

**INFORMATION AND COMMUNICATION TECHNOLOGIES USE IN
SMALL AND MEDIUM ENTERPRISES
CASES OF ARUSHA AND DAR ES SALAAM**

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**A Thesis Submitted in Partial Fulfilment of the Requirements for the Award of
Master Business Administration (MBA) of Mzumbe University (Dar es salaam
campus college)**

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DECLARATION

AND

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ABSTRACT

Information technology had a great impact in all aspects of life and the global economy is currently undergoing fundamental transformation. Modern businesses are not possible without help of information technology, which is having a significant impact on the operations of Small and Medium Sized Enterprises (SME) and it is claimed to be essential for the survival and growth of economies in general. It is generally recognized that SME play a key role in the revival and development of national economy in many countries and particular in the context of Tanzania. The study investigates the way in which the SMEs use ICT to become competitive in today's economy.

This empirical study had three objectives. The first objective was to identify the current state with regard to the use of ICT by SMEs in Tanzania. The second objective was to assess the problems preventing SMEs in using ICT as a competitive tool. The third objective was to identify the contributions of ICT to SMEs growth in Tanzania

The results of the study show that only a small number of SMEs in Tanzania are aware of the benefits of ICT adoption. The main driving forces for ICT investment are to provide better and faster customer service and to stay ahead of the competition. A majority of surveyed SMEs have reported a positive performance and other benefits by utilizing ICT in their businesses. Majority of SMEs outsource most of their ICT activities.

Lack of internal capabilities, high cost of ICT and lack of information about suitable ICT solutions and implementation were some of the major barriers identified in adoption of ICT by SMEs.

The findings therefore have important implication for policy aimed at ICT adoption and use by SMEs. The findings of this research will provide a foundation for future research and will help policy makers in understanding the current state of affairs of the usage and impact of ICT on SMEs in Tanzania.

ABBREVIATIONS/ ACRONYMS

CAMARTEC	Centre for Agricultural Mechanization Rural Technology
DIT	Dar es salaam Institute of Technology
GDP	Gross Domestic Product
ICT	Information and Communication Technology
ISP	Internet Service Provider
IT	Information Technology
MS Office	Microsoft Office
PC	Personal Computer
SIDO	Small Industries Development Organisation
SME	Small and Medium Enterprise
TEMDO	Tanzania Engineering and Manufacturing Design Organisation
TTCL	Tanzania Telecommunications Company Limited
VoIP	Voice over Internet Protocol
TCRA	Tanzania Communications Regulatory Authority
TRA	Tanzania Revenue Authority

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CHAPTER ONE

PROBLEM SETTING

1.1 Introduction

The emergence of information and communications technologies (ICTs) has affected many industries and organizations. In its effort to transform Tanzania economy from a commodity-based producing nation to being a manufacturer of industrial products and more recently knowledge based economy, the government is putting greater emphasis on ICT.

ICT refers to technologies that provide access to information through telecommunications. ICT is defined as ‘any technology used to support information gathering, processing, distribution and use’. ICTs can be viewed as all form of technologies and product for a wide range of software, hardware, telecommunications and information management techniques, applications and devices, and are used to create, produce, analyse, process, package, distribute, retrieve, store and transmit or receive information electronically in a digital form such as computers, email, internet, websites, social networking and other wireless communications devices, networks, broadband, and as well as the various specialised devices and applications associated with them, such as satellite systems and videoconferencing (Becknsala & Ram 2006).

ICT is important tool that provides the opportunity for small to medium enterprises (SMEs) to improve their competitiveness in business arena. In the rapidly changing business environment of the twenty-first century, it is extremely important for SMEs to use and adopt ICT in order to maintain their competitive edge, develop a global network of product exchange and establish wider international network. The effective use of information system (IS) and information technology (IT) can provide SMEs with the opportunity to take advantage of ICT in order to enhance the way they conduct business and increase core competencies (Porter & Miller 1985 and Brady et al 2002).

The SMEs sector is the great important to Tanzania economy. SMEs is now being recognized as the backbone of the economy and play a significant role in generating employment, enhancing the quality of human resources, nurturing a culture of entrepreneurship, supporting the large scale industries and opening up new business opportunities. Being operating with small capital requirement, SMEs is always taken as a platform for young and aspiring entrepreneurs to start their businesses (Nicol 2003).

1.2 Background Information to the Problem

Today's business world has been deeply influenced by Information and Communication Technologies (ICT) and the application of ICT among business is widespread. ICT are rapidly changing global production, work and business methods and trade and consumption patterns in and between enterprises and consumers. Every business must bring ICT into their business operation and take advantage of the benefits they offer. In the developed countries including Australia and United Kingdom Small and Medium enterprises (SMEs) account for more than half of all business and over half of all employment. Nowadays small businesses are increasingly using and adopting information and communication technology due to the advent of Personal Computer, cost-effectiveness and cheaper ICT products. The use of ICT can improve business competitiveness with internet providing numerous opportunities for SMEs to compete equally with large corporations (Kazi 2007).

As the world economy continues to move toward increased integration as a result of advances in information communications technology, and the increasing reduction in trade barriers, some of the greatest opportunities for small businesses will derive from their ability to participate in the regional and international markets. The use of the ICT is considered to be a driving tool for businesses to compete on a global scale, with improved efficiency, and closer customer and supplier relationships. In this respect, SMEs should consider information and communication technology (ICT) as an important approach in their business to take competitive advantage from the global markets.

Moreover, ICT is a resource of SME which may help them to access and contribute to in order to enhance its competitiveness (Mutula, & Brakel 2006)

1.3 Problem Statement

Information and Communication Technologies (ICTs) are regarded to be a powerful tool for socio-economic development. ICT can play a substantial role to address a number of goals on the development agenda. In an attempt to identify sectors that are likely to be responsive to technological change and promise high return on investment, Small- and Medium-Enterprises (SMEs) have materialized as one potential target sector to harness ICT for development.

SMEs are often considered to be a key source of productivity, growth, and job creation, their performance and the environment, in which they perform, are seen as an important factor for economic development.

The importance of ICTs and a telecommunication structure was only recognized by the Tanzanian government in the early-to-mid 1990s. Tanzania has a low level of Internet penetration in terms of infrastructure and patterns of use. The only really successful ICT to enjoy a high degree of penetration is the cell phone. Yet at a government level, high priority is given to the Internet and the rapid adoption of computer technology.

Since there is no clear evidence to support this view in Tanzania's SMEs, this thesis will provide some empirical data on the ICT utilization of SMEs in Tanzania. If any of the broad objectives are to be targeted; a starting point must be identified from which to proceed. This thesis wants to contribute to this process. Looking at the ICT utilization in SMEs, it will try to identify the size of the gap between realities, thus, which applications are used for what purpose to what extent, and opportunity, this means, areas which offer a starting point for further and more elaborated ICT utilization.

1.4 Research Questions

14.1 General Research Question

How do SMEs use ICT to become competitive in Tanzania?

1.5 Specific Research Questions

- (i). What is the current state with regard to the use of ICT by SMEs in Tanzania?
- (ii). What are the problems preventing SMEs in using ICT as a competitive advantage tool?
- (iii). What are the contributions ICT uses to SMEs growth?

1.6 Research Objectives

1.6.1 General Objective

To find out how the SMEs use ICT to be competitive in Tanzania.

1.7 Specific Objectives

- (i). To identify the current state with regard to the use of ICT by SMEs in Tanzania.
- (ii). To assess the problems preventing SMEs in using ICT as a competitive tool.
- (iii). To identify the contributions of ICT to SMEs growth in Tanzania.

1.8 Significance of the Study

Doing research in business management is vital as it helps a business plan for the future, based on what may have happened in the past. If carried out successfully it can help a company make informed plans on how to become more viable in its sector. As in any other studies, this paper has the following purposes,

Firstly, it contributes to the knowledge on the current benefits that SMEs enjoy through using ICT to gain competitiveness.

It also identifies various ICT sources that SMEs can apply to become more competitive and eventually its growth

It also recommends alternative ways for attracting and promoting the SMEs which in return the economic growth and improved standard of living.

1.9 Scope of the Study

The study confined itself within the boundaries of Arusha and Dar es Salaam regions only.

The researcher was not able to venture other major areas such as big cities and rural areas. The research also focused this study on entrepreneurs who have invested in various projects such as product providers and services providers as well.

The study did not deal with other huge investments due to other economic and social areas due to budgetary measure and time limit.

1.10 Limitations to the Study

However the major limitations of this study are time factor, lack of enough finance and realization of information. This means there is short time available for the study, especially the period of preparing the report and lack of enough information for the study.

1.11 Delimitation of Study

The study focused on the information and communication technologies use in small and medium enterprises in Tanzania, particularly in Arusha and Dar es Salaam. Questionnaires and Interview were employed in the collection of the primary information used in the study. Secondary data were obtained from Arusha regional library, SIDO, TCRA, CARMATEC journals, forum and websites.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Technology advancement and rapid digitalization have deviated the route of doing business and market competition; information and communication technology (ICT) is the heart of this deviation. This deviation has resulted in a new economy, known as the knowledge economy and knowledge is a very crucial factor in this economy. Lucchetti and Sterlacchini (2004) highlight the reason for high growth rate of US economy in 1990s resulted in productivity and employment rise was the adoption of ICT. Galloway and Machrie (2005) supported the findings of Lucchetti and Sterlaccini that ICTs are drivers of economic growth.

Findings from other academicians such as Van Brakel and Mutula suggest that information is a crucial factor that provides SMEs with a competitive advantage in this era of globalization and economic development. However they go further by pointing out the problems of information access in developing countries for instance Tanzania, Botswana, Togo, Kenya and the Caribbean due to poor ICT facilities and infrastructures. Information access plays a critical role in the decision making process and thus SMEs gain more competitive decisions to undertake.

Despite the fact that SMEs play an important role in developing countries' economies, ICT adoption is still relatively low when compared to developed countries (Kuteyi, 2009).

2.2 Definition of Key Terms

Information

Information is an activity. Information is a life form. Information is a relationship. Information is a verb not a noun, it is something that happens in the field of interaction between minds or objects or other pieces of information. Information is an action which occupies time rather than a state of being which occupies physical space (A quote from the magazine Wired, March 1994).

Communication

Two-way process of reaching mutual understanding, in which participants not only exchange (encode-decode) information, news, ideas and feelings but also create and share meaning. In general, communication is a means of connecting people or places. In business, it is a key function of management--an organization cannot operate without communication between levels, departments and employees (Business Dictionary)

Competitive

This can be defined as a characteristic of competition. Thus, having or displaying a strong desire to be more successful than others.

