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ICT and SMEs' competitiveness in South Africa: How SMEs could use ICT to become competitive in South Africa

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KEYWORDS

- Business intelligent (BI)
- Customer relations management (CRM)
- Electronic business (e-business)
- Electronic commerce (e-commerce)
- Enterprise resource planning (ERP)
- High speed downlink packet access (HSDPA)
- Independent Communications Authority of South Africa (ICASA)
- Information and communication technology (ICT)
- Information technology (IT)
- Open source software (OSS)
- Small to medium-sized enterprises (SMEs)
- Voice over Internet protocol (VoIP)
- Trade and Industrial Policy Strategies (TIPS)

CHAPTER 1 MINI-DISSERTATION OVERVIEW

Information and communication technology (ICT) is a vital component in the present “knowledge economy”. It is used by many global businesses to remain competitive. In order to compete with big business, small to medium enterprises (SMEs) need to implement ICT as an essential part of their business. However, SMEs often appear slow to adopt ICT, for several reasons. There are unique challenges that SMEs face with regard to the adoption of ICT.

This mini-dissertation reviews present literature to define ICT and SMEs and determine the current situation in South Africa with regard to the use of ICT by SMEs, including possible benefits to SMEs as well as stumbling blocks to adopting ICT. The research consists of collecting data from ten SMEs in Gauteng in South Africa using questionnaires and interviews, to determine how SMEs can use ICT to become more competitive.

The mini-dissertation will have a number of chapters: the first chapter will give an overview of the subject. The second chapter will explain the research motivation and methodology while the third chapter will be the literature review, which will explore the topic of ICT and SMEs in depth, with a focus on South Africa. Chapter four will deal with data collection and analysis; the main source of data will be interviews based on structured questions. The fifth chapter will be the discussion and recommendations based on the results of the analysis and the literature review. Chapter Six will be the conclusion.

CHAPTER 2 RESEARCH MOTIVATION

2.1 Introduction

Information and Communication Technology (ICT) has influenced the way in which business is conducted globally, resulting in, for example, a faster turnaround of products and production, smart products, and 24 hours of shopping around the world. Businesses are re-engineering their processes and investing huge sums of money in ICT solutions such as Customer Relations Management (CRM) systems and Enterprise Resource Planning (ERP), in order to take advantage of the changing environment. Knowledge is the cornerstone of this new environment, normally referred to as the “knowledge economy”. Customers in this new economy demand knowledgeable products and want to buy knowledge. For example, cars today have more knowledge about their surroundings than in the past, being equipped with tools such as rain sensors, night vision or driver’s assistance to ensure safe and comfortable journeys.

With their financial power, human capital (highly skilled staff) and resources (state-of-the-art equipment), big businesses have managed to take advantage of ICT to gain the edge over competitors, unlike small and medium enterprises (SMEs). According to Galloway and Mochrie (2005, 33), there is evidence that ICT is the driver of economic growth, which explains the drive by many governments around the world for SMEs to adopt ICT. The main reason for this drive is that governments acknowledge the considerable contribution of SMEs towards GDP and employment figures.

2.2 Problem statement

According to Ritchie and Brindley (2005) and Lucchetti and Sterlacchini (2004) ICT plays a very important role in the current “knowledge economy”. It is vital for SMEs to become a part of this economy in order to compete and thrive in the future. The problem is that SMEs are mainly using traditional tools to stay competitive. They need to take advantage of the power of ICT in order to take on

the competition, whether small, big or global. Both the traditional and the ICT tools are very important for the competitiveness of the business. There are number of reasons why an SME might not implement ICT tools, such as limited funds, lack of knowledge, lack of skilled staff, lack of tools etc.

2.3 Research questions

2.3.1 Main research question

How can SMEs use ICT to become competitive in South Africa?

2.3.2 Secondary research questions

- What is ICT?
- What are SMEs?
- What is the current state of affairs regarding the use of ICT by SMEs in South Africa?
- What are the stumbling blocks for SMEs in using ICT as a competitive tool?
- In which ways could SMEs use ICT to become competitive?

2.4 Hypothesis

SMEs contribute greatly towards the growth of the GDP and the reduction of unemployment in the South African economy, and as a result they need to stay competitive and up to date with economic changes. The way business is done has changed and continues to change; the products and services are more digitised and knowledgeable. At the heart of these changes is ICT. Various authors such as Lucchetti and Sterlacchini (2004), Galloway and Mochrie (2005) say that the adoption of ICT can give SMEs the ability to be innovative and flexible, widen their markets, reduce their turnaround times, and allow them to extend their trading hours. In order for SMEs to succeed in using ICT as a competitive tool, they should include ICT as part of their business strategy and make sure that it is aligned with their business goals, then integrate it with

business processes. In order to achieve this it is important for the decision makers to have knowledge of ICT and ICT skills.

2.5 Research approach and methodology

The study will make use of interpretive research methodology in order to answer the research question. This method is an action type of research that generally makes use of data collection methods such as case studies, interviews, or participation observation. Since there is no extensive research on the topic, this approach is the best one for obtaining information from South African contacts within the time frame. According to the literature the owner-manager is the main decision maker within the SMEs; it is important to try and extract the information from him/her through the process of interviewing and interpreting the findings. This process does not guarantee that the information will be accurate or not biased, but it is the best way given that most of the knowledge would reside in the owner-manager's head. The study will involve a literature survey to determine the ICT needs of SMEs, the adoption rate of ICT in South Africa and also the approaches already used.

The questions in the interviews are based on a questionnaire (see Appendix A) and are open-ended questions with the aim of giving respondents the freedom to express their own experiences. The study will mainly use qualitative analysis to analyse the data. The qualitative method was chosen because this is a mini-dissertation with limited time and the sample of the respondents was too small to conduct quantitative research. This method allows the subjects to share their experiences more freely.

2.6 Research plan

The research methodology to be applied has been established. The plan is then to gather background information on the above research questions using a literature survey. Thereafter a questionnaire will be developed, incorporating specific issues identified in the literature. The study will be conducted on SMEs

using interviews based on the questionnaires. The answers will be analysed and the findings discussed with reference to the literature.

2.7 Structure / preliminary chapters division

- 1) Thesis overview
- 2) Research motivation/methodology
- 3) Literature review
- 4) Data collection and analysis
- 5) Discussion and recommendations
- 6) Conclusions

2.8 Conclusion

There is still a lot of research needed in this area, especially from a South African point of view. South Africa, like many developing countries, relies on SMEs to reduce unemployment and to contribute toward the growth of the economy. Research into how ICT can enhance SMEs in order to keep them competitive and sustainable in the knowledge economy (information era) is at the top of many governments' agendas around the globe. It is thus important that proper need analyses be undertaken and solutions be provided that assist SMEs. Other factors, such as the characteristics of SMEs, should be studied in greater detail in order to see how they affect the adoption of ICT by SMEs.

The next chapter is the literature review and it will expand on the ideas that have been expressed in this introduction. It will start off by defining the concepts of ICT and SME then it will discuss the current status of ICT adoption in South Africa. Thirdly it will discuss the current stumbling blocks of SMEs using ICT as a competitive tool. Fourthly it will highlight the possible benefits of ICT adoption by SMEs then finally it will discuss the ways in which SMEs could use ICT to become competitive.

CHAPTER 3 LITERATURE REVIEW

3.1 Introduction

Globalisation and digitalisation have changed the way business is done and competes in the marketplace; information and communication technology (ICT) is the lifeblood of this change. This change has resulted in a new economy, known as the knowledge economy: knowledge is the most important asset in this economy; knowledge is what we sell and buy. Lucchetti and Sterlacchini (2004) highlight the fact that the high growth rate in the US economy during the 1990s, which saw productivity and employment rise, was due to the early and fast adoption of ICT. ICT is the foundation on which the knowledge economy is based. Galloway and Mochrie (2005) substantiate the findings of Lucchetti and Sterlacchini that ICTs are the drivers of economic growth, as does Handzic (2004:7):

“Currently, at the forefront of organisational performance are the organisations which recognised that information, knowledge and their intelligent application are the essential factors of success in the new economy, and take advantage of information technology to achieve high levels of efficiency and effectiveness”.

Mutula and Van Brakel (2006) agree that information is an important asset, giving SMEs a competitive advantage in the new economy. However they point out that access to information is a problem in developing countries like Botswana and South Africa, due to lack of ICT infrastructure. Information access plays a critical role in the informed decision-making process, making it easy for SMEs to take good competitive decisions. “The ability of SMEs to survive in an increasingly competitive global environment is largely predicated upon their capacity to leverage information as a resource” (Mutula & Van Brakel, 2006:404).

For this reason many governments around the globe have been pushing for the adoption of ICT by SMEs. However, Dixon, Thompson and McAllister (2002) point out that those governments should be cautioned that the drive to adopt ICT is based on the assumption that ICT must be a “good thing” for SMEs. Governments should assess the need for ICT by SMEs before implementing an adoption strategy. Martin and Matlay (2001) also caution governments that they should not adopt a one-size-fits-all approach, as SMEs have different characteristics and ICT needs. These differences are mainly due to reasons such as annual turnover, nature of business, number of employees, geographical location, or ownership. Dixon et al. (2002) give a good example of a case where ICT might not be as good as intended:

“[A] case in point is remote SMEs in more marginal parts of the UK: although e-commerce can potentially provide global markets through ‘richness and reach’, the companies still require the fundamental of distribution networks and direct markets to be successful.”

One of the stumbling blocks in the way of SMEs adopting and using ICT to their advantage is the need to be able to differentiate different aspects of ICTs and to assess their individual needs, thereafter providing a suitable solution for that business. Taylor and Murphy (2004) reiterate the findings of Martin and Matlay (2001), remarking that there is a need for critical study on differentiating factors that affect adoption of ICT by small business.

