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AN INVESTIGATION INTO FACTORS LIMITING THE ADOPTION OF INFORMATION COMMUNICATION TECHNOLOGY BY SMALL AND MEDIUM SIZED ENTERPRISES IN GABORONE, BOTSWANA

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LASTON MASEKO

22029966

Dissertation Submitted in partial fulfillment of the requirements for the degree

MASTER OF BUSINESS ADMINISTRATION

At the Mafikeng Campus of the North-West University

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ABSTRACT

The aim of the study is to investigate factors that limit the adoption of information and communication technologies (ICT) by Small and Medium Sized Enterprises (SMEs) in Botswana. Four objectives were set for the study. These included the need to measure the extent of usage of ICT by SMEs in Botswana, the determination of drivers of ICT adoption by SMEs in the country, the views of SMEs with regard to adopting ICT in their businesses and the opinions of SMEs if they think they missed out on growth opportunities, markets and profits if they did not incorporate ICT in their business models. Various frameworks guided the study. The main ones being the Theory of Research Action, the Technology Adoption Model, and the Integrated ICT Adoption Framework. Other hybrid models have been proposed by researchers and referred to in the literature review. The study covered the capital city of Botswana, Gaborone, which houses the majority of SMEs in the manufacturing sector and is fairly representative of other towns and cities in the country. Purposive sampling was used to draw the sample of participants who provided the information that was required for the study. The study utilized quantitative and qualitative approaches to extract primary data. Data instruments used included questionnaires, and prior to the main study, a pilot study was carried out. The Statistical Package for Social Sciences was used to analyse primary data. The findings of the study showed the reasons that impede information and ICT adoption by SMEs are many and varied. The key ones being the non-existence of proficiencies and expertise, lack of technical and managerial aptitudes, the calibre of business owners and the level of education acquired, poor telecommunications infrastructure, lack of awareness on the part of owners and managers, spontaneous business operations, failure to appreciate the changing business environment and fear of the unknown.

ACKNOWLEDGEMENTS

I take this opportunity to convey my sincere gratitude to all staff members of the Graduate School for their extensive support during my time of study at Mafikeng Campus of the University of North West. To my supervisor, Professor Kapunda of the University of Botswana, I thank you for creating an environment which gave me an opportunity to complete this project. My study partners, your resourcefulness is something I shall always cherish. To my wife, Gouta Pearl Maseko and all family members, I am humbled by your patience for the moments I had to forgo when you deserved my attention.

I wish to acknowledge my indebtedness to Mr. Lisani Ndaba, together with other business owners who partook in the survey.

May God bless you all.

Thank you

Laston Maseko

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LIST OF ACRONYMS

CEDA	Citizen Enterprise Development Agency
DOI	Diffusion of Innovation
GDP	Gross Domestic Product
ICT	Information and Communications Technology
LEA	Local Enterprise Authority
NICT	National Information and Communications Technology
OECD	Organisation for Economic Co-operation and Development
SADC	Southern African Development Community
SMEs	Small and Medium Enterprises
SPSS	Statistical Package for Social Sciences
UTAUT	Unified Theory of Use and Acceptance of Technology

CHAPTER ONE

INTRODUCTION AND RESEARCH OVERVIEW

1.0 Introduction

Several years ago, Botswana has been considered among the best performing economies in the world and received accolades of being a beacon of success in economic management in comparison with other states in Africa. Driven largely by diamond revenue, the economy moved from being one of the poorest at independence in 1966 to middle-income status by the mid-1990s. During this period, the economy grew at an average rate of more than 8 percent per annum, and per capita income of more than $6,000 as of end of 2009 (Bank of Botswana 2009). To a considerable extent Botswana has also thus far been able to avoid economic downfall attributable to inconsistent mineral markets and sources suffered by so many other mineral-rich economies. This has been largely owing to its expenditure strategy. In fact, these macroeconomic indicators, conceal structural weaknesses and the vulnerability of the economy. The economy is heavily dependent on the diamond-mining, which accounts for almost a third of the GDP.

To address the structural weaknesses which were clearly visible and likely to upset Botswana's economic growth, around 1982 the government chose to pursue a policy of economic diversification, not only because dependence on diamonds and beef has limited benefits for the majority of people in the country who are not able to find employment in these sectors, but also because it is hard to achieve economic growth with a human face through primary export-led growth. One of the ways that has been identified to have potential for economic diversification is the development of manufacturing Small and Medium Enterprises (SMEs). This motivation comes from the fact that it has now been established globally that SMEs are a major cause of entrepreneurial development, industrial development as well as economic growth, hence employment creation for poverty reduction. However, despite this recognised importance, the performance of SMEs in Botswana's economy, especially when it comes to manufacturing for export, has been very limited. This argues for the need to investigate if this business sector is using Information and communication technology to leverage its businesses to fastrack their growth and contribute meaningfully ton the GDP.

The study aims to investigate factors limiting the adoption of Information and Communications Technology (ICT) by Small and Medium Enterprises (SMEs) in Botswana.

Information and Communications Technologies or ICT is defined by the World Bank as "the set of activities which facilitate by electronic means the processing, transmission and display of information" Rodriguez & Wilson, (2000). Rodriguez and Wilson (2000) provides a definition of SMEs as business ventures which employ less than 100 people and a minimum turnover of one million pula in revenue in a fiscal year.

The need to carry out the study emanates from the immense contribution SMEs make to the economy. For them to be efficient, effective and survive the realities of global competition, according to Karkoviata (2001:75), such enterprises need to adopt modern management techniques. These include, among others, the use of ICT to manage activities such as marketing, supply chain, inventory and human capital management and make Botswana products competitive on global markets. It is also envisaged that some of them will grow to become big and global businesses. Hashmi (2007) noted that ICT is bridging the gap between domestic and international economic and social citizens. As engines of economic growth, SMEs contribute both towards high standards of living, alleviating unemployment and the Gross Domestic Product (GDP) of the country Bob (2012:65).

Global interconnectivity, which defines ICT linkages between sovereign states, is a tsunami event and a tidal wave of cataclysmic change sweeping the world Siegel (1999:12). According to Zeki, Zakaria and Liong, (2013), innovation is an accepted part of the development of any modern organisation. They further observed that the frequency of organisational change has increased alongside the developments in ICT. The current research will investigate factors limiting the adoption of ICT by SMEs in Botswana.

The SMEs sector in Botswana has over the years developed to a sizeable level in comparison to larger business sectors. This is attributed to the supportive policy of the Botswana government to promote empowerment of local businesses LEA (2009).

The rationale for support is that a vibrant SMEs sector should contribute to Botswana's economic development Briscoe, (1995). A current review of performance of SMEs reveals that despite receiving targeted financial, technical, business and management support in the past five years through the Citizen Enterprise Development Agency (CEDA) and Local Enterprise Authority (LEA), some of them still show sluggish performance thus resulting in insignificant contribution to the GDP. Various reasons are cited for this poor performance, such as inadequate personal, management and business skills. Budget Speech, (2009).

However, a mini survey undertaken recently by Ongori, (2009) in Gaborone has revealed that the use of ICT is one of the critical areas in which most SMEs have been found to be faring poorly. The survey of 150 SMEs found that 75 % were not using ICT effectively in their businesses. This is despite the availability of a developed ICT infrastructure in Botswana. The low uptake of ICT in most SMEs businesses appears to hinder their performance and growth. According to Iyana, Oyo and Manchaca, (2001), these businesses are not taking advantage of advances in information and communications technologies to change the traditional ways of doing business today.

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1.1 Background to study

SMEs, in the form of individual ventures, have become centres of manufacturing, which contribute to socio-economic, political and religious developments that changed the world outlook. Before the industrial revolution, blacksmith's shops were scattered across the breadth of the earth manufacturing armour and farming implements. These small sized enterprises have grown to become military industrial complexes, farming equipment and earthmoving businesses in the form of Boeing, John Deere and Caterpillar, just to name a few familiar names of today. Gutenberg's printing press in Germany, a small family business, formed the basis of the printing industry. The author of this research deliberately delves into history to show how SMEs metamorphosed to become global industries employing millions of people. The companies grew big on the back of prevailing ICT methodologies at the time.

Estime, Garnys and Loithe (2008) observed in their report for the Organisation for Economic Co-operation and Development (OECD) that businesses in the countries they studied started as SMEs and grew into global businesses. Many of such SMEs were into manufacturing, and one such company was Tata of India. Supported by solid ICT platforms, it was able to nurture upcoming SMEs in India by outsourcing services and subcontracting manufacturing of items, which were not core to their business through establishing strong value chains. Such linkages were only made possible where the SMEs had ICT infrastructure, which enabled business engagement at all levels, key among these being internet and telephones.

In their study of business growth of SMEs in Kenya and Africa, Nduati, Ombui and Kagiri (2015) noted that the spirit of entrepreneurship by SMEs was lowered by the limitations in ICT appreciation. It slowed economic growth, which is critical to countries, it fostered political instability and increased unemployment through

inhibiting development of down and upstream industries in the value or service chain. In a way, Botswana appears to share some of the attributes of what was observed and is prone to instability vagaries, particularly in the medium term.

As more graduates are churned out of the universities and colleges in Botswana, concerns about stability of the country should be considered. These are literate youthful people, facing limited chances of employment by mining companies, quasi-government and government sectors. The mines are becoming mechanized and automated reducing demand for labour in this sector. Solutions to maintain stability lie in capacitating and growing SMEs. Capacitating could be through facilitating rapid ICT uptake by SMEs and further broadening opportunities for creating SMEs in industries that support mining and diversifying the economy.

1.2 Statement of the Problem

The growth of the SME sector in Botswana is very slow as evidenced with their minimal contribution to the GDP and as players both in the domestic and international market. There is an obligation to use ICT as a leverage to make this sector vibrant therefore, this study seeks to investigate the extent to which this digital advantage is used.

In the early 1970's, the Government of Botswana came up with programmes and schemes aimed at supporting entrepreneurship and small business development in the country. It promoted a policy of empowerment to a well-developed and vibrant SMEs sector in the hope that they would contribute significantly to Botswana's economic development and pursue the diversification of the economy from relying on the primary mining sector. The efforts by the government will undoubtedly raise the profile of most SMEs businesses in the country.

There is a need to become an informed nation to enable Botswana to enter the information technology age like other nations and develop her communications capacity thereby making her globally competitive as an information and knowledge society (Botswana Government, 1997).

This brought about the formation of the National Information and Communications Technology (NICT) Policy of 2007 to direct all ICT activities and programmes in the country. Under this policy, the ICT industry was liberalised and incentivised to set up many internet, cellular, and other wireless companies. The current trend shows that

big companies and businesses in Botswana have been moving towards adopting ICT (personal computers, email, mobile and internet) to do their businesses thus moving away from traditional business practice and improving their performance. However, this is not so with most SMEs. The challenge is that most SMEs still rely on traditional tools to carry out their business. There is slow adoption of ICT in their business models, raising concerns that they need to take advantage of the power of ICT to thwart competition, whether domestic, regional or global. The research problem under investigation is therefore defined as "***An investigation into factors limiting adoption of information communication technology in SMEs in Gaborone, Botswana***".

It is envisaged that low productivity, deficient performance, lack of competitiveness and slow growth in SMEs will contribute towards low Gross Domestic Product (GDP). This is a perceived problem, and the current project investigated factors limiting the adoption of ICT usage by SMEs in Botswana.

1.3 Research Objectives

On the basis of the statement of the problem, the following objectives guided the investigation, namely, to:

1. Measure the extent of ICT usage by SMEs in Botswana.
2. Determine the drivers of ICT adoption by SMEs in Botswana.
3. Determine limitations of ICT adoption by SMEs in Botswana.

1.4 Research Questions

The main research question was "what are the factors limiting ICT adoption by SMEs in Botswana?". The following sub-questions will also be addressed in search of answers to the problem.

1. Have SMEs in Botswana embraced ICT in their business models?
2. What are the factors that push SMEs to adopt ICT in Botswana?
3. What are the challenges facing SMEs in adopting ICT in Botswana?

1.5 Significance of study

This study was found to be important to the government, investors in ICT and SMEs as follows:

1. In its long-term planning, the government will be able to forecast the anticipated expenditure required to set up ICT infrastructure for SMEs.

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To address the structural weaknesses which were clearly visible and likely to upset Botswana's economic growth, around 1982 the government chose to pursue a policy of economic diversification, not only because dependence on diamonds and beef has limited benefits for the majority of people in the country who are not able to find employment in these sectors, but also because it is hard to achieve economic growth with a human face through primary export-led growth. One of the ways that has been identified to have potential for economic diversification is the development of manufacturing Small and Medium Enterprises (SMEs). This motivation comes from the fact that it has now been established globally that SMEs are a major cause of entrepreneurial development, industrial development as well as economic growth, hence employment creation for poverty reduction. However, despite this recognised importance, the performance of SMEs in Botswana's economy, especially when it comes to manufacturing for export, has been very limited. This argues for the need to investigate if this business sector is using Information and communication technology to leverage its businesses to fastrack their growth and contribute meaningfully ton the GDP.

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In the early 1970's, the Government of Botswana came up with programmes and schemes aimed at supporting entrepreneurship and small business development in the country. It promoted a policy of empowerment to a well-developed and vibrant SMEs sector in the hope that they would contribute significantly to Botswana's economic development and pursue the diversification of the economy from relying on the primary mining sector. The efforts by the government will undoubtedly raise the profile of most SMEs businesses in the country.

There is a need to become an informed nation to enable Botswana to enter the information technology age like other nations and develop her communications capacity thereby making her globally competitive as an information and knowledge society (Botswana Government, 1997).

This brought about the formation of the National Information and Communications Technology (NICT) Policy of 2007 to direct all ICT activities and programmes in the country. Under this policy, the ICT industry was liberalised and incentivised to set up many internet, cellular, and other wireless companies. The current trend shows that

big companies and businesses in Botswana have been moving towards adopting ICT (personal computers, email, mobile and internet) to do their businesses thus moving away from traditional business practice and improving their performance. However, this is not so with most SMEs. The challenge is that most SMEs still rely on traditional tools to carry out their business. There is slow adoption of ICT in their business models, raising concerns that they need to take advantage of the power of ICT to thwart competition, whether domestic, regional or global. The research problem under investigation is therefore defined as "***An investigation into factors limiting adoption of information communication technology in SMEs in Gaborone, Botswana***".

It is envisaged that low productivity, deficient performance, lack of competitiveness and slow growth in SMEs will contribute towards low Gross Domestic Product (GDP). This is a perceived problem, and the current project investigated factors limiting the adoption of ICT usage by SMEs in Botswana.

1.3 Research Objectives

On the basis of the statement of the problem, the following objectives guided the investigation, namely, to:

1. Measure the extent of ICT usage by SMEs in Botswana.
2. Determine the drivers of ICT adoption by SMEs in Botswana.
3. Determine limitations of ICT adoption by SMEs in Botswana.

1.4 Research Questions

The main research question was "what are the factors limiting ICT adoption by SMEs in Botswana?". The following sub-questions will also be addressed in search of answers to the problem.

1. Have SMEs in Botswana embraced ICT in their business models?
2. What are the factors that push SMEs to adopt ICT in Botswana?
3. What are the challenges facing SMEs in adopting ICT in Botswana?

1.5 Significance of study

This study was found to be important to the government, investors in ICT and SMEs as follows:

1. In its long-term planning, the government will be able to forecast the anticipated expenditure required to set up ICT infrastructure for SMEs.

2. It would assist government to draft policies that incentivise SMEs to adopt ICT in their operations.
3. It would give SMEs opportunities to attach importance of ICT to their businesses.
4. Big businesses that interact with SMEs will be able to communicate with them and transact efficiently and effectively.

1.6 Scope of Study

The study derived its scope from framework from the Unified Theory of Use and Acceptance of Technology (UTAUT) advanced by Venkatesh, Davis and Davis (2003) as cited by Samandiwakara and Gunawaderma (2014). It is complemented by the SMEs implementation of the ICT framework described by Kaparubandara and Nelson (2017) who highlights the generic internal and external barriers to ICT adoption. The study was conducted in Gaborone in by H Ongori, (2009), which has all types of small and medium-sized enterprises that are fairly representative of Botswana. Specifically, limitation of adoption information and communications technology by SMEs was the focus. The study was revisited during the months of April and May 2017.