Technology

The branch of knowledge that deals with the creation and use of technical means and their interrelation with life, society, and the environment, drawing upon such subjects as industrial arts, engineering, applied science, and pure science. (International Foundation for Information Technology 2011)

Information Technology

The technology used for the study, understanding, planning, design, construction, testing, distribution, support and operations of software, computers and computer related systems that exist for the purpose of Data, Information and Knowledge processing.

Information and Communication Technology

ICT can be defined as technologies that enable recording, processing, retrieving and the transmission of information or data. Herselman and Hay (2003), describe ICT as technologies that support the communication and co-operation of human beings and their organizations and the creation and exchange of knowledge. Furthermore, Yu (2010) considers ICT as a range of technologies that allow the gathering, exchange, retrieval, processing, analysis and transmission of information. In other words, ICT can be described as any tool that facilitates communication, process and transmit information and share knowledge through electronic means.

Enterprise

Enterprise can be defined as a unit of economic organization or activity; especially, thus a business organization. It also means an organized business activities aimed specifically at growth and profit.

Business enterprise - the activity of providing goods and services involving financial and commercial and industrial aspects; "computers are now widely used in business"

Small and Medium Enterprises

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.

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 decision and thus the owners' personality and attitude toward technology have an impact on the adoption of ICT by the small business.

State of affairs

This can be defined as the combination of circumstances applying within the society or group at a particular time.

2.3 Theories and Concepts

2.3.1 Theories

Technology Acceptance Model (TAM)

According to Forman and Goldfarb (2006), TAM has proven to be a robust model that is frequently used to study user acceptance of ICT. It is widely viewed as an information system theory which helps to understand the adoption and use of internet (Gibbs et al., 2007; Davis 1989). The theory helps to understand how adopters come to accept or reject the use of ICT in their small businesses. TAM model employed by Davis (1989) theorized that perceived usefulness (PU) and perceived ease of use (PEOU) as the two main determinants of user acceptance and use of technology.

The entrepreneur will accept using ICT when he/she learns that it has great benefit to the business. The user of ICT will only accept it if it gives him/her greater competitive advantages over his/her rivals in the business.

Theory of Reasoned Action (TRA)

The TRA model, which is a more general theory than TAM, includes four general concepts namely: behavioural attitudes; subjective norms; intention to use; and actual use. This theory is designed to understand the causal chain linking external variables to IT usage intention and actual use in a workplace.

Theory of Planned Behaviour (TPB)

The TPB is viewed as an extension of the TRA which ‘deals with conditions where the individual has no control of their behaviour’ (Manueli et al., 2007).

Apart from TRA and TPB, there are also other extensions of TAM such as the Brown and Licker (2003) theoretical framework which was applied in South Africa and provides useful insights that illuminate ICT adoption in terms of the perceived usefulness and perceived ease of use.

As the theory states usually an entrepreneur is characterized with the ambition to succeed and expand his business so due to that motive he/she will use ICT as a tool that will make him/her achieve the intended success.

2.3.2 Concepts

SMEs Adoption concepts of ICT

Authors on the topic of adoption of ICT hold three viewpoints which are the technology perspective management and organization 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 concept; This concept 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 successfully.

Success is measured from a technology point of view and not on the success of the business.

Management and organization of technology concept; This idea is similar to the one above but with greater emphasis on the management or organizational 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 concept; This idea 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

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 impact 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 business that have little or no ICT in their business. They do not understand the different 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 organization. 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. (See the figure below)

Figure 2.1: The User Characteristic Model

	Low user of ICTs	Medium user of ICTs	High users of ICTs
Hard Characteristics	They would use analogue Communication system	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 Informantion system	Require specialized 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 form part of the business process I producing goods and services.

(Southern & Tilley, 2000:148)

2.4 Empirical Literature

2.4.1 Local Context

Information and communication Technology covers technologies like the simple telephone, point of sale systems, standalone PCs networked environments, internet, and credit card facilities. Ritchie and Bindley (2005) define ICT as the array of primarily digital technologies designed to collect, organize, store, process and communicate information within and external to an organization and, in our case, SMEs.

Table 2.2 Current State of ICT in Tanzania

Indicators	1961	1993	2007	2010
Population (in millions)	12.3	26.6	40.4	44.7
Fixed line exchange Capacity	11,300	125,703	163,300	214,640
Mobile operators	0	1	5	5
Mobile subscribers		1,500	8,322,000	24,745,800
Tele-density (lines per 100 people)	0.10	0.32	0.4	0.18
Internet subscribers		10	50,000	200,000 +

(Source: TCRA 2010)

There are rapid improvements in ICT environment especially in the Mobile phone and internet access.

ICT is concentrated in major cities such as Dar es Salaam, Arusha and Mwanza but little access to rural areas.

Secondary School Computer Studies Syllabus for Forms I – IV exists but not implemented in many schools due to lack of ICT facilities and teachers.

Many Tanzanian websites exists most written in English which is not a dominant local language.

The potential for e-commerce is constrained by Lack of local internet-friendly credit facilities and an appropriate legal framework to ensure trust, security and accountability.

The use of ICT has affected every aspect of business, transforming not only the way that business is conducted but also creating new business sectors and jobs. It has now being challenges on how to use ICT in these businesses to increase innovation and creativity while cutting down cost and increase profitability of the firms. This blog is to bring up issues related to ICT governance, security and Risk management in Tanzania and cross countries

In Tanzania there is limited literature explaining factors influencing the adoptions and its challenges.

Using online search on Emerald (accessed on 31st July 2011), reveal that out of 17 search results none of them was addressing adoption of ICT in SMEs in Tanzania (The online search was done using phrases “adoption of ICT in SME -Tanzania) Probably this shows limited study on adoption of ICT in SMEs in Tanzania.

Matambalya, 2001, argue that Tanzania firms particularly SMEs are not utilizing available opportunity of ICT in conducting their business. A study of 144 Small Scale enterprises which had consistently plausible data, 28 did not possess information and communication technologies at all. 13 of them however used external phone services. The remaining had invested at various levels in at least one of the ICTs. A number of 39 enterprises only use phones with fixed lines and an additional number of 26 enterprises have mobile phones on top. 5 enterprises have fax machines in addition but no PC based communication technologies. Less than a third (45 enterprises) uses the most advanced ICTs email and Internet. It was also note that about 56.5% only invested not more than US \$ 200 in ICT facilities like phone and computer. Another study by Molony, 2005 argue that, many entrepreneurs in Tanzania rely much on mobile phones for their day to day business. This means other services offered by ICT such as software application like internet browsing, file sharing over internet, email, video conference, and advance software which uses database like enterprise resource planning, customer relation management and Inventory management which could add value to the SMEs in Tanzania are not yet utilized.

2.4.2 Abroad Context

Some empirical studies by Bartelsman and Doms (2000), Brynjolfsson and Yang (1996), Dedrick et al. (2003), Kohli and Devaraj (2003) and Melville et al. (2004) confirms the positive effect of information and communication technologies (ICT) on firm performance in terms of productivity, profitability, market value and market share. Their study also reveals that ICT has some effect in terms of intermediate performance measures, such as process efficiency, service quality, cost savings, organization and process flexibility and customer satisfaction. The introduction of ICT will offer various new investment opportunities within local industries,

particular in the area of SMEs. Industries that are developing may take advantage of ICT which are being recognized by many previous studies.

In fact, there is a need to accelerate the implementation of ICT to improve business performance. In order to do so, it will be important to measure the key factors driving the growth of ICT and providing appropriate recommendation on this study

Shanker (2008) ascertains that the use of ICT in many organizations has assisted in reducing transactional cost, overcome the constraints of distance and have cut across geographic boundaries thereby assisting to improve coordination of activities within organizational boundaries. Also, Spanos et al (2003) state that buyers and sellers are able to share information and transfer goods across national borders with the use of ICT, which helps to increase access to global supply chains. ICT has also led to more transparency in organizations since it enables networking and information sharing that leads to demands for greater openness and transparency (Shanker, 2008; Kollberg and Dreyer, 2006). Jiménez-Zarco et al. (2006) further argues that ICT plays an important role in acquiring, creating and managing knowledge as it enables the diffusion of organizational data that can be crucial for effective decision making and control at all levels. Likewise, ICT helps in organizational planning and improves organizational communication and flexibility.

Olugbenga (2006) argues that ICTs are being used for strategic management, communication and collaboration, customers' access, managerial decision making, data management and knowledge management since it helps to provide an effective means of organizational productivity and service delivery

2.5 Conceptual Framework

2.5.1. Problems of ICT Adoption in Developing Countries

In developed countries including Tanzania, ICT has been used to change the way businesses are conducted in order to have a strategic advantage in their various operations.

(Kunda & Brooks, 2000) argues that the problems in introducing ICT in developing countries can be classified into three generic categories, namely: contextual, strategic and operational.

Contextual problems are due to poor match of models of developed countries' design and applications to the developing countries context, semantic discrepancies in the wording and understanding of phenomena as well as references to different value systems and different concepts of rationality (Kunda & Brooks, 2000).

Strategic problems relate to local, national and regional policy initiatives, as reflected in the institutional intervention mechanisms of influence, regulation and implementation (Kunda & Brooks, 2000), whilst technical and economic constraints and lack of skilled personnel are **operational problems** faced by developing countries.

Some other problems that affect developing countries from adopting ICT are lack of skilled human resources, economic constraints, lack of systems infrastructure and application problems. Lack of skilled human resources has been described as a principal barrier blocking the diffusion and effective exploitation of ICT in developing countries (Woherem, 1993).

Economic constraints such as the non-existence of reliable background statistical information and inadequate capital to finance ICT have been identified as another set of factors. Furthermore, developing countries often lack adequate telecommunication infrastructures. There is also the issue of systems infrastructure deficiency and application problem and in most of the developing countries there is still the problem of irregular electrical power supply.

