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ALI Abdishakur Yusuf

IMPACT OF ICT ON SMES

– Case Rwanda



TURUN AMMATTIKORKEAKOULU
TURKU UNIVERSITY OF APPLIED SCIENCES

Author: ALI Abdishakur Yusuf

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The world is experiencing a new global economic order which is characterized by information and communication technologies. A whole tremendous change is taking place in which the spread of knowledge has given a rise to an era of knowledge and information. Internationalization and globalization on the other hand had pushed nations and firms across the world into much harder new dilemmas. Such dramatic shifts are extremely challenging for small developing economies like Rwanda. Fortunately, knowledge, and technology offer such countries like Rwanda a platform on which to build a future and become part of the global digital economy. The overall purpose of this thesis was to report on the brilliant progress of this country that has emerged from chronic poverty, mass killing, political instability, and global indifference to a nation embraced to science, technology and business investment giving special attention on the impact of ICT on small and medium-sized enterprises in Rwanda. As an instrument for collecting primary data, a questionnaire was administered to over 35 SMEs operating in different fields. The study revealed that the creative use of ICT enables SMEs not only cutting costs and improving efficiency but also for creating different levels of relationship bonds with their customers which in return gives them value proposition. Overall, the results of this research confirm that ICT has diverse and positive impact on the growth and competitiveness of SMEs.

KEYWORDS:

SME, ICT, e-commerce, e-business, e-marketing, business innovation, marketing, performance and competitiveness, knowledge-based economy, Rwanda

Tekijä: ALI Abdishakur Yusuf

TIETOTEKNIIKAN VAIKUTUS PK-SEKTORIIN – CASE RWANDA

Maailma on kokemassa uudenlaista maailmantaloudellista tieto- ja kommunikaatioteknologioiden muokkaamaa järjestystä. Tiedon ja informaation aikakausi on synnyttänyt suuren muutoksen tavassa levittää tietoa. Kansainvälistyminen ja globalisaatio ovat ajaneet kansoja ja yrityksiä ympäri maailmaa kohti vaikeampia uusia ongelmia. Tällainen dramaattinen muutos on erittäin haastavaa pienille kehittyville talouksille, kuten Ruanda. Opinnäytetyön tarkoituksena on raportoida loistavasta edistymisestä tässä maassa, joka on syntynyt kroonisesta köyhyydestä, massamurhasta, poliittisesta epävakaudesta, sekä globaalista välinpitämättömyydestä kansakunnassa huomioiden tieteen, informaatio- ja kommunikaatioteknologian (ICT) vaikutuksista yritysten investointeihin kiinnittäen erityistä huomiota pieniin ja keskisuuriin yrityksiin Ruandassa. Tietoa kerättiin ensisijaisestikyselyn avulla, joka lähetettiin yli 35 eri aloilla toimiville PK-yritykselle. Tutkimus osoitti, että luova ICT:n hyödyntäminen edesauttaa PK-yritysten mahdollisuutta sekä leikata kustannuksia ja parantaa tehokkuutta, että myös luoda erilaisia rahoitussuhteita asiakkaidensa kanssa, jotka vastapalveluksena antavat heille arvolupauksia. Tämän tutkimuksen tulokset vahvistavat, että tietotekniikalla on monipuolinen ja myönteinen vaikutus kasvuun ja kilpailukykyyn PK-sektorilla.

ASIASANAT:

PK, ICT, e-kaupankäynti, e-liiketoiminta, e-markkinointi, liiketoiminnan innovaatiot, markkinointi, suorituskyky ja kilpailukyky, osaamiseen perustuvassa taloudessa, Ruanda.