1.7 Ethical Issues

Macmillan's English Dictionary defines ethics as a set of principles that people use to decide what is right and what is wrong. The following ethical issues were observed informed concern, confidentiality, invasion of privacy and accessibility.

1.7.1 Informed Consent

Informed consent is a voluntary agreement to participate in research. It is not only a document that is signed but is a process in which the subject has an understanding of his/her rights, the purpose of the study, the procedures to be undergone and the potential benefits and risks of participation.

The researcher informed the participants about the purpose of the study, the extent of their involvement and the duration of the study.

1.7.2 Confidentiality

Confidentiality refers to the rights embodied in the principles of respect for persons, beneficence and justice. Generally, confidentiality is the right of privacy of an individual over the use or access of his or her personal information that he or she

shares with the researchers Marczyk, DeMatteo & Festinger, (2005). All the personal information availed to the researcher of this study by the respondents is regarded as confidential.

1.7.3 Invasion of privacy

Meetings with participants were convened at mutually agreed upon public venues. The researcher scheduled appointments and was granted opportunity and space to interview respondents.

1.7.4 Accessibility

The researcher made every effort to meet respondents in public places and during working hours. Where circumstances did not allow this, the researcher first phoned the respondents and on agreement then sent questionnaires to them by electronic mail.

1.8 Limitations

The following limitations of resources, time and coverage were anticipated during the course of the research.

1.8.1 Resources

The researcher incurred financial expenses for stationery, travelling and subsistence during the study. In mitigation, a questionnaire was designed and sent by e-mail to cater for respondents too far away to visit personally. Arrangements were made telephonically in advance with the respondents.

1.8.2 Time

Time limitations were encountered since the researcher was fully employed and respondents had their own work schedules. However, some questionnaires were sent to respondents by e-mail and where it was critical to meet respondents, special meeting times were arranged at their convenience.

In addition, the time in which the study survey for the dissertation was undertaken was relatively short. The researcher did not therefore probe the issues to his entire satisfaction.

1.8.3 Coverage

Although it was difficult to generalise the findings of the study to the whole country it was nevertheless possible to generalise amongst the sampled businesses within

Gaborone because Gaborone is the centre of the country's enterprises therefore the trustworthy findings can be generalised to the entire country.

1.9 Structure of Research

Chapter One is an introduction to the whole dissertation. It provides the reader with an overview of the limitations in the adoption of ICT by SMEs in Botswana. The chapter also provides the reader with an outline of the research objectives, the main and subsidiary research questions. The hypothesis, scope and limitations to the study are explained.

Chapter Two reviews secondary data on which other researchers have written on limitations of adoption of ICT by SMEs and highlights critical theories behind the reasons for limitations. The researcher dwelt to some extent on these before moving on to review the situation in Botswana.

Chapter Three covers the research methodology, a descriptive research survey was used to gather quantifiable information that was used for statistical inference on audience through data analysis. Questionnaires that were numbered and ordered in a way that was logical to respondents were used as research instruments. Statistical analysis was done using IBM SPSS 23 statistical package. The results from the analysis were used to draw conclusions on the hypothesis.

Chapter Four presents the findings of the data collected. Data presentation techniques such as graphs and tables are included. Data analysis and discussion of the results were also incorporated in this chapter.

Chapter Five draws conclusions and provides recommendations based on the results on the limitation of adopting ICT by SMEs in Botswana.

1.10 Summary

This chapter pointed out the need for a study to find the extent of the limitations of adoption of ICT by SMEs in Botswana. The researcher highlighted the importance of ICT to the operations of SMEs in the country.

To this end, the researcher identified the impact of the limitations on the economy of Botswana. Research objectives and research questions were formulated. Hypotheses have been proposed and the significance of the research to other stakeholders explained.

The following hypotheses were considered/examined in this study.

Hypotheses

First hypothesis: Fierce competition is a major problem for all types of SMEs.

Second hypothesis: Funds availability is a significant problem, especially for relatively SMEs.

Third hypothesis: Lack of knowledge about benefits of ICT by SME owners

The case study is opening grey areas regarding these limitations, which other researchers will in future investigate further. Ethical issues and current limitations to the study have been explained. The next chapter will review the existing body of literature regarding factors limiting the adoption of ICT in Botswana by SMEs.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

The previous chapter proffered an overview of the study, namely, an investigation of factors limiting the adoption of ICT by SMEs in Botswana. The government of Botswana realises that these SMEs occupy a central place in the economy in that they are future engines of economic growth, can support big business and will help to diversify the economy and wean it off from dependence from primary sector, which is firmly rooted in mining. SMEs provide long-term solutions to the unemployment crisis and will also contribute meaningfully to the GDP in the long term. ICT is envisaged as one of the means to improve efficiency in the operations of SMEs and subsequently as leverage to lower costs of production and making Botswana products more competitive locally and in global markets.

The chapter explores in detail theoretical foundations of ICT suitable for use by SMEs and will highlight experiences of other countries whose SMEs have fully embraced ICT. Countries in similar circumstances like Botswana, such as the Southern African Development Community (SADC) countries, will be discussed. Finally, the discussion will anchor on Botswana. However, there is a gap in the extant literature concerning the region, which is lacking in depth thus providing superficial insights only.

2.1 Theoretical Framework on Factors Limiting Adoption of ICT by SMEs

In light of the contribution of ICT to the success of big corporations worldwide, researchers have been left to wonder why the gains of ICT have not been so visible in improving the performance and productivity in some SMEs in other countries yet in other countries the benefits are visible. Researchers differ in opinions, but Costello and Moreton (2009) argued that the basis of all the research on limitations of adopting ICT by SMEs is attributed to Rogers (1995) who propounded the theory of diffusion of innovation, and they cite the researcher in their preliminary works.

2.1.1 The theory of diffusion of innovation

Diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system according to Everett Roger, (1961). An Innovation is an idea, practice, or object perceived as new by an individual or other unit of adoption Rogers, (2003).

Theory

The diffusion of innovation theory analysis how the SMEs adopt the new innovative ideas and how they made the decision towards it. Both mass media and interpersonal communication channel is involved in the diffusion process. The theory heavily relies on Human capital. According to the theory, innovations should be widely adopted to attain development and sustainability. In real life situations the adaptability of the culture played a very relevant role where ever the theory was applied. Rogers proposed four elements of diffusion of innovations they are:

1. **Innovations** – An idea, practice, or object perceived as new by an individual. It can also be an impulse to do something new or bring some social change.
2. **Communication Channel** – The communication channels take the messages from one individual to another. It is through the channel of communication the Innovations spreads across the people. It can take any form like word of mouth, SMS, any sort of literary form.
3. **Time** – It refers to the length of time which takes from the people to get adopted to the innovations in a society. It is the time people take to get used to new ideas. For an example consider mobile phones it took a while to get spread among the people when it is introduced in the market
4. **Social System** – Interrelated network group joint together to solve the problems for a common goal. Social system refers to all kinds of components which construct the society like religion, institutions, groups of people etc

Costello and Moreton (2009) observed that many theories and models have been proposed to explain the adoption of ICT by SMEs. In their investigation, they noted that researchers reviewed various means of ICT adoption by SMEs ranging from electronic data interchange, e-Business and internet adoption models. Costello and Moreton (2009) in their analysis of the work of Rogers (2003) cited in Castello and Moreton (2009) attributed adoption of ICT by SMEs to diffusion of innovation. The researchers further noted that Rogers' theory formed the basis of acceptance of ICT by SMEs and concurred with Rogers's findings that adoption

depended on the recipients' conviction that adoption depended on the cost benefit analysis and that people would adopt if the innovation they adopt would produce some relative advantage to that it replaced. Taylor (2015) noted that the Diffusion Of Innovation (DOI) model by Rogers (1995) explains the efficacy of adopting ICT at firm level by SMEs and explains how individual characteristics, internal characteristics of organizational structure such as individual leader factors and ability to comprehend change, knowledgeability and expertise of staff contribute. As for external pressures, he views the impact of competitive pressures. Figure 1 below illustrate the diffusion of innovations model done by Rodgers and adopted from Taylor. It shows how individual leader factors, internal factors of organisational structure and external factors of the organisation can influence diffusion in organisations.

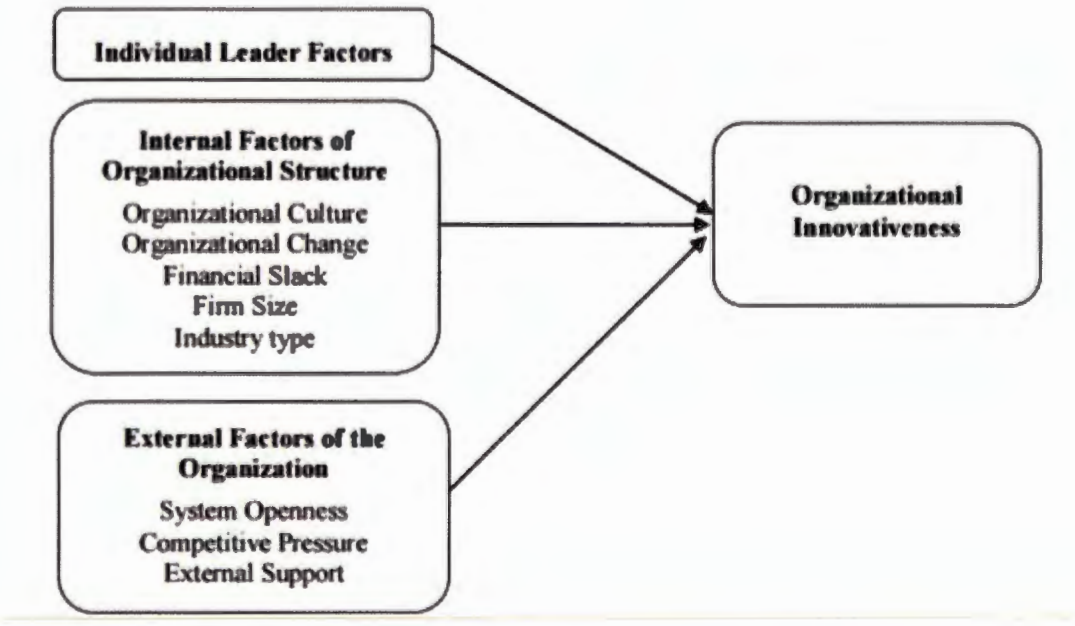


Figure 1: Diffusion of Innovations Model. (Rogers, 1995). Adapted from Taylor (2015).

Whilst critics consign Rogers' diffusion of innovation theory to the dustbin because of its simplicity, Costello and Moreton (2009) cited Bradford and Florin (2003) who advocate the validity of the theory on the basis of "perceived needs by SMEs to adopt the ICT practice if it produces better results than that it replaces."

2.1.2 Theories that Evolved from the Diffusion of Innovation Theory

In his doctoral thesis, Djatikusumo (2014:35) clearly elaborated a theoretical framework, which was used to interrogate factors limiting adoption of ICT by SMEs in Indonesia. The three theories adopted for establishing the framework derived some of their elements from Rogers (2003) cited in Costello and Moreton (2009). The theories are namely the Theory of

Reasoned Action (TRA), the Technology Acceptance Model (TAM) and the Unified Theory and Use of Technology (UTAUT).

2.1.2.1 The Theory of Reasoned Action (TRA)

The theory of reasoned action serves to understand an individual's voluntary behaviour. The ideas found within the theory of reasoned action have to do with an individual's basic motivation to perform an action. TRA says that a person's intention to perform a behaviour is the main predictor of whether or not they actually perform that behaviour. According to the theory, intention to perform a certain behaviour precedes the actual behaviour. This intention is known as behavioural intention and comes because of a belief that performing the behaviour will lead to a specific outcome. Behavioural intention is important to the theory because these intentions "are determined by attitudes to behaviours and subjective norms". The theory of reasoned action suggests that stronger intentions lead to increased effort to perform the behaviour, which also increases the likelihood for the behaviour to be performed. Using TRA in this study will help in determining the attitude and behaviour of SME owners towards the adoption of ICT.

Costello and Moreton (2009) cited Fischbein and Ajzen (1975) who postulated that the behaviour of other people is largely determined by the manner in which people see them in the Theory of Reasoned Action. In application of the theory Djatikusumo (2014:35) noted that Lam, Cho and Qu (2007) found that an effective adoption of IT depends on positive intention towards IT adoption. In a real situation, where the Owner/Manager of a SME business is perceived to be knowledgeable he or she is expected to adopt ICT in the business to mirror image perceptions stakeholders in the business have about him.

2.1.2.2 The technology acceptance model (TAM)

The theory was developed by Davis (1989) and derives its basic tenets from the Theory of Reasoned Action (TRA), which in turn has its roots grounded in the Diffusion and Innovation (DAI) theory put forward by Rodgers in 1965 (Costello & Moreton 2009). The model was predominantly used in the IT/IS studies and was later adopted to interrogate studies in adoption studies of ICT by SMEs. Karahanna, Agarwal and Angst (2006), cited by Djatikusumo (2014:37), stated that the model has been predicted to have better validity for both initial adoption and continued use. As such Djatikusumo (2014:37) noted that TAM can be described as a model, which argues that determinants will influence the decision of each individual on how and when they will use new technology. Venkatesh and Morris (2000) concluded that the TAM has relevancy when predicting relationships between individual behaviour and technology.

However, other researchers such as Van Akkren and Cavaye (1995), cited in Costello and Moreton (2009), noted weaknesses in TAM theories; key among these being the neglect of other critical factors such as influences on personnel behaviour, economic factors and outside influences emanating from other stakeholders.

A deduction from the foregoing, points to the fact that adoption of ICT by SMEs in Botswana depends on people in management or owners of such enterprises, their degree of appreciation of current business practices depends on institutions they interact with in pursuit of their business models. In their business model, the leadership astuteness, quality of human capital in the manner it understands the role of ICT in business and external environment factors cannot be down played. Figure 2 below depicts the relationships in TAM.

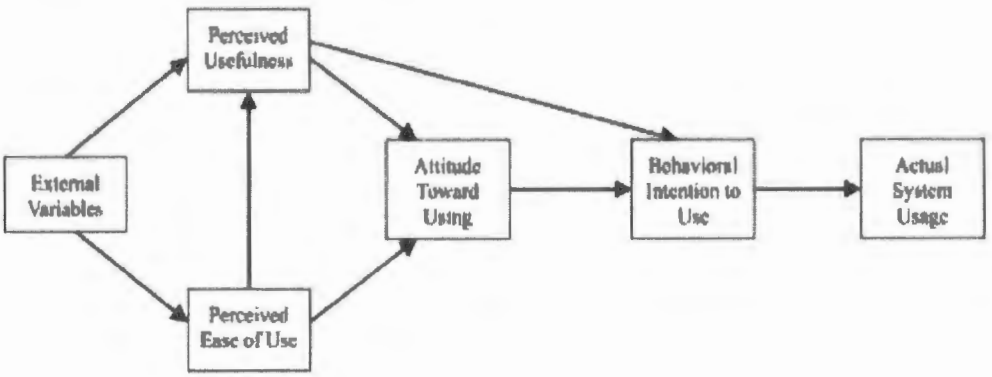


Figure 2. The Technology Acceptance Model (Davis et al. (1989:95). Adapted from Samandiwakara and Gunawardema (2014).

2.1.2.3 The Unified theory of acceptance and use technology (UTAUT)

According to Samandiwakara and Gunawardema (2014), UTAUT model was postulated by Venkatesh, Davis and Davis (2003). Alawadhi and Morris (2008) pointed out that UTAUT is a merger of eight research models namely TRA, TAM, TPB, the Motivational model (MM), the combined TAM and TPB, the model of PC utilization, MPCU, DOI and Social cognitive theory. Samandiwakara and Gunawardena (2014) highlighted that UTAUT comprises four determinants complimented with four moderators of key relationships. There are four constructs, namely performance expectancy, effort expectancy, social influence and facilitating conditions. The key moderators are gender, age, voluntaries and experience says Kriponant (2007), cited by Samandiwakara and Gunawardena (2014). Samandiwakara and Gunawardena (2014) pointed out that facilitating conditions imply the degree to which an individual believes that organisational and technical infrastructure exists to support the technology.