2.5.2. What are the drivers of ICT adoption in Tanzania?

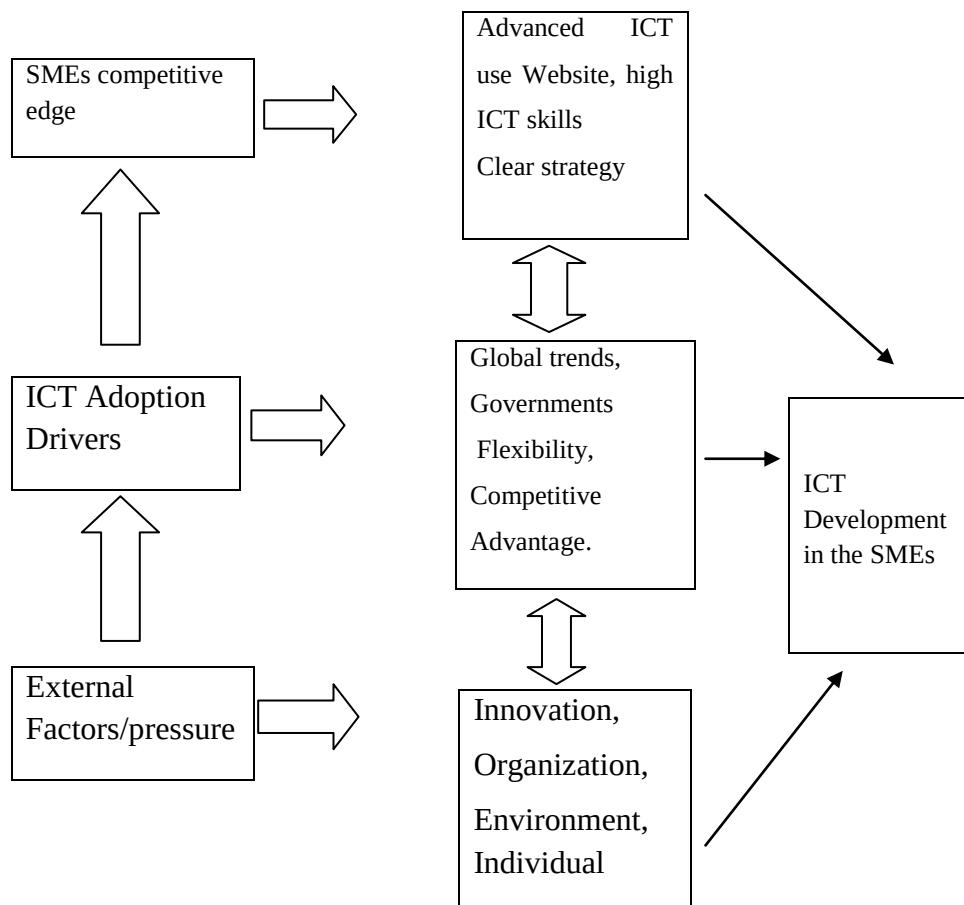
The drivers of adoption of ICT by SMEs are global trends, governments, innovation, flexibility and competitive advantage. These drivers are some of those that have been highlighted by different authors as the main drivers that are pushing SMEs to adopt ICT. The major trends of globalization are leading many governments around the world especially in Europe and the developing countries, including Africa

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

There are number of stumbling blocks or barriers that make it difficult for SMEs to adopt ICT.

Ritchie and Brindley (2005) mainly look at the barriers of diffusion agents that prevent the SME from adopting ICT. These barriers include; **(a)** Lack of knowledge about the strategic use of ICT, (b) Lack of necessary IT skills-base, (c) Perceived high setup cost, (d) Ever-changing ICT environment, and (e) Geographical factors (see the figure below)

Figure 2.2: Detailed and Dynamic Stage Model of ICT use in SMEs



2.5.4. Ways in which SMEs could use ICT to become competitive.

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.

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 advantages and flexibility, Close contact with customers, Focus on profit rather than sales, and 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 given 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 achieves business goal. The SMEs should make sure that it employs the right skills (permanent or contracted) and identified the roles that these will play in making sure that the SME is successful in leveraging ICT.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

Research methodology is a way to systematically solve the research problem. It may be understood as a science of studying how research is done scientifically. In it we study the various steps that are generally adopted by a researcher in studying his research problem along with the logic behind them.

3.2 Type of Research

Descriptive research is widely used to describe the ways which SMEs can use ICT to be competitive in developing economy of Tanzania and to list out alternative ways of improving the ICT access by SMEs in Tanzania so that can be competitive for economic growth and poverty alleviation. The methods of research utilized in descriptive research are survey methods of different kinds.

3.3 Areas of Study

Tanzania is among the developing countries in southern Sahara region, being so the country's economic development differs from region to region as there are regions which are well developed and there others which are still underdeveloped.

This study was conducted in two regions which are among the well developed economic centres/regions in Tanzania. The primary data were collected from owners of registered SMEs in Arusha and Dar es Salaam. The researchers selected these two regions due to their economic development and also because of easy access to gather information as other regions were out of reach by the researcher.

3.4 Target Population

Target population is the population to which the result of the study may be extrapolated out to, even if not all members of this population were eligible for sampling, and is not normally defined.

Without proper awareness of ICT application in the business, the business will not prosper; therefore it is a very good idea to bring that awareness to all business people.

The targeted population was all the registered SMEs in selected regions which are Arusha and Dar es Salaam. Since SMEs are non human persons then, the owners, employees and customers were interviewed hence representing the targeted SMEs

3.5 Sample and Sampling Technique

The sampling technique use in this study was simple random sampling whereby all registered SMEs had an equal chance of being selected. The study involved a sample of 50 SMEs which included owners, employees and customers.

In Tanzania there are several regions which have more economic development than others for example regions like Dar es Salaam, Arusha, Mwanza, Mbeya, Kilimanjaro, Zanzibar and Tanga are some of those economically well of regions.

Firstly Arusha and Dar es Salaam are the regions that are purposely selected as the area by which the researcher conducted his study. Secondly was the selection of small and medium enterprises categorized by numbers of employees, from each of the selected region. Thirdly selection of 40 small and medium enterprises as categorized in second step located at city centres and 10 located at local areas was done.

3.6 Sources of Data

The researcher relied on the following sources of data to collect necessary information that was of good help to his study/thesis.

3.6.1 Primary Data

Primary data are those which are collected afresh and for the first time, and thus happen to be original in character (Kothari 2004).

Researcher administered questionnaires was used. The questionnaires contained both closed and open-ended questions. These types of questionnaires ensured that the rate of non-responses was minimized to the highest degree.

Face to face interview was applied. Reason for using this kind of method was ensure that the researcher gathers the required information directly from the respondents and time limit to fill in the questionnaires.

3.6.2 Secondary Data

Secondary data are those which have already been collected by someone else and which have already been passed through the statistical process (Kothari 2004).

Documentary method was also be used by the researcher as well to gather more information about the study.

3.7. Data Collection and Analysis

3.7.1 Introduction

Data was collected using interviews and questionnaires (see appendix 2). These questionnaires were distributed to 5 SMEs in Arusha and 5 SMEs in Dar es Salaam while 20 for 10 SMEs were interviewed from these regions respectively.

There was no special reason for selecting these two regions thus Arusha and Dar es Salaam, except that it was easier to access SMEs in these areas. The owners of each SME were chosen as suitable candidate for the interviews/questionnaires due to the fact that they have a good understanding of issues surrounding their business.

There were a number of challenges when it comes to data collection, such that the owners were always busy and so not easily accessible, and some of the questions were answered with “yes” or “no” without going in detail. Generally these would result in a follow-up phone call to clarify the answers.

Since the sample is relatively small the findings cannot be generalized 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.

3.7.2 Subjects

Simple random sampling method was used in selecting the 50 SMEs that participated in the interview/ questionnaire whereby every SME had an equal chance of being selected. The subjects are from Pangani, Sabena, Mianzini, Goliondoi and streets in

Arusha town district, Mwenge, Kariakoo and Sinza districts in Dar es Salaam as it was easier for the researcher to access them. The targeted subjects were the business owners, staffs and customer of the registered SMEs because they are the ones who influence decisions making in business or they could direct me to the relevant people. Getting the decision maker is very important for gaining better understanding of the issues happening in/facing the SME. (See appendix 3)

3.7.3 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 find out, if ICT is used and how it is implemented. Appendix A shows all the questions that were asked to the owners/representatives of the SMEs. The questions were both open ended and non open ended with the objective that they will be answered with much accuracy and well detailed as needed. Forty (40) subjects were interviewed face to face with different participants from both regions. The other ten (10) were provided with questionnaires due to time limit, but a follow-up telephone interview was done to clarify some answers when needed. Before the interview and questionnaires each participant was given the letter requesting him/her to assist the researcher in getting information about the study and above all the meanings of the acronym and the purpose of the study in general was well explained to the subject. (See appendix 2)

3.7.4 Data Analysis

Data analysis means searching for patterns in the data such as, recurrent behaviour, object or a body of knowledge (Neuman, 2007, p. 335). Although in qualitative research the process is seen to be fluid, researchers have identified some processes that a qualitative researcher may follow in the analysis process. The process of data analysis involves four steps (Hesse-Biber and Leavy, 2011) which are: (a) data preparation (b) exploration (c) reduction and (d) interpretation and analysis. In line with Hesse-Biber and Leavy, Ritchie, Spencer, and O'Connor (2003) have identified the main two steps in analyzing qualitative data: data management and data analysis. Both have confirmed that the process may not be linear as it may demand the researcher to go back to data and transcript materials within the whole process of analysis. In this study, the analysis process involved four main processes: (a) memo

writing (b) transcribing the interviews (c) sorting and synthesizing data into categories and themes and (d) interpretation.

a) **Memo**

In this study memo writing started during the field work by taking notes on the important issues during and after each interview session. Memo writing helped to identify some of the information that was not covered during the interview sessions and be able to contact the participants for more clarification. After the transcription memo was done by summarizing the key points that the researcher found to be important, trying to link some ideas and concepts and identify issues that seemed to be different. Each participant had a separate section in a notebook in which the notes were written. Memo was used in addition to the transcribed materials as it helped to explain and note down some issues which occurred during the interview that could not be recorded such as, non-verbal expressions.

b) **Transcription**

The transcription of the interview was done after the data collection was completed and transcribed. The main topics were identified and examined for similarities and phrases that represented similar topics or ideas were further clustered into categories. The importance of transcribing data is that it helps the researcher to engage in a deep listening, analyzing and interpretation.

After transcription, each interview was translated into English. Translation was done to the areas that the researcher found to be important. In addition, due to the fact that Kiswahili language is used in schools it has rich vocabulary relating to education. In this respect, all concepts used in the interview guide were translated without any problem.

On the other hand, translating interviews from Kiswahili to English has encountered some problems. The translation has reduced the presentation of the natural conversation. For example, there were some sayings that could not be translated into English and some statements of emphasis that could be well expressed in the language used during the interview. Therefore, the researcher tried to ensure that the translation maintained the real meaning presented in the interview by looking for words with similar meaning without deterioration of the meaning intended by the

speaker. In order to avoid bias that may arise during the translation process the context and the meaning of the speaker were considered.

c) Sorting and synthesizing data

After the transcription, data were sorted and synthesized; both descriptive and explanatory accounts were taken into consideration in order to identify categories and patterns in the data. Data were described by identifying important views presented by the respondents and categorized into different SMEs activities. Percents were used in order to identify similar ideas and concepts and also to differentiate different views. Some of the ideas that were seen to occur many times were noted. This was done in order to see if there is any pattern in the data.