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LIST OF ABBREVIATIONS (OR) SYMBOLS

ATM	Automated teller machines
B2B	Business to Business
B2C	Business to customer
B2G	Business to government
Blogs	Also known as Web logs, allow users to post thoughts and updates about their life and experiences on the Web.
C2B	Customer to Business
C2C	Customer to customer
C2G	Customer to government
CRM	Customer relationship management
EB	Electronic banking
EB	Electronic business
EC	Electronic commerce
EM	Electronic marketing
EL	Electronic learning
G2C	Government to customer
ICT	Information and communication technologies
OECD	Organization for Economic Co-operation and Development
Rwf	Rwandan Franc
SCM	Supply chain management
SME	Small and medium-sized enterprises
Social media	Refers to the means of interactions among people in which they create, share, and exchange information and ideas in virtual communities and networks.
Social Networking	Include sites like Facebook and MySpace which allow users to build and customize their own profile sand communicate with friends.
UNCTAD	United Nations Conference on Trade and Development
Web 2.0	The term Web 2.0 is associated with web applications that allow the creation and exchange of user-generated content.

1 INTRODUCTION

1.1 Current Situation

Africa is currently experiencing the best economic performance in decades. Six of the world's top ten fastest growing economies are from Africa however the cost of doing business in Africa is still in general high as a result of policy uncertainty, inadequate physical infrastructure, poor access to investment funds and banking services, to point some. Most commonly African SMEs lack appropriate driving resources including the collective knowledge, skills, and other necessary resources that enable business to grow and add value to their goods and services in order to meet the competitive demands of their customers. A further intricacy which is restricting African SMEs to perform economically better and or have higher international commitment is that they are often labeled to have reputation of low quality products and that there are technological requirements both in regional and developed markets as well as difficulties in joining international supply-chain networks. In addition to the problems noted, there is a poor inter-firm linkage between small firms and large ones. Cooperation between small and large firms permits small enterprises in particular to reap the benefits of scale and scope economies. The skills small firms develop and knowledge they acquire in inter-firm linkage can lead to competitive advantage in the global marketplace (McCormic 1999). Although, SMEs in developed countries continue to face an array of similar challenges, the solution has been found from the effective utilization of Information and Communication Technologies (ICT).

This thesis intends to bring into light the story of emerging SMEs in a small East African country which tends to be different than above reflections. Better known as the only country that plunged the worst genocide of modern history, Rwanda - erupted into civil violence in 1994, leaving around if not more 800.000 people dead.

Given this tragic fact, Rwanda has ironically within 17 years turned out to be one of the top ten fastest growing economies in the world. It is also regarded currently as among top best performing economies in Africa and as such continues to be one of the top places to invest in Africa. In spite of the recent financial crisis, the economy of Rwanda recovered from the sharp downturn with an expansion of 7.4% in 2010 (African Economic Outlook 2011) and the outlook for 2013 remains robust.

Rwanda's economy has progressed by improving factor productivity, achieving a considerably higher level of output per worker (African Economic Outlook 2011). The country has undertaken impressive reforms to create a business-friendly environment for the private sector. It has the status of best reformer in the world and is one of the freer countries in economic terms. Currently, latest figures show that there are as much of 123.000 SMEs operating in Rwanda (African Development Bank 2011). Most small enterprises in Rwanda start off as micro businesses and grew into small businesses making 97.8% of the private sector and accounting for 36% of private sector employment. Medium sized enterprises, by contrast, are well-established ICT-oriented businesses that are individually or jointly owned. They have set administrative processes, qualified personnel and trained staff, employ between 50-100 people and account for 0.22% of businesses in Rwanda, contributing 5% of total private sector employment. Combinations of these categories show that SMEs comprise approximately 98% of the total businesses in Rwanda and account for 41% of all private sector employment (Ministry of Trade and Industry of Rwanda 2010).

However, to a large extent, Rwandan SMEs face similar challenges as other small and medium scale businesses in the continent. Rwandan SMEs face challenges in boosting their businesses across the region. This is due to many restricting policies and regulations as well as poor infrastructure which generally inhibit trade movement.

1.2 Research objective and motives

My interest in this study stems from the brilliant progress of this country that has emerged from chronic poverty, mass killing, political instability, and global indifference to a nation embraced to science, technology and business investment as well as from the view point of the infrequent studies made on ICT performance on emerging African SMEs which makes this research work more interesting. Thus, the objective of this study is twofold; first it tries to investigate the impact ICT on growing SMEs in Rwanda with particular attention on how ICT improves their competitiveness and business performance in the face of this rapidly changing and globalised world. Secondly, this research tries to place Rwandan SMEs in a broader global business framework in order to compare and contrast their innovativeness, competitiveness and performance.

