoiding to implementing ICT in their business if the owner and workforce find it too complex and are not familiar with it. On the other hand, SMEs are more likely to implement ICT if their business partners, competitors or the industry have taken on ICT and are pressurizing them to do so.

5.3.4 Raise awareness of the benefits which ICT can bring to an SME

The fourth objective of this study was to raise awareness of the benefits which come along with the adoption of ICT by SMEs. From the onset the researcher wanted to determine if there was any awareness by SMEs of the benefits of adopting ICT to their SMEs. As an attempt to determine this, respondents were requested to specify the level of awareness of the benefits of ICT in their SME and majority (34.2%) of them indicated that the awareness is low. This finding is not unexpected given the fact that majority of respondents in this study also indicated that the importance of ICT adoption is low in their SMEs. Hence the current state and use of some of form of ICT in their SMEs is low.

It is clear from these findings that more awareness needs to be raised so that more SME owners become aware of the benefits ICT can bring to their businesses, and it is precisely one of the objectives of this study to raise that awareness. The literature indicates that ICT benefits without any uncertainty can enhance any given business and improve its turnaround profits, and they can help save any business which is facing problems, problems which can lead to closure. In their study regarding the awareness of ICT, Modimogale and Kroeze (2009) discovered that SMEs have not familiarized themselves with the knowledge economy and that they don't know very much about ICT. This is in agreement with the literature, which underlines lack of awareness as problematic. According to Chau and Turner (2002), the SME owner's lack of knowledge about ICT technology and perceived advantages are the main challenges regarding the adoption of ICT technologies.

Martin (2005) stresses that the owner-manager of the SME has limits, which includes cracks in knowledge or ability. If the SME owner-manager is not aware of the benefits of ICT or the

knowledge economy, this will affect the business as he or she determines the culture of the business. It is apparent from the literature review that lack of awareness or knowledge of ICT is a barrier hindering the adoption of ICT tools by SMEs. Therefore more awareness needs to be raised whereby the focus is to highlight the effective use of ICT by SMEs and clarify the issue of costs and negative effects of not using it.

5.3.5 Determining the barriers experienced when adopting ICT by SMEs in Mafikeng

The fifth and final objective of this research paper was to determine the barriers experienced by SMEs when adopting ICT. As an attempt to determine these barriers the researcher formulated ten-question as part of the questionnaire to measure challenges or obstacles faced by SMEs when adopting ICTs into their businesses. These barriers featured in most studies in the literature review done, each question was a 5-point Likert item from "strongly disagree" to "strongly agree". Below is the finding made with regards to the barriers experienced, 1 being the challenge which was rated the highest and 10 being the challenge rated the least.

1. The high cost of internet connectivity
2. Inadequate telecommunication infrastructure
3. Low level of technology usage within the organization
4. Unconvincing benefits to the organization
5. Employee skills too low
6. Limited resources in terms of finances
7. Lack of Government Support
8. Lack of the technical know-how
9. Lack of awareness on ICT
10. Low level of literacy among SME owners

Results of this study regarding challenges concur with discoveries made by Cloete et al., (2002) and Herselman (2003) in the sense that the challenge which was rated the highest in this study is the high cost of internet connectivity, followed by the inadequate telecommunication infrastructure. According to Cloete et al. (2002), in their research concerned with the adoption of e-commerce by SMEs in South Africa, they discovered that adoption is deeply influenced by influences within the business.

5.4 Recommendations of the study

The following recommendations are based on the findings of this research study and the resultant conclusions. It is anticipated that these recommendations may be used as guidelines for SME owners, investors, government, and the community of Mahikeng to understand the adoption, the value obtained, and barriers of ICT adoption by different SMEs in Mafikeng.

5.4.1 Current state of ICT

ICTs are seen as competing tools for businesses and if adopted and applied appropriately, can bring with it numerous benefits for businesses (Modimogale and Kroeze, 2009). With regards to the current state of ICT adoption and usage by SMEs in Mafikeng, it is concluded that it is very low, thus the research recommends that much more needs to be done by SMEs to improve the adoption and usage of ICT in order to gain competitive advantage.

There is some practical evidence which suggests that SMEs utilizing ICT enjoy improved profits and outreach and as a result can better place themselves in the market. Moreover some empirical evidence state that pressure from the competition is an influential driver of ICT adoption and diffusion (Al-Qirim, 2007; Battisti et al., 2007 and Selwyn and Pearson, 2004).
Based on the literature review in chapter 2, according to Southern and Tilley (2000), the following general pointers to applying ICT as a competitive tool are recommended:

- An SME needs to build an ICT strategy which is founded on the business objectives and goal this will help recognize and adopt appropriate ICTs based on the strategic goals of the SME.
- An SME needs to importantly make certain that the ICT strategy adopted is in line with the business strategy.
- An SME needs to determine the part that ICT will be playing within the SME
- An SME needs to select the adoption strategy that is accurate for a particular business, bearing in mind the nature of the SME from the small business standpoint.