3.8 Reliability and Validity of the Data

3.8.1 Reliability of the data

Reliability is the extent to which a measurement instrument or procedure yields the same results on repeated trials (Carmines and Zeller, 1979).

Data reflect stable and consistent data collection processes across collection points and over time. Progress toward performance targets reflects real changes rather than variations in data collection approaches or methods.

Source data is clearly identified and readily available from manual, automated or other systems and records.

3.8.2 Validity of the Data

Validity is the extent to which an instrument measures what it is supposed to measure (Carmines and Zeller, 1979).

Data were recorded and used in compliance with relevant requirements, including the correct application of any rules or definitions. This ensured consistency between periods and with similar organizations, measuring what is intended to be measured.

Relevant guidance and definitions are provided for all statutory performance indicators

3.9 Ethical concerns

Ethical consideration in conducting qualitative research is very important as it helps to define what is or is not legitimate to do or what moral procedures are involved in the research process (Neuman, 2007). In this respect, issues such as informed consent, deception, confidentiality, benefit of research to participants and participants request that go beyond the social norms should be taken into consideration (Lipson, 1994: cited in Creswell, 2007, p. 141). In this study ethical issues were taken into account. The introduction letter was obtained from the Mzumbe University (Dare s Salaam Business School). Prior to the data collection, individual oral consent was obtained from all the participants. This entailed an explanation of the purpose of the study, and a guarantee of confidentiality relating to the information to be given. Participation in this study was voluntary, free from coercion and participants were told that they have the right to refuse or provide information as well as to withdraw at any time during the interview process. They were assured that no penalty will be attached to such decisions. The participants were also assured that the information to be collected would be treated in confidence and it would not be linked to anyone. That is, it is presented in such a way that it cannot be traced to a specific person. The entire interview process was conducted in private places.

CHAPTER FOUR

PRESENTATION OF FINDINGS AND ANALYSIS

4.1 Introduction

The findings are grouped according to the logical grouping of the interview questions and questionnaires used for data collection. It is important to once again highlight that, this research makes use of qualitative approach in trying to answer the research question. The replies are based on the experience of the SMEs' owners as they run their business.

4.2. Workforce knowledge

All the respondents interviewed have a workforce within the required range as discussed in the definition of SME. The number of employees range from 3 up to 14 as indicated in the table 4.1 below. This reflects that the chosen respondents were the right ones. The education of the employees in these SMEs is of different level as it ranges from standard seven to university degree depending on type of SME and task assigned to him/her. This could imply that an SME requires some level of literacy, though not all the employees are computer literate and those who have the knowledge of computer; it is just the basic applications they are aware of. See the table below;

Table 4.1 Workforce within the SME

Type of SMEs	No. of SMEs	No. Of employees	Category of enterprise
ICT goods and services dealers	5	3-5	Micro Small
Hardware-Building materials dealers	10	5-9	Small
Electronics appliances	10	4-7	Small
Wholesale and retail shops.	10	4-8	Small
Clothes, shoes, handbags, dealers	10	1-4	Micro
Others i.e. Tourism, jewellers,	5	3-14	Micro Small
Total	50	-	-

(Source: Own Field survey 2013)

4.3. Awareness of ICT

Large percent of respondents 66% have slight sense of IT understanding and its benefits, and this is convincingly not enough to say that they are aware of ICT. They

do not know ICT and how it differs from IT. They find the two terms (things) IT/ICT complicated and they do not give themselves the time to understand these two things. They do not have dedicated IT/ICT staff to carry out ICT-related responsibilities. The majority of the respondents generally use friends, family members who have a slight idea about IT/ICT and some even go back to the place/shop they purchased the item to get help or advice. Their awareness is low. The remaining 34% of respondents are completely unaware of IT/ICT and its impact to their business. See the table below;

Table 4.2 Awareness of ICT within SMEs

Type of SMEs	No. of SMEs	Yes	No	% yes	% no	% overall
ICT goods and services dealers	5	5	0	10%	0%	10%
Hardware-Building materials dealers	10	7	3	14%	6%	20%
Electronics appliances	10	8	2	16%	4%	20%
Wholesale and retail shops.	10	5	5	10%	10%	20%
Clothes, shoes, handbags, dealers	10	4	6	8%	12%	20%
Others i.e. Tourism, jewellers,	5	4	1	8%	2%	10%
Total	50	33	17	66%	34%	100%

(Source: Own Field survey 2013)

4.4. Decision making process with regards to ICT

All respondents indicated that they are the main decision makers in the matters concerning their business activities, including ICT. All respondents felt no shy to say that whenever there is a need for technology installations, problem fixing or implementations, they usually go to IT shops to get advice or any other kind of help on the matter in hand, or they ask friends and family members who have the knowledge about ICT. Looking at this approach of having a reliance on sales people/outside persons who do not know these SMEs' activities can put danger to the business as the ICT decisions advice given out may not fit to their business activities. This means that, the information the owners/managers get from this approach will not be strategic and in the line with the business goals.

4.5. Current state of ICT within the SMEs

Almost all (37 /50 that is 74%) of the respondents admit that their businesses use some form of IT or ICT tools/facilities as the figure below depicts. This seems almost impossible in light of the above discussion on high level of computer illiteracy, but

the use of user friendly tools such as fax, telephone, POS, and TRA machines facilitate the use of ICT in this circumstance. Forty out of fifty SMEs view technology as important thing in their business. The well established SMEs such as Compucat technologies, A&A Computers ltd, JR Electronics, and Softnet Technology Tanzania Ltd have a net work environment as they are more technological based companies. They use their networked environment to provide service such as internet, and sharing of work with clients and partners. See the figure below;

Figure 2.3 Current state of ICT within the SMEs

Type of SMEs and their activities	No. of SMEs	ICT available facilities.	Use of available ICT
ICT related such as soft ware, hardware, computer services and IT maintenance, computer sales	All 5 of them 10%	Telephone, Cell phones, internet, website, fax, cctv camera , e-mail, computer, accounting package software	Answers customer inquiries, receive and press orders, make transactions through M-pesa, tigo pesa airtel money, store customers 'information, make appointment, market the products, search for new markets, security purposes, and record transactions.
Hardware-Building materials such as cements, glasses, steel, pipes, hummer	8 / 10 16%	Computer, website, phones, fax , e mail address, CCTV cameras, accounting package software	Store all necessary data, press and receive orders, look for new markets and products, transactions via M-pesa, tigo pesa and airtel money, communications, security purposes, record transactions
Electronics such as TV, radios, phones, wire, bulbs, switch etc.	7 / 10 14%	Computer, website, phones, fax , e mail address, CCTV cameras, accounting package software	Store all necessary data, press and receive orders, look for new markets and products, transactions via M-pesa, tigo pesa and airtel money, communications, security purposes, record transactions
Wholesale and retail shops such as stationers, cosmetics, agro vet, pharmacy, supermarkets	7/ 10 14%	Computer, website, fixed phones, fax , e mail address, scanners, accounting package software	Store all necessary data, press and receive orders, look for new markets and products, transactions via M-pesa, tigo pesa and airtel money, communications, record transactions, scan barcode for prices of products.
Clothes, shoes, handbags, and other human's wear dealers	5/ 10 10%	Computer, fixed phones, fax , e mail address, accounting package software	Store all necessary data, press and receive orders, look for new markets and products, transactions via M-pesa, tigo pesa and airtel money, communications, record transactions
Others such as Tourism, jewelers, professional firms, printing, media and publishing	5/5 10%	Computer, website, fixed phones, fax , e mail address, accounting package software	Store all necessary data, press and receive orders, look for new markets and products, communications, record transactions, hotel booking,

ICT use in different kind of SMEs; Source, own field survey 2013

4.6. Barriers to ICT use within SMEs

The respondents listed various barriers that prevent them from using or implementing ICT, ranging from socio-economic issues to technology related issues such as lack of enough capital 66%, power cuts 78%, lack of knowledge 82%, and possibility of fraud, slow network 78%, technology threats 76%, and high cost of ICT installation 86% as indicated in table 4.4 below. These listed problems are very much in line with the literature. Most of these problems could possibly be solved by learning more about ICT by SMEs owners and allowing their staff to learn ICT applications. Also the SMEs owners can hire people with ICT knowledge to work with them and help their employers and other staff to become aware of ICT and its application. See the table below

Table 4.4 Barriers to ICT adoption/use and implantation in SMEs

Identified problems from the respondents	Frequency	Percentage
Network problems/unreliable infrastructures	39	78%
Lack of financial resources	33	66%
Lack of awareness & knowledge of ICTs	27	54%
High cost, too expensive	43	86%
Lack of skills & ICT illiteracy	41	82%
Geographical factors	29	58%
Ever changing ICT environment	38	76%

(Source: Own Field survey 2013)

4.7. Ways SMEs can use ICT to become competitive

To be successful in the 21st century, any country in the world needs to develop an idea-based can do economy and society. It means that an economy and society that are proficient at both creating ideas and translating a considerable proportion of them into new business opportunities. In this circumstance, many developed countries have already realized that their future relies on increasing investment in the capability of the knowledge economy and creating an environment to the rapid translation of new ideas into new business opportunities.(Archrol and Kotlerk, 1999; Vilaseca, 2003).

As to small and medium sized companies (SMEs), it will be able to seize this opportunities in a wide variety of ways. The following general steps to using ICT as a competitive tool are suggested:

- (i) **Step 1:** Set up an ICT strategy based on the business goal and objectives. The focus-dominance model referred to above should be used to identify and implement the suitable ICTs based on the strategic focus of the organization.
- (ii) **Step 2:** Make sure the ICT strategy is aligned with the business strategy.
- (iii) **Step 3:** Identify the role that ICT will be playing within the SME, using the focus-dominance model.
- (iv) **Step 4:** Choose the adoption strategy that is right for a specific business, considering the nature of the business from the "small firm perspective"

These steps/ways and more others are discussed in detail next chapter.

4.8. Contribution/benefits of ICT to the SMEs

The third aspect of the research looked into the value added through ICT use within SMEs in Tanzania. Information and Communication Technologies are seen as a competitive tool for enterprises (Modimogale and Kroeze 2009) and, if implemented and used correctly, can bring with it many benefits for enterprises. These benefits include permitting collaboration between the adopting business and other businesses and making the business faster through more effective processes, as well as giving businesses the ability to retrieve, store and process information much more efficient (in terms of both cost and effort) (Taylor,2004).