1.3 Research questions

As indicated above this study seeks to answer interchangeably the following research questions:

- What are the distinctive behaviour and development characteristics of Rwandan SMEs?
- What is the role and impact of ICT and how does Rwandan SMEs benefit from using it as a competitive tool?
- What are the key driving forces of ICT adoption and usage?
- To what extent government reforms help shape the private sector particularly SMEs?
- What are the stumbling challenges Rwandan SMEs face currently?

1.4 Methodology

Research strategy selection is often dependent on the types of research questions asked, control of the behavior, environment and contemporary events. Based mainly on research questions “what” and “how”, this research is categorized as an exploratory and descriptive approach. The strategy for this

research is based on empirical study that will help build a realistic understanding of the impact of ICT on small and medium-sized enterprises.

As this research aims to interchangeably address from different angles the degree in which ICT applications and systems play in the performance and innovation of SMEs, several mainstream theories and empirical frameworks will be explored for the purpose of gaining better understanding. The structure of this thesis is consistent with the determined objectives and methodology of the research. Thus the thesis is structured into five chapters. Chapter 1 titled “introduction” presents the context of the study, research objectives, motivation and methods.

Chapters two and three review literature theories of ICT and its impact on SMEs performance, competitiveness and innovation, how SMEs cope and take advantage of ICT trends and consider opportunities brought by ICTs in their business strategy development. Further, how social media and networks help companies interact, create relationship with consumers and tap into a much larger communities that may not have been otherwise available via traditional advertising channels.

Chapter 4 titled “Rwanda” presents a nutshell view of the current economic development and business environment of the country. Further, it intends to place Rwandan SMEs in a broader global business framework in order to contrast and measure their capacity, competitiveness and performance.

Chapter 5 presents research methodology, design and rational, data collection approach, survey results and summary. And finally, the conclusion of the thesis as well as study limitations and recommendations for future research will be presented.

1.5 Significance of the study

It is hoped that the outcome of this research will add up or in other words contribute to existing studies especially with regards to the effect of ICT on

small and medium-sized enterprises in Africa as well as barriers and challenges encountered through their transition to adapting ICT.

2 LITERATURE REVIEW

As chapter one outlined the background and objectives of this study including research questions as well research significance of the study, this chapter intends to present literature reviews, knowledge and other information relevant to the theme of this study. As such, this chapter focuses on reviewing the evolution and definition of information, communications and technology (ICT), e-business, e-commerce and e-marketing as well as marketing in social media.

2.1 The evolution of ICT

The realization and evolution of Information, Communication and Technology (ICT) has arguably begun in the late 1970s and early 1980s, following the emergence of, first the minicomputer and, later the microcomputer (culminating in the personal computer). At early stages, the Information Technology was the single most dominant notion in terms of economic development and growth. However, despite the fact that IT expansion created significant economic opportunities, keeping it as discrete sector was not in economic terms wise and as such, emerged the significance of increasing communication technologies as well as information processing technologies – a shift from IT to ICT. Following was the intense placement of large volumes of investment to entice and stimulate all possible means of ICT infrastructure and development.

Today, the result is clear, ICT shapes every aspect of our lives and is paradoxically taking on a hitherto unseen dimensions whereby communication technologies are becoming forces of social change – bringing the virtual and physical worlds more closer than ever before in a more dynamic fashion. Considering the rapid evolution of ICT and government policies and strategies in place, the future of ICT is promising at large in every imaginable sector and field.

2.2 Defining ICT

The term ICT – Information, Communications and Technology can be thought of or referred to technologies that pertain to the new science of collecting, storing, processing and transmitting information whereby information, computing, and telecommunications are converging. Beckinsale and Ram (2006, 86) defined ICT as ‘any technology used to support information gathering, processing, distribution and use’. More precisely ICTs can be viewed as all forms of technologies and products for a wide range of software, hardware, telecommunications and information management techniques, applications and devices used to create, produce, analyze, 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 specialized devices and applications associated with them, such as satellite systems and videoconferencing (Porter and Millar 1985, 149-174; Brady et al 2002, Nicol 2003).