The above pointers will not only improve the adoption and correct usage of ICT in the business they will also help improve importance, awareness and value of ICT in the SME.
It also recommended that SMEs in this study ought to begin considering the implementation of several new technologies in the market, insuring that such ICTs are correctly lined up with

their business objectives. SMEs need to explore up-and-coming technologies such as OSS, VoIP and mobile technologies. All this has to be done at a management level, this means that SMEs must hire the right individuals to help with the adoption and the implementation thereof.

5.4.2 Decision-making process with regards to ICT

As it has been the case with many research studies in this topic, it is also the owner/manager who make decision in the SME regarding the acquiring and implementation of ICT in their business. This is a mistake, as the literature points out, precisely because the SME owner/manager is the one taking decision in all parts of the business which includes ICT, with no knowledge of the ICT environment.

Martin (2005) highlights that the SME owner/manager has limitations, which include uncertainties in his knowledge or ability. If the owner/manager is clueless about ICT or the knowledge economy, this will directly affect the business as he or she is responsible for setting the culture of the business.

One of the causes of this difficulty is the fact that the owner/manager may not have prioritised ICT as an important function in the SME. According to Perry (2007), random decision making regarding ICT is problematic and is something that has to be urgently dealt with so as to give SMEs competing advantage.

Planning the implementation of ICT is crucial if any business wishes to successfully use it, therefore it is recommended that the SME should have a devoted individual or group with the objective of adopting and implementing ICT in accordance with the needs of the SME, with appropriate powers which will make it possible for them to execute such decisions independently. Since the owner/manager is the one making decisions, it is recommended that the owner/manager be equipped with ICT related knowledge or be surrounded by people with ICT knowledge.

The other solution is to use consultants who can help make right decisions regarding ICT. It is recommended that the appointed consultant should have the suitable technical and business experience, if possible an independent consultant.

5.4.3 Value of ICT to SMEs

One of the research questions of this study was to determine the value of ICT on SMEs. Hence respondents were asked to indicate the level of importance/value of ICT in their SME operations. The majority (39.7%) of them indicated that the importance of ICT is low in their SME. Analysis of the results further reveals that the owner/manager is the decision maker regarding ICT adoption. As indicated, According to Martin (2005), the SME owner/manager has limits, which includes lack of knowledge or competence in relation to ICT. If the owner/manager is clueless about ICT, this will directly affect the business as he or she is the one making decision maker.

It is recommended that from the onset the owner/manager has to mindful of and appreciate the significance and the role of ICT within the SME. Subsequently it is essential to prioritise ICT like other functions in the SME operations. As soon as this is done the SME must try hard to create an ICT culture, this can be done by assuring that the business processes rely on technological solutions and less on manual solutions, and by persistently exploring all the several and latest ICT opportunities with their potential benefits to the SME.

5.4.4 Awareness of ICT

Majority of respondents in this study indicated that the awareness of ICT in their SMEs is low, and also majority of SMEs do not engage in ICT issues. As alluded to above, the majority of the respondents also indicated that the importance of ICT is low in their SME. It is not surprising to see that most respondents do not recognize the significance of ICT in their SMEs because majority of them also indicated that the awareness of the value ICT can bring to their SME is low.

In order to raise awareness, it is recommended that the owner/manager needs to familiarize himself/herself with available technological solutions suitable for their SMEs. Secondly there must be constant engagement with the workforce in relation to what is happening in the ICT industry to make all workers aware of ICT value be comfortable with adopting it. It is also recommended that the SME must furthermore invest in training its workforce about technology and motivate workers to use ICT.

5.4.5 Barriers or challenges

As it was indicated in the literature review of this study different issues recognized as reasons for this reluctance can be generally categorized as external barriers and internal barriers. Internal Barriers can be addressed within the business by the business itself, whereas External Barriers must o be addressed by either y government involvement or by cooperation of SMEs (Kapurubandara and Lawson, 2006).

The responses in the questionnaire concerning the barriers hindering the successfully implementation of ICT are in accordance with what most researchers in the literature review have identified as obstacles. The barrier which was rated the highest as a problem is the high cost of internet connectivity, and closely followed by the inadequate telecommunication infrastructure.