Table 4.5 summarises and ranks the perceived benefits through ICT use in SMEs. The key perceived benefits experienced by SME owners focus on customer-centric improvements, to mention few are; increase in customer satisfaction 92%, faster turnaround time 74%, better quality of service and improved marketability68%. See the table below

Table: 4.4 Perceived value added by ICT to the SMEs

Value added	Agree	Do not agree	Not sure
Customer satisfaction has increased	46 (92%)	-	6 (8%)
The quality of service has improved due to ICT	39 (78%)	3 (6%)	8 (16%)
Business processes are more efficient, tasks are performed more quickly	32 (64%)	9 (18%)	9 (18%)
The organisation has become more marketable	28 (56%)	12 (24%)	10 (20%)
The organisation has become more effective since the adoption of ICT	14 (28%)	11(22%)	25 (50%)
Short term targets are more achievable	37 (74%)	5 (10%)	8 (16%)
Organisation has become more profitable	29(58%)	7(14%)	14(28%)
Stock levels are always up to date Communication within the organisation has improved	34(68%)	9(18%)	7(14%)
Organisational goals are being met with more ease	39(78%)	2(4%)	9(18%)
Employees are able to work from remote locations	33(66%)	9 (18%)	8(16%)
Staff morale has increased. Product quality has been improved relationships with suppliers have been improved	34 (68%)	4 (8%)	12(24%)
Customer base has increased	37 (74%)	2 (4%)	11(22%)
Increased revenue since implementation	37 (74%)	2 (4%)	11(22%)
Operational costs have decreased since the ICT has been adopted	31(62%)	13 (26%)	6 (12%)

(Source: Own Field survey 2013)

CHAPTER FIVE

DISCUSSION OF THE FINDINGS

5.1 Introduction

The findings from the SMEs responses to the interviews questions and questionnaires reflect to the necessity of further investigation on how SMEs can understand ICT and the ways to get and apply its facilities. The majority of the respondents agree that their business activities rely much on ICT technologies. They have basic ICT facilities with them such as fixed phones, mobile phones, fax, point of sale (POS) devices, computers, digital cameras, printers, and some of them have internet access.

When going through the answers, it appears that the implementation of ICT has not been done from a planned strategy, but is based more on specific needs that the SMEs have or may have at given period of time. Unlike big businesses, SMEs do not have specialized personnel who is responsible for making ICT decisions strategically.

This situation is worsening by the fact that almost all SMEs are managed by person who are the owners and make all decisions in the business. The problem here is that these owners do not have any experience or knowledge of ICT and threats of technology unless they have ICT background.

The SMEs should therefore employ IT/ICT or chief information officer (CIO) personnel who will be responsible for all ICT needs in the business, or get a consultant to advice the SME owner on ICT related issues strategically. This will improve awareness and ICT knowledge, hence then, improving decision making related to ICT in the SMEs.

5.2. Workforce knowledge

The findings reflect that the education level of the staff of the interviewed SMEs owners range from standard seven to university degree one, but only some of them have IT/ICT related skills and few from ICT based SMEs have specialized IT staffs such Compucat technologies, JR Electronics and some few others just to mention those two as examples. Knowledgeable and skilled ICT employees are very important in the e-economy for successful adoption and application of ICT as pointed

out in the literature review by Matula and Brakel (2007:232), who state that well trained human resources for developing ICT applications, supporting and maintaining systems are essential resources.

As mentioned before, there is a need to have someone motivating as well monitoring ICT in the business and its adoption, implementations and application processes. Always this type of a person should have the influence and authority on the decision making concerning ICT related matters in the business. His/her role is to make sure that any technology that is adopted and used by the business is in line with the business goals and strategies.

5.3. Awareness of ICT

In terms of awareness of ICT, the study disclosed that SMEs do not know much about knowledge/e-economy and that they have very little knowledge of ICT. This supports the literature which pinpoints lack of knowledge as a problem. Usually it is good and very advantageous for someone to have necessary information about something before using or buying it. Similarly businesses rely on information in order to make good decisions that will give them a competitive advantage.

5.4. Decision making process with regard to ICT

The finding from the study 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 business activities of the SME, making all or most of the decisions. This is a weakness revealed by literature since the owner is the decision maker in all matters including ICT, though not having proper knowledge of ICT and its environment. This may lead to a wrong decisions which will not be implemented which may then result in a failure of achieving business objectives henceforth harm SME competitive advantage capabilities.

Planning the ICT implementation is very important if any business wants to apply it successfully. This means planning what to use, how to use it, when to use it, who will be using it, what alternatives to use when it is not working, its design, how to fix it,

time to leave it and buy the new one, etc. These are very important questions SME owner or person responsible for ICT implementation should answer before making the decision. Therefore it is very crucial to have someone with the right knowledge and expertise to answer those questions.

5.5. Current state of ICT within the SMEs

The responses from the interviews show that the SMEs involved in the study, possess some basic technologies/ICT tools such as fixed phones, mobile phone, fax, computer, digital cameras, CCTV cameras, and scanners, and are already installed for some section of the business and some of them are connected to the internet networks. This finding supports the literature that high percentage of Tanzanian SMEs have basic ICT facilities such as phones both fixed and mobile and computers. This reflects that the basic technologies are in place but internet connectivity and mobile technologies still need to be increased and improved. The owners of the interviewed SMEs agree that technology is an important part of their customer lives which means that it is also important to their business.

5.5.1. Computers and Internet Access

Out of thirty respondents who had computers, twelve have a local area network and fifteen have Internet access. The majority of firms with Internet access, ten of them, have ADSL high speed Internet access, making Cable & Wireless the main provider of Internet access to businesses.

Seven respondents indicated that more than 80 per cent of their employees have access to the Internet, though only four said that more than 80 per cent of employees use the Internet as part of their job.

Almost all firms with Internet access, twenty seven, use email. The main uses of email by businesses are to contact suppliers and to communicate with customers.

Less than fifteen respondents with Internet access had a company website. Company websites were used mainly for marketing and advertising and to provide information on the company; only three of SMEs indicated that their website is used to process customer transactions.

For companies that did not transact business on the Internet, the main reasons given were products not suited for Internet, security and privacy concerns, preference for

face-to-face transactions and lack of customer demand for online services. However, a majority of firms indicated that they benefitted from using the Internet.

5.5.2. Use of Fixed phone Service

Fixed phone service is used by only 22 businesses surveyed. This was a surprising to me as fixed line voice service is the most well established ICT. Roughly 14 respondents had one phone line, 5 have two lines and 2 have three or more lines. This service is provided by Tanzania Telecommunication Corporation Limited (TTCL)

Fax service, another well established service, is used by all type of businesses. However only two-thirds of small businesses used fax service as compared to 96 per cent of large businesses. It may be that small businesses find the newer options such as email more cost effective and practical. Among the surveyed SMEs only 15 use fax service in their businesses

5.5.3. Use of mobile phones

The role of mobile phones in maintaining customer relationships is clear from the survey. Mobile phones are used more often for keeping in contact with customers and clients compared to any other form of communication. All SMEs in the study use the mobile phone for this purpose compared to 22 using fixed-line telephones (of those who owned it). The difference is not so dramatic when ordering supplies, something that can be done using a fixed-line phone more easily since this can be an occasional occurrence.

Nevertheless, there is a difference between SMEs using mobile phones compared to those using fixed lines, which again speaks to the increasing importance of mobility and low start-up costs associated with mobile phones.

The crossover between business and personal is also more pronounced among mobile phone users compared to fixed-line phone users. Comparing fixed-line phones and mobile phones in terms of desirability, mobile phones are rated as significantly more important than any other category, including fixed-line phones.

Nowadays mobile phones are used for transaction purposes, such transactions are, m-pesa, tigo pesa, easy money and airtel money which is not the case with fixed line phones. The study also revealed that many business owners use their mobile phones to send e-mails and short messages to their customers.

Other owners and employees with ICT knowledge or aware of mobile technologies use their phones especially smart phones to connect to the internet thus, the phone is used as a modem.

5.5.4. Use of scanner in wholesale shops and supermarket

The bar codes on products are read by the Electronic Point of Sale (EPOS) tills at the checkouts. This is achieved by using a scanner, which sends out infra-red laser beams via a set of mirrors, enabling the bar code to be read at most angles.

When an item is passed over the scanner, the black and white parts of the code are detected by the laser, as the black parts reflect very little light whilst the white parts reflect most of the light. This is converted into electrical pulses which are sent along the cables to the branch computer.

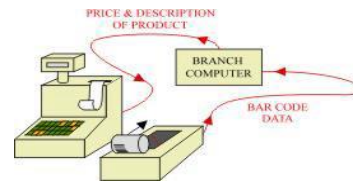
The branch computer then searches its stock file for the product matching the European Article Number (EAN) number as it is the most commonly used bar code. When this record is located the price and description of the product is extracted and sent back to the EPOS till at the checkout which then shows this item and price on the digital display, prints them on a receipt and adds the price to the total. At the same time, the branch computer records that one of this item has been sold. We will look at how this is used for stock control on other pages.

When a bar code has been correctly scanned, the scanner emits a bleep. If no such sound is made, the item can be passed over the scanner again until it has been correctly read.

The keyboard is used to enter codes of products that will not scan, for example reduced price items.



(Photo showing supermarket bar code scanner)



(Portrait of bar code scanner)

5.5.5. Postal box

Even in an environment where mobile phones are the preferred communication tool, the postal box still has a role to play. In the study, some of SMEs continue to use a postal box to communicate with customers and clients, most likely for more formal communication compared to a mobile phone, and 23 SMEs use the postal service to order supplies.

5.6. Barriers to ICT adoption and implementation in SMEs

The answers from the interviewees with regards to the barriers/problems to successfully implementing ICT within SMEs are in line with what most authors in the literature review have ascertained as obstacles to ICT adoption and implementation. The problems that were identified as major problems in various developing countries are also here in Tanzania as well. Problems such as lack of knowledge on strategic use of ICT and its whole concept, was mentioned by all respondents as the main challenge to them, they also said about expensiveness of obtaining IT skilled personnel as their price tag are high.

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

- (i) **Strategic.** This level addresses issues that impact on the direction of the business (business strategy), capital investment and network in relation to ICT SMEs should formulate their own IT/ICT strategic objectives.
- (ii) **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 I/ICT architecture.

(iii)**Organization 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 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.

5.6.1. 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 need to be considered a key player in the SME reaching its goals.

5.6.2. Lack of necessary IT skills-base

As already expressed, the owners 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 owners ICT skills, personality and attitude towards technology. The IT skill problem forms part of the bigger problem of a shortage of specialists in IT/ICT in Africa. Tanzanian Government has set up organizations (SIDO, CARMATEC, DIT and TEMDO) to try to increase ICT skills. However, the owner-managers attitudes towards ICT and its value needs to change and each SME need expertise to work with. The ideal staff level for an SME that considers ICT to be the 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 application 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)

- (i) 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.
- (ii) 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.
- (iii) 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 organize the information of the adoption process and make sure that the staff know where to get what information in order to make it easy.
- (iv) 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 organizational and behavioural levels of barriers. Getting the right skills is part of the strategic function of the organization, 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 to ICT skills. The role creation covers behavioural aspects, making staff excited about ICT.