Based on the search (using the key words ICT adoption, SME and ICT, Small business information systems, innovation within small businesses) for information from journals (emerald, IEEE, Google Scholar, Blackwell Synergy, Infotrac, Taylor & Francis, etc) and libraries, it appears there has been little empirical research done on this topic relating to South Africa. Most of the research that has been conducted is outside South Africa; therefore the importance of this research

is to uncover where South Africa stands with regard to ICT adoption by SMEs, and also to find out the issues facing South African SMEs.

This chapter will firstly define what is understood by both ICT and SMEs. Secondly it will establish the current state of affairs regarding the use of ICT by South African SMEs; and thirdly, determine the driving factors for ICT adoption in South Africa. The chapter will then establish the status quo in South Africa and discuss the stumbling blocks that make it difficult for South African SMEs to adopt ICT. Finally it will recommend ways in which SMEs could use or get started with ICT to become competitive.

3.2 What is ICT?

Information and Communication Technology covers technologies like the simple telephone, point-of-sale systems, stand-alone PCs, networked environments, Internet, and credit card facilities. Ritchie and Brindley (2005) define ICT as “the array of primarily digital technologies designed to collect, organise, store, process and communicate information within and external to an organisation and, in our case, SMEs” (Ritchie & Brindley 2005:206).

ICT is a broad concept that covers Information Systems (IS), Information Technology (IT) and digitalisation. Many authors (Ritchie & Brindley 2005, Martin and Matlay (2001), Fulantelli & Allegra 2003) on this topic concur that ICT brings changes in the global information flow, behaviour, patterns and options of customers, and SMEs stand to benefit from ICT in reduced transaction costs, inventory controls, quality controls, access to a wider market space and leveraging economies of scale. According to Moodley (2002), ICT is an enabler for global “networking” economy.

“Information and Communication Technology (ICT) offer enterprises a wide range of possibilities for improving their competitiveness: they provide mechanisms for getting access to new market opportunities and

specialized information services such as distance consulting, continuous training, new advisory modes, etc.” (Fulantelli & Allegra 2003:45).

Organisations use ICT for diverse purposes in order to complement their business model. Thus ICT can be categorised into different groupings from the business, or in this case SME, point of view, according to Lucchetti and Sterlacchini (2004). Depending on the business strategy an SME can choose a specific category as its ICT direction.

3.2.1 Categorisation of ICT for SMEs

Lucchetti and Sterlacchini (2004) categorise ICT into the following groupings: general-user, production-integration and market-oriented groups. These categorisations relate to the roles of ICT or the strategic position that ICT can play within a particular SME.

The SME’s owner or owner-manager needs to understand the value that ICT can add to the business and then place it within one or more of the following groups:

General-user ICT group. This is the basic ICT implementation, which includes e-mail and Internet. The rates of adoption at this level are generally high and do not depend on the size of the business. At this level technology is being introduced into the business in small doses and is not coordinated.

This also includes standalone ICT, meaning “PCs used for the purpose that does not require communication technology” (Galloway & Mochrie, 2005:34). They emphasise that adopting standalone ICT applications can meet specific needs of the business like financial planning, customer record-keeping and developing marketing material. Many authors on this topic,

including Galloway and Mochrie (2005), point out that the use of standalone ICT, or in this case general ICT, is not prolific. But the use of standalone ICT can be viewed as an entry point into the new economy, meaning it does not necessarily give competitive advantage but it gives access to being competitive.

Production-integrating ICT group. These are more advanced than the general-user ICTs as these ICTs are either linked to the production processes carried out within the firm or based on inter-firm relationships. They are expensive and require relevant technological skills to carry them out. According to the levels defined by Ritchie and Brindley (2005), they would form part of the strategic plans of a business for achieving business goals and enhancing or changing business processes. The use of ICT infrastructures such as networks; product data management; virtual prototyping; computer-aided design; electronic funds transfer (EFT); electronic data interchange (EDI); having LAN (local area network) or WAN (wide area network) connections within your business; and e-business and e-commerce, are expected to change the process of knowledge creation, embodiment and reuse.

The benefit of this is product innovation (PI) and faster service delivery. According to Corso et al. (2001:36), “SMEs should heavily leverage these opportunities to support cross-boundary communication and knowledge sharing”. Examples of applications and tools at this level are ERP (enterprise resource planning), CRM (customer relationship management), billing systems, and computer-aided design. Generally, applications under this group rely on networked technologies and, according to Galloway and Mochrie (2005:34), this “has transformed the capacity of SMEs to share and transfer information”.

Market-oriented ICT group. These represent the firm's web presence, displaying the goods and the company information on the world wide web. Some web sites might have e-commerce functionality, such as offering the ability to place orders. This relates to the marketing aspect of the business.

The world wide web can be a powerful platform for expanding and reaching new markets. It gives the SME access to 24 hours of trading, borderless market space, and leverage to compete against big companies on the same platform.

So by positioning the SME within an appropriate grouping, the owner or owner-manager can change the SME's business process.

In an attempt to establish the adoption status of ICT by SMEs in South Africa, it is crucial to understand the focus area or viewpoints that authors on this topic have been taking.

3.2.2 Adoption perspectives of ICT

Authors on the topic of adoption of ICT hold three viewpoints, which are: the technology perspective; management and organisation of technology perspective; and small firm and ICT perspective. According to Southern and Tilley (2001), the first two have dominated the field of enquiry.

- **Technology perspective.** This perspective examines ICT adoption from the technology point of view. The focus is mainly on technology aspects like the Internet or e-mail technology, without looking at how the business can use this technology to be successful. The focus is thus only on the success of the technology driving the business.

Consideration of the SME is not made; success is measured from a technology point of view and not on the success of the business.

This perspective holds dangers for both SMEs and large business. There have been reports of failures of ERP and CRM projects within organisations; one of the biggest problems is not the technology but the readiness of the organisation to embrace the technology. There are a number of things that the organisation needs to take into consideration when implementing technology, for instance, the organisational culture should be technology oriented; business processes need to be flexible in order to consider technology; one needs to check the availability of IT skills needed for implementing the technology, and so on. Lack of consideration of these factors might cause failures in the adoption process.

- **Management and organisation of technology perspective.** This view is similar to the one above, but with greater emphasis on the management or organisational aspects. This view lays emphasis on the strategic approach to ICT by SMEs and on the capabilities and structures of the SMEs.
- **Small firm and ICT from the small firm perspective.** This view focuses on the SMEs and how they use technology as a tool to improve their competitiveness. This perspective takes into consideration the vision of the SME. Many authors on this topic are now starting to place emphasis on this viewpoint.

The approach of this paper will be based on this last perspective, looking at the owner-managers and how they factor technology into the strategy of the business in order to help the business to become more competitive. It

is also important to understand the characteristics and differentiating factors of SMEs.

3.3 What are SMEs?

Small to medium enterprises (SMEs) are businesses that employ 150 people or fewer and are not a subsidiary of a public limited company, according to Southern and Tilley (2000). SMEs play a very significant role in the growth and development of an economy. Empirical studies have shown that a large percentage of the growth in GDPs and of the reduction in unemployment is as a result of activities of SMEs. Mahemba and Bruijn (2003:162) cite the fact that SMEs make up more than 90% of all business establishments worldwide. Authors such as Southern and Tilley (2000), Taylor and Murphy (2004), and Martin and Matlay (2001) agree and acknowledge that SMEs are different and should be treated as such. There are many factors that make SMEs different, such as turnover, industry, number of employees, and format of the business. These factors need to be studied in more detail to establish how they influence the adoption process.

3.3.1 Differentiating factors of SMEs

Buckley and Montes (2002) explain that compared with big business, SMEs are generally found to spend less per employee on ICT and also spend less on computers and communication. Moreover, SMEs generally do not have R&D (research and development) or innovation departments, but in order for them to survive in the digital or knowledge economy, it is very important that they develop these.

One characteristic that almost all small businesses have in common is that they are owner managed. The owner is the centre of the business, making all or most of the decisions, and thus the owner's personality and attitude towards technology have an impact on the adoption of ICT by the small

business. Martin (2005:191) agrees that the owner-manager has limitations, such as:

- “Owner-manager capability gaps or knowledge gaps prevent effective new technology use and selection.
- Intuitive and organic styles of management and operation impact significantly on technology evaluation and implementation because they make it difficult for the owner-manager to make confident decisions.
- Owner-manager motivations, value, attitudes and abilities dominate organisation knowledge. This means that if the owner-manager does not build a technology acceptance culture in the small business it will be difficult for the staff to adapt.” (Martin 2005:191)

But this does not make all SMEs the same; there are a number of factors that make them different and unique. This means that the adoption process of ICT should be treated differently for each SME. Factors such as:

- The e-commerce or e-business model used by the SME
- The location of the SME
- The take-up model adopted by the SME
- Whether it is a service or a product development business
- The unique characteristics of the SME

will all affect the business and how it adopts ICT. Differentiating factors need to be explored more deeply to uncover the exact factors that make them different. In an attempt to better understand SMEs, this paper looks at the user groups and their characteristics (soft and hard).

3.3.2 ICT-user types of SME

In an attempt to understand SMEs, it is vital to take a close look at the relationship between SMEs and the usage of ICT and how this impacts on

the adoption process. According to Southern and Tilley (2000:145-146), there are three types of user groups, which are:

- **Low users.** These are the small businesses that have little or no ICT in their business. They do not understand the difference between IT and ICT and are not willing to invest lot of money in ICT.
- **Medium users.** This group includes the small businesses that have started using some ICT in their organisation. They have stand-alone PCs and have some form of a network established.
- **High users.** This group exhibits signs of more sophisticated understanding of ICT and how the technology can be applied.