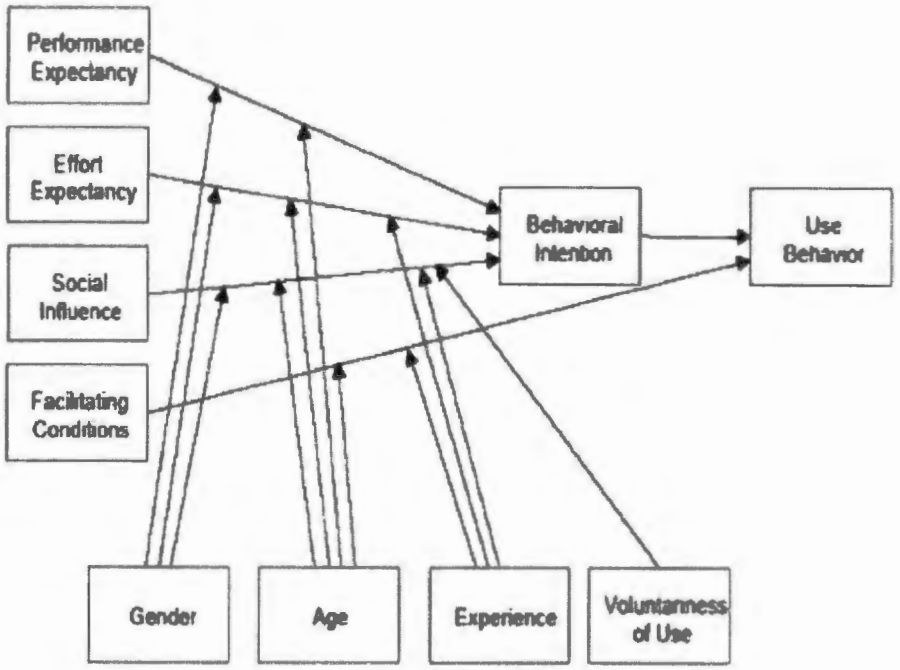


Figure 3 The Unified Theory of Acceptance and Use Technology Model by Venkatesh et al (2003). Adapted from Samandiwakara and Gunawardema (2014).

Table 1 below summarises theories discussed in the foregoing section.

Table 1 Key variables of attributes of models merged to form UTAUT Model.

Number	**Theory**	**Constructs**
1	Theory of reasoned action (TRA)	1. Attitude towards behaviour 2. Subjective Norm
2	Technology acceptance mode (TAM) A – Tam 2 B- Including Gender	1. Perceived usefulness 2. Perceived ease of use 3. Subjective Norm
3	Motivation Model (MM)	1. Extrinsic motivation 2. Intrinsic Motivation
4	Decomposed Theory of Planned Behaviour (TPB) A- TPB including voluntariness B- TPB including experience C- TPB including age	1. Attitude towards behaviour 2. Subjective norm 3. Perceived behaviour control

5	Combined Acceptance Technology model Acceptance Model Theory of Planned Behaviour C-TAM-TPB	1. Attitude towards behaviour 2. Subjective Norm 3. Perceived behavioural Control 4. Perceived Usefulness
6	Model of PC Utilization (MPCU)	1. Job fit 2. Complexity 3. Long term consequence 4. Affect towards use 5. Social use 6. Facilitating Conditions
7	Innovation Diffusion Theory	1. Relative advantage 2. Ease of use 3. Result of demonstrability 4. Friability 5. Visibility 6. Image 7. Compatibility 8. Voluntariness of use
8	Social Cognitive Theory	1. Outcome expectation 2. Self-efficacy 3. Affect 4. Anxiety
9	Unified Theory and Use of Technology	1. Performance Expectancy 2. Effort Expectancy 3. Social Expectancy 4. Facilitating Conditions

Adapted from Samandiwakara and Gunawardema (2014)

Samandiwakara and Gunawardena (2014) and Venkatesh and Morris (2000) concluded from their studies that the UTAUT model is inclusive of key models such as DOI, TAM, TRA and complementary models which have additives from other fields bringing comprehensiveness,

reliability and validity to it. Its use is thus recommended in investigations into aspects dealing with technology, information communications technology and other fields relating to studies which entail willingness to receive something new into a system.

In this regard the UTAUT model will be adopted to investigate factors limiting the adoption of ICT by SMEs in Botswana.

2.2 ICT implementation by SMEs in developed countries

Literature review on ICT implementation in developed countries adopted a selective stance by looking at the United Kingdom, the United States of America, and the European Union and to some extent New Zealand and Australia. The trends are similar and the discussions on these countries give a fair view of developed nations, which embrace similar inclinations to ICT and ideological orientations of a free market albeit with slight variations.

OECD Report (2004) defined SMEs organizations as those businesses, which employ at most 250 people. Harindranath, Dyserson and Barnes (2008) observed that in the United Kingdom about 99,9% of SMEs employ 4.3 million people. According to OECD (2004), 92% of the SMEs within the European Union provide jobs to 1–10 people. Parida, Johansson, Ylinepaa and Braunerhjelm (2010) say that the proportion had increased to 99% by 2010.

Harindranath, Dyserson and Barnes (2008) carried out research on 400 SMEs in the South of England in food processing, transport and logistics, media and internet industries and pointed out that about 60% of SMEs in that country, utilize ICT platforms such as telephones, electronic mail (e-mail), the internet, the web for business to business and business to customer engagements mainly to achieve functional efficiency and to fulfil regulatory obligations. The researchers note that using ICT for strategic intent has not yet matured to become an adopted practice. Functional efficiency entails improving efficiency and cutting costs in day-to-day operational issues such as stock and inventory management, financial and accounting management, supply chain management, reaching out to customers, enhance joint project implementation with partner businesses and management control functions. This mirrors practices in the European Union, Sweden, Australia and New Zealand. Parida, Johansson, Ylinepaa and Braunerhjelm (2010) viewed the USA differently where ICT utilization is intense for all purposes because of very low costs for example about $10.00 per month is incurred by a household to host a website and $10.00 per year to register it. In the USA, SMEs can therefore utilize ICT for strategic intent.

OECD (2004) studies revealed that the costs of establishing a website differ significantly from country to country, but rise sharply in Australia to about $800.00. Network infrastructure issues become an impediment to interoperability in some countries. Interoperability on its own can deter switching from one form of network to another, requiring justification of strong business cases, which hike both exiting and operating costs for leaving service providers. Lack of internal technological capabilities in ICT, OECD (2004:22), inferior technology, Harindranath, Dyserson and Barnes (2008) high costs of developing and maintaining ICT platforms within the business, paucity of internal and external relationships with skilled personnel and partner organizations increase costs on SMEs (Parida, Johansson, Ylinepaa & Braunerhjelm, 2010).

The typology of SMEs businesses determines its ICT requirements and usage. The same can be argued for their business models, which to some extent are a function of dominating industries within a region or country. In countries where the knowledge and quaternary industries are at their peak in their development profile, there is need for unique ICT platforms in SMEs that partake in their ICT activities OECD, (2004).

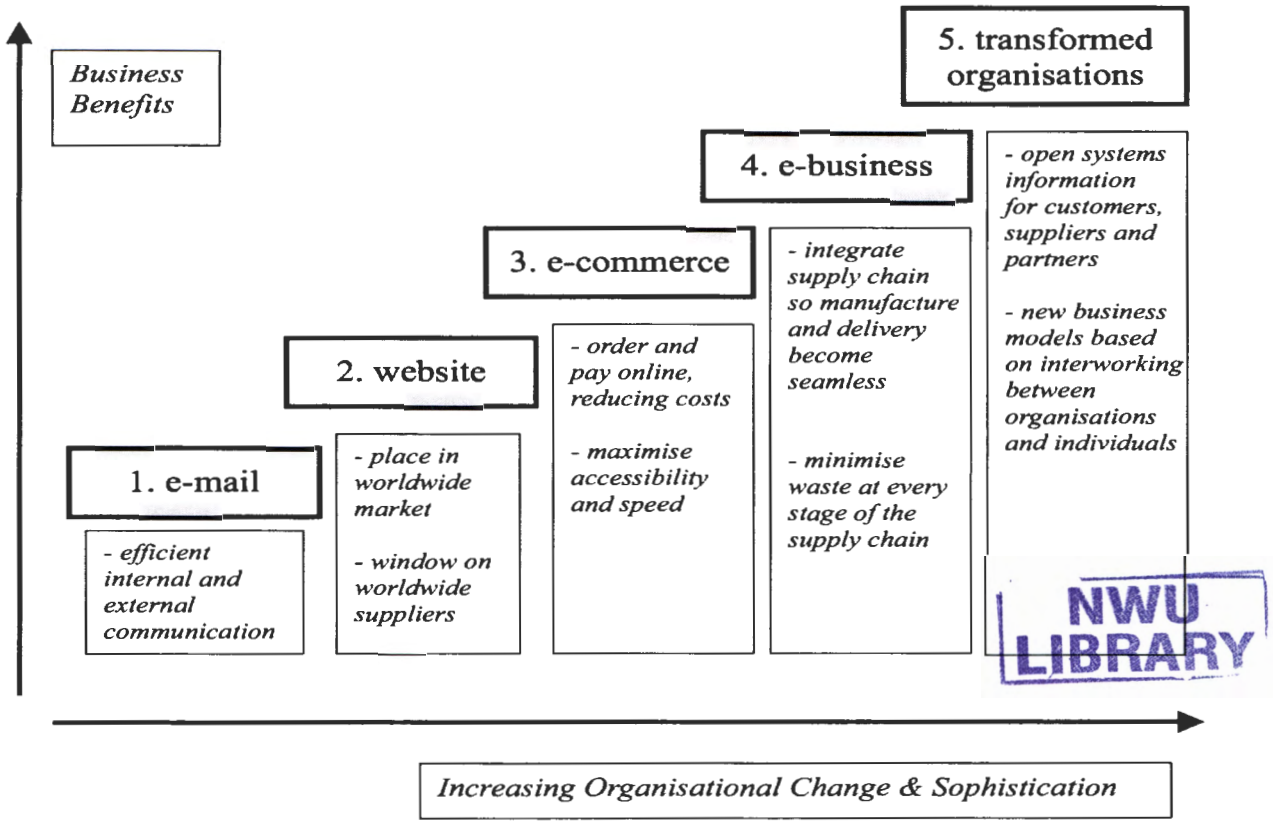
Some conservative SMEs fear to develop new business with new business models as this would entail developing new ICT platforms, a cost that cannot be justified, making costs of development outweigh benefits (Harindranath, Dyserson & Barnes 2008; Parida, Johansson, Ylinepaa & Braunerhjelm, (2010); OECD, (2004).

In studying United Kingdom and European Union SMEs and their adoption of ICT, Harindranath, Dyserson and Barnes (2008) and OECD (2004) concurred that management capability, ownership structures, lack of training needs and the cost of ICT consultants were an impediment in adopting sound ICT platforms.

Scepticism in fear of loss of information to outside parties, lack of recourse on issues arising from online transactions and shaky legal frameworks on ICT issues affected SMEs and deterred these from participating effectively in ICT. Such cases were prevalent in the United States of America (Harindranath, Dyserson & Barnes, (2008); Parida, Johansson, Ylinepaa & Braunerhjelm,(2010); OECD, (2004).

Harindranath, Dyserson and Barnes (2008) noted that there was high ICT illiteracy among some entrepreneurs and this was followed by lack of standards in their types of businesses. As such it limited their adoption of ICT.

In their findings in Sweden, Parida, Johansson, Ylinepaa and Braunerhjelm (2010) noted that utilization of different types of ICT evolved with growth. As the size of the SMEs grew, they embraced more ICT platforms and in some instances negated some other platforms. Thus the growth profile is mapped in Figure 4.



Source: Martin and Matlay (2001) adapted from Cisco-led Information Age Partnership study on e-commerce in small business

Figure 4 Adoption Ladder of ICT Product. Source: Martin and Matlay (2001)

The final decision was that the UTAUT model, supported by the diagram of the Cisco-led information Age Partnership, is applicable to appreciating limitations in the adoption of ICT by SMEs in Botswana. This would provide insight into the stages reached by the SMEs in this study in implementing ICT in their business models.

2.3 ICT implementation by SMEs in developing countries

In developing countries, a plethora of social, economic, political, environmental, and technical and even some international problems posed upon these countries make SMEs the only pathway to tackle challenges of underdevelopment through opportunities offered by ICT (Kaparubandara & Nelson, 2017). In addition to the UTAUT model that has been adopted for the main study, a simplified model by Kaparubandara and Nelson (2017) will be applied to complement the analysis by simplifying understanding of internal and external barriers under

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investigation. In their study of Sri Lanka, Kaparubandara and Nelson (2017) noted that SMEs encountered internal and external barriers by adopting ICT. Internal barriers that were identified ranged from lack of awareness of ICT, unavailability of time and investment resources, cost/return issues and owner/managers being players in decisions regarding adoption of ICT. The researchers noted that some business models by SMEs were simple and did not demand much of ICT attention.

According to Kaparubandara and Nelson (2017), external barriers were those challenges that affected the entire economy and could not be resolved by a single business alone. Key among these was lack of telecommunications infrastructure which limit ICT penetration and the cost of ICT gadgets in some countries. Through forming clusters to solve communication challenges head on, most governments and private sectors were making headway gradually (Kaparubandara & Nelson, 2017). However, policy changes either through frequent change of governments or instabilities by governments, impacted on policy consistency on adoption of ICT by SMEs (Mapeshoane & Pather, 2016). Incoherencies by industry associations and the legal fraternity, lack of ICT software standards and unavailability of sound procedures and guidelines are also some of the impediments (Kaparubandara & Nelson, 2017; Rahayu & Day, 2015; Mapeshoane & Pather, 2016).

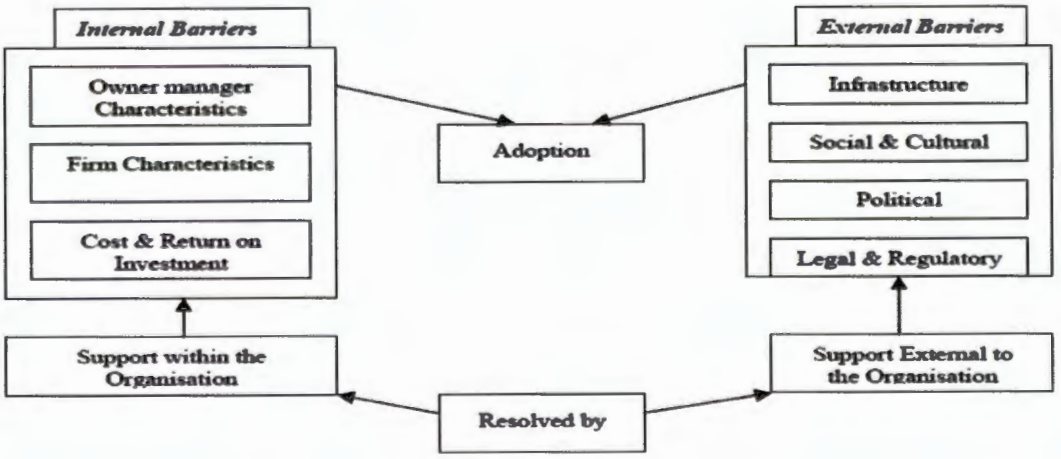

Figure 5. Factors Limiting Adoption of ICT by SMEs in Developing Countries. Adopted from Kaparubandara and Nelson (2017).

The model illustrated in Figure 5, though peculiar to Sri Lanka, mirrors the environment regarding ICT adoption by SMEs for most developing countries.

In the case of Malaysia, which has many archipelago islands, ICT penetration to SMEs is a real challenge (Rahayu & Day, 2015). Saleh and Burgess (2009) and Rahayu and Day (2015) are agreed that Malaysia, which has 92% of its registered firms as SMEs and 33% of its

working population experiences gross underutilization of its ICT applications with only 30% of these businesses having websites. The supplementary model augurs well for Botswana given its large geographical size, small population and an irregular distribution of population densities.

Kaparubandara and Nelson (2017), Rahayu and Day (2015) and Saleh and Burgess (2009) confirmed that both internal and external barriers are at play in inhibiting adoption of ICT by SMEs. It is noted that managerial understanding of ICT, which comprises financial, technological and human resources are still low and the need to know benefits that accrue by adopting on adoption of ICT by SMEs (Rahayu & Day, 2015). Both researchers acknowledge that infrastructure, culture, value on importance of ICT and workplace practices do not stimulate the appetite by SMEs to utilise ICT fully. Rahayu and Day (2015) found that the environmental context was not driving SMEs towards adopting technologies. They noted particularly the pressure from customers is not enough and government zeal is on the leeward side in terms of support. Regulation is still slack generating issues of mistrust as well (Rahayu & Day, 2015; Saleh & Burgess, 2009).