5.6.3. 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 rand and stories of ICT solutions are synonymous with running over budget.

The other problem with regards 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 programmed 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, 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 Tanzanian Government like many others, is driving the cost of communication down through bodies such as TCRA. Such bodies are constantly torching telecommunication companies like Airtel, Tigo, TTCL, Vodacom and Zantel, 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 Tanzania.

An SME with right knowledge can use OSS solutions in order to run the business: solutions such as Skype (for free calls) quick book, tally (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.

5.6.4. Ever-changing ICT environment

The ICT environment is ever changing so constant learning and updating of technology is needed. Technology is constantly evolving, getting faster, smaller more powerful, or digital for example there are two issue 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 situations described in the focus dominate model of levy, Powell and Yetton (2001:135), 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 function 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.

5.6.5. Geographical factors

ICT makes it easier to reach remote or rural areas. Most rural areas lack resources and infrastructure and have no proper address systems. Fixed connectivity in rural areas is still a huge problem though the use of cell phone is high. Another major

problem is the high rate of illiteracy in the rural areas. On the contrary the urban areas of Tanzania 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 problem such as lack of roads and addresses will make implementation easier.

5.6.6. Lack of financial and legal infrastructure

SMEs may still be hesitant to engage in e-commerce due to undeveloped legal policy for electronic payment and security issues. Many Tanzanian banks, a key link in the e-commerce chain, have not even adopted online banking in their own systems.

In the end, the definite costs of identifying the right goods and/or service, finding staff to manage it, taking the company up the learning curve, and obtaining financial resources are not perceived to justify benefits.

5.7. Ways SMEs can use ICT to become competitive

Adoption of e-business becomes a substantial research topic because it enables the firm to perform electronic transactions on value of activities' chain. It stands for a new way to comprise Internet-based technologies with core business potentially affecting the whole business.

The present study is somehow different from other studies because its unit of analysis is the SME owners rather than the firm itself or its staff. The importance of studying the owners themselves is that they are the decision-makers, and they are often too busy to learn ICT or its potential benefits to their business. Understanding how SME owners learn to use and adopt IT will represent a knowledge gap in the IT adoption model by providing penetrations on the link between IT adoption and IT illiteracy, and will help providers of training programs to guide the SME owners for a quick learn and adopt IT and so become IT-literate

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:

- (i). Owner motivation, experience and management skills.
- (ii). Expertise in managing growth
- (iii). Access to resources (money, technology and people)
- (iv). Innovation, competitive advantages and flexibility.
- (v). Close contact with customers
- (vi). Focus on profit rather than sales
- (vii). 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:

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

These three steps and more others are discussed in detail below.

5.7.1. Setup 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 recognize the impact of ICT on their business and should invest in efforts to take advantage of it. The Tanzanian Government is busy with awareness campaigns and has set up non-profit organizations that should help SMEs obtain the necessary ICT resources and advice.

The owner-manager needs to understand that he/she cannot be everything in the business and needs to employ or outsource the ICT function. Software is becoming a service: a good example is Compucat Technologies, which is using quick book accounting software for its SME transactions with clients. 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's business strategy.

By defining the strategic objective of the SME, the SME can decide which strategic investment to make in ICT. Levy et al (2007:234) 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 focus-dominance model, proposed by Levy et al (2007:234), may be used to fit appropriate ICT solutions to individual SMEs. It is based on the following dimensions of the SME: strategic focus (cost reduction versus value adding) and customer dominance (where the technology to be used is dictated mainly by the customers). Customer dominance refers to the power of important clients, as many "SMEs are driven primarily by customer needs". The model's four domains - coordination, efficiency, collaboration and innovation - create competitive scenarios. The small business would need to identify the model into which it falls in the 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, an SME in the efficiency quadrant (where cost saving is important and the customer dominance is high) will only need basic ICTs such as accounting and word processing programs. If it is important to improve customer relations (with a more divergent base of clients), the SME fits into the coordination model (low customer dominance) and will have to maintain a customer database to keep track of the clients' preferences. Since value adding is important in the collaboration model, electronic data interchange and materials requirements planning should be facilitated due to high customer dominance, while electronic business systems are typical of innovation SMEs (low customer dominance). Once the strategic positioning is done, the focus will be on getting the right tools and technology to achieve the strategy.

5.7.2. 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 on the management and organization 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.

5.7.3. Identification of adoption roles

Identification of the roles needed for adoption will help the SME understand the skills and knowledge needed to adopt ICT. Martin (2001) highlights his findings that successful internet adoption depends on different roles of employees and the four main ones are: 1) leader of the adoption process, 2) translator of technology into ordinary language so that everyone understands how to use it, 3) administrator of technology seeing to it that the technology runs all the time, 4) technology specialist who is responsible to make sure that the right technology is used/selected and best practices are implemented. These four roles 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 an ICT group would have some of those roles but not all of them.

5.7.4. Developing the ICT workforce

In general, there is a shortage of well-qualified professionals of ICT in Tanzania. There are also no well-established ICT professional profiles, and a standardized process of evaluation or certification of the different courses offered by various training centres is lacking. Access to Online and distance learning for ICT is also still limited. Furthermore, opportunities for training are mostly limited to few urban centres. Therefore there is a need for these issues to be addressed by offering adequate training to staffs and create a syllabus in all education level so that when these students complete their studies are well aware of ICT.

5.7.5. Get Adequate ICT Training and Support

Adequate training, support and encouragement should come from senior management. The adoption of continuous training approach will play an important role in increasing the confidence and awareness of benefits of ICT with employees & managers, and the entrepreneurs can create and organization with learning culture, integrating the training in their work activities and understanding in depth the potentialities of communication and information tools.

5.7.6. Finding Right Service Partner

It is important to note that ICT is a broad and fast-changing subject. It is hard to build end to end expertise internally, and it is also difficult to give perfect definition to your requirements, the best way is to find a partner who is an expert and understands the implication of ICT and also its use in your organization properly to build knowledge gradually. A partner who is ready to work with you on an ongoing basis to keep adding the changes as you mature rather than you keep moving from L1 provider to L2 to L3 provider. Find a partner who is ready to work with you on an ongoing basis to keep making changes as you mature.

5.7.7. Government Support

The government has set a policy which aims to help and develop the ICT knowledge and application to various economic sector including SMEs, thus paving the way for the adopt it.

Provide a national framework that will enable ICT to contribute towards achieving national development goals.

Transform Tanzania into a knowledge-based society through the application of ICT.

The following are among the objectives of the policy:

- (i) Increase the use of ICT for equitable and sustainable socio-economic and cultural development of Tanzania.
- (ii) Raise the level of awareness on the role and potential of ICT.
- (iii) Create an authoritative national organization to effect, coordinate and review the ICT policy.

- (iv) Prioritize ICT investment in development assistance policies and programs.
- (v) Enhance synergy, economies of scale and productivity in all ICT matters.
- (vi) Create a favourable environment for cooperation and partnership in ICT among public and private sectors, civil society, and between all stakeholders at local, national, regional and international levels.

The government also offers support to these economic sectors including SMEs by establishing different institutions which through their activities will help these economic sectors to understand and then adopt ICT, such institution are; Dar es salaam Institute of Technology (DIT), Centre for Agricultural Mechanisation and Rural Technology (CARMATEC), Small Industries Development Organization (SIDO), Tanzania Engineering and Manufacturing Design Organization (TEMDO)

5.7.8. Benefits of ICTs for SMEs

Selwyn (2002) states that Information and Communication Technology is a term including a wide range of technological applications; digital broadcast technologies; telecommunications technologies as well as electronic information resources. ICT therefore, encompasses a range of technologies information and resources (Selwyn, 2002). Information and Communication Technologies are seen as a competitive tool for enterprises (Modimogale and Kroeze 2009) and, if implemented and used correctly, can bring with it many benefits for enterprises. These benefits include permitting collaboration between the adopting business and other businesses and making the business faster through more effective processes, as well as giving businesses the ability to retrieve, store and process information much more efficient (in terms of both cost and effort) (Taylor, 2004). Information technology has shifted from being a resource barely employed in businesses to one of extreme importance, which businesses invest in to gain competitive advantage (Carr, 2004). The main driver behind this shift or transformation is due to the assumption that information technology's increase in ubiquity and potency has increased its strategic value (Carr, 2004) Competitive advantage refers to the situation an organisation finds itself in

when it implements a value creating strategy which is not being simultaneously implemented by any of its competitors (Hoffman, 2000).

This competitive advantage becomes a sustainable one if none of the current or potential competitors in the industry are able to duplicate the benefits of the strategy implemented. This allows the firm to be the only organisation in the respective industry to have this 'edge' and reap the benefits thereof, whilst competitors are still using "older" means of doing business (Hoffman, 2000). According to Porter, businesses can gain a competitive advantage in their respective industry in two main ways, namely cost advantage, or differentiation advantage (Porter, 2001). Both sources of advantage can be gained by businesses through strategic positioning with the use of the internet (Porter, 2001).

From an operational perspective, introducing ICTs into the value chain changes the way it operates and has a direct influence on the links between the various functional units of an organisation. This relationship between ICT and an organisation's value chain with IT having the power to refine it and the linkages within it, shows that IT plays a pivotal role in creating value for an organisation (Porter and Millar, 1985).

From a competitive perspective, Information Technology can change the rules of competition in various ways. Porter and Millar (1985) suggested that there are five main competitive forces within an industry structure which determine industry profitability for an organisation. IT can affect each of these forces as follows:

- (i) Power of Buyers: IT makes information more widely available to larger target markets, thus giving buyers' greater purchasing power through better and faster information.
- (ii) Power of Suppliers: IT allows suppliers to gauge supply and demand for their products much better, as they get better information on their inputs.
- (iii) Threat of New Entrants: IT raises the barriers to entry in an industry.
- (iv) Threats of substitutes: Physical products are replaced by technology driven substitutes.
- (v) Rivalry amongst existing competitors: Organisations need to keep up to speed with new technologies in order to avoid being the last to implement a certain

technology and fall behind competitors. Process improvements using IT need to be made constantly to ensure competitive advantage.

The identified benefits that the SMEs get when using ICT in their businesses areas follows:-

Increase profit

Interviewees also believed that the adoption of ICT would assist in increasing profit in their businesses. One respondent stated that “we use ICT to strategize information that we have to get on our sales target which includes the turnovers that has to be used”.