Southern and Tilley (2000) examine the above user groups in relation to the hard or soft ICT characteristics and show how each user group reacts. The hard issues are visible aspects of ICT that can be observed and the soft issues are qualitative aspects of running a small business. Figure 1 shows the hard and soft characteristics of the three user groups:



	Low users of ICTs	Medium user of ICTs	High users of ICTs
Hard characteristics	They would use analogue communication systems.	They would use analogue communication systems.	They would use or be on the move toward digital communication technology.
	Have low number of telephone lines	Have a number of computers in a networked environment	Plans in hand to integrate IT and communication technology.
	Low IT skills	Evidence of management information system	Require specialised skills in IT & ICT.
Soft characteristics	Very limited speculative IT investments.	Still some speculative investment in IT/ICT but with growing confidence in decision making	Less speculative IT investment and more calculated investment with clear return on investments (ROI)
	Not very sure when making technical-business decisions.	More sophisticated business rationale to employing technology	Business rationale is well articulated for ICT use
	Generally do not know much about IT/ICT.	Know the potential power of IT/ICT	IT/ICT forms part of the business process in producing goods and services.

Figure 1: The user characteristic model (Southern & Tilley, 2000:148)

3.4 What is the status quo in South Africa?

According to Trade and Industrial Policy Strategies (TIPS), South African SMEs contribute positively to the country GDP and the reduction of unemployment levels; as a result the South African Government is pushing for South African SMEs to adopt ICT in order for them to continue with the good work. South Africa faces similar challenges to many developing countries, resulting in similar motivations for adopting ICT, such as the promise of solutions for economic and social problems, reduction of the digital divide between third world (poor and developing) countries and first world countries and integration of ICT with the delivery systems of foreign aid investments.

On the other hand, Fink and Kenny (2003) caution against the belief that the digital divide is widening between the developed and the developing countries, because the increase in network development in developing countries is growing at a faster rate than in the developed countries. They argue that the way the division is measured needs to be reviewed. This means that the drivers of ICT should be considered carefully, as many governments' drives for the adoption of ICT are based on this assumption.

3.4.1 What are the drivers of ICT adoption in South Africa?

The drivers of adoption of ICT by SMEs are global trends, governments, innovation, flexibility and competitive advantage. These drivers are some of those that have been highlighted by different authors as the main drivers that are pushing SMEs to adopt ICT. The major trends of globalisation are leading many governments around the world, especially in Europe and the developing countries, including Africa (Dixon et al., 2002). The South African government is aware of the changes that are occurring in the economy and have put ICT adoption policies in place. This should encourage innovation in the development of products and services by SMEs, giving them the ability to compete with bigger companies and international SMEs and companies.

3.4.1.1 Globalisation

The world is inter-connected and businesses serve a global customer base; this means customers can buy goods/services anywhere in the globe, country or province. ICT technologies such as Internet, intranet, world wide web, wide area networks (WAN) and local area network (LAN) are making it possible for anyone anywhere to communicate, opening up new markets. The world has become one big marketplace with no borders. Moodley (2002:31) emphasises the fact that ICT is an “integral part of the accelerating pace of globalisation”.

What this means for a developing country like South Africa is that it has to compete with developed countries for the same markets. Companies in developed countries have an advantage over local companies - who face different challenges and have less experience in their marketplace. They can sell their products and services more cheaply, therefore killing local companies. A good example of globalisation forces on the South African market, in particular the agriculture and wood industries, is highlighted by the research of both Tregurtha and Vink (2002) and Moodley (2002) respectively. Both the sectors saw a need to grow their business globally in order to survive in the new economy. One of the biggest barriers in these industries was the fact that these markets had been protected for too long and the government had to come up with policies to liberate the markets. This means that the South African Government is a key stakeholder in the process of helping this country to participate in the knowledge economy.

3.4.1.2 Government drives

Governments recognise the role that SMEs play in the economy in solving some of their major headaches like unemployment, so they want to narrow down the digital divide so that SMEs can contribute to the new economy. According to TIPS (Trade and Industry Policy Strategies), the South African Government is very aware of the need to participate in the global economy and the knowledge economy in order to grow and survive into the future. The government has put groups like TIPS in place to deal with policy issues and to push its agenda of getting South Africa involved in the ICT arena.

3.4.1.3 Innovation

SMEs realise that in order for them to be successful and competitive against big business, they need to offer innovative goods or services, and that ICT is an enabler of innovation. Innovation gives the SME the

ability to provide “new solutions for their products, production, marketing and administration to cope with the dynamics of the markets” (Mahemba & De Bruijn 2003:163). Product innovation is one of the advantages that ICT gives SMEs. The clients of the knowledge economy demand intelligent products and services. This means that knowledge has to be integrated into products and services, for example the design of a bottle of water has to take the user into consideration and be built in such a way that the user can hold it easily (such as the new design of the Pepsi bottle); this can make or break the sales of the product. Today we don’t buy cars so much as we buy the service that a car manufacturer offers, such as safety (knowledge features like pre-safety and post-safety in Mercedes Benz), comfort and ease of use (a Lexus can park itself), reliability (Toyota sells reliability and affordability), and the like. South African SMEs can use ICT for accelerating network developments and active participation in the global economy.

3.4.1.4 Flexibility

ICT offers SMEs flexibility of trading time (24 hours, 7 days a week), resources (remote access to knowledge, suppliers, etc) and a borderless environment. ICT offers SMEs flexibility and cheaper solutions in order for them to achieve their business objectives. Flexibility can mean many things, like the ability to deliver products and services on a different platform that is easily accessible. For example, banking is now done through different mediums like cellphone, Internet, and ATMs (automatic teller machines) 24 hours a day. The benefit is that people in the rural areas can have access to banking facilities.

ICT also reduces barriers of entry into the different market segments. A good example is Amazon.com; when it entered the market, giant bookstores like Barnes & Noble never thought that Amazon would surpass them; today Amazon has clients all over the world and is a

multimillion-dollar company. Now Barnes & Noble has copied the Amazon model of selling books over the Internet to stay competitive and relevant to its clients.

3.4.1.5 Competitive advantage

SMEs realise that ICT can give them competitive advantage over their competitors. Arthur Goldstuck of World Wide Worx supports this statement by saying that the Internet tends to make a company more competitive (Jackson, 2007). Jackson (2007) emphasises that emerging ICT technology, if used, is most likely to result in a competitive advantage. This competitive advantage is a result of the innovation and flexibility that ICT affords SMEs. This means it will be easier for SMEs to come up with new and creative products and services that are quick to implement, given the decision-making structure of SMEs as opposed to that of larger companies.

3.5 South African SMEs

According to Mutula and Brakel (2006), 69% of South African SMEs have three or more PCs, and of these 87% do not use the Internet to buy products. This means that there is a huge growth potential for South African SMEs to use Internet and networking technologies. In 2003 more than 12 000 SMEs in South Africa were reported to be using ICTs (Mutula & Brakel 2006:408). According to Shiels, Mclvor and O'Reilly (2003:313), the Internet is an "effective channel for advertising, marketing and even direct distribution of certain goods and services".

South Africa is a developing country going through a growth period and exploiting different technologies. According to the World Wide Worx survey on SMEs, there is a huge advantage to be obtained from the use of emerging ICT technologies, particularly Internet connectivity and mobility. Emerging technologies such as VoIP are taking advantage of the converging markets and changing the landscape of business. South African SMEs especially should explore mobile

technologies as a large number of South Africans have cellphones and this is a good platform to deliver services to. Goldstuck of World Wide Worx (Jackson, 2007) believes that SMEs that are using emerging technology like VoIP stand to benefit and grow their markets.

Converged networks, where voice and data are merged into one infrastructure, are already available, with Skype being one of the most popular such applications in use. Businesses are starting to use these tools to communicate with clients and with each other. However, Hatfield (Jackson, 2007) is concerned about the slow take-up of these technologies, pointing out that 90% of businesses still use the old telephone system. Concerns might be due to lack of knowledge, lack of skills to support OSS solutions, and/or risk control.

One of the biggest problems in South Africa is the high cost of connectivity and lack of infrastructure. According to Herselman (2003), South Africa has been developed in an uneven manner: the urban areas have the latest modern technologies while the rural areas are underdeveloped with little of the infrastructure, such as electricity and telephone lines, that is needed to thrive in the knowledge economy. As mentioned above, the South African Government is aware of the need to participate in the global knowledge economy. It has thus mandated Telkom (the local telephone company which is partly owned by government) through ICASA (Independent Communications Authority of South Africa) to meet its target of making South Africa a connected country while reducing the cost of communication.

However, this problem is not the only one. South Africa, like many developing countries, faces a number of challenges in becoming an active participant in the knowledge economy. Some of these challenges are highlighted in the section below on stumbling blocks.

3.6 What are the stumbling blocks for SMEs in using ICT as a competitive tool?

There are a number of stumbling blocks or barriers that make it difficult for SMEs to adopt ICT. Ngwenyama and Morawczynski (2007) argue that everyone assumes that ICT will successfully bring about benefits, but not all environments are the same. The issues affecting successful implementation or adoption of ICT are both socio-economic and technological. MacGregor and Vrazalic (2006) agree with the findings of Ngwenyama and Morawczynski (2007) that the barriers to adopting ICT by SMEs are both socio-economic and technological, by pointing out that the barriers can be caused by factors external and/or internal to the organisation, which in this case is the SME. According to Herselman (2003:945), “many of South Africa’s rural areas exist below subsistence levels and remain impoverished because they have no access to basic infrastructure essential for economic growth and development”.

Ritchie and Brindley (2005) mainly look at the barriers or diffusion agents that prevent the SME from adopting ICT. They group them into the following areas:

- **Strategic.** This level addresses issues that impact on the direction of the business (business strategy), capital investments and networks in relation to ICT. SMEs should formulate their own IT/ICT strategic objectives.
- **Technological.** This level deals with issues relating to the complexity of technology and professional support for the technology in relation to the production of goods and services. This level should underpin the above level of strategy, by implementing IT/ICT strategic plan in order to build a good IT/ICT architecture.
- **Organisational and behavioural.** This level deals with issues that relate to the personality, such as capacity and risk perceptions. These also underpin the strategic level but the focus is on supporting the business process.