Zeid (2012) observed that SMEs constituted more than 90% of all businesses in Africa and provided the main source of jobs and income. It being so, the level of ICT adoption by these institutions is worrisome. Zeid attributed low levels of e-commerce and web enabled adoptions to market size, lack of or non-existence of telecommunications and ICT infrastructure, lack of education and awareness in Egypt and Africa at large. Slackened legal systems, government issues, affordability, cost structure, social and psychological factors also contribute in Kenya (Nduati, Ombui & Kagiri, 2015; Mapeshoane & Pather, 2016). In their study of the tourism industry in Lesotho, Mapeshoane and Pather (2016) concluded that the following factors had a significant effect on adoption of ICT by SMEs: performance expectancy, effort expectancy, social influence, experience, gender, facilitating conditions and national culture.

2.4 The impact of ICT on SMEs in Botswana

According to the Parliamentary Office of Science and Technology (Botswana Government, 2006), the mandate to develop Botswana rests with SMEs. This mandate, they observed, will help to create jobs, eradicate poverty and will economically empower the people. It will also integrate SMEs into the mainstream economy and grow them to become big businesses that are locally owned and contribute immensely towards the GDP of the country. It is imperative therefore to adopt ICT in their business models (Mokaya, 2012:172).

Pursuant to NICT Policy Document of Botswana Government (2007), the sector was liberalised to ensure participation by private sector investors, making ICTs infrastructure and software, mobile phone related applications like (VoIP) voice over internet protocols become available, stimulating rapid growth in the mobile phone usage sector (Parliamentary Office of Science and Technology, 2006). However, the researcher is unclear on the extent of the usage of mobile technology in business.

Golding, Donaldson and Black (2008) attributed the role of SMEs as stimulants to domestic and regional economic growth. Mokaya (2012:12) remained upbeat that total poverty eradication will become a reality through initiatives to capacitate SMEs. Bob (2012:65) justified support to SMEs in Botswana in that they will create employment, improve the quality of human resources, nurture the spirit and culture of entrepreneurship, provide seedbeds for innovation and motivate potential entrepreneurs to start their own businesses. Above all they will help to diversify the economy of Botswana.

Although mobile technology in the form cell phones has been fully embraced as a way of voice communication between ordinary people, in terms of application of ICT to real business the country finds itself in the middle of a digital divide. The adoption of ICT by SMEs, which impact on economic growth are still at a low ebb (Karkoviata 2001:75). Golding et.al (2008) observed that adoption of technology by SMEs has been painstakingly slow because of illiteracy challenges. Mokaya (2012:72) has observed that most SMEs have not adopted ICT for e-business and as such there are impediments to identifying profitable business opportunities due to lack of information.

In a bid to ensure that ICT is spread out within the country, the government of Botswana established the required infrastructure, enabling telecommunications and encouraged private companies in the establishment of base stations for use in receiving internet signals and worldwide communications, one such company being Mascom, which was once owned by Strive Masiiwa of Zimbabwe. At the moment the country has Botswana Telecommunications and Orange Botswana as internet and cell phone service providers. Mining companies such as Debswana, scattered government institutions and the tourism sector, a case in point being lodges and tourist resorts in Okavango Delta, are already using such facilities. The optic fibre cable that passes through Gaborone extends as far as Maun, Francistown, other towns and links Botswana to neighbouring countries. Bofinet is a collaboration of private sector investors and the government. One other form of ICT links to reach communities in remote parts is Vsat. This is expensive and unaffordable to SMEs with business models that do not generate substantial revenues.

Regardless of this countrywide infrastructure, some SMEs do not take advantage of the existing ICT infrastructure either due to fear of being tracked by government because they do not wish to pay taxes or adhere to government operating standards set for running such business.

Botswana is a large country with a small population size with higher population densities that are distributed in places where economic activities such as mining, and tourism are located. This is in peri urban, town or village settlements. Major settlements are along the highways and only some villages may be found deep in the heart of the Kalahari Desert where clans or tribes are concentrated within regions that the government can easily access.

Such a contradiction in terms of size of the country and very low population densities with limited cultural diversity bring about challenges in developing a robust human resources base. More so the dispersed populations particularly the tribal once cling to their old age traditions like negative attitudes towards schooling in preference to holding on to their culture.

Nowadays suppliers prefer large markets where to sell their goods and commodities and spread the cost over a large number of people in order to benefit from economies of scale in manufacturing and distribution. The establishment of value chains become imperative, particularly where manufacturing is intended to supply global markets. ICT plays a role in the whole value chain. Botswana is not renowned for large scale manufacturing hence the capacitation of SMEs through the requisite ICT is non-existent.

The potential market is small and reliance is mainly on imported goods. The country does not manufacture ICT related items, food products and many other items that are required for day today living. The distribution cost within the country is equally high making items and equipment expensive. Many imports of technical nature come through or are imported from South Africa since the country is land locked. Aspects of Just in Time Supply or Production can be found only where relationships between mines and their suppliers exist. Rarely does this involve local SMEs, obliterating completely ICT adoption by local SMEs. This nips away the intention of developing ICT expertise in that regard.

Botswana enjoys a democracy that dates far back and is considered among the most politically stable countries in the world. Democratic elections are held frequently and the violation of basic human rights is unheard of in Botswana. There is no time in history when she has gone to war with its neighbours and there have never been political demonstrations

that compromise its political stature. It is a member of SADC, the African Union and has been known to mediate in political disputes of some of its neighbours.

It has an impartial legal system that is independent from the legislature and the executive arms of the government. In terms of enforcing industrial standards particularly in ICT it is said to be non-existent. May be it is because of limited expertise. On the ease of doing business in the country it ranks fairly in the continent thereby inviting a sizable contingent of investors every year. Most of these are in the ICT, technical and mining sectors.

2.5 Chapter Summary

The literature review had the intention of linking the adoption of ICT by SMEs businesses worldwide and in Botswana. Various frameworks of ICT adoption by SMEs were discussed and it was found out that internal and external barriers influenced the adoption significantly. ICT adoption by SMEs was covered and the extent of the success was unravelled. Literature also reviewed the situation in some Asian countries, highlighting the challenges these countries encountered in this endeavour. In broad terms the situation in Africa was explained and insights from Egypt, Lesotho and Kenya highlighted briefly. The extent of the problems in the continent of Africa are similar across the countries. The situation in Botswana was discussed.

From the literature review it became clear that factors that determine adoption ICT by SMEs are universal and depended on internal and external barriers that SMEs businesses face. However, concerted effort by governments, SMEs and ICT companies is a requirement to make adoption of ICT a success because SMEs are engines of economic growth and help to alleviate poverty and eradicate problems of underdevelopment.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

The study aimed at investigating factors limiting adoption of information communication technology (ICT) by SMEs in Gaborone, Botswana. The UTAUT model by Venkatesh, Davis and Davis (2003) and a supplementary model that simplified understanding of internal and external barriers under investigation without ambiguity was adopted from Kaparubandara and Nelson (2017) who carried out a similar study in Sri Lanka, a developing country with similar characteristics to Botswana. In order to do so effectively other models, in which the roots of the UTAT model are grounded, were discussed in the literature review. These are the diffusion of innovation model (DOI) described by Rogers (1995), the Theory of Reasoned Action (TRA) by Fischbein and Ajzen (1975), cited by Costello and Moreton (2009), and the theory of acceptance model (Davis 1995) cited by Costello and Moreton (2009).

The constructs of the UTAUT model were gender, age, experience and voluntariness. Factors adapted from Kaparubandara and Nelson (2017) to allow further interrogation reviewed internal and external barriers which motivate or inhibit adoption of ICT by SMEs in Botswana. Internal barriers unravelled critically owner/manager characteristics, firm characteristics and cost and return issues on investment. External barriers, those which the business lacked capacity to influence, comprise the infrastructure social and cultural factors, the political environment and the legal and regulatory environments.

First, the research design was presented followed by research philosophy, research strategy, population and sampling techniques, data collection procedures and research instruments, data analysis and presentation.

3.1 Research design

The study adopted a descriptive research design, which employed both qualitative and quantitative approaches and methods to collect effective and efficient data. Purposive sampling was used in selecting sample participants as it provided the researcher with desired flexibility in selection to minimize costs. The researcher aimed at data collection and analysis of the crucial factors that influence factors that limit adoption of ICT by SMEs in Botswana. In order to meet this criteria questionnaire were designed and sent to owner/manager of SMEs using two major methods. The first method was to email the owner/manager chosen from SMEs databases and the second method was to hand deliver the questionnaires to

owners/managers and return the questionnaires to the researcher upon completion. These methods were applied at the researcher's cost and time. Owner/manager attitudes, perception, opinions and behaviours gathered from questionnaires were quantified and formulated facts to unravel patterns in the research. The responses were coded to a Likert scale as recommended by Davis (2000:13).

The researcher also conducted a pilot study. An appointment call was made three days prior to each interview conducted. Interviews were carried out in the afternoon as it was regarded as the appropriate time when there is less pressure on the owner/managers. Content analysis and data matching were then used to analyse data collected from the interviews.

3.2 Research philosophy

The study adopted an approach in which it aimed at understanding the subjective reality of factors that made SMEs not to adopt ICT, the motives, actions and intentions of owners or managers of SMEs. The research seeks to apply the reasons in the real business world that made them chose to adopt or not to adopt ICT in their businesses. Epistemology is the investigation into the nature of knowledge itself. The study of epistemology focuses on our means for acquiring knowledge and how we can differentiate between truth and falsehood. Modern epistemology generally involves a debate between rationalism and empiricism. In rationalism, knowledge is acquired through the use of reason while empiricism is the knowledge that's gained through experiences.

The research philosophy adopted by this study is epistemology. Epistemology is important because it is fundamental to how we think, and this will interrogate the way SME owners in Gaborone think about the adoption of ICT. Without some means of understanding how we acquire knowledge, how we rely upon our senses, and how we develop concepts in our minds. We have no coherent path for our thinking. A sound epistemology is necessary for the existence of sound thinking and reasoning.

3.3 Research methodology

The research method comprised of a rigorous literature review on an investigation of factors limiting the adoption of ICT by SMEs and a field survey. Literature reviewed enabled the researcher to sift through the information available on limitations and refined the research questions in view of the information made available by other researchers on various aspects of adoption of ICT by SMEs. The literature review led to the formation of the research model and hypothesis.

Deductive approach

A field survey is a design that is associated with a deductive reasoning. Deductive approach to research is aimed and testing theory whilst an inductive approach is concerned with the generation of new theory emerging from the data aiming at generating a new theory based on the data.

Random Sampling

Random sampling is a method of selecting a sample (random sample) from a statistical population in such a way that every possible sample that could be selected has a predetermined probability of being selected.

Questionnaires and interviews were primary data collection instruments for the research. Although these have inherent weaknesses, for example, that they are time consuming large amounts of data were collected in an economical and effective way. The questionnaire is regarded as authoritative because data collected using it can be standardized bringing with it ease of comparison and analysis.

3.4 Population and sampling techniques

3.4.1 Target population

The population of study comprised all 30 SMEs in Gaborone that are registered as formal businesses. Owner/managers of these Institutions constituted the population of study.

3.4.2 Sampling unit

Kothari (2004) defines a sampling unit as a geographical area such as a state, a district, village or a construction unit. In this study the City of Gaborone served as the sampling unit.

3.4.3 Source list or sampling frame

The sampling frame comprised 22 businesses which responded and 8 which didn't respond and were distributed as illustrated in Table 2 below.

Table 2: **Sampling Frame**

Target group	Sectors of the economy	Number of Responses	Non-Response	Where SMEs is Situated
Primary Industry	• Agriculture	0	3	Gaborone
	• Mining	0	0	Gaborone
	• Oil and Gas			Gaborone
Secondary Industry	• Wholesale	1		Gaborone
	• Retail	3		Gaborone
	• Construction	1		Gaborone
	• Engineering	2	2	Gaborone
	• Textile	2		Gaborone
Commerce	• Accounting Firms	2		Gaborone
	• Legal Firms	1		Gaborone
	• ICT Businesses	3		Gaborone
	• Tourism Service	2		Gaborone
	• Education/Health	1	1	Gaborone
	• Real Estate	1	1	Gaborone
	• Entertainment	3	1	Gaborone
Total		**22**	**8**	

3.4.4 Size of sample

According to Bryman and Bell (2010), when the sample size is large the greater is its precision. This leads to fewer sampling errors in the survey. A total of 30 SMEs was selected from owners/managers. Determination of the sample size followed a proportionate size sampling method specified by Kothari (2006:165) and the calculations were as follows:

Standard error of proportion of successes $\frac{\sqrt{p \, x \, q}}{n}$

p = Number of people who responded

q = Number of people who did not respond

n = Sample size of the population

√ (0.73 x0.27)/30

0.1971/30

=0.00657

√0.00657

=0.081

The formulae are justified because the size of the sample was ideal.

3.4.5 Sampling procedure

The research used purposive (non-probability sampling) procedure in selecting the sample area. Gaborone was chosen because it has the highest prevalence of assorted SMEs. In selecting the SMEs, these were listed individually, and each given a number. The number was randomly selected from a box in order to avoid an overlap in selecting an SME which is owned by the same person or has branches in various parts of the town. Respondents from each SME were chosen as follows; 1>one owner/manager (see Table 3). 30 SMEs businesses were sampled. This procedure has advantages of low costs, short time-lag and produces a clearer picture of the research. Kothari (2004:243) argued that if a researcher chooses a sample in an objective way, it will be representative.

Table 3. Sample Participants

Target group	Sectors of the economy	Owner/Managers Participants	Where SMEs is Situated	Justification for targeting the group
Primary Industry	• Agriculture	0	0	0
	• Mining			
	• Oil and Gas			
Secondary Industry	• Wholesale	1	Gaborone	Existing Businesses
	• Retail	3		
	• Construction	1		
	• Engineering	2		
	• Textile	2		
Commerce	• Accounting Firms	2	Gaborone	Existing Businesses
	• Legal Firms	1		
	• ICT Businesses	3		
	• Tourism Service	2		
	• Education/Health	1		
	• Real Estate	1		
	• Entertainment	3		
Total		22		

3.5 Data collection ~~methods~~

3.5.1 Data collection procedure

The researcher utilized both secondary and primary data sources.

3.5.2 Secondary data sources

The researcher carried out extensive literature review on>of past studies on this subject. The UTAUT model supplemented by a model that explains internal and external factors that affect adoption of ICT by SMEs by Kaparubandara and Nelson (2017) provided a holistic frame of reference for the research. The literature review included journals from various research institutions and internet searches.

3.5.3 Primary data sources

Primary data was collected from owners/managers of SMEs by means of a questionnaire survey. SMEs contacts were established by acquiring contact details of registered with department of SMEs. Some information about these and their locations were acquired by means of asking the general public. This enabled the researcher to infiltrate other SMEs. Prior appointments were made for all the interviews with owners or managers. Questionnaires were sent to all SMEs that were sampled. This task was done using the electronic mailing and drop

and pick methods. The process took about two weeks and delayed responses were left out due to limited time.

3.5.4 Research instruments

Interviews were conducted to gain information from owners/managers of SMEs. The researcher used an interview guide (Appendix) to maintain focus of the discussion during the interview session. Interviews enabled the researcher to simplify questions and probe areas not initially understood.

The researcher also used questionnaires as research instruments. They were specifically designed for private school customers with measured on the Likert scale. According to Kothari; (2004) the Likert scale has the following advantages:

a) It is relatively easy to construct and consumes less time.
b) The Likert-scale is considered more reliable because under it respondents answer each statement included in the instrument.
c) It is highly recommended and useful for opinion research.

The statements included in the questionnaire captured SMEs owner/manager perceptions regarding factors motivating or inhibiting ICT adoption.

3.5.5 Validity and Reliability

The use of research objectives and research questions in designing the questionnaires and the interview guide ensured instrumental validity. The researcher cross-examined all the questions to make sure that they were concise and clear. Piloting the questionnaires was done to the following SMEs in order to ensure validity and reliability.