Efficiency/Speed

Efficiency was also identified as a reason for ICT adoption. Six respondents decided to adopt ICT in order to become more efficient in their various businesses. Many respondents stated that their main reason for ICT adoption is to improve their work in terms of speed. One of the respondent comments: “The decision was due to the stress of manual processing of patients data which is cumbersome. ICT helps us to be efficient. ICT is the technology of the day, the world is a global village hence as a company, we had to move from manual to electronic data processing”

Reduce cost/saves time

Respondents all stated that ICT helps to reduce operational cost and also saves times. One respondent commented that; “ICT makes our job move faster; it is efficient and reduces cost. For instance instead of carrying some documents to places which takes time, we just send it via the internet”.

Communication

Five respondents gave their reasons for adopting ICT as for communicating with customers. A respondent states that; “ICT is mainly used in our organization for communication with our customers, suppliers, to get quotation for various products by searching the internet and also to get information from other stake holders in the business

Automation/Computerisation of records

In terms of automation and computerisation of company's records, respondents gave similar reasons for adopting ICT that is, moving from manual processing of data to automated data processing. A respondent comments; "There were too many paper work with manual processes and obtaining information from files was always difficult but with the adoption of ICT, we are now relieved. We can find information easily unlike manual system".

Information storage

Storing information was identified as another reason for adopting ICT amongst the respondents. According to one respondent; "ICT helps to store information using different ICT equipment".

Customer satisfaction

In terms of customer satisfaction, all the respondents' want to provide better customer services to their customers ensuring their customers are satisfied, hence, they decided to adopt ICT. One respondent comments; "ICT is what is in vogue nowadays. You cannot do without technology. If you are competing with other organizations that are ICT compliant, it is very important that you are able to compete as this will help to satisfy your customers. Information has a lot to do with organizational advantage in terms of customer satisfaction".

Advertisement

A respondent mentioned that the adoption of ICT helps them to advertise their products and services. The company comments: "With ICT you can advertise your products and services. If you do not connect or do not have some form of ICT, it is very likely that people may not know you have something to offer. Hence, we use ICT for advertisement

Current Trends/Technology of the day

It was noted that some of the participating firms decided to adopt ICT just because it is one of the latest developments. For example, one SME described ICT as the

technology of the day whilst four other respondents decided to adopt ICT due to the current trends. Respondents also viewed ICT adoption as a tool that could assist them to adapt to their business environments hence, they stated that it was necessary to adopt ICT.

One respondent comment; “The world globally is changing; technology is now at the forefront of every organization. There is no way you can meet up with the current trend of technology if we do not use ICT because everything is going digital. If you use manual systems you will not get enough patronage from people. So you will need to come out and do what people are doing and meet up with the standard of others. We are looking forward to getting the most sophisticated ICT infrastructures for our business. Also, another respondent states that; “ICT is the trend in the business world. For you to stay competitive and add value to your business, you must keep at pace with what goes on in the world and the world today is moving from having to go to meetings and doing your writings in long hand and having to use type writers to write your letters instead of computers. So far, for you to deliver qualitative service, you must adopt ICT. Technology enhances your business and helps to move your business forward. In order words, it makes things easier

Online presence

Ten respondents gave the opinion that having online presence helps to attract new customers and generally gives a better profile of their companies, while four respondents stated that technology is now the order of the day. One respondent states that; “The world globally is changing; technology is now at the forefront of every organization hence there is need to have online presence”.

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.1. Introduction

The purpose of this chapter is to cover conclusions and recommendations of the study in terms of the data which have been collected and analyzed with the regard of questionnaires and interview distributed to the respondents.

6.2. Conclusion

I found that ICT usage within SMEs in Tanzania is moderate in common technologies, but limited in the more sophisticated technologies such as wireless, data storage and network security solutions. It was noticed that Tanzania SMEs are taking a comprehensive approach to their ICT use focusing on both strategic and operational aspects of their business. The results of my study show that Tanzania SMEs are making reasonable application in ICT and that there is a modest competition among the SMEs. The main driving forces for ICT use was to provide better and faster customer service, to stay ahead of competition and following top management strategy. The competitive strategy for the majority of SMEs was to provide high quality products and services to their customers and to establish long term relationships with customers

Nearly half of the respondents have realized business benefits of ICT adoption such as better customer relationships, increase in revenue and in reducing costs. Two thirds of the respondents are very positive about increasing their business performance in the future.

With regard to barriers to ICT adoption, three fourths of the firms feel that a lack of necessary internal skills is a major barrier. More than half of the respondents feel that the costs of implementation are too high. Lack of availability of relevant information and advice on suitable and effective technologies is also one of the major barriers.

Other barriers include SMEs having no time to implement ICT projects, lack of powerful network connections and frequent power cuts. These findings are consistent with other studies. This emphasizes the need for more training facilities in ICT for SMEs, measures to provide ICT products and services at an affordable cost, and availability of free professional advice and consulting at reasonable cost to SMEs. My findings therefore have important implication for policy aimed at ICT adoption and use by SMEs.

Overall, it seems that only a small number of SMEs in Tanzania are aware of the benefits of ICT adoption. The findings of my research show that the SMEs lack necessary ICT knowledge and skills and mechanism to find and receive advice and support. There is a need for more focus and concerted efforts on increasing awareness among SMEs on the benefits of ICT adoption in order for SMEs to be more productive and competitive. Also, there is a need for providing affordable ICT products, services, solutions and relevant professional advice for SMEs. The findings of this research will provide a foundation for future research and will help policy makers in understanding the current state of affairs of the usage and impact of ICT on SMEs in Tanzania.

6.3. Recommendations

Workforce knowledge

The SME must establish ICT as a functional area the same as finance, marketing or human resources. By doing this, ICT will be considered as a crucial area of function that deserve seriousness.

Once that is done the SMEs owners/managers need to identify fitting roles for this functional area and establish their requirements such as abilities, skills and experience, facilities/tools they are looking for when they want to fit the roles. They should hire personnel with right qualifications and experience for the ICT job.

If these SMEs cannot afford to someone who is ICT qualified candidate, then they can hire a consultant who can give advice and training. The objective here is to get consultant who well understands both ICT and business matters.

Current state of ICT within SMEs

There are lots of technologies that SMEs can take advantage of, such as connectivity, mobility and emerging technologies like voice over internet protocol (VoIP) to control and conduct business. Having computer is not good enough, connecting it to the internet can bring an SME closer to its clients/customers and suppliers. Today everyone has a mobile phone which can work as a medium for marketing or selling products.

SMEs should now start to consider adoption of various technologies and make sure that such technologies are strategically planned and aligned with the business objectives. SMEs should open up to emerging technologies such as OSS, VoIP and mobile technologies. They can achieve these only if they do it strategically and employ the right persons who will assist them on the ICT matters.

Awareness of ICT

The owner/manager needs to become aware of and understand benefits and the role of ICT in his/her business. Then ICT has to be given priority as other functional areas. After this ICT culture should be built within the SMEs' business, the SME should start to apply ICT to its business activities and train its staff about ICT and its use and continuously be ready for the new technology arrivals which are supportive to their business goals.

Decision making process with regard to ICT

Knowledge is the key to decision making, therefore the SME owner/manager needs to have good ICT skills/knowledge or persons with ICT knowledge to enable him/her to make good/right and effective decisions. The SMEs need to establish ICT strategically and this can be performed only when there are right and effective decisions. The future of any SME relying on ICT for its business activities depend much on the decisions made by the owners/managers.

The SMEs should have dedicated person or group of persons with the main responsibility of motivating and take care of all technology needs of the SMEs with decision making authority.

As it is discussed above, the ICT decision makers should involve different roles such as leading the technology, translating the technology, documentation of technology and acquiring specific knowledge about technology and ICT as a whole. There should a person or group of persons performing these roles. The objective of assigning these roles is to make ICT easy to manage and less intimidating. This will be possible by employing persons with the ICT knowledge and experience, so as to make sure that the decisions made are right and comply with business objectives.

Barriers to ICT adoption and use in the SMEs

First thing here is to sort out all barriers into categories such as strategic, technological, behavioural, geographical, economical and environmental as suggested by Ritchie and Brindley (2005). Once that is done, a plan of action should be set up on how to solve these problems. Problems which are cost free and little time consuming should be addressed first then followed by those which the SME will need to incur cost and more time in combating them.

Education on ICT will help to solve problem of lack of knowledge and lessen the worries about technology changes, security, and the IT use in the business. Security issues involve possibility of fraud, hacking or cracking but awareness of how to protect your business in the ICT environment will reduce the risks.

The problem of power supply can be solved by installing alternative energy sources like generators and solar power servers.

Consulting experts is a good approach to use if one is unaware of a place to obtain correct information about ICT, its facilities and uses. For example one can obtain information and other technical aid from organizations such as SIDO, TEMDO and TCRA.

Further increasing Internet access is driving SMEs to exchange information with the internal and external network more efficiently. It is important to consider the way in which ICT is used and managed in an organization:

- 1) Understanding how information is controlled; the limitations of ICT for the type of information & the legal considerations.

2) Management of information – how information is captured, verified and stored for effective use; its processing and distribution and keeping the information secure.

3) Information systems strategy- how ICT can be used within a business or organization as part of achieving goals and objectives

6.4. Remarks

This study was a preliminary exploratory study to learn about a few selected aspects of ICT adoption in a developing country, Tanzania. There are number of issues such as legal, regulatory, interventions from the government, just to name a few, in the adoption of ICT that needs further investigation. A detailed study should take a more comprehensive approach considering a wide range of areas of ICT adoption. These results are based on a small sample of 50 SMEs, and all of them belong to Micro and Small enterprises. Data was collected from SMEs which use some form of ICT in their business. Some few organizations that do not use computers were also included in the study. Some of the respondents were not too cooperative and they could tell me to visit their website for more information about them. My conservative opinion is that currently, Micro businesses use some form of ICT for and many others do not use any form of ICT for reasons mentioned earlier in the paper. The results show a general trend and practices of the use and impact of ICT on SMEs in Arusha and Dar es salaam cities, which are among the regions/cities with good economic development in Tanzania. The results should be interpreted or used with these perspectives in consideration. A larger sample is needed to further validate these trends. Also, further research should focus on collecting and analyzing empirical data from SMEs and comparing the results with the findings of this study.