The focus of this paper is on the above three areas, which reflect some socio-economic issues. Yes, ICT is an enabler and it has a number of benefits, as highlighted by Tregurtha and Vink (2002), such as reduction of cost, network scale and improved service levels, but it is very important to look at the ability of the SMEs to leverage ICT and get the best benefit for their particular model of business.

The lack of knowledge about the strategic use of ICT and lack of the necessary IT skills are the two key issues. Other stumbling blocks are the perceived cost of ICT and the ever-changing ICT environment, together with geographical factors such as rural versus urban areas, as discussed below.

3.6.1 Lack of knowledge about the strategic use of ICT

There is a lack of knowledge about the potential benefits of ICT and strategies to support SMEs in achieving their business objectives. As mentioned before (in Section 3.3.1), SMEs face the challenge that generally they are owner managed and the owner makes all or most of the decisions about the business (strategic direction). Unfortunately the owner-manager's limitations become limitations of the business. This barrier can be classified as a strategic level problem. ICT needs to be considered a key player in the SME reaching its goals.

3.6.2 Lack of necessary IT skills-base

As already expressed, the owner is the centre of the business, making all or most of the decisions in the small business, so the adoption of ICT by the small business depends on the owner's ICT skills, personality and attitude towards technology. The IT-skills problem forms part of the bigger problem of a shortage of specialists in IT/ICT in Africa. The South African Government has set up organisations (SETAs) to try to increase ICT skills. However, the owner-managers' attitudes towards ICT and its value needs to change, and each SME needs expertise to work with. The ideal staff

level for an SME that considers ICT to be the core of its business strategy is that of a high user group as described above in Section 3.3.2. “Pervasive use of ICT in the economy depends on well-trained human resources for developing relevant applications, supporting and maintaining systems” (Mutula & Brakel, 2007:232).

If they have a well-trained ICT staff, SMEs are likely to adopt and use ICT as a competitive tool successfully. Martin (2005) highlights his findings that successful Internet adoption depends on different roles of employees and uses combat names to describe them, such as warriors, interpreters, clerks and priests. The main aim for using such names was to make them easy to relate to and to give them the kind of responsibility and respect associated with those roles.

The separate roles are described in the following way (Martin, 2005):

- **Warriors** (leading the way to adoption). This role is the driver of the adoption process, and the person in this role should be passionate and support the adoption. This person does not necessarily need to be a technical person but needs to have a high purpose for the adoption (business reasons). Normally this person is the owner-manager.
- **Interpreters** (translating the technology to the ordinary employee). This role is that of the person who understands the technology and can sell this to the rest of the employees of the small business, enabling them to understand it.
- **Clerk** (the administrator of the adoption process and documentation keeper). This role is that of “bringing order to chaos” (Martin 2005:196). What this means is that this person should be an administrator and should organise the information of the adoption process and make sure that the staff know where to get what information in order to make it easy.

- **Priest** (technology specialist). This role is that of the specialist, the person who gives direction with regard to technology best practices, which application to go with, turnarounds, and the like.

The important thing here is that different roles are essential in achieving a good implementation and separation of duties. The roles can be named in any way that staff can relate to and understand.

This stumbling block to the adoption of ICT can be classified under both the strategic and the organisational and behavioural levels of barriers. Getting the right skills is part of the strategic function of the organisation, since understanding that ICT plays a critical role in the business will help in planning the right budget, creating the right job description and knowing how to interview for ICT skills. The role creation covers behavioural aspects, making staff excited about ICT.

3.6.3 Perceived high setup cost

ICT is perceived to be expensive by SMEs so they often do not have a budget for it. ICT solutions are generally associated with millions of rands and stories of ICT solutions are synonymous with running over budget.

The other problem with regard to the cost of ICT is that SMEs may invest in unnecessarily big solutions due to sale pitches, hype of specific products or market patterns without considering their real need. Often they could have purchased a less complicated, smaller package or programme to meet their needs, and thus paid less. This would be like a farmer buying a 10 ton truck to deliver 200 kg of vegetables – it will work, but be inefficient and a waste of money. These are the kind of things that give SMEs the impression that the adoption of ICT is very expensive.

There are different types of costs associated with ICT: product/solution, development, connectivity, hardware, software, maintaining workforce and hidden costs such as annual license fees, upgrade fees, training fees etc. These costs can be overcome by having the right knowledge and know-how. For example, there are lots of open source software (OSS) programmes available – these are free or low cost ICT tools and solutions written by open source communities. These solutions can be used to support business. In terms of connectivity to the world wide web (Internet), the South African Government, like many others, is driving the cost of communication down through bodies such as ICASA. Such bodies are constantly forcing telecommunication companies like Telkom to reduce their rates and make communication affordable to everyone. Mobile operators also offer broadband technologies such as 3G or HSDPA (high speed downlink packet access) at a cheaper rate – these are accessible anywhere in South Africa.

An SME with the right knowledge can use OSS solutions in order to run the business: solutions such as Skype (for free calls), Turbo cash (accounting software) and others can be combined to offer a total solution for all the business processes.

The perceived high cost of ICT can be classified as a strategic and/or technological barrier. Technology can be expensive or cheap, depending on which technology platforms are chosen. Once more, understanding the role of ICT will make it easier for the business to achieve its goal. But the key thing here is understanding technology.

3.6.4 Ever-changing ICT environment

The ICT environment is ever changing, so constant learning and updating of technologies is needed. Technology is constantly evolving, getting faster, smaller, more powerful, or digital, for example. There are two

issues here: on the one hand the SMEs need to monitor the kind of technologies that their clients are using and try to make sure that they are on a par in order to serve them. On the other hand the SMEs don't need to change every time there is a change in technology; this depends on the focus area of the SMEs.

This latter situation is described in the focus-dominance model of Levy, Powell and Yetton (2001:135) (shown in Figure 2 in Section 3.7.1). The focus-dominance model is based on the dimensions of strategic focus (cost reduction versus value added) and customer dominance (few versus many customers). The model has four domains: coordination, efficiency, collaboration and innovation, which create competitive scenarios. Which domain the business falls into will determine the rate at which the business needs to change its technology. If an SME is doing business in the innovation and collaboration domain, it might require constant change of technology, while an SME that functions in the coordination and efficiency space is only required to change after a long time.

This stumbling block touches on all three categories of barriers and diffusion agents. The ICT strategy of the SME needs to take into consideration that technology changes at a rapid rate, the different technologies need to be monitored as they evolve into the future, and the staff need to be excited enough to have an interest in the changes as they happen.

3.6.5 Geographical factors

ICT makes it easier to reach remote or rural areas. However, there are other factors to be considered, such as the “FedEx effect” which affects deliveries: for instance, rural areas might not have proper address systems, or there might be no roads. South Africa faces the problem of underdeveloped rural areas and well-developed urban areas. Most rural

areas lack resources and infrastructure and have no proper address systems. Fixed-line connectivity in rural areas is still a huge problem, though the use of cellphones is high. Another major problem is the high rate of illiteracy in the rural areas. On the contrary the urban areas of South Africa are well connected and the use of technology like the Internet is high.

This barrier falls under strategic levels of diffusion agents. Issues such as the “FedEx effect” should be addressed at a strategic level. Taking the time to plan to overcome problems such as lack of roads and addresses will make implementation easier.

3.7 Possible benefits of ICT to SMEs

The drive to adopt ICT is based on the perception that ICT will bring about specific benefits. These benefits differ from business to business. The possible benefits of ICT within the SME include the ability to:

- reduce cost and operational efficiency
- work remotely
- reduce the price by increasing turn-around period or using open source software (OSS)
- grow the market share by exposure to a wider client base.

According to Alexander (2008), some of the technologies or tools that SMEs can benefit from and that will help realise the above benefits are:

- **Video conferencing.** This enables “real time, face-to-face communication with partners, clients, contractors and employees over a broadband network” (Alexander, 2008:3). Video conferencing can benefit the SME in a number of ways by, for example, reducing costs because of fewer expensive trips and hotel stays, reducing time spent travelling and away from work, still providing the rich content that you

would receive from a normal phone call, and allowing meetings to be held more regularly than trips can be planned. Alexander (2008) points out that video conferencing promotes greater communication in the following ways: you can see non-verbal signals that you do not get through a normal phone; you can present more information, for instance with slide shows; demos and training can be done through video conferencing; and staff in different geographical areas can benefit. The magnificent thing about video conferencing is that you can use technologies such as VoIP and OSS, so you will pay next to nothing for your communication. Thus the SME does not need to invest in expensive equipment – it can use platforms such as Skype and Gtalk. Using these technologies can save the small business travelling expenses.

- **Extension mobility.** “Wireless and mobile technologies increase efficiency and productivity by extending the footprint of your office, delivering information and applications to your employees when and where they need it” (Alexander, 2008:3). This enables one to work remotely with a “virtual office”. The benefit to the SME is a saving on rental space, and, if a job requires staff to be on site at the client’s premises, the faster deployment of work to staff while they are on the road. This can be done through the use of IP networks, VoIP tools, the cellphone as a tool, and web-based solutions. Once again the cost of these solutions is cheap compared with normal telephone or travelling costs.
- **Customer relationship management (CRM).** According to Alexander (2008), CRM technologies are designed to help the business, in this case the SME, have a better understanding of its clients. CRM is often described as having a 360 degree view of the customers, meaning knowledge of all the touch points (communication) that the customer makes with the business and the ability to analyse them to gain a better understanding of the customer’s future needs. For example,

knowing that a client has done a certain kind of business with the company, allows the company to follow up on the last service and offer more related solutions. Alexander (2008) explains that you can link your CRM solution with your IP phone, so when a client calls, it pops up the client's history window. Thus before you answer you already know a lot about the person phoning, and you can address them by name, thus improving the customer's experience.