The fact that the diffusion of information and communication technologies (ICTs) is a prevailing reality in many parts of world it is particularly for developing countries held to offer remarkable opportunities for the alleviation of poverty and the creation of employment and have the potential to expand a country’s economy by making economic enterprises more accessible to local and global markets, improving access to market information, providing information for better and more competitive prices, and lowering transaction costs (Rao 2004, 261; Shiel et al 2003, 312). For small and medium sized enterprises, ICT can be exploited to create a list of contacts and to make use of available information to start and sustain new business ventures. For example, Moyi (2003:222) and Shiel et al. (2003:312) express that ICTs have the potential to link small sellers and buyers to the daily market prices of commodities in different places, giving them the ability to improve their negotiating power. So much so, Cohen and Kallirroi (2006:45) agree that information and communication technologies can radically change the

competitiveness of organizations, and note how electronic commerce has reduced the cost of trading among companies and also helped to strengthen their relationships and collaboration.

Despite ICTs' role in changing approaches to business by making it possible for business enterprises worldwide to establish direct links with customers, suppliers and distributors, enabling faster and more efficient service delivery and transactions (Castells, 1999:3;) it has become an important feature in the global transformation of social, economic and political life (Migiro, 2006:40; Donner, 2004:4) resulting the decrease of the cost of doing business globally. The unprecedented acceleration of Information, Communication and Technologies (ICT) have contributed the recognition of a wide range of new technologies, business practices and features not to mention the emergence of e-business, e-commerce, e-marketing, e-banking, e-learning etc.

The integration of information and communications technology (ICT) in business has revolutionized relationships within organizations and those between and among organizations and individuals. Specifically, the use of ICT in business has enhanced productivity, encouraged greater customer participation, and enabled mass customization, besides reducing costs. With the aim of gaining better understanding, the characteristics, differences, as well as benefits and disadvantages of the terms e-business, e-commerce and most importantly e-marketing will be discussed.

2.3 E-business

The term "e-business" has a very broad application and meanings; to some the terms e-business and e-commerce mean the same, to others they are quite different. However, at a more fundamental level, the term "e-business" is framed in this research as enhancing the overall competitiveness of an organization by deploying innovative information and communications technology throughout the entire organization and beyond, through links to partners and customers. Damanpour (2001) defines e-business as any 'net' business activity that

transforms internal and external relationships to create value and exploit market opportunities driven by new rules of the connected economy. In contrary, some scholars view e-business as the evolution of e-commerce from the perspective of buying and selling over the internet, and as such argue that the former is a subset of the later (Turban et al., 2006). Others argue that both terms interchangeably mean the same thing (Schneider, 2002). However, in the broadest context, e-business is an electronic way of doing business. Laudon and Laudon's (2002) describe e-business as the use of the internet and other digital technology for organizational communication, coordination and the management of the firm encompasses these different adaptations. Moreover, (Kalakota and Robinson 2001, 5) have proposed a clear definition that stresses the difference between e-commerce and e-business. They delineate that "e-business is not just about e-commerce transactions or about buying and selling over the Web; it is the overall strategy of redefining old business models, with the aid of technology, to maximize customer value and profits". Kalakota and Robinson's definition is of great importance because it describes e-business as an essential business-reengineering factor that can promote company's growth (European Commission, 2007).

There is a rich body of literature on the benefits of e-business. In spite of the complexity of technological choices, implementation difficulties, personnel training costs and the continuous updating of systems most companies face especially small and medium-sized enterprises, researchers identify that SMEs have a lot to gain from e-business if they target e-business activities upon their business strategies. E-business alignment with the firm's business strategy constitutes SMEs to perform better in terms of growth, productivity and profitability.

2.3.1 The four faces of e-business

Damanpour (2001, 16-33) discusses the four faces of e-business, which were originally identified by the Gartner Advisory Group each of which looks at e-

business from a different perspective (Figure 1). The four faces include the following:

(1) *Face 1: Business and Financial Models Perspective* – This face focuses on the business model and opportunities that operate as an electronic entity. Financial considerations such as reduced costs and operations efficiency are primary considerations. Such a model regards technology as an enabler of the business opportunity and sometimes requires changes in the corporate culture, financial accounting guidelines, and the corporate image. The model can be used for an existing company (brick-and-mortar), a new spin-off from brick-and-mortar, or a small unknown start-up (e.g. amazon.com when it was first launched).