Reliability and Validity

Reliability is the degree to which an assessment tool produces stable and consistent results. Test-retest reliability is a measure of reliability obtained by administering the same test twice over a period of time to a group of individuals.

3.5.6 Ethical Issues

Questionnaires of the study were delivered either by hand or electronically mailed to SMEs selected for the investigation. Participants were told not to write their names on the questionnaires to ensure anonymity. All the data collected was used for this study only and confidentiality was ensured. The ultimate goal is complete confidentiality for every research

participant, which Baez (2002) refers to as the "convention of confidentiality." The convention of confidentiality is primarily upheld as a means to protect research participants from harm.

3.6 Data analysis and presentation procedures

The researcher used tables, graphs and diagrams to present data and the SPSS package was used for data analysis. As for qualitative information gathered through interviews, content analysis was carried out to compare similarities and differences of views. The data analysed was collected based on the research questions and objectives.

3.7 Chapter summary

The main purpose of the chapter was to give a clear path of the way relevant information will be gathered for the study. The use of the qualitative and quantitative research design was stated and justified, as well as the description of the population and sample. Account was also given of the instruments used in collecting data. The suitability of the research instruments used was also clarified. Methods used to collect data were also spelt out in the chapter as well as data analysis and presentation procedures. The next chapter will look at data presentation and analysis.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSION

4.0 Introduction

The previous chapter presented the research methodology, which included; research design, research philosophy, strategy, population and sampling methods. Research instruments were presented, and data collection procedure was presented. The current chapter presents findings from the research. These are based on information obtained from SMEs representatives across Gaborone. The findings were summarised in tabulations and illustrated in diagrams and graphs.

4.1 Response rate

According to Saunders, Lewis and Thornhill (2007:58), a response rate of 67% is recommended as acceptable to validate the research carried out. Questionnaires were randomly distributed. As shown in Table 4, the response rate from SMEs was 73% making the research valid and reliable.

Table 4. Response Rate

Target Group	Target Sample	Response	Response rate
SMEs representatives	30	22	73%
Total	**30**	**22**	**73%**

4.2 Basis of findings of the research

The questionnaires sent out to SMEs representatives derived from the conceptual framework of the Unified Theory of Acceptance and Use of Technology (UTAUT) model by Venkatesh, Davis and Davis, (2003) as cited by Samandiwakara and Gunawardema (2014). This was complemented by a model of factors limiting the adoption of ICT by SMEs in developing countries by Kaparubandara and Nelson (2017).

4.3 FINDINGS AND DISCUSSIONS

4.3.1 Demographic composition of SME management sampled

Of the 22 respondents that the researcher sampled, their demographic compositions were captured. Variables such as age, gender and experience were recorded. The variables were chosen because they provide insights on the limitations of ICT adoption of SMEs in Gaborone Botswana.

Table 5. Positions of respondents in SMEs

Positions of Respondents in SMEs	Frequency	Percent	Valid Percent	Cumulative Percent
General manger	8	36.4	36.4	36.4
Managing director	6	27.3	27.3	63.6
Head of department	1	4.5	4.5	68.2
CEO	2	9.1	9.1	77.3
Other	5	22.7	22.7	100.0
Total	**22**	**100.0**	**100.0**	

Source: Primary Data

From Table 5 36.4% of the respondents were general managers and 27.3% were managing directors. CEOs, head of departments and other constituted 9.1%, 4.5% and 22.7% respectively. The respondents were found to be relevant as they had potential for providing holistic views of organisations they represented. These respondents determined how SMEs adopted ICT and provided an overview of factors which limit ICT adoption by their businesses.

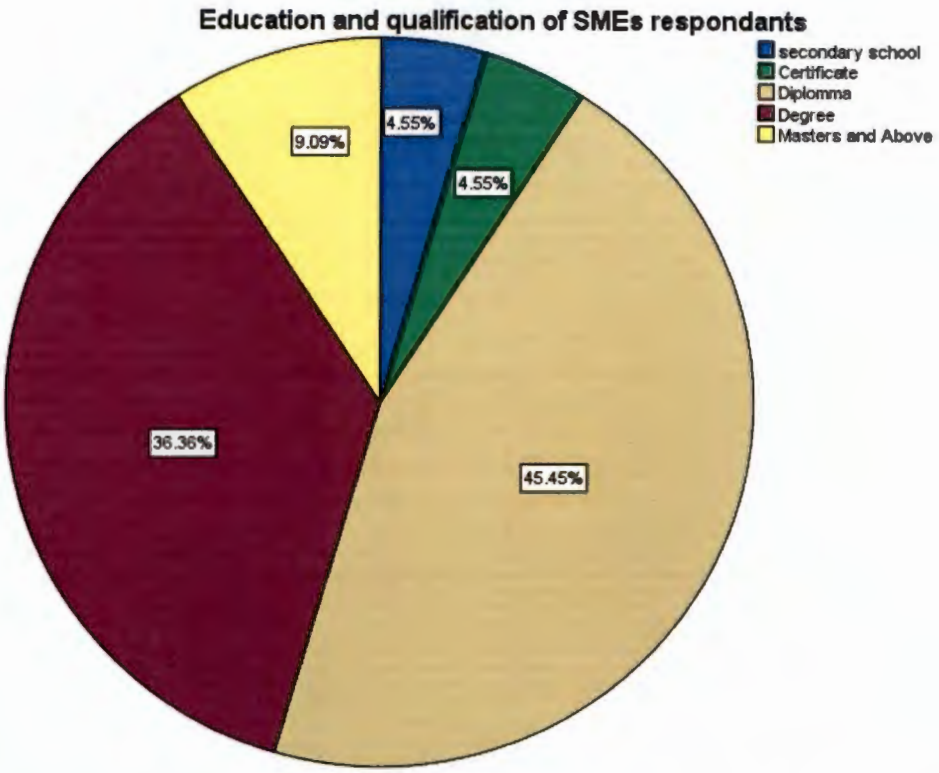

Figure 6 Education Level of owner/managers and representative of SMEs. Source: Primary data.

Figure 6 shows the level of qualification of the respondents comprised of 45.45% diploma holders, 36.36% degrees, and 9.09% with post-graduate qualifications. Holders of certificates and secondary education make up a total of 9.1% as alluded to in Figure 4.2. . The level of education is indicative of ICT appreciation in industry and commerce and the corresponding limiting factors which inhibits ICT adoption.

Table 6. Gender distribution of respondents

Gender composition of respondents		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	16	72.7	72.7	72.7
	Female	6	27.3	27.3	100.0
	Total	22	100.0	100.0	

Source: Primary data

Table 6 shows that 72.7% of the respondents were male and 27.3% were female. Majority of the female respondents were in the textile industrial sector. However ICT limitations were also high in the textile sector.

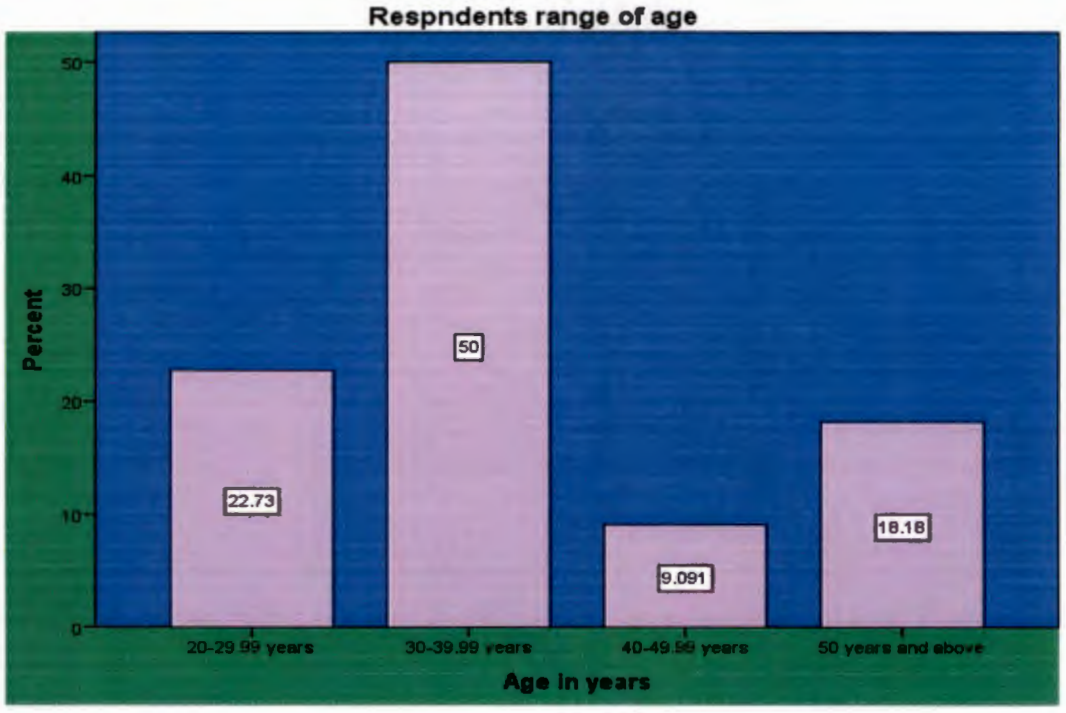

Figure 7. Age distribution of respondents. Source: Primary data

As per Figure 7, most people who are involved with SMEs are in the bracket of young entrepreneurs. A total of 50% comprises those in the 30 to39 age group, followed by 22,73% between the ages of 20 to 29 years, followed by18,18% in the age group of 50 years and older and 9,091% who are between 40 years and 49 years. The predominant age groups of between 20 and 39 years are technology savvy people who easily adapt to ICT trends, but can be inhibited from utilizing ICT products of high level due to limiting factors beyond their control such as access to internet and lack of ICT equipment.

Below is the diagram showing the distribution of employees across the SMEs

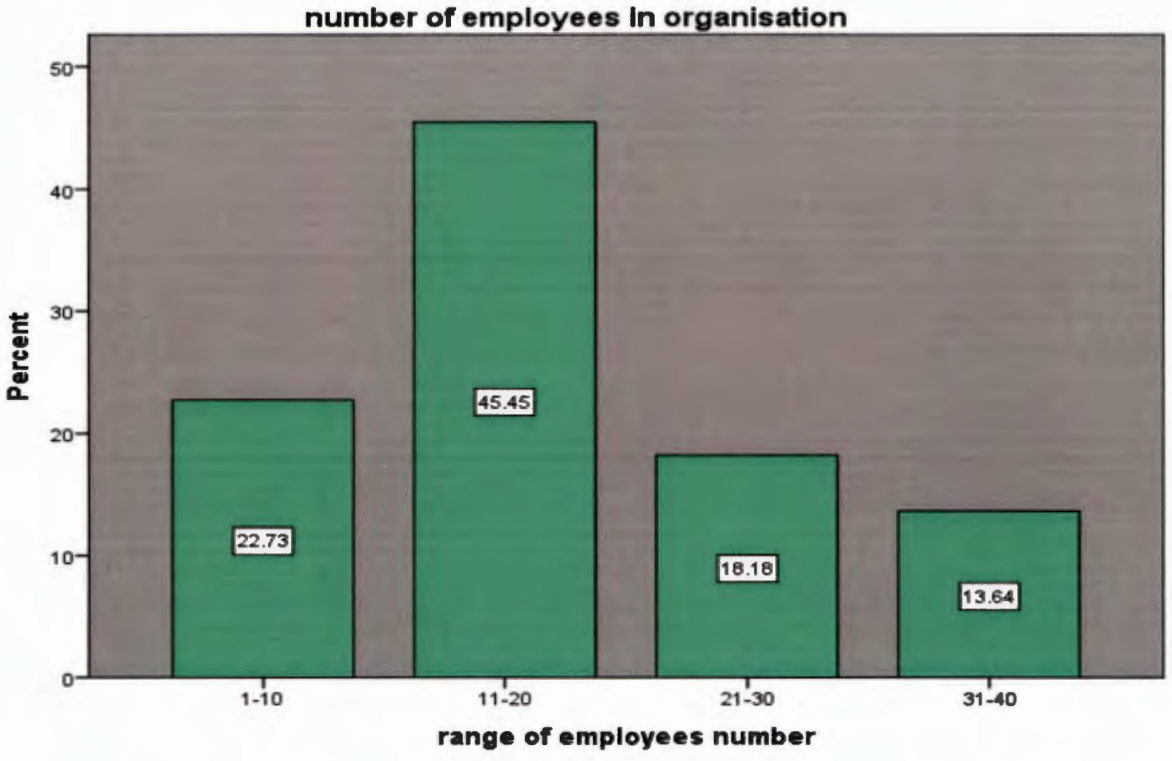

Figure 8 Distribution of employees in SMEs. Source: Primary Data

Figure 8 shows that, out of the twenty-two SMEs that responded, 45.45% of these employed between 11–20 people, 22,73% employed 1–10 people, 18,18% employed 21–30 people and 13,64% employed 31–40 people. The increase in the number of people employed by SMEs entails fast and cheap internal communication that can be made possible by adapting ICT for internal communication. As such, limitations in adopting ICT internally can hinder internal communications. Communication of employees with stakeholders will also be saddled with challenges. Management control systems that entail effective ICT assets use equally hinder envisaged control and policy implementation.

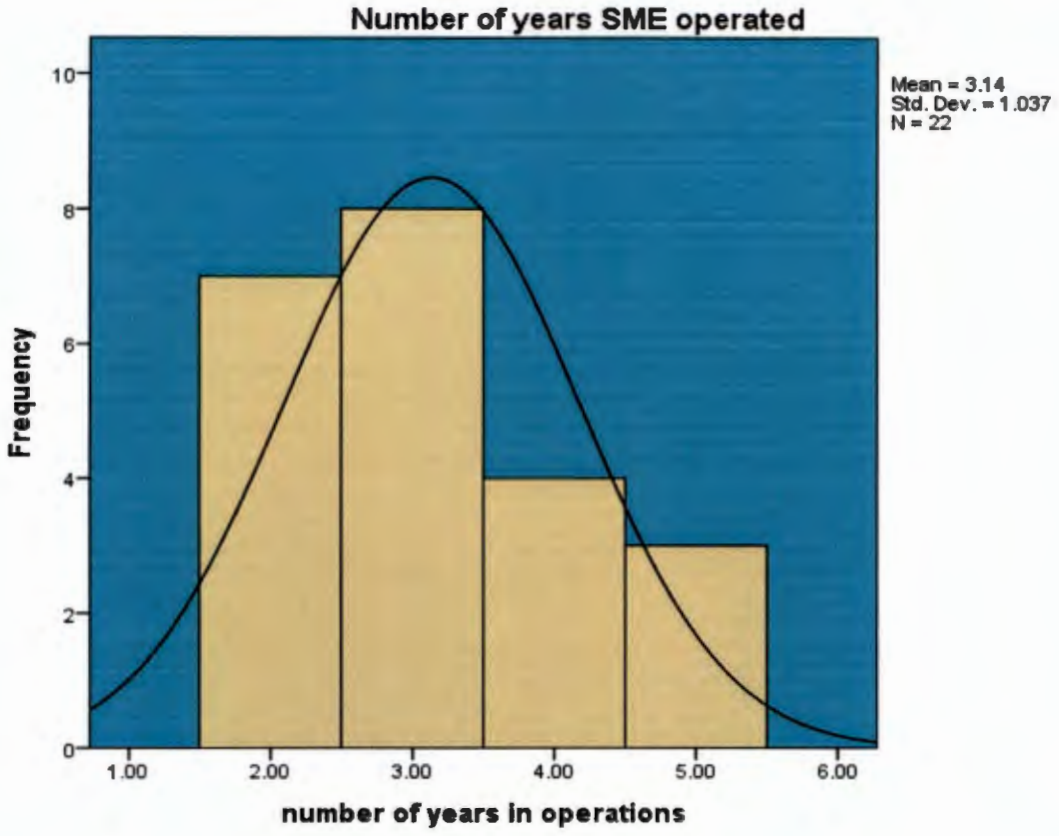

Figure 9. Number of years sampled SMEs have operated. Source: Primary Data

Table 7 below demonstrates the number of years SMEs has been in operation.

Table 7. Presentation of number of years SMEs have operated.