- **Unified messaging.** This “is a solution that streamlines business communication, enabling employees to send and retrieve their voice mail, e-mail and fax messages from one device – either their computer or IP phone” (Alexander, 2008:5). The main benefit of unified messaging is saving time and money by viewing all messages on one device. There are free or very cheap solutions that can be downloaded from the world wide web.

3.8 Ways in which SMEs could use ICT to become competitive

Schubert and Leimstoll (2007) touch on an important question, that of ICT value. According to Schubert and Leimstoll (2007), there are two schools of thought with regard to the issue of ICT value. The one, known as Porter's theories, says that ICT adds value to SMEs and the other, known as Millar's theories, believes that ICT does not really add any value since it is a commodity, just like electricity, available to everyone. In conclusion they agree that competitiveness of an SME depends on the ways in which ICT is used to support business processes. So having ICT implemented in a business does not necessarily give the business any competitive advantage, but having it linked to the business processes and strategy will most likely give a competitive advantage.

In general it appears that SMEs that employ ICT according to the critical success factors below have a better chance of becoming commercially successful,

according to Taylor and Murphy (2004). The critical success factors are as follows:

- Owner motivation, experience and management skills
- Expertise in managing growth
- Access to resources (money, technology and people)
- Innovation, competitive advantage and flexibility
- Close contact with customers
- Focus on profit rather than sales
- Strong demand and operating in a growth market.

In order to achieve the above critical success factors, the SMEs need to embark on the following:

- They need to have a clear ICT strategy that will govern the adoption process within that particular SME.
- They need to make sure the ICT strategy is aligned with the business strategy, which means that the ICT strategy should support and achieve business goal.
- The SME should make sure that it employs the right skills (permanent or contracted) and identifies the roles that these skills will play in making sure that the SME is successful in leveraging ICT.

These three steps will be discussed in detail below.

3.8.1 Set up of the ICT strategy

SMEs need to define an ICT strategy for the business; this will help the business understand the potential of ICT and outline the processes and methods to be followed during adoption. SMEs need to recognise the impact of ICT on their business and should invest in efforts to take advantage of it. The South African Government is busy with awareness campaigns and has set up non-profit organisations that should help SMEs obtain the necessary ICT resources and advice.

The owner-manager needs to understand that he cannot be everything in the business and needs to employ or outsource the ICT function. Software is becoming a service: a good example is ABSA bank, which is providing a payroll solution to its SME clients. For the SME, this leads to a reduction in the costs of developing or acquiring payroll solutions, and means that maintenance and upgrading of the solutions is taken care of. SMEs need to spend money and time on getting the relevant advice from ICT experts and consultants in order to set up the ICT strategy, based on the SME business strategy.

By defining the strategic objective of the SME, the SME can decide which strategic investment to make. Levy et al. (2001) have found that investment in ICT is successful when it takes one of the following two forms: providing efficiency and savings, or enabling added value. The former form is taken by SMEs in the Low and Medium user of ICT groups where ICT is used for transaction processing and does not play a huge role, while the latter is adopted by the High user of ICT group; here ICT is used for technical and operational integration and inter-organisational integration (as discussed in Section 3.3.2).

The focus-dominance model in Figure 2 shows the different possible ICT solutions. As mentioned in Section 3.6.4, it is based on the following dimensions of the SME: strategic focus (cost reduction versus value adding) and customer dominance (few versus many customers) (Levy et al., 2001:135). Customer dominance refers to the power of the customers, as “SMEs are driven primarily by customer needs” (Levy et al., 2001:135). The model’s four domains: coordination, efficiency, collaboration, and innovation, create competitive scenarios.



		Coordination	Innovation
Customer dominance	Low	<i>Word processing</i> <i>Accounting</i> <i>Customer databases</i>	<i>Word processing</i> <i>Accounting</i> <i>Electronic business</i>
	High	<i>Word processing</i> <i>Accounting</i>	<i>Word processing</i> <i>Accounting</i> <i>MRP</i> <i>EDI</i>
		Cost saving	Value adding
		Strategic focus	

Figure 2: The focus-dominance model (Levy, Powell & Yetton, 2001:136)

The small business would need to identify the quadrant into which it falls in the above focus-dominance model, by determining whether its strategic focus is cost saving or value adding, and then determining whether the customer dominance is high or low. For example, if the majority of the clients of the SME (high customer dominance) use a specific technology, then it will influence the ICT adoption. Once the strategic positioning is done then the focus will be on getting the right tools and technology to achieve the strategy.

3.8.2 Alignment of business strategy with ICT strategy

Aligning the ICT strategy with the business strategy will ensure that ICT is used to deliver on the SME's objectives. The ICT strategy design should be based upon the business strategy, as the SME should not be driven by technology needs but by business needs. Earlier research on this topic was focused more on the technology perspective and the management and organisation of technology perspectives, overlooking the small firm's perspective, but now the focus is moving towards the relationship between SMEs and ICT from the small firm's point of view. Authors have begun to

take the latter perspective more seriously because they have seen the importance of ICT supporting the business process.

3.8.3 Identification of adoption roles

Identification of the roles needed for adoption will help the SME understand the skills and knowledge needed to adopt ICT. The four roles discussed above are not only important in the adoption of Internet use but can be used in the adoption of technology in general. The group of high users of ICT would have all four roles implemented, while the medium user of ICT group would have some of those roles but not all of them.

3.9 Conclusion

The literature review has highlighted the change of the economic environment into the new economy (knowledge economy). The lifeblood of this new economy is information and communication technology (ICT), while SMEs play an important role within the South African economy. In order for them to continue playing this role in the future they need to adopt ICT. The South African Government, like other developing countries' governments, is pushing for the SMEs to adopt ICT as part of ensuring that they participate in the global economy.

The current status in South Africa is that the number of SMEs adopting ICT technologies is growing, especially in the urban areas, but at a slow rate. The aim is to accelerate it in order to reduce the digital divide. There are some stumbling blocks that we need to overcome: the two key issues are the lack of knowledge about the strategic use of ICT and the lack of necessary IT skills.

The next chapter is the data collection and analysis chapter; it will discuss the data collection methodology and the kind of questionnaires that will be applied to gather information about the South African SMEs. Then it will discuss the

techniques that will be used to classify the findings and analyse them. Finally it will discuss the findings of the questionnaires.

CHAPTER 4 DATA COLLECTION AND ANALYSIS

4.1 Introduction

Data was collected using interviews based on questionnaires (see Appendix A). These questionnaires were distributed to 10 SMEs within the Pretoria region. There was no special reason for selecting the Pretoria region, except that it was easier to access SMEs in this area. The owners of each SME were chosen as suitable candidates for the interview/questionnaire due to the fact that they have a good understanding of issues surrounding their businesses. There were a number of challenges when it come to the data collection. For example, the owners were always busy and so not easily accessible, and some of the questions where answered with 'yes' or 'no' without going into detail. Generally this would result in a follow-up phone call to clarify the answers. Since the sample is very small the findings can not be generalised in a statistical manner. However, since this is a qualitative study, the results may still be used in a valid way to suggest problematic areas and possible solutions.

4.2 Subjects

There were no specific criteria used in selecting the 10 SMEs that participated in the interview/questionnaire. The selection was done randomly and based on acceptance. All of the subjects are from Pretoria in the Gauteng province as it was easier for the author to access them. The targeted subjects were the business owners, because they are the ones that make decisions in their SME or because they could direct us to the relevant people. Getting the decision maker is very important for gaining a better understanding of the issues facing the SME. All the SMEs that participated in the interview are listed on Appendix B.

4.3 Data gathering

The questions were selected carefully: they were designed to gain an understanding of ICT knowledge and usage within the specific SME and to discover, if ICT is used, how it is implemented. Appendix A shows all the

questions that were asked to the owner/managers of the SMEs. The questions are open ended with the objective that they will be answered with as much detail as needed. Five of the interviews were conducted face to face with the different participants. The other five chose to answer the questions by themselves, due to time constraints, but a follow-up telephonic interview was done to clarify where needed. Before the interview and questionnaire each participant was given a list of the meanings of the acronyms.

4.4 Data analysis

Since this research primarily uses a qualitative approach, the open-ended questions will be analysed interpretively. As the research is not large, having only ten respondents in the sample, the use of the quantitative method does not suit this type of research. After the interviews and questionnaires the researcher's notes were examined for clarity. For analysis purposes, questions in the questionnaire can be grouped into the following logical groupings:

- **Workforce knowledge.** Questions 1, 2 and 15 aim to understand the workforce employed by the SME and at the same time confirm that the business is an SME.
- **Current state of ICT within the SMEs.** Questions 3 to 5, 13 and 14 aim to establish the current status of ICT usage within the SMEs, and to establish if basic technologies, such as a telephone, are available.
- **Awareness of ICT.** Questions 6 and 7 aim to establish the levels of awareness of ICT and the knowledge economy by the SME owner (as an important part of the SME).
- **Decision-making process with regards to ICT.** Questions 8 to 12 aim to gain an understanding of the ICT decision-making process within the SMEs. Who makes decisions? What are the ICT decisions based on? Who maintains the ICT infrastructure? How do SMEs deal with growth, scalability issues and staying current and up to date?
- **ICT barriers.** Question 16 aims to establish the barriers that prevent SMEs from adopting or implementing ICT in their organisations.

- **Current processing of information.** Questions 17 to 19 aim to determine how the SMEs are doing their current processing of transactions.

4.5 Findings/results

The findings are grouped according to the logical grouping of the questions discussed above. It is important to once again highlight that this research makes use of a qualitative approach in trying to answer the research question. The replies are based on the experiences of the SMEs' owners as they run their businesses.