- **High cost of internet connectivity and the inadequate telecommunication infrastructure**

According to Khong et al. (2009), ICTs mainly the internet, are having a substantial effect on the processes of SMEs; it is stated that the internet is vital for the survival and development of countries' economies in general and SMEs specifically. In a study led by the National Youth Development Agency (NYDA) in 2010 it was established that although most of

emerging (59%) and recognised (79%) SMEs have Internet access, there is still a noteworthy number of SMEs that have no access to the Internet or whatsoever. One of the causes of such high number of SMEs lacking internet access is the fact that South Africa is said to be one of the most costly nations in relation to internet access and has one of the slowest connecting speeds (HumanIPO, 2013).

Africa is recognised as having the highest growth rate of cell phone connections in the globe, and a cell phone has turn out to be the centre of the continent's connectivity achievements (Butler, 2005; CIPESA, 2005). Mobile technologies are seen as having an advantage as compared to other technologies because they overcome many physical infrastructural challenges, this being a critical issue in rural and remote locations where most of Africans reside. According to Goldstuck (n.d), the substantial level of internet diffusion in South Africa is because of the usage of cell-phones, and the physical internet access infrastructure is less developed in developing nations like South Africa the main reason being because of price. Even though access to infrastructure is still mostly limited in South Africa, cell-phone penetration is not. According to the Government Gazette (2016), the entertainment and media outlook report predicts that mobile Internet penetration in South Africa will increase sharply from 36, 6 per cent in 2014 to 69, and 1 per cent in 2019. It is recommended that SMEs should consider the usage of mobile phones in order to access the internet, this will not only overcome the challenge of high cost internet connectivity it will also overcome the challenge of inadequate telecommunication infrastructure they are faced with.

- **Low level of technology usage within the organization**

In order to overcome this challenge it is recommended that the owner/manager should prioritise ICT in their SME, and adopt various ICT solutions in-line with their business needs. In this 21st century digitalisation and globalisation have improved the manner in which business is being conducted and contests in the marketplace; ICT is the lifeblood of this change. According to Mutula and Van Brakel (2006), it is an essential asset, giving SMEs a competing advantage in the new economy. Therefore it of paramount importance that SMEs in Mafikeng increase their level of technology usage in order to successfully compete.

- **Unconvincing benefits to the organization**

The review of the literature has shown many researchers concluding that ICT adoption can offer a business many benefits. According Hartigan (2005), ICTs have the prospective of generating modifications amongst SMEs and offer them a chance to be more innovative,

competitive and generate growth. ICT is capable of offering a business a varied range of opportunities for improving their competitiveness, benefits such as providing tools for gaining access to new market opportunities and expert information services (Giovanni and Mario, 2003).

There many ICT solutions out there in the market with many convincing benefits which can add value to an SME and when implemented correctly can give it a competing advantage. As it was discussed in chapter 2 of this paper, having ICT adopted in a business does not automatically grant the business any competitive advantage, however having ICT connected to the processes of the business and its strategies will most likely give a competitive advantage. Therefore it is recommended that SME owners or IT consultants should search the market for relevant ICT solutions in-line with their business needs, then implement them in accordance to their business processes and strategy. This will give the SME very convincing benefits and ultimately a competing advantage.

- **Employee skills too low and lack of the technical know-how**

Employees with knowledge and skills with regards to ICT are very key in today's knowledge economy for effective implementation and application of ICT, well-trained staff for creating appropriate ICT applications, maintaining and supporting systems are crucial resources (Matula and Van Brakel, 2007). Instead of seeing this as a challenge it is recommended that the manager sees it as an opportunity to train and invest in his work-force. It is recommended that the SME owner/manager enrols his employees for a short basic ICT training course, or alternatively employ a consultant who will offer advice and training to his staff in relation to ICT.

The main issue is the development of the human capital within SMEs by the government. This can be attained by dropping, through various kinds of policy instruments, the appointment and training costs of educated personnel, and particularly university graduates. Creating an absorptive capability for ICTs needs to precede the permitting of effective use (Youssef and M'henni, 2010). It is also recommended that Government should consider entering into agreements with universities or colleges that will see Government paying for training of SMEs in programmes or courses related to ICT and business.

- **Limited resources in terms of finances**

ICT is seen as being very expensive by most SMEs so they regularly do not set aside a budget for it. ICT related solutions are largely linked with huge sums of money and stories which are related to ICT solutions are usually of over budget.