Number of years SME operated		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	6–10	7	31.8	31.8	31.8
	11–15	8	36.4	36.4	68.2
	16–20	4	18.2	18.2	86.4
	21 and Above	3	13.6	13.6	100.0
	Total	22	100.0	100.0	

Source: Primary data

It is noted from Table 7 and the histogram (Figure 9) that 36.34% of the SMEs that we sampled have operated for a period between 11 years and 15 years; and 31.8% have served between 6 years and 10 years. SMEs that have survived for 16 to 20 years constitute 18.2%; and 13.6% constitute those that have operated for 21 years and longer. Those that have operated in the 11 years to 15 years bracket have coincided with the advent of ICT, although there is no evidence of reaching a state of transformed organisation in which they share information directly into databases of stakeholders. It is noted that most of these SMEs have adopted some form of ICT in their operations, though limited in scope.

Table 8. SME industry sectors sampled

SME industry sector	Frequency	Percent	Valid Percent	Cumulative Percent
Chemical/medical/pharmaceutical	2	9.1	9.1	9.1
Textile	4	18.2	18.2	27.3
Machinery and Engineering	1	4.5	4.5	31.8
Transport/Haulage/freight services	2	9.1	9.1	40.9
Accounting and Audit	2	9.1	9.1	50.0
Manufacturing	2	9.1	9.1	59.1
Entertainment	1	4.5	4.5	63.6
Agriculture	1	4.5	4.5	68.2
Retail and wholesale	1	4.5	4.5	72.7
Construction	1	4.5	4.5	77.3
Education	4	18.2	18.2	95.5
Hospitality	1	4.5	4.5	100.0
Total	22	100.0	100.0	

Source;>: Primary Data

Table 8 shows the SME sectors sampled during the study and it is followed by Figure 10 which shows the extent of ICT adoption per SME.

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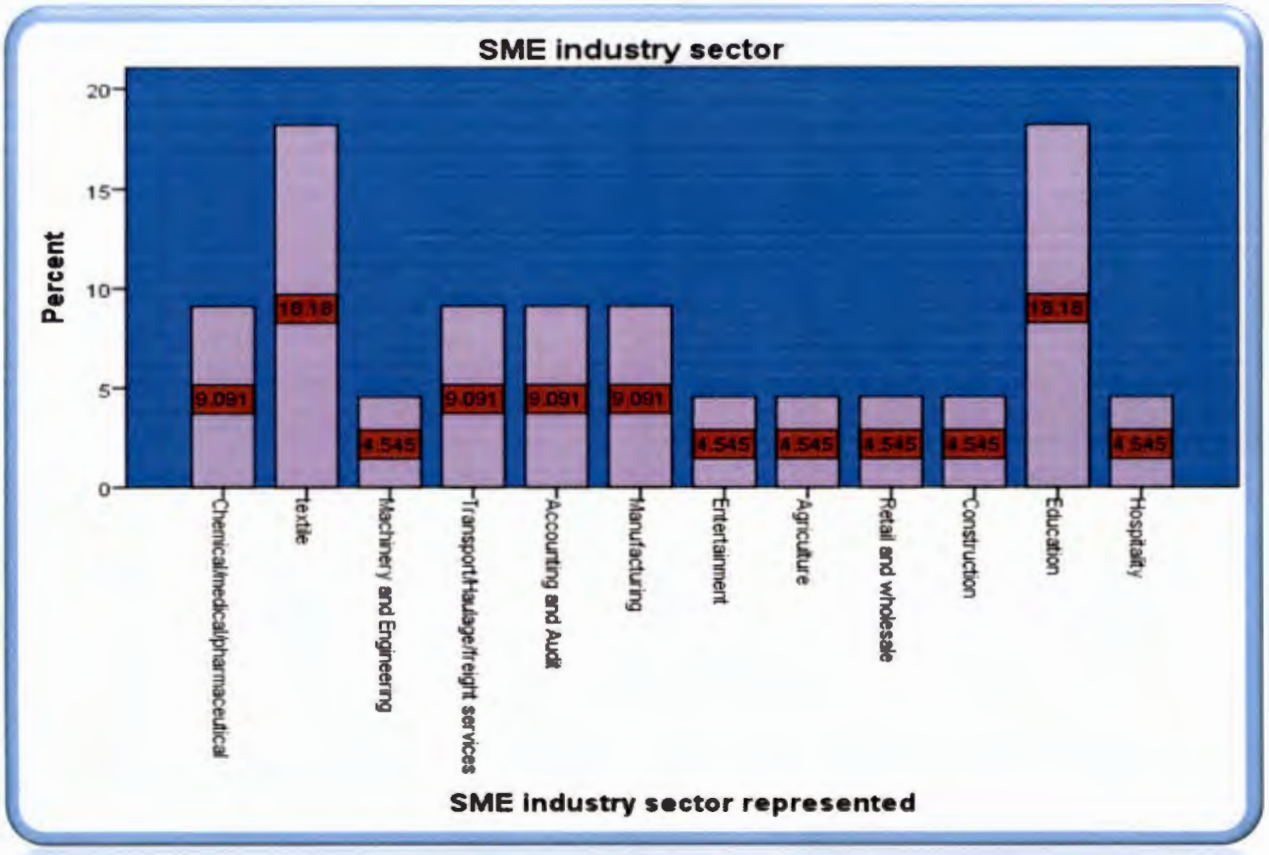

Figure 10. Industrial sector distribution of sampled SMEs. Source: Primary Data

According to figure 10, businesses in which the research was carried out were fairly spread within the industry with education and textile sectors contributing 18%. These were followed by the chemical pharmaceutical, accounting audit and manufacturing SMEs which provided 9,09% each. The last respondents comprised machinery and engineering, entertainment, agriculture, retail and wholesale construction and hospitality, which each provided 4,5%. All the SMEs respondents used ICT, albeit to a limited extent because of varying limitations.

Table 9 illustrates that there we 8 SMEs interviewed within the radius of 10-49.99 KM of Gaborone and the same number was interviewed within a radius of 50-99.99 KM.In summary some SMEs were within Gaborone and others in the surrounding areas of Gaborone

Table 9. Geographical Distribution of SME

Geographical distribution of customers	Frequency	Percent	Valid Percent	Cumulative Percent
10-49.99km	8	36.4	36.4	36.4
50-99.99km	8	36.4	36.4	72.7
inclusive of all	6	27.3	27.3	100.0
Total	**22**	**100.0**	**100.0**	

Source: Primary Data

As seen in table 9 out of the respondents of SMEs, 8 of them have a customer catchment area of between 10 km and 49.99 km and another 8 SMEs have a catchment beyond 50 km to 99 km, whilst 6 of the SMEs service all the areas. The implication of distance entails improved ICTs infrastructure and products in order to reach clients. The study found that most SMEs had telephones, cell phones and could also reach clients by electronic mail, an indication that they had the requisite ICT internal tools.

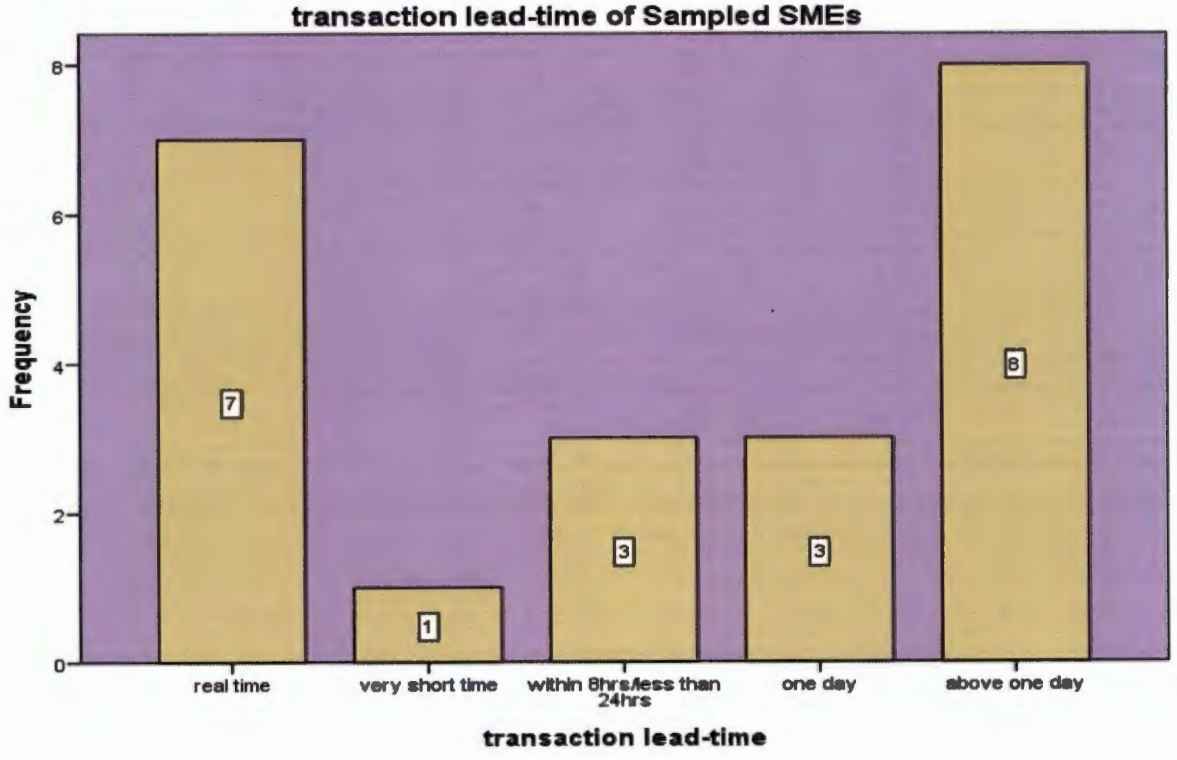

Figure 11. Transaction Lead time of SMEs. Source: Primary data

In Figure 11, eight of the respondents operate businesses whose transaction lead-time is above one day, followed by seven respondents whose transaction lead-time is real time. It is also noted that those that transact in real time have embraced ICT in their functions. Transactions that appear to be real time include banking transactions, retail transactions, record of bank deposits made that reflect on mobile phones and computers as the transaction happens. Among the SMEs respondents, there is limited evidence of real time transactions

involving inventory management, real time replenishment of stocks by suppliers, teleconferencing and participation of businesses in partner organizations databases.

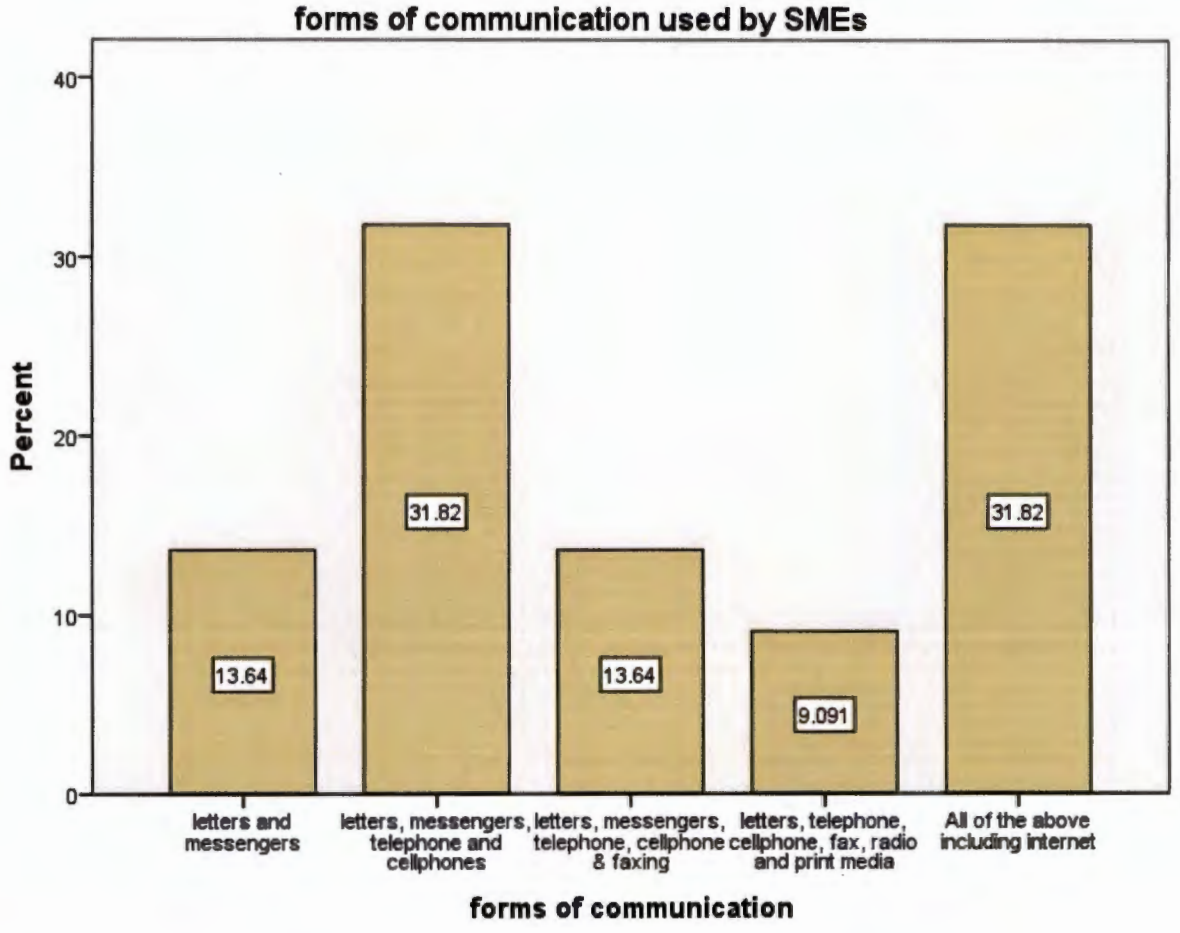

Figure 12. Communication forms used by SMEs. Source: Primary data

As per Figure 12, in view of the transaction lead times, it is noted 31,82% of the respondents have adopted the use of telephones, mobile phones and internet. However, the use of the internet is restricted to electronic mailing and banking activities.

Table 10 illustrates the payment systems used by different SMEs and most of the respondents, except 3 out of the 22, use ICT bank products that are linked to their accounts.

Table 10. Payment Systems used by SMEs

Payment systems applied by SMEs	Frequency	Percent	Valid Percent	Cumulative Percent
Cash	2	9.1	9.1	9.1
Cheques	1	4.5	4.5	13.6
Bank transfers	7	31.8	31.8	45.5
Mobile banking	2	9.1	9.1	54.5
Internet payment systems	1	4.5	4.5	59.1
All of the above	9	40.9	40.9	100.0
Total	22	100.0	100.0	

Source: Primary Data

Table 11 shows the experiences SMEs have in managing ICT.

Table 11. Previous History of SMEs management in ICT

Respondents' previous history in ICT	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	20	90.9	90.9	90.9
No	2	9.1	9.1	100.0
Total	**22**	**100.0**	**100.0**	

Source: Primary data

According to Table 11, 90,9% of the respondents worked for some companies which utilised ICT and were familiar with some ICT products that were relevant for various businesses. Only 9,1% of the respondents had not worked in businesses that used ICT products. The level of appreciation indicates the possibility of adoption of ICT as per business needs. It is these needs that may create limitations.

Table 12 seeks to know if different SMEs are using ICT in their business operations.