4.5.1 Workforce knowledge

All the respondents interviewed have a workforce within the required range as discussed in the definition of SME (see page 17). The number of employees ranges from 4 up to 70. This reflects that the chosen respondents were the right ones. The employees of all ten respondents have a minimum qualification of Grade 12 (Matric) and six of them employ people with tertiary education. This could imply that an SME requires some level of literacy, but the problem is that six out of the ten respondents indicated that their employees are not computer literate. Only Tlase technologies have IT experts (the two owners are specialists) as their business is technology-based. The others do not have any ICT specialists working for them.

4.5.2 Current state of ICT within the SMEs

Almost all (nine out of ten) of the respondents agree that their business uses some form of IT or ICT technology. This seems almost impossible in light of the above discussion on the high levels of computer illiteracy, but the use of user friendly tools such as telephone, fax, POS and credit card machines facilitate the use of ICT in this circumstance. Seven of the ten view technology as important in their business. The kind of technology in

use is mostly telephones and standalone computers for Internet purposes. Two of the respondents, Tlase Technologies and Hype Technologies cc, have a network environment, as they are more technology-based companies. They use their networked environment to provide services such as Internet and sharing of work with clients and partners.

4.5.3 Awareness of ICT

Almost all the respondents have some sense of understanding of IT and what the benefit might be, but not enough. They do not know ICT and how it differs from IT. They find IT/ICT complicated and do not want to try to understand it. However, none of them has any idea what the knowledge economy is. They do not have dedicated IT or ICT staff to carry out the ICT-related responsibilities. The majority of the respondents generally use friends and family who know a bit about IT/ICT to help or give advice. Their awareness level is very low. This problem is discussed in chapter 5.

4.5.4 Decision-making process with regards to ICT

All the respondents indicated that they are the main decision makers in their business with regard to all decisions, including ICT. All of them said that when there is a need for technology implementation, they go to IT shops to get advice on the matter or they ask friends and family that have knowledge of IT. The danger with this approach is that they rely on sales people who do not have any knowledge of their business to advise them on their ICT decision. The kind of information that the owner-manager gets from this process will not be strategic and in line with the business goals. This reflects the lack of ICT specialist in the SME as discussed in the literature review on page 27 (Lack of necessary IT skills).

Not all the respondents have dedicated ICT staff. They get help when there is a problem, generally from friends or family. Only two of the

respondents have expert technicians to maintain their technologies. Issues such as building stable and scalable ICT infrastructure to support business processes and future growth are not considered. Decisions are made randomly - there are no frameworks or decision structures for ICT.

4.5.5 Barriers

The respondents listed different barriers that prevent them from adopting or implementing ICT, ranging from socio-economic issues to technology-related issues: lack of money, power cuts, lack of knowledge, possibility of fraud, technology intimidation, (perceived) high cost of ICT. The listed barriers are very much in line with the literature, with the addition of power cuts as a new barrier that is probably unique to South Africa (frequent power failures being a result of recent intermittent load shedding by the national electricity supplier). Most of the barriers could possibly be overcome by learning more about ICT and by SMEs employing knowledgeable ICT staff.

4.5.6 Current processing of information

The ten interviewed SMEs use very basic ICT. They do not even keep an electronic database of their clients. Two of the ten capture their transaction details on the computer by using a point-of-sales (POS) terminal, while the other eight use manual methods for capturing their transactions. For example, the restaurants use POS to make the process more efficient and to deal with current levels of business. This POS is almost standard in the restaurant industry. The owners admit that the information collected by the POS is used mainly for accounting purpose and not for data mining. The POS does have standard features which give some analysis, but these are not exploited to their full capacity.

4.6 Conclusion

The data gathering and analysis was done using the qualitative method, after collecting the data using interviews and questionnaires. This is an interpretive research based on the experience and knowledge of the owner-managers of SMEs. The reason why this type of research was chosen is that firstly, there is little research on this topic, especially in South Africa, so the literature is limited, and secondly, the sample of respondents was too small for quantitative research.

The subjects were all from Gauteng. They meet the criterion which was that they should be the owner or manager of an SME because, being high-up in that business, they can give us a better view of ICT-related issues in that SME. There were a number of challenges that the researcher faced in collecting the data, for instance some of the owner-managers were always busy and had no time to sit down for the interview. In such cases they were left with the questionnaires and followed up with a telephone interview.

The questions were grouped into six logical sections. Data was interpreted and the findings grouped in the same sections, which made it easier to analyse them within a particular context. The findings were summarised and presented according to the same logical structure.

The sample used above is small and needs to be extended in follow-up work with some statistics to support the finding. However, due to the limited scope of the mini-dissertation, this study is limited to the representation of the qualitative results only.

The next chapter will discuss the findings and make recommendations based on those findings. Discussions and recommendations will be structured in the same logical grouping as discussed on page 41. Recommendations will

follow after every discussion of the group. Finally there will be general recommendations of the whole chapter.

CHAPTER 5 DISCUSSION AND RECOMMENDATIONS

5.1 Introduction

The findings from the SMEs' replies to the questionnaire reflect the need for further investigation on how SMEs can achieve understanding of the knowledge economy and the effect of ICT on it. The majority of the participants agree that to a large extent they rely on technology to run their businesses. They have basic ICT technologies implemented at their businesses, such as telephone, fax and point-of-sale (POS) devices, and some have Internet access.

When examining the answers it appears that the implementation of ICT has not been done from a strategic point of view, but is based more on specific needs that the SME has or might have. The fact that all the respondents indicated that they do not know anything about the knowledge economy and also that they have highlighted lack of knowledge as a problem, confirms that these SMEs implement ICT because of market forces rather than from a strategic point of view. Perry's (2007) article entitled "SMEs get CIO-on-call" touches on the fact that ICT decisions for most SMEs are not based on business strategy but on short-term requirements. Unlike big businesses, SMEs do not have a CIO or someone playing this role to make ICT decisions from a strategic point of view.

This situation is aggravated by the fact that almost all the SMEs are managed by the owners, who make all the decisions in the business, as highlighted in the questionnaire. The problem is that unless they come from an ICT background, the owners do not have any experience or knowledge of ICT and are intimidated by technology, as one respondent pointed out. Age may play a role in this, as most of the interviewed candidates were 35 years and above; further studies

should be done to confirm this. This affects ICT-related decisions, because they are not based on sound knowledge. For example, in their endeavour to sell their products, sales representatives give SME owners advice based on their products and paint a picture that looks good, without necessarily putting everything into context. If the SME owner follows the advice of the most persuasive representative, he or she may not end up with the most suitable product.

The SMEs should thus employ an ICT specialist to look after the ICT needs of the business, or get a consultant to advise the SME owner on ICT-related matters at a strategic level. This should improve awareness and knowledge of ICT, thus improving decision making related to ICT in the SME.

5.2 Workforce knowledge

The findings reflect that the education levels of the staff of the interviewed businesses range from matric to degrees, but none of them have any IT/ICT related skills. Knowledgeable and skilled ICT employees are very important in the knowledge economy for successful adoption and implementation of ICT, as highlighted in the literature review by Matula and Brakel (2007:232), who state that “well-trained human resources for developing relevant ICT applications, supporting and maintaining systems” are essential resources.

As mentioned before, there is a need to have someone championing ICT in the business and driving the adoption/implementation process. Generally this person needs to be someone with the right authority and influence; in the case of SMEs the owner can play this role. The role of the chief information office (CIO) is a good example from big organisations of someone who drives ICT and its potential benefits. This role makes sure that any technology that is adopted and used by the business is in line with the business goal and strategies.

The different roles that support ICT, such as one to introduce technology or maintain it, also need to be established. Technology planners like architects are also very important, as they are the ones who develop the architecture or technology blueprint based on the business goals and objectives. They look at issues like scalability, technology platforms, creating models, future growth, etc.

The findings validate the significant role that ICT knowledge and skills play. All the interviewed SMEs agree that they do not know much about ICT or knowledge economy, but they recognise the impact that ICT is making on the economy. They highlight a lack of ICT skills as a critical obstacle to their business using ICT as a competitive tool.

Recommendations

The first thing that needs to happen is that SMEs must establish ICT as a functional area, just like the functional areas of finance or human resources. By doing so, they will be recognising ICT as an important function that deserves to be taken seriously.

Once that is done they need to identify fitting roles for this function and establish their specifications, to know what abilities, skills and experience they are looking for when they want to fill the roles. When looking for staff to fill the positions they should make sure that they get people with the right qualifications and experience to do the job.

If the problem is that an SME cannot afford someone with the required skills, then it could hire a consultant who can give advice and training. The objective will be to get a consulting company that understands both ICT and the business aspect. The recent article on Itweb by Perry, entitled “SMEs get CIO-on-call”, discusses this option. Perry also confirms the need for ICT strategic-level thinking within the SMEs. He highlights

random decision making with regards to ICT as a problem that needs to be addressed in order to give SMEs competitive capability.

5.3 Current state of ICT within the SMEs

The interviews show that in the SMEs involved in the study, some basic technologies such as telephones, fax machines and standalone computers are already implemented for some sections of the business. This finding agrees with the literature that more than 50% of South African SMEs have a computer and telephone (fixed or mobile). This means that the basic technologies are in place but Internet connectivity and mobile technologies still need to be increased. The SMEs recognise that technology is an important part of their clients' lives, which means that it becomes important for their businesses too. All the interviewed SMEs say that their businesses are impacted by ICT in some way.

The findings also confirm the fact that current technology implementation is not planned but random. All the interviewed SMEs admit that they did not have a plan in place when they introduced the current technologies into their businesses. Hence they have only basic technologies. According to Jackson (2007), SMEs that use emerging technologies such as VoIP and mobile technologies are significantly ahead of others. Jackson (2007:10) also confirms that implementing ICT technologies tends to make a company more competitive.