The other problematic issue regarding the cost of ICT is the fact that SMEs might invest in unnecessarily huge solutions because of sale pitches, hype created on certain products or patterns in the market without bearing in mind their actual need. Regularly they could have acquired a less complex, minor package or solution to address their specific needs, and therefore paid less. Financial support is a very important component with regard to ensuring that SMEs are sustainable, profitable and competent. Firstly it is recommended that government must merge all its funding agencies and form a single centralised funding agency which will be dedicated to SMEs. Such dedicated SME funding agency should be easily accessible to SMEs to award funding. It is also recommended that SME owners should identify their business needs and look for relevant ICT solutions and budget for it. They need to avoid investing in unnecessary big solutions and products which are not in line with their business needs.

- **Lack of Government Support**

As it has been indicated in chapter 2 SMEs have been recognized as useful drivers of inclusive economic development and growth in South Africa and across the world. Some researchers have assessed that, in South Africa, SMEs make up 91% of formal businesses, afford employment to about 60% of the workforce and total economic output accounts for approximately 34% of GDP. Therefore it of outmost importance that government offers support to these SMEs for sustainable growth.

The SME sector in South Africa is vigorously supported by several government initiatives, like: The National Small Business Act of 1996, which describes SMEs and provides for the creation of the National Small Business Council and the Ntsika Enterprise Promotion Agency (Ntsika).Khula Enterprise Finance is mandated with assisting SMEs get finance, mainly through providing security on behalf of small businesses to banks, retail financial organisations, dedicated funds and joint schemes, as well as making available loans through partner intermediaries.

Moreover, the Department of Trade and Industry (DTI) has several programmes and grants ready to support and encourage old and new SMEs and to generate employment in South Africa. Some of these programmes and grants are listed below.

- Black Business Supplier Development Programme (BBSDP)
- Seda Technology Programme (STP)
- Umsobomvu Youth Fund
- Youth co-operative finance
- Critical Infrastructure Programme (CIP)
- Seda Technology Programme (STP)
- Incubation Support Programme (ISP)
- Technology and Human Resources for Industry Programme (THRIP)

It is recommended that the Mafikeng local Municipality increases awareness of these government initiatives and make them readily available to SMEs in Mafikeng. In relation to ICT it is recommended that the North West local government should consider offering free Wi-Fi to SMEs like the city of Tshwane has done. This will help SMEs overcome their challenge of high internet costs. It is also recommended that the government should draw up policies which are more geared towards assisting the SME sector development through a number of programs which range from tax incentives to technical support, from supervisory requirements to policy mediations, training and all other kinds of business growth services.Furthermore, it is recommended that SME officials from the Department of Economic Development and Tourism, Mafikeng Local Municipality, and Mafikeng SEDA must conduct regular coaching and mentoring programs to capacitate the SME owners.

5.5 Recommendations for future research

Firstly it is recommended that other scholars could expand the current research by expanding the sample frame to SMEs across South Africa and not limit it to Mafikeng as this study did. It is also recommended that other researchers could look at a comparison of SMEs' ICT use across all nine provinces in South Africa. It is also recommended that other researchers may explore in detail the challenges faced by different SMEs in Mafikeng and find solutions to overcome those challenges.

5.6 Conclusion

This chapter presented research conclusions and recommendations based on this research findings. In conclusion regarding the current state of ICT adoption and usage in SMEs in Mafikeng, the researcher found that even though different types of ICT tools and technologies were used it is clear that the usage was very low, and this assertion is true as also respondents were directly asked in the questionnaire to rate the current state of ICT adoption and usage in their SMEs and majority of them rated it as low. This finding is not supported by the literature review as many researchers advocate for the high usage of ICT by business especially SMEs in order to thrive and stay competitive (Ritchie and Brindley, 2005; Gono et al., 2013; Bayo-Moriones and Lera-Lopez, 2007 &Lucchetti and Sterlacchini, 2004) to mention a few.

Regarding the relationship between ICT adoption and SME growth, results show that there is a weak relationship between these two variables, meaning that an increases or decreases in business size does not significantly relate to increases or decreases in the use of some form of ICT in the SME. This finding is consistent with findings made by other researchers on this topic who have discovered a weak or non-significant relationship between the adoption of ICT and business size (Teo et al., 1997; Love et. al., 2005; Lefebvre et al., 2005; Hollenstein, 2004). However, the literature review also shows that this finding does not concur with findings made by other researchers because a positive correlation between ICT adoption and business size is discovered in several empirical studies such as (Teo and Tan, 1998; Fabiani et al., 2005; Morgan et al., 2006;).