Table 12. Use of ICT in operations

SME use of ICT in Business operations	Frequency	Percent	Valid Percent	Cumulative Percent
Not at all	1	4.5	4.5	4.5
Very little use	5	22.7	22.7	27.3
Sometimes	3	13.6	13.6	40.9
Regularly	12	54.5	54.5	95.5
Always	1	4.5	4.5	100.0
Total	**22**	**100.0**	**100.0**	

Source: Primary data

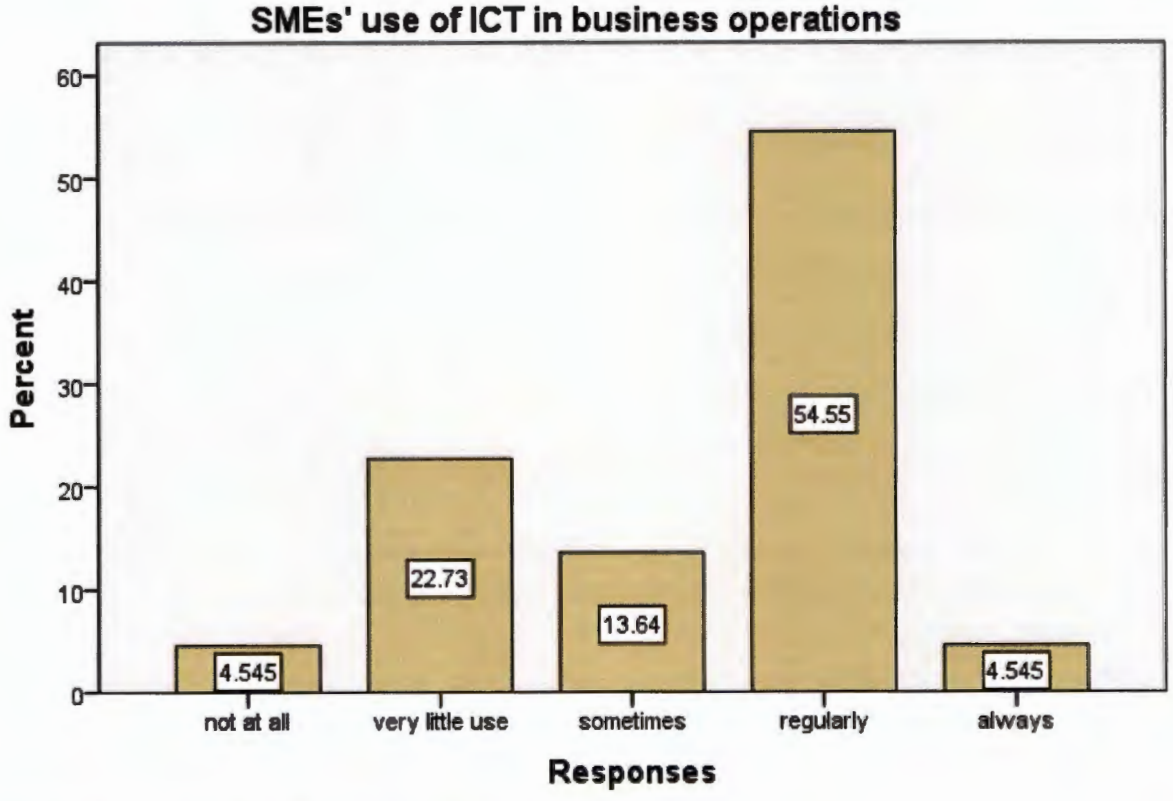

Figure 13. Use of ICT in operations. Source: Primary data

An analysis of the number of respondents concerning the use of ICT in Figure 13 shows that 54,5% use ICT regularly; 22,7% have very little use for it, whilst one SME which constitutes 4,5% does not use it at all.Those that use very little of it, use it sometimes and regularly, give a fair view of the limited extent to which they utilise it. These SMEs have not yet fully embraced it. The limitations to full adoption could be a lack of knowledge regarding where to

use it, unawareness of the extent to which it can be applied, curtailing the use because of perceived reasons that are peculiar to the businesses.

4.4 Factors that push SMEs to adopt ICT in Botswana

4.4.1 Supplier ICT adoption of SMEs

Suppliers create push factors that can make the entire value chain adopt ICT in their business models including the level of its sophistication. In the case of respondents from the sample, 18,2% of the suppliers did not use ICT in business operations, 36,4% sometimes used it, 18,2% used it regularly, whilst 27.3% always used it. The ICT products used were always of low order in the form of telephones, e-mails and some form of work software that is driven by the availability of internet. This may be a pointer to the poor sophistication of the SMEs in Botswana.

Table 13 below shows the extent at which SMEs have adopted ICT in supply chains and if the have embraced the use of ICT to improve their supply chains.

Table 13. The adoption of ICT in SMEs' supply chain

Supplier ICT adoption of SMEs	Frequency	Percent	Valid Percent	Cumulative Percent
Not at all	4	18.2	18.2	18.2
Sometimes	8	36.4	36.4	54.5
Regularly	4	18.2	18.2	72.7
Always	6	27.3	27.3	100.0
Total	**22**	**100.0**	**100.0**	

Source; Primary data

4.4.2 Customer adoption of ICT

Similarly, it can be argued that customer involvement in supplier business is still transactional and does not entail involvement of customers. As such this does not entail sharing common ICT platforms in activities like supply chain management or Just in Time Production.

This is reinforced in Table 14, which illustrates the extent at which SMEs use ICT to service their customers

Table 14. SME customer ICT adoption.

SME customer ICT adoption	Frequency	Percent	Valid Percent	Cumulative Percent
Not at all	9	40.9	40.9	40.9
Sometimes	6	27.3	27.3	68.2
Regularly	2	9.1	9.1	77.3
Always	5	22.7	22.7	100.0
Total	**22**	**100.0**	**100.0**	

The results in Table 14 is a clear manifestation of the extent of the problem because 40% of the customers of the respondents have no work-related ICT requirements with their suppliers. 27.3% of the respondents may sometimes adopt because a need has triggered the temporal use of the ICT link. 9,1% indicated that they regularly have some transactions shared through ICT probably placing an order via an e-mail, whilst 22,7% always have transactions shared through ICT. This batch off suppliers could be dealing with the mining or tourism sectors.

4.4.3 ICT push from the government and statutory institution

Historically, Botswana's economy is government-led and -run, with the private sector playing a peripheral role. In an effort to facilitate private sector activity, government institutions provide private sector development services such as training, mentoring, product development, market research and financial support. Nonetheless, the public sector employs over 40% of the formal workforce and the support of the SMEs by government will help in creating more employment opportunities.

Table 15. The adoption of ICT by regulators in SMEs sector

Regulator adoption of ICT	Frequency	Percent	Valid Percent	Cumulative Percent
Not at all	15	68.2	68.2	68.2
Sometimes	3	13.6	13.6	81.8
Regularly	4	18.2	18.2	100.0
Total	**22**	**100.0**	**100.0**	

Source; Primary data

Of the respondents, 68,1% have their relationships with regulators and government and are not ICT driven. About 13,64% sometime have ICT interventions, whilst 18.8% have regular transactions that are ICT driven. E-government is strong push factors which can make citizens adopt ICT products and software.

4.5 Challenges facing SMEs in adopting ICT in Botswana

In Figure 14, SMEs acknowledged that ICT was now the in thing>in-thing. Of these 31.82% agreed strongly that lack of awareness of more ICT products limited its adoption, whilst 50% agreed that in essence nothing can be done outside the domain of ICT. A few of the respondents comprising 9,09% were neutral to the fact that awareness limits adoption, whilst another 9,091% disagreed with the position completely.

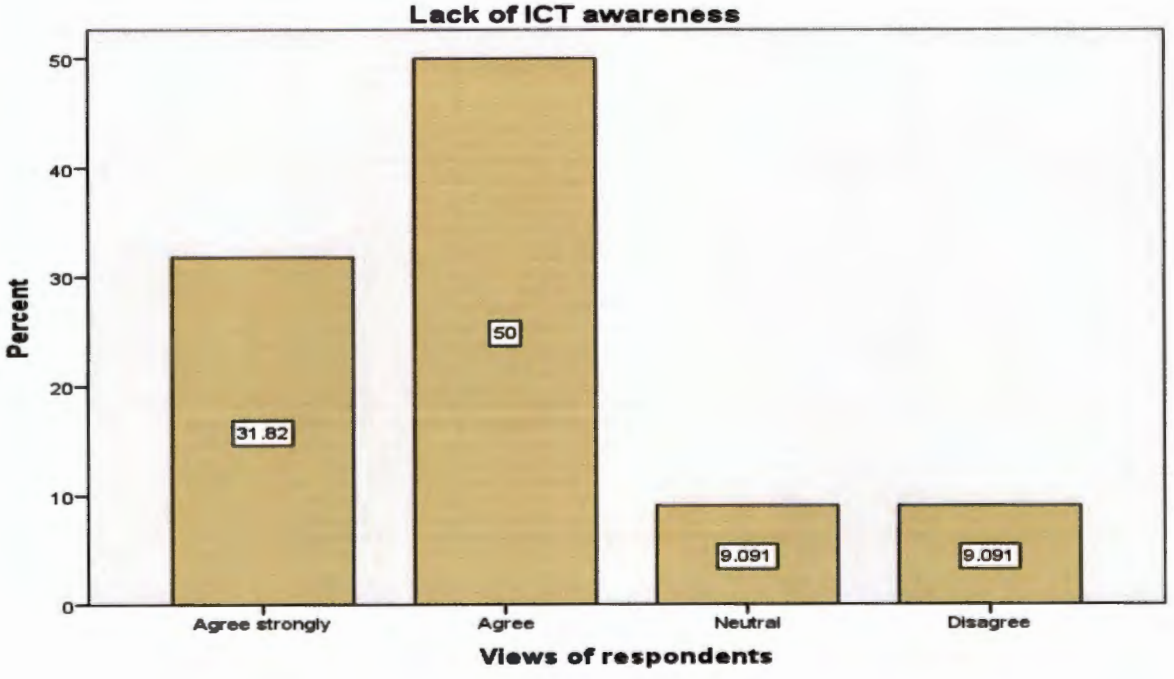

Figure 14. Lack of ICT awareness. Source: Primary data

4.5.1 SMEs feel that there is no need for ICT in their business operations

Figure 15 shows the view that there is no need to adopt ICT by SMEs was inconclusive because 27.27% of the respondents were neutral, 36,36% disagreed, whilst the remaining 36.36% disagreed strongly as shown in figure 15. The positions appear to be arising from simple transactions such as the convenience of banking and purchasing from supermarkets people enjoy. Those who disagreed strongly were convinced that internet and e-mails gave them the opportunity to reach their clients easily and directly.

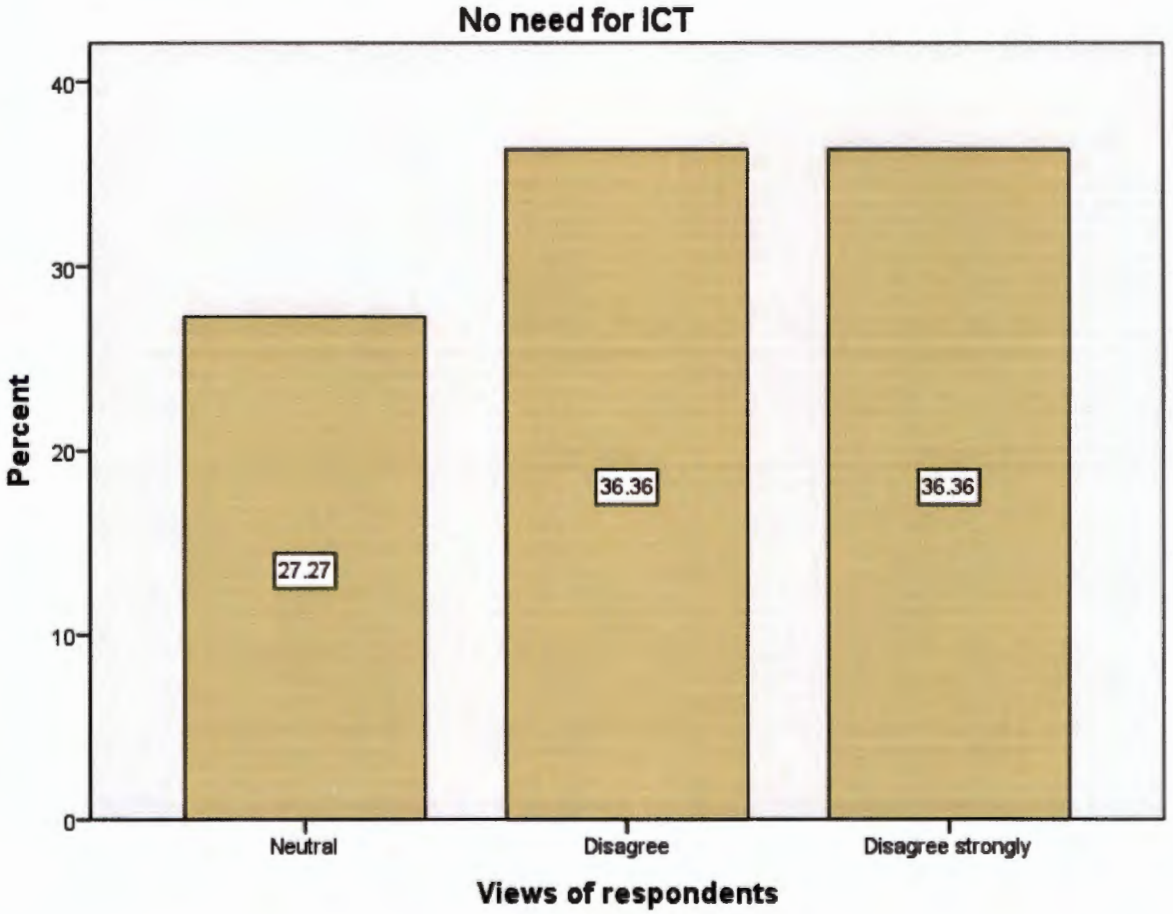

Figure 15. Responses that there is no need for ICT adoption in their business.

Source: Primary Data

4.6 Challenges associated with internal ICT assets limiting the ability to adopt ICT

Table 16 shows that out of the respondents, about 54,5% agreed strongly that internal assets to fully adopt to ICT were the missing link, whilst 45.5% agreed. The reply from some of the respondents were somehow confusing given that in one question paused some remained neutral to the importance of ICT.

	Frequency	Percent	Valid Percent	Cumulative Percent
Agree strongly	12	54.5	54.5	54.5
Agree	10	45.5	45.5	100.0
Total	**22**	**100.0**	**100.0**	

Source: Primary data

Table 16. Limited sector specific hardware and software for SMEs to embrace ICT

4.6.1 Fear of exposition of business information to third-parties as a challenge in ICT adoption [Introduce]

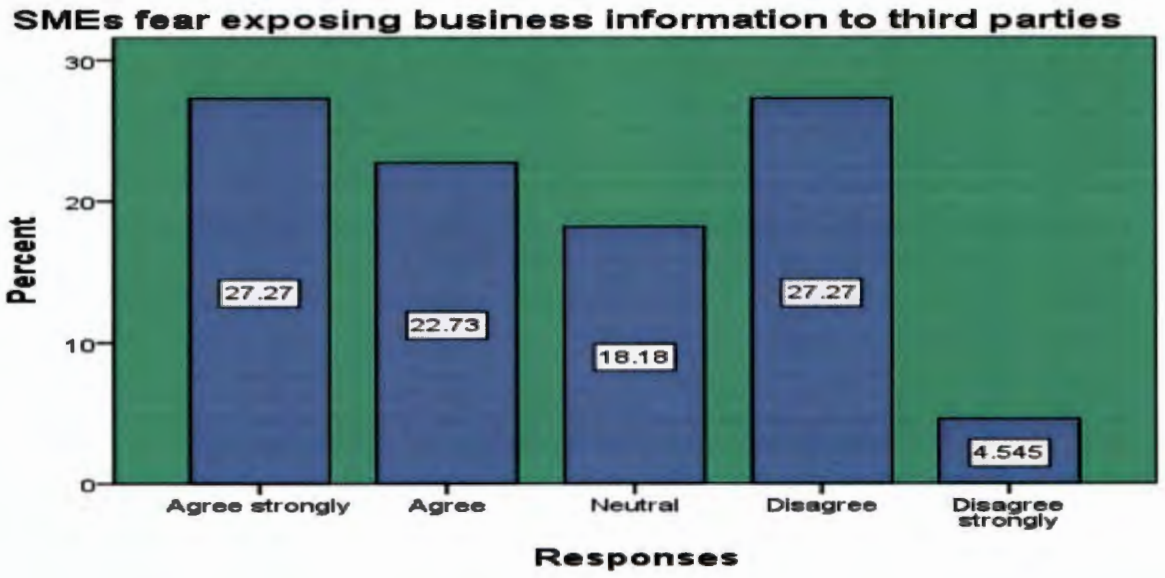

Figure 16. Responses on how SMEs feel about exposing their business information should they fully adopt ICT. Source: Primary data

According to Figure 16, some respondents highlighted security fears that accompanied ICT with 27.27% agreeing strongly that the uptake of ICT was limited by slackened security in protection of business secrets. About 22.7% agreed that security concerns were a limiting

factor, but benefits ought to outweigh security concerns.18.8% were neutral whilst 27.27% disagreed that security was not an issue. About 4.5% of the respondents disagreed strongly and were of the view that security concerns were not a limitation at all.