Recommendations

There are lots of technologies that SMEs can exploit: Goldstuck of World Wide Worx (Jackson, 2007) highlights the use of connectivity, mobility and emerging technologies such as VoIP to leverage a business. Having a computer is not good enough; connecting it to the Internet can bring an SME closer to its clients and suppliers. This can reduce turnaround times and provide a delivery platform for goods and services. Today almost

everyone has a cellphone, which can work as a platform for marketing or selling products.

The recommendation would be that SMEs should start considering the adoption of various new technologies, making sure that such technologies are aligned with their business objectives. SMEs need to explore emerging technologies such as OSS, VoIP and mobile technologies. All this needs to be done at a strategic level, meaning that SMEs should employ the right people to assist in these studies and the implementation thereof, as discussed above in the workforce knowledge section.

5.4 Awareness of ICT

In terms of the awareness of ICT, the study revealed that SMEs do not know much about the knowledge economy and that they know very little about ICT. This is in agreement with the literature, which highlights lack of knowledge as a problem. For example, in order for you to succeed at playing soccer you need to understand the game and its rules. Similarly, businesses rely on information in order to make informed decisions that will give them a competitive advantage.

The literature review (see page 27) has shown/highlighted that many SMEs apply ICT haphazardly based on various reasons such as market influence, sales hype, supplier influence or customer influence. The application is thus not often based on sound knowledge or business strategy. This problem is caused by a lack of expert knowledge of ICT within the SME.

As Martin (2005) emphasises, the owner-manager of the SME has limitations, including gaps in knowledge or capability. If the owner-manager does not know much about ICT or the knowledge economy, this will impact the business since he or she sets the culture of the business.



Recommendations

Firstly the owner-manager needs to become aware of and understand the benefits and the role of ICT within the SME. ICT then needs to be prioritised as a functional area. Once this is done the SME should build an ICT culture within the business, by making the business process more reliant on technology and less on manual processes, and by continually exploring all the various and newest technological options with their possible benefits to the SME.

Constant communication with staff about what is happening is important to make all employees comfortable with it. The SME should also invest in training its staff about technology and encourage employees to use technology and join OSS communities. As recommended by Martin (2005), successful Internet adoption depends on different roles being set out. The SME should thus develop different ICT roles and name them in such a way that everyone can relate to them with ease. The aim is to make technology easy and understandable so that everyone feels comfortable with it and applies it effectively.

5.5 Decision-making process with regards to ICT

The finding from the interviews was that the decision-making process is one sided. These results confirm the statement in the literature that the owner is the centre of the SME business, making all or most of the decisions. This is a weakness, as the literature indicates, because the owner-manager of the SME is the decision maker in all aspects of the business, including ICT, without necessarily having proper knowledge of the ICT environment. The owner-manager's capability gaps or knowledge gaps, intuitive or organic styles, and motivations will influence his or her decisions. Perry (2007) stresses that random decision making with regards to ICT is a problem and something that needs to be addressed in order to give SMEs competitive capability.

One of the reasons for this problem is the fact that the owner-manager may not have prioritised ICT as a functional area. ICT is seen more as a “nice-to-have”, something that you should have but could do without. The owner-manager should rather think of ICT as an essential function, like accounting, and either outsource it or employ someone permanently for it.

Planning the ICT implementation is essential if any business wants to employ it successfully. This means planning what to use, how to use it, when to use it, who is going to use it, what alternatives to use if it is not working, the infrastructure of it, how to grow it, when to retire it, etc. These are very important questions to answer before implementing ICT – it is critical to have someone with the right knowledge and expertise answering them.

Recommendations

Knowledge is the answer to decision making, therefore the owner-manager needs to be equipped with ICT knowledge or surrounded by knowledgeable ICT people. The SME needs to establish ICT as a function, with ICT represented at the strategic level with input into decisions affecting the future direction of the business. The SME should have a dedicated person or group with the main aim of driving and looking after the technology needs of the SME, with the relevant powers to be able to execute such decisions.

As suggested by the literature on page 28, the ICT decision makers should include different roles, such as leader of technology (warrior), translator of technology (interpreter), documenter of technology (clerk), and holder of special knowledge (priest). The objective in assigning roles is to make ICT more manageable and less intimidating. It is thus vital to employ ICT staff with experience and knowledge of their work, to ensure

that decisions are relevant, suited to the SME and contribute to its success.

The other solution is to use consulting agents to obtain information that can help in decision-making. A good example is the “CIO-on-call services” as discussed by Perry’s (2007) article that can be used to get expert advice. The challenge is to choose the right consultant with the appropriate technical and business experience, preferably an independent one with no association with any particular products (otherwise he or she might be concerned with making sales and not have your business interests at heart). Also make sure that you have a knowledge transfer plan with the consulting company and that training of the SME staff is part of the output. Learning is a big part in knowledge management and decision making, with great benefits for the future. This aspect is crucial, especially for SMEs with their limited budgets.

5.6 Barriers

The answers in the interviews regarding the barriers to successfully implementing ICT are in line with what most authors in the literature review have identified as obstacles. The barriers that were highlighted as major problems in South Africa are lack of knowledge about both the strategic use of ICT and ICT as a concept. All the respondents agreed that understanding ICT was a challenge for them, and emphasised the lack of IT skills as a problem. They complained that IT skills were too expensive because ICT specialists have big price tags. Generally SMEs can not afford expensive skills, whether ICT or otherwise, because of their small turnover and limited budgets. The problem of the ever-changing ICT environment is one that the respondents understand and are aware of, but keeping up with the changes is a bit difficult for them. Another problem that they highlighted was a lack of trust in ICT, together with doubts

about its security, because of not understanding it and because they cannot tell if they are being robbed. They would rather use methods that they understand.

There is one obstacle that stood out, that of the present power shortage problem, which is a disaster and a threat to South African businesses. The problem is that customers start experiencing delays because the systems are offline, which destroys the benefits that technology should bring to businesses. The other obstacles discussed above can be overcome by employing experts with ICT skills and investing in ICT knowledge within the business.

Most of the respondents did not classify these obstacles into impact areas.

Recommendations

The first step is to classify all the obstacles or stumbling blocks into impact areas, such as strategic, technological, or organisational and behavioural, as recommended by Ritchie and Brindley (2005). Once that is done, a plan of action should be drawn up of how to overcome the obstacles. For example, some of the barriers can be dealt with more quickly as they do not require money, while others can be planned for when funds become available. The advantage of grouping the obstacles is that you might find that the organisational and behavioural barriers can be solved with relative ease, while solving technology-related barriers might take time.

Lack of money can be overcome by exploring OSS solutions, by sharing resources with other businesses or by buying software as a service. The latter option has been growing: we have seen consulting companies coming up with solutions in this field while service providers such as banks provide some of these solutions to their clients as value-adding services.

As an alternative to expensive in-house payroll systems, SMEs could outsource or rent these services. A good example of a bank providing

solutions is First National Bank (FNB), which offers its business account holders a payroll solution for running their monthly payrolls. As mentioned before, the benefits for the client are cheaper solutions and availability of experts, while maintenance and upgrades of the systems are done by the service provider. Similarly, ABSA give their SME clients business support solutions, including accounting software. These services are provided at a nominal cost of R245 per month (at present in 2008). If the SME were to buy the accounting software it might spend about R12 000, plus have to pay annual licence fees.

These examples indicate the availability of cost-effective solutions for SMEs and the drive to make ICT accessible to everyone. These solutions are applicable to all the groupings of barriers.

Education about ICT will solve issues such as lack of knowledge, feeling intimidated by technology, and security, which fall in the organisational and behavioural grouping of barriers. Regarding security issues, there is a possibility of fraud in any system, not only an ICT system, but awareness of how to protect yourself in the ICT environment will reduce the risks. The problem of power cuts can be overcome by investing in alternative energy sources like generators or solar power. Consulting experts is a good place to start if you do not know where to find the correct information.

5.7 Current processing of information

Most of the benefits of ICT come from the data captured from the customer, such as personal details and transactions details. The reason why the new economy is called the “knowledge economy” is due to the heavy reliance on information and data that is turned into knowledge/intelligence. This knowledge is then used by the business to help its decision-making process.

By keeping records of transactions a business can learn and discover new information about the customers, such as their buying patterns or their tastes. Business Intelligence (BI) can be used to develop the competitiveness of the business. This is one of the motivations why there is a drive for SMEs to adopt ICT. BI tools are very expensive but using the same concept of “CIO-on-call services” as discussed by Perry (2007), sharing BI can make it affordable for SMEs.

The finding of this study is that many SMEs do not keep electronic records of their customers or their transactions, which means that they do not have databases. Most of the interviewed SMEs keep only manual records of their clients’ details and transactions. Manual records are difficult to analyse, especially when there are a lot of records. Those few records that are captured on the computer are isolated from the rest of the data in the manual record, so it is difficult to put them together to form a knowledge base. For example, the information which is captured on the point-of-sales (POS) devices is not combined with the rest of the customer information.

Even if an SME has a database, the information is not exploited in any way that could highlight opportunities for marketing or growth. The concepts of data warehousing, data mining, business intelligence, customer hubs or product hubs do not exist in the SME environment.

Recommendations

SMEs should keep records of their customers’ details and capture all their transactions. They need to invest in databases, starting off with a simple access database and only moving on to more advanced databases as they mature, as databases like Oracle or Sysbase might be too expensive and too big for them in the beginning.

Storing data is very important but will not result in any benefit or competitive advantage unless the SME takes that data, starts analysing it and studying patterns in it, and uses it to draw up business strategies. So apart from the database, the SMEs need to invest in or outsource analytical tools and skills in order to explore the information for potential benefits. This again reflects the need for knowledge and skills related to ICT.

SMEs thus need to build their ICT systems in an enterprising manner for effective customer relationship management (CRM). to gain a 360 degree view of their customers.