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APPENDICES

Appendix 1

Questionnaires for the SMEs Respondent

1. Name of Your Enterprise.....
2. When did your company begin its business operation.....?
3. What is the size of your enterprise? Please tick among the list below;
 - (i). Micro enterprise (1- 4 employees)..... ()
 - (ii). Small enterprise (5-49 employees)..... ()
 - (iii). Medium enterprise 50-99 employees)..... ()
4. Which of the following groups closely resembles your main company activities:

Horticulture () Wood and wood-products () Minerals ()

Fish and fish products () Non-processed agriculture ()

Wood & wood products () Chemicals () Pharmaceuticals ()

Machinery and equipment () Printing, media, publishing ()

Meat and meat products () Arts and Handicraft ()

Textile, clothing and leather () Retail and wholesale trade () Tourism ()

Processed Food, Beverages and Tobacco () Others ()

Please specify.....
5. Which year did your enterprise start using ICT facilities as a source communication?.....
6. How do you perceive the overall prospects ICT contribution on the growth of your business in the short and medium term, as compared to the past two years (2010-2011)? (please tick where appropriate)

	2010	2011
(i). Good (improved)	()	()
(ii). Bad (worsen)	()	()

(iii). Still the same () ()

7. To what extent has the ICT been useful for the following services?

	Please tick	Not useful at all	Very useful.
(i).	Identifying business opportunities	()	()
(ii).	Clarifying business procedures to clients	()	()
(iii).	Reducing permit approval bottlenecks	()	()
(iv).	Linking with other foreign enterprises	()	()
(v).	Linking with other local enterprises	()	()
(vi).	Reducing communication burden with customers and suppliers	()	()
(vii).	Improving the business environment	()	()
Others (please specify).....			

8. In your opinion what else should be done to improve the access to ICT?

.....

9. Which type of ICT sources does your company usually use for communication?

(i).	Media such as TV and radio	()
(ii).	Cell phones	()
(iii).	Office telephones	()
(iv).	Website and blogs	()
(v).	e-mails	()
(vi).	Social media and networks like facebook, twitter, etc	()

10. To what extent are you satisfied with these sources?

	Please tick	Disappointed	Satisfied
(i).	Media such as TV and radio	()	()
(ii).	Cell phones	()	()
(iii).	Office telephones	()	()

- (iv). Website and blogs () ()
- (v). e-mails () ()
- (vi). Social media and networks like facebook, twitter, etc () ()
11. How many employees can use ICT facilities in your enterprise? Please tick one
1-9 () 10-29 () 30-49 () 50+ () No one ()
12. How effective are those employees using ICT facilities compared to those not using them?
Very effective () Justifiable () The same () Poor ()
13. What are the main problems encountered when using these ICT sources?
- (i).
- (ii).
- (iii).
- (iv).
- (v).
14. Based on your experience in the Tanzanian business environment, please list specific measures that can potentially improve ICT use in the business environment in Tanzania
- (i).
- (ii).
- (iii).
- (iv).
- (v).

Thank you very much for your cooperation. All information will be treated with absolute confidentiality only aggregate figures will be reported.

Interview Questions

Interview questions for small and medium enterprises

1. How many employees does your company/business have?

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

.....
.....
.....
.....

3. Does your company/business rely on technology?

.....
.....
.....
.....

4. What do you understand/know about ICT?

.....
.....
.....
.....

5. Does your company/business use IT or ICT technology?

.....
.....
.....
.....

6. What information and communication technologies are in place in your company/business?

.....
.....

7. What do you understand about knowledge economy?

.....

.....

.....

.....

8. Who make decisions in your company/business?

.....

.....

.....

.....

9. Who make technology/ICT related decisions in your company/business?

.....

.....

.....

.....

10. How dependent is your company/business on ICT?

.....

.....

.....

.....

11. How do you record your company/business transactions?

.....

.....

.....

12. Where do you keep your customers information?

.....

.....

.....

Maswali (Dodoso) kwa wajasiriamali

1. Kampuni/biashara yako ina wafanyakazi wangapi?

.....

.....

.....

2. Kiwango cha elimu cha wafanyakazi wako

.....

.....

.....

3. Je kampuni/biashara ya inategemea/inatumia teknolojia?

.....

.....

.....

.....

4. Je unatumia aina gani ya teknolojia ya taarifa na mawasiliano?

.....

.....

.....

.....

5. Je unauelewa gani kuhusu teknolojia ya taarifa na mawasiliano?

.....

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.....

.....

6. Je ni nani anayefanya maamuzi katika kampuni/biashara yako?

.....

.....

.....

7. Jenl nani anayefanya maamuzi yahasuyo teknolojia katika kampuni/biashara yako?

.....
.....
.....

8. Je ni nanibanayehusika na masuala yote yahasuyu teknolojia?

.....
.....
.....
.....

9. Ni kwakiasi gani kampuni/biashara yako inategemea matumizi ya teknolojia?

.....
.....
.....
.....

10. Je kuna mtumizi ya kompyuta katika kampuni/biashara yako?

.....
.....
.....
.....

11. Je ni wafanyakazi wangapi wanauelewa wa kompyuta?

.....
.....
.....
.....

12. Je ni vikwazo gani vinavyo kwamisha matumizi ya teknolojia ya mawasilano na taarifa katika kamumi/biashara yako?

.....

.....

.....

.....

.....

13. Unashauri nini kifanyike ili kuboresha na kutatua tatizo la matumizi haya ya teknolojia?

.....

.....

.....

.....

14. Je unahifadhi vipi taarifa za wateja wako?

.....

.....

.....

.....

Appendix 2

List of few Interviewed SMEs

Lengetu Trading hardware: This is an enterprise which deals with the sale of building materials such as cements, steel, pipes, nails, limestone, gypsum and also electrical appliances such as socket switch, bulbs, and electricity wires to mention few. The enterprise has twelve employees who work in various sections within and outfield duties. One employee is computer literate and he knows and use accounting package software for recording business transactions. In this enterprise there is only one computer which is used for recording available items in the shop and transactions made. Also the shop use mobile and fixed phones to communicate with customers and suppliers. There is no any internet connection within this enterprise.

Taslim Bookshop, Stationary and Internet cafe: This enterprise deals with selling different academic and story books, school and office items, also offers internet services as the place has internet café. There are three employees in this enterprise and two of them are computer literate but they have only the basic application knowledge. In this SME there are seven computers whereby six of them are connected to the internet for internet services where customers come and use internet for communication and downloads, the other one is used for data storage.

Shamba la Kilimo Agro vet: this is an enterprise which deals with the sale of farming/agricultural materials such as pesticides, fertilizers, seeds and offer agricultural advice to farmers and pastoralists on how to use different pesticides or fertilizers to different types of seeds and how these farmers can improve their farming activities. In this enterprise there are two computers one is used by the accountant and the other is used by the owner and this is a laptop and it is connected to the internet using modem, the owner admitted that he uses his PC for communication and also browse several website to look for different opinion and instruction on types of seeds, fertilizers and pesticides.

Bahati Auto spares: This enterprise deals with the sale of automobile spares such as tires, tire rims, seat covers, oils, fan belts and other car items. It has five employees and none of them has the computer knowledge. In this enterprise there is no any computer, the records of the available items are kept in books as well as the sales and purchases records. Mobile phones are widely used for communication between workers and clients. When asked why the shop doesn't have a computer, the owner answer was he is planning to get one.

Bus stand

Munge Traders & Cosmetics: This enterprise deals with the sale of different kinds of cosmetics such as body lotion, perfumes, soaps, hair wigs, artificial fingernail, and other beauty shop material. It also offers beauty salon services at their premise. It has five employees and none of them has the knowledge about ICT. The owner has a computer/laptop and has little knowledge about ICT/computer applications; she uses her computer for several purposes both personal and business such as surfing the internet for different hair styles, new commodities, and communication with her clients, recording information about her business and for entertainment. She and her employees use mobile phones for business and personal purposes.

A.A. Manyanga Stationary and Secretarial Service: This enterprise deals with the sale of different school and office items such as books, files, folders, pens, pencils, diaries and offers secretarial services such as typing, printing, lamination, binding and scanning. There are three employees and one of them has basic computer application knowledge. It has two computers one used for secretarial services and the other used for recording business items and transactions. Telephones and mobile are also used for communication and internet surfing.

Saraya Electronics: This enterprise deals the sale of different types of mobile phones and phone accessories. The enterprise has two employees. The owner of this enterprise is a little bit aware of the computer but has no any ICT skills. The enterprise has a computer which is used for recording business information and is

also connected to the internet using modem. The internet is for communication with supplier through emails. There is a use of mobile phone also for communicating with clients, both customers and distributors as it is retail and wholesale enterprise.

R. E. Jarsen Auto Spares: This enterprise deals with the sale of automobile spares such as tires, tire rims, seat covers, oils, fan belts and other car items and offers mechanical services as well . It has six employees; two of them work inside the shop while others are mechanics. Among these employees one is computer literate but knows the basic applications only. In this enterprise there is only one computer, the records of the available items are recorded in this computer as well as the sales and purchases records. Mobile phones are widely used for communication between workers and clients.

Mahson Fan book Office & PC Solution: This is an enterprise dealing with buying and downloading movies and music through internet and then burns them to the DVDs, CDs and sells them to customers. The enterprise also offers IT solution services to different clients especially students as well as selling computer accessories. The enterprise has four employees who are all computer literate and have IT/ICT knowledge. There are two fixed computers in this enterprise and each employee plus the owner have their own PC which they use for both personal and office/business purposes. There is internet connection to their computers and use modem to connect their PCs to the internet too. They all possess smart mobile phones which they use for different purposes such as communication and modem to get access to the internet connection.

Compucat Technologies: This enterprise deals with activities like, Advanced Computer Training, Computer Sales IT Solutions, Software Solutions, and Internet Solutions as well as Telecommunications. The enterprise has thirteen employees and seven of them are computer literate whereby three of them are IT/ICT professionals. The enterprise has five computers used for different office purposes and are connected to the internet. The enterprise also has a website address which is used for advertisement and information provider to its customers.

JR Electronics: JR Electronics specializes in the field of marketing and servicing computer hardware, carries out networking and related IT repair and maintenance of IT related equipment for its customers. It provides total IT solutions under one roof. The enterprise has been divided into several profit centers with a view to ensure a high standard of technical support, computer education, service and back-up to every client. The enterprise has twenty five employees and seventeen employees among those twenty five are computer literate whereby six of them are ICT professionals. The enterprise use more than ten computers as some of them are used for training and others are used for office purposes and are connected to the internet. The enterprise also has a website address which is used for advertisement and information provider to its customers.

Softnet Technologies: It provides Information Technology products, services and solutions, such as advanced Microsoft Solutions and Services, especially in deploying Windows Networking Infrastructure, Active Directory, Messaging Solutions, Collaboration Solutions, Office Automation as well as basic Operating System deployment and Office Productivity solutions. The enterprise also provides outsourced IT support services. The enterprise has nine employees and seven of them are computer literate whereby five of them are IT/ICT professionals. The enterprise has seven computers used for different office and business related activities and are connected to the internet. The enterprise also has a website address which is used for advertisement and information provider to its customers.