4.6.2 Lack of knowledge about business benefits associated with ICT as a challenge in fully adopting ICT.

Table 17. Responses on SMEs lack of knowledge in ICT benefits

SMEs lack Knowledge of ICT business benefits	Frequency	Percent	Valid Percent	Cumulative Percent
Agree strongly	10	45.5	45.5	45.5
Agree	10	45.5	45.5	90.9
Neutral	2	9.1	9.1	100.0
Total	**22**	**100.0**	**100.0**	

Source: Primary data

In Table 17, all respondents agreed that lack of knowledge on benefits which accrue to business once they adopt ICT was a limiting factor to enhance the complete ICT package that is relevant to business. 45.5% agreed strongly and the other 45.5% also agreed. 9.1% of the respondents were not so sure hence could not give an opinion. Lack of knowledge is however evident as most SMEs do not use relevant software for management functions such as inventory control, human resources management and simple accounting packages.

4.6.3 Challenges associated with high maintenance costs of ICT products and assets

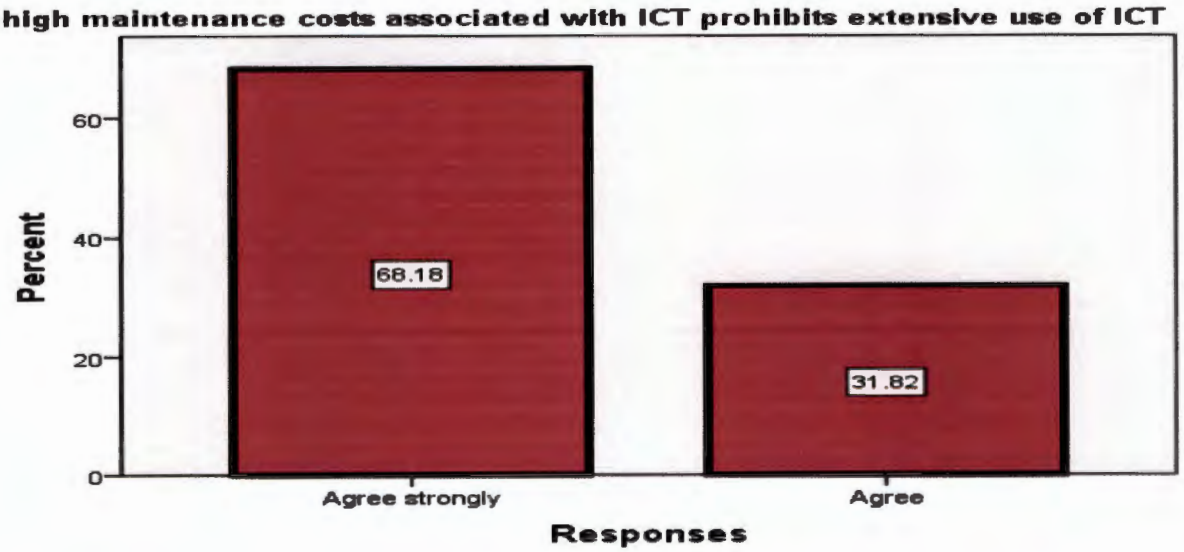

Figure 17. Responses on high maintenance costs of ICT. Source; Primary Data

Maintenance costs of ICT assets were considered high by the respondents as indicated by 68.18% who agreed strongly and 31.82% who agreed as seen in figure 17. Thus, there is concern that maintenance costs will add to operating costs, which among others include salary overheads of the people who will manage these assets. Although not explicitly mentioned in the research acquisition costs of ICT assets and licensing fees for software are perceived to hike up ICT costs.

4.7 Chapter Summary

The chapter discussed findings, the extent of ICT usage by SMEs in Botswana and limitations to adopt it fully in their business models. There are indicators that SMEs in Botswana have embraced ICT in their business models, albeit at a lower level than elsewhere in the world. Push factors that drive SMEs towards ICT adoption have also been alluded to in the chapter, such as the adoption of ICT by SME supply chains. Finally, challenges being faced by SMEs in fully adopting to ICT have been presented and discussed. The next chapter will elaborate on findings, recommendations and conclusions.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Restatement of objectives

The preceding chapters covered the literature review, the research methodology and data presentation and analysis. This chapter therefore seeks to wrap up the whole study by presenting the summary of research findings, major conclusions and recommendations. The research also provides suggestions for further study.

The findings are drawn from the research that investigated factors constraining the adoption of ICT of SMEs in Botswana this was attained through the following objectives:

i. To measure the extent of ICT usage by SMEs in Botswana.
ii. To determine the drivers of ICT adoption by SMEs in Botswana.
iii. To determine limitations of ICT adoption by SMEs in Botswana.

5.1 Summary

The study intended to investigate factors that limited the adoption of ICT by SMEs in Botswana. The government has been nurturing SMEs through its empowerment policy to local businesses in different sectors (LEA, 2009). Despite all the effort by the government, a current review of ICT adoption by SMEs, and focused financial, technical, business and management support in the past five years, a good number of them still show sluggish performance. The Citizen Enterprise Development Agency (CEDA, 2009) and Local Enterprise Authority (LEA, 2009) have highlighted these findings in their reports.

The Botswana Government (2000) noted that there was need to become an informed nation to enable Botswana to enter the information age like other nations and develop its communications capacity and the need to make Botswana globally competitive in knowledge and information society (Botswana Government, 1997). This brought about the formation of the national information and communications technology (NICT) Policy of 2007 (Botswana Government, 2007) to direct all ICT activities and programs in the country.

In order to achieve the set objective, the Government of Botswana established a country-wide ICT infrastructure by laying optic fibre networks and building base stations. The study sought to find out factors limiting the adoption of ICT by SMEs in Botswana. It investigated the factors that push SMEs to adopt ICT in Botswana and factors which these institutions face, inhibiting them from adopting ICT fully in their business models.

Various frameworks were used to illuminate the study, the guiding one being, the Unified Theory of Acceptance and Use of Technology (the UTAUT model) by Venkatesh, Davis and Davis (2003) cited by Samandiwandiwakara and Gunawardema (2014). The model proposed by Kaparubandara and Nelson (2014) in their studies of factors limiting adoption of ICT in developing countries, complemented the UTAUT model. Other theories which led to the build-up of the UTAUT model were also discussed.

The study highlighted cases in which the adoption of ICT was most successful. For instance, Harindranath, Dyserson and Barnes (2008) observed 400 SMEs in South England that embraced ICT and achieved functional efficiency. OCED (2004) also highlighted the cost related to ICT differing from country to country and how these have differing impacts to how SMEs adopt ICT.

The study adopted a descriptive research design, which employed both qualitative and quantitative methodologies to collect effective and efficient data. The sampling unit was the city of Gaborone with a sample frame of 30 SMEs, which targeted groups across all economic sectors.

Findings of the research study revealed factors, which limit ICT adoption by SMEs in Botswana. The level of education was found to be indicative of ICT appreciation. ICT limitations were found to be high in the textile sector. The predominant age groups of between 20 to 39 years were found to be technology savvy people who adapted to ICT trends easily and were inhibited from utilizing ICT products of high level due to limiting factors beyond their control.

The study found that an increase in the number of people employed by SMEs entails fast and cheap internal communication that can be made possible by adopting ICT for internal communication. As such limitations in adopting ICT internally can hinder internal communications. Communications of employees with stakeholders were also saddled with challenges. Those that have operated in the 11–15 years bracket had their carriers coincide with the advent of ICT, although there is no evidence of reaching a state of transformed organisation in which they share information directly into databases of stakeholders. It is noted that most of these SMEs have adopted some form of ICT in their operations, though limited in scope. The implication of long distances entailed improved ICTs infrastructure and products in order to reach clients. The study found out that most SMEs had telephones, cell phones and could also reach clients by electronic mail, an indication that they had the requisite ICT internal tools albeit at low levels.

It was also noted that those that transact in real time embraced ICT in their functions. Transactions that appeared to be real time included banking transactions, retail transactions and record of bank deposits made, that reflected on mobile phones and computers as the transactions happened. Among the SMEs respondents, there was limited evidence of real time transactions involving inventory management, real time replenishment of stocks by suppliers, teleconferencing and participation of businesses in partner organizations databases. Those that used very little of it; used it sometimes and regularly, gave a fair view of the limited extent to which they utilised it painting a picture that SMEs have not yet embraced it fully. The limitations to full adoption could be a result of lack of knowledge regarding where to use it, unawareness of the extent to which it can be applied, curtailing its use because of perceived reasons that are peculiar to the businesses.

The ICT products used were always of low order in the form of telephones, e-mails and some form of work software that is driven by the availability of internet. The findings also indicated that most SMES have not adopted ICT because of high maintenance costs that were associated with it. This may be a pointer to the sophistication of the SMEs industry in Botswana.

5.2 Conclusions

5.2.1 Factors limiting adoption of ICT by SMEs in Botswana in their business model

These are owner and manager characteristics such as gender, age, level of education, degree of awareness, and number of years the manager/owners were once exposed to companies that employed ICT in their businesses. These factors had a significant bearing towards adopting ICT in their businesses.

5.2.2 Factors Pushing SMEs to adopt ICT in Botswana

Nature of customers; nature of suppliers; employee complement; geographical distribution of customers and suppliers and sophistication of ICT products used either by suppliers or customers and ICT push from government and statutory bodies can limit the SMEs propensity to adopt ICT in their business models.

5.2.3 Challenges facing SMEs in adopting ICT in Botswana

The sophistication of ICT products, their applicability, the high maintenance cost contribution towards their businesses and the commensurate benefits that will accrue were also a hindrance. Trust and security issues about information leakages to third parties such as competitors were a cause for concern.

5.3 Recommendations

The support of the SME growth is the Botswana government's initiative and this is seen as a way of diversifying the economy which is so much reliant on diamonds as the major income earner hence its contribution is the highest to the GDP. The following recommendations will help in ensuring a vibrant SME sector that is able to contribute handsomely to the GDP and compete well both in the local and global markets.

- The government should provide incentives for SMEs using ICT in business models.
- ICT assets, such as computers and software, should have no duties or taxes charged on them.
- SMEs should come together and lobby government to assist in developing incubators that are ICT focused.
- ICT training should start at a very elementary level in the education system to enable its appreciation and development of local ICT products.

5.4 Recommendation for further study

It is recommended that an investigation be carried out on how the government can promote the use of ICT in all businesses in Botswana. Investments on research projects by the government regarding the ways that can be adopted to promote ICT adoption by SMEs.

5.5 Chapter summary

The chapter summarised the whole study that was carried out and recapitulated the research objectives, the research design used, as well as major findings of the research in the investigation of factors limiting the adoption of ICT by SMEs. Conclusions to the study were stated in the chapter and included aspects such as factors limiting adoption of ICT in Botswana; the push factors that can make SMEs adopt ICT and impending challenges that hinder ICT adoption by SMEs in Botswana. The following recommendations were also made in this chapter: the government providing incentives to SMEs which use ICT in their business models; removing duty and taxes from ICT internal assets; developing ICT incubators and enforcing ICT training from very elementary levels in the education system. Suggestions for further research were also made in the chapter and chances are that the researcher may research on it at a higher level in the future.

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QUESTIONNAIRE

This is a questionnaire for investigating the factors limiting the adoption of ICT in Small and Medium Enterprises in Botswana. Please answer the questions by ticking or circling answers that are relevant to your business. (The original questionnaire whose answers are still valid was reworded on recommendations of the examiners to address the substance and findings of the original research).

Please Indicate your position? (Tick One)

General Manager
Managing Director
Head of Department
CEO
Other(Please specify).....

1. Please Indicate your level of Education and Qualification (√)

Primary School ☐
Secondary School ☐
Certificate ☐
Diploma ☐
Bachelor's Degree ☐
Masters and above ☐

2. Please indicate your gender

Male ☐ Female ☐

3. Please circle your age in the appropriate age range

A 10 years-19,99 years ☐ B 20 years -29,99 years ☐

C 30years-39,99years ☐ D 40 years -49,99 years ☐

E 50 years – 59,99 years ☐ F Above 60 years ☐

https://resourcegovernance.org/sites/default/files/RWI_Econ_Diversification_Botswana.pdf

4. How long has your business been operating?

Less than one year ☐

1year – 5 years ☐

6years – 10 years ☐

11years – 15 years ☐

16 years – 20 years ☐

20 years and above ☐

5. Before starting/working for this business, were you employed in a company that used ICT?

Yes ☐

No ☐

I was never employed ☐

6. Indicate the industry you operate in? (Tick only One)

Chemical/Medical/Pharmaceutical	
Hospitality/Grocery/Food Processing/Food and Catering Services	
Textile	
Machinery/ Engineering	
Transport /Haulage/Freight Services	
Metal and Hardware	
Accounting & Audit	
Manufacturing	
Financial Service/Stock broking/Risk Management	
Photo Shops/Colour Laboratories	
Legal Practice	
Oil and Gas Companies	
Agriculture	
Wholesale/Retail	
Telecommunication/Communication/Mobile Phone Dealers	
Mining/Mining Services	
Entertainment	
Construction/Real Estate	
Education	
Any other (Specify)	

7. Does your business use Information Communication Technology in your operations

Not at all ☐ Very little ☐ Sometimes ☐ regularly ☐ always

8. Indicate the Information Communication Technology assets that your business uses

Mobile phones ☐

Computers and laptops ☐

Fax machines ☐

Printers and scanners ☐

Telephones ☐

9. Please tick the number of employees involved in your business operations

Less than 5 ☐

5–10 ☐

11–50 ☐

Above 51 ☐

10. What is the geographical distribution of your clientele?

Less than 1 km ☐

1 km – 9.99km ☐

10km – 49.9km ☐

50km – 99 km ☐

Above 599 km ☐

Inclusive of all distances ☐

11. What is the transaction lead time of your business per order?

Real time ☐

Very short time ☐

Between 8 hours but less than a day ☐

One day ☐

Above one day ☐

12. How does the business communicate with customers, suppliers and stakeholders?

Writing hard copy letters and sending by messenger or driver ☐

Reaching them by telephones and cell phones ☐

Faxing ☐

Through radio and print media ☐

Sending information by internet ☐

By popping on their websites ☐

By being involved with processes of their operations ☐

Any other methods (Specify).....

13. How does your business make or receive payments?

Receive cash ☐

Receive and write cheques ☐

Bank transfers from and into accounts ☐

Transfer through mobile phone ☐

Internet/ web based bank payments ☐

A combination of the above methods (Specify)

14. To what extent do your stakeholders adopt ICT in their business models and require you to do the same for ease of communication and information management?

Frequency of Use of ICT Stakeholders	Not at all	Sometimes	Regularly	Always
Suppliers				
Customers				
Tax authority				
Foreign buyers				
Auditors				
Bankers				
Industry groups				
Employees				
Shareholders				
Insurers				
Regulators				
Researchers				
Other interest groups				

15. If they do, which ICT products do they use most?

ICT Used	Word Processing	Telephone Fax and cell phones	E-mail	Internet	Websites	Transformed organizations
Type of Stakeholder						
Suppliers						
Customers						
Tax authorities						
Auditors						
Bankers						
Employees						
Shareholders						
Regulators						
Researchers						
Other interest groups						
Accountants						

16. If your answer to question 8 is either not at all, very little or sometimes, what limits your business from using ICT regularly or always? Reasons for not using ICT at all or limited use of it.

	Justification of no use or limited use	**Not at all**	**Very little**	**Sometimes**
1	No need for ICT in my business			
2	Lack of awareness of ICT products suitable for my business			
3	Lack of knowledge about the use of ICT in my business			
4	Lack of skills among employees to use ICT in the business			
5	Lack of funds to invest in ICT products for the business			
6	Lack of money to invest in internal ICT hardware and software			
7	Non availability of sector specific hardware and software to use in the business			
8	Lack of knowledge about benefits which accrue to the business by utilizing ICT			
10	Fear of raising operating costs through payments of licenses			
11	Fear of exposing business information to competitors			
12	Fear of releasing excessive information to third parties and regulatory institutions			
13	Fear of being hacked thereby compromising			

	security constraints			
14	Lack of expertise to safeguard information regarding business operations			
15	High costs of maintaining ICT systems that are not justified by the return on investment			
16				
17				