5.8 General recommendations

In summary, the recommendations for SMEs to overcome barriers and improve implementation of ICT in their businesses are as follows:

- SMEs should invest in educating their staff and management about ICT and its benefits.
- They should invest in recruiting or outsourcing knowledgeable ICT specialists.
- They should build a culture that is favourable to technology and innovative.
- ICT decisions should be informed and based on ICT knowledge.

Based on the literature review, the following general steps to using ICT as a competitive tool are suggested:

Step 1: Set up ICT strategy based on the business goal and objectives.

Step 2: Make sure the ICT strategy is aligned with the business strategy.

Step 3: Identify the role that ICT will be playing within the SME, using the focus-dominance model (Figure 2 in Section 3.8.1).

Step 4: Choose the adoption strategy that is right for your business, considering the nature of your business from the “small firm perspective” (Section 3.2.2).

5.9 Conclusion

The study of the ten SMEs has revealed and confirmed some of the issues with regard to the use of ICT as a competitive tool. All the owners who were interviewed have some basic ICT tools in their businesses and agree that technology plays an important part in their businesses. They also acknowledge that they have limited knowledge about ICT and the knowledge economy, which affects the ICT decision-making within the business. This study has revealed the weakness within SMEs of a lack of strategic direction with regard to ICT. ICT is often implemented for survival or compliance purposes and not strategically, which could result in a competitive advantage for the SME.

The comments on the topic of barriers confirm the findings of many authors, and also introduce uniquely South African ones such as power cuts. Basic technologies like telephone, fax, POS and Internet (in some cases) are already in place in most of the SMEs interviewed, but they are not used as an integrated solution for competitive advantage.

By employing an ICT specialist or getting an ICT consultant to help the SME owner formulate an ICT plan and strategy, decision-making in the business will improve and lead to ICT being used strategically as a competitive tool. This should see the SME becoming part of the knowledge economy.

The next chapter is the conclusion; it will summarise the mini-dissertation by making sure that all the questions have been answered and also make some recommendation of future researches based of the findings of this mini-dissertation.

CHAPTER 6 CONCLUSION

The research tries to answer the question:

“How can SMEs use ICT to become competitive in South Africa?”

The research is based on the assumption we are in the new economy known as the “knowledge economy”, with ICT as the lifeblood. The most important asset in this new economy is knowledge, which is what we sell and buy. The products are more knowledgeable and the customer demands smart products. Businesses have invested a lot of money in ICT and have been exploiting it to be ahead of their competitors.

ICT is an enormous subject which covers, amongst others, normal telephones, cellphones, mobile technologies, point-of-sale systems, ERP solutions, CRM solutions, the Internet, PCs and networks. ICT is an enabler for global networking and can be used in different ways, such as:

- **general-user** where it is mainly used for administrative purposes
- **production-integrating** where it is used to support business processes and the production of goods and services
- **market-oriented** where it is used for marketing purposes and increasing the company presence on the web.

There are two schools of thought when it comes to the value of ICT. One school believes that ICT is a commodity and does not add any competitive advantage to the business or SME, while the other believes that ICT does add value to the business and can give a company a competitive advantage. Both beliefs could be correct, depending from which angle you view them. Yes, when implemented haphazardly ICT might not add any value and probably will not lead to any

competitive advantage for the business, but when ICT is implemented as part of the business strategy to support the business processes it will probably lead to a competitive advantage. Thus the manner in which SMEs adopt and implement ICT is important as this will determine whether they will gain competitive advantage or not.

SMEs play an important role in the global economy: they contribute to the GDP and reduction of unemployment, especially in developing countries. Many governments around the world are pushing for SMEs to adopt ICT in order for them to survive in the knowledge economy. The South African Government is no exception. The need for SMEs to adopt ICT is driven by governments, globalisation, innovation, flexibility and competitive advantage.

The adoption of ICT should take into consideration that SMEs are different and thus have different needs for ICT. It is important for an SME to adopt ICT solutions that are specific to its needs. A number of barriers make it difficult for SMEs to adopt ICT, such as a lack of knowledge about the strategic use of ICT, a lack of necessary IT skills, perceived high setup cost, the constantly changing ICT environment, and geographical factors. Geographical factors were not examined here, but a new barrier, that of power cuts, was identified – this problem might be unique to South Africa. More research will need to be done to determine this.

The ICT problems in South Africa are both socio-economic and technological, ranging from connectivity problems to ICT-skills needs. South African SMEs should take advantage of various emerging technologies. Even though the problem in rural areas is still bandwidth and availability of networks, mobile technologies have helped to close the gap. The number of cellphones with 3G or high-speed networks has increased. This is a market which the SMEs could be exploiting, whether for marketing purposes or for delivering products or services.

The study found that the basic ICT technologies such as telephone, fax, e-mail and Internet are already available in most SMEs. Most of the respondents agree that ICT is important and that it has an impact on their business in one way or the other. However, they have no idea what the knowledge economy is. The biggest barrier to competitive implementation of ICT in their businesses is a lack of knowledge and expertise on all ICT aspects. This leads to poor decision-making regarding ICT, a lack of trust in the value and security of ICT, failure to take advantage of the benefits that even the simple technologies could give the business, and failure to utilise no-cost/low-cost software options. This research has shown that the key reason for SMEs' failure to implement ICT to their competitive advantage is the lack of ICT knowledge, which leads to the failure to include ICT as a strategic and operational tool for business.

The suggested ways in which SMEs can use ICT to become competitive are:

- 1) **Set up an ICT strategy for the business.** This means a strategy of how technology will be used to help the business achieve its objectives and optimise its business processes. This would include choosing the type of technology, infrastructure and architecture that will best achieve business goals and maximise benefits.
- 2) **Align the business strategy with the ICT strategy.** This means that the ICT strategy should support the business strategy. ICT should not run the business.
- 3) **Identify ICT roles needed to make the adoption process successful.** These roles are, for example, the driver of ICT, the maintainer, or the administrator. SMEs should hire knowledgeable staff or consult with ICT professionals.

The research has therefore indicated the need for SMEs to implement ICT in order to be competitive. ICT adds value and will be a competitive tool when it forms part of the business strategy and when the necessary ICT skills and knowledge are within the SME. All SMEs in South Africa need to seriously

consider implementing more ICT, in order to remain competitive in today's fast-moving global knowledge economy.

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APPENDIX A

Questions

Interview question for small and medium enterprise.

1. How many employees does your business have? _____

2. What is the average level of education of your work force?

3. Does your business rely on technology?

4. Does your business use any IT or ICT technology?

5. What information and communication technologies are in place in your business?

6. What do you understand about ICT?

7. What do you understand about knowledge economy?



8. Who make decisions in your business?

9. Who makes technology/IT related decisions in your business?

10. Who maintains technology in your business?

11. How dependent is your business on technology?

12. What industry does your business fall into?

13. Do you have a computer in your business?

14. Do you have a telephone line or fax line in your business?

15. Are your employees computer literate?



16. What barriers do you find in implementing ICT solutions in your business?

17. How do you store customer information in your business?

18. How do you record transactions?

19. How do you do your financial recording or bookkeeping?

APPENDIX B

The names of the SMEs that participated in this exercise are:

1. **Therapeutic Touch Studio cc**

Therapeutic Touch Studio is a wellness spa offering stress and relaxation services to both individual and corporate clients. It employs 11 employees and they are not computer literate. The business has two computers which are used mainly for administrative purposes such as record keeping and to produce marketing materials. The business has a website and is mainly used for marketing purposes and exposure.

2. **Glitz Hair and Beauty cc**

Glitz Hair is a hair and beauty shop which offer services such as hair cuts. It employs 7 employees and they are not computer literate. It has a computer which is used for administrative purposes and capturing transactions.

3. **Parrots Coffee Shop**

Parrots coffee shop is a restaurant based in Menlyn shopping mall catering to wide range of clients. It employs 70 employees and they are computer illiterate. The store has 3 computers which are used as points of sales (POS) and to record the transactions as they happen. The employees have been taught how to use the system as a POS. The management uses the system to get their reports but they do not have any technical experience. The business has a website and is mainly used for marketing purposes and exposure.

4. **Mokuena Attorneys**

Mokuena Attorneys is a law firm which deals with commercial law and it has employed 12 employees. Half of the staff are computer literate and can use applications such as MS excel and MS word. They have 5 computers which are mainly used for drafting legal documents, but they do not keep electronic client records.



5. Boitumelo Restaurant

Boitumelo is a restaurant that serves African cuisine. It employs 15 employees and they are computer illiterate. The business has a computer which is used mainly to capture the sales transactions.

6. Tlase Technologies cc

Tlase Technologies is a company that sells computer hardware, software and accessories. They also provide internet surfing services and have 7 computers which are networked. It has 3 employees and they are all computer literate

7. Mosway Properties cc

Mosway is a property agency with franchises in Gauteng and Limpopo. The main company has 4 employees and it has 2 computers. The employees have basic computer skills and they use the computers for administration and marketing. Most of the business is still done manually. The business has a website and is mainly used for marketing purposes and exposure, but they are developing this website to be part of the core business which will enable interested clients to view properties on the site.

8. Endian Systems cc

Endian Systems is a software development company which provides IT solutions for SMEs. It has 6 employees who are ICT experts. They have 6 computers and they operate a virtual network to do their work. The business has a website and is mainly used for marketing purposes and business exposure.

9. Siyashesha Trading cc

Siyashesha Trading is a general dealer which offers security, catering, tanning and cleaning services. Siyashesha has 4 permanent employees and employs casual staff per project. It has 2 computers which are used mainly for administration purposes and producing marketing materials. The business has a website and is mainly used for marketing purposes and exposure.

10. Hype Technologies cc

Hype Technologies sell IT hardware, IT accessories and provides maintenance. Hype has 2 employees who work from Cape Town and Pretoria through a virtual network. They have 4 computers which are used for ordering and capturing the sales transactions. The business has a website and is mainly used for marketing purposes and exposure.