In relation to the importance of ICT adoption and use by SMEs in this study, findings indicate that most respondents pointed out that the importance of ICT in their business operations is low. This finding is not supported by the literature as many researchers like Dholakia and Ksherti (2004) have found that ICT adoption and usage by SMEs is of paramount importance in this day and age. According to Dholakia and Ksherti (2004), ICT adoption and usage is important as it increases an SME's capability to compete with other businesses, assists in creating chances for diversity amongst entrepreneurs, and makes available appropriate and easier ways of running a business more cost-efficiently.

With regards to the barriers experienced by SMEs when adopting ICT, findings of this study are in line with findings made by many researchers in the literature review; researchers such

as (Cloete et al., 2002 & Herselman, 2003) who in their studies discovered that the challenge which was rated the highest was the high cost of internet connectivity, followed by the inadequate telecommunication infrastructure as is the case in this study. Cloete et al., (2002) further went and stated that ICT implementation is mostly influenced by issues within the business.

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APPENDIX 1: QUESTIONNAIRE

This questionnaire is confidentially administered by the researcher, and is targeting SME owners, managers & employees in the Mafikeng Area in the (North West Province, SA) for the purpose of collecting primary data for writing a research report in partial fulfillment of the requirements for the degree of Masters in Computer Science & Information Systems, being pursued by the scholar at the North-West University (Mafikeng Campus). The response you will provide will be treated with utmost confidentiality.

SECTION A: GENERAL INFORMATION

1. Name of organization_____

2. Position in the Organization_____

3. Please Tick the appropriately response to the statements with **(X)**

NO.	STATEMENT	RESPONSES				
1	**Owner Age**	Under 21 years	21-30 years	31-40years	41-50years	Over 50 years
2	**Owner Qualification**	None	Primary School	Middle School	High School	College/ University
	What is the average level of education of your work force	Primary School	Middle School	High School	Tertiary/Higher Education	None
2	**Business size**	1-9 employees	10-19 employees	20-30 employees	31-50	Over 50
3	**Business age**	Less than 1 year	1-5 years	6-10 years	11-19 years	Over 20 years
4	**Market focus**	Local area	Regional area	National	International	Other(please specify)
5	**What is the average level of education of your work force**	Primary School	Middle School	High School	Tertiary/Higher Education	None
7	**The use of some form of IT or ICT technology in the business**	Not applicable	low	fairly high	high	highly important
6	**Who makes or help make decisions with regard to ICT/IT in the business**	Owner/Manager	Friends & Family with IT knowledge	ICT specialists in the business	IT Shops	Consultants

SECTION B: CURRENT STATE OF ICT WITHIN THE SMES

4. Please rate the following items on how you use them in your business to stay competitive. **(X)**
Scale of: (5- highly important), (4- high), (3 -fairly high), (2 –low), (1- Not applicable)

NO.	ITEMS	1.(Not applicable)	2.(low)	3.(fairly high)	4.(high)	5.(highly important)
1	Desktop Computer					
2	Telephone system/switchboard					
3	Portable devices (smartphones, Laptop, notebook computers, PDAs)					
4	Cash register					
5	Printers, copiers, faxes and scanners					
6	Internet					
7	Social-Network					
8	Website					
9	Dstv, TV and radio					
10	Credit card machines					
11	Others please specify:					

SECTION C: ICT CAPABILITY

5. Please rate your organization on the following indicators where;

Scale of: (5- highly important), (4- high), (3 -fairly high), (2-low), (1- Not applicable)

NO.	INDICATOR	1.(Not applicable)	2.(low)	3.(fairly high)	4.(high)	5.(Very highly)
1	Importance/value of ICT in the business operation					
2	The current state of ICT adoption and usage in the business					
3	Getting the business engaged in ICT issues					
4	Usage of ICT to gain Competitive advantage					
5	Sharing of information electronically within the enterprise					
6	Support for business management software/systems (e.g. ERP, CRM, HR, databases)					
7	Use of cloud computing services					
8	Future intentions for adopting and utilizing ICT in the business					
9	Benefits of ICT in the business					
10	Awareness of the benefits of ICT in the business					

SECTION E: CHALLENGES

6. The following statements aim to capture the challenges of using ICT in your company. Please rate the following questions from Strongly Agree to Strongly Disagree.

NO.	STATEMENT	1.(Strongly disagree)	2.(Disagree)	3.(Neither agree nor disagree)	4.(strongly agree)	5.(Agree)
1	Limited resources in terms of finances					
2	Low level of literacy among SME owners					
3	Lack of the technical know how					
4	Lack of awareness on ICT					
5	Employee skill too low					
6	High cost of internet connectivity					
7	Inadequate telecommunication infrastructure					
8	Lack of government support					
9	Unconvincing benefits to the organization					
10	Low level of technology usage within the organization					

**********Thank you for participating in this survey**********