(2) *Face 2: Relationships* – This face looks at e-business from a relationship perspective as new relationships and collaborations are created and forged in e-business to enter new markets or enhance customer, supplier and business relations. Some examples of the relationship perspective are customer relationship management (CRM), supply chain management (SCM) and Infrastructure management. For example, the traditional ordering and invoicing processes can be managed electronically. Electronic marketplaces, catalogues and bidding systems, and Internet searches can transform business demeanor, accelerate business activities, increase global competition, create global logistics networks, provide improved customer relationships, cost-effective services, and speed up goods and information delivery down the entire supply chain.

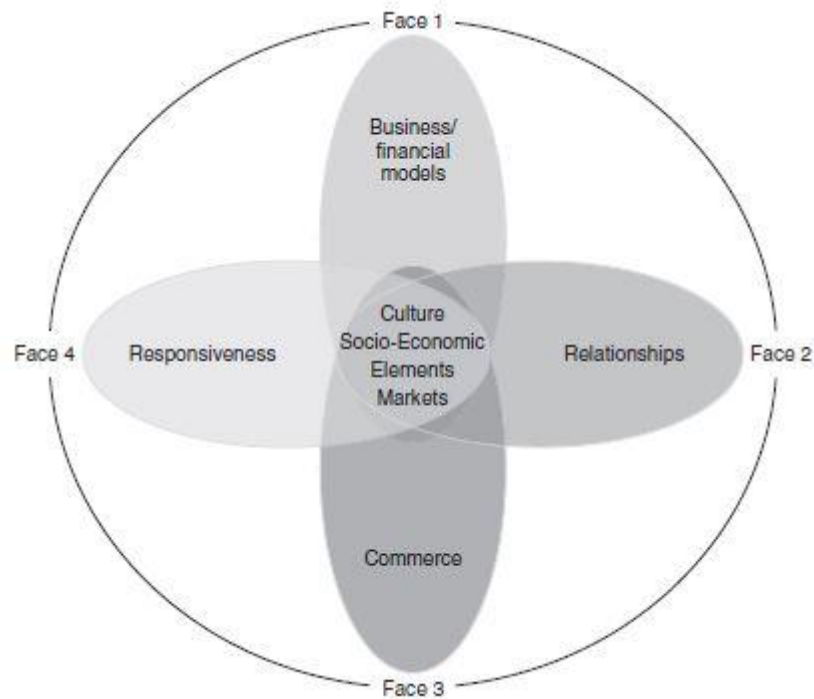


Figure 2.1. Four faces of e-business (source: adopted from Damanpour, 2001)

(3) *Face 3: Commerce* – This face focuses on electronic buying and selling, which requires the development of systems, services, models, and relationships to support effective buying and selling. Face 3 overlaps other three faces and emphasizes the importance of technology to business success and customer demands by leveraging the capability of the Internet to reach global buyers around the clock.

(4) *Face 4: Responsiveness* – This face is centered on the efficiency and timing of business transactions. Responsiveness, in e-business terms, means reducing the time between a business request and its fulfillment by increasing efficiency of the delivery of processes and their supporting computing systems for seamless operations to provide fulfillment. For example, the direct connection of a rent-a-car automobile request system to insurance companies

results in improved efficiency, reduction of errors, and hence customer satisfaction.

2.4 E-commerce

The emergence of e-commerce has profound impact on industries as well as individual firms in terms of the nature of competition as well as sources of competitive advantage (Pitts and Lei, 2000). However, despite this fact, there is no commonly or universally agreed definition of the term e-commerce. The businessdictionary.com defines e-commerce as “Business conducted through the use of computers, telephones, fax machines, barcode readers, credit cards, automated teller machines (ATM) or other electronic appliances (whether or not using the internet) without the exchange of paper-based documents. It includes activities such as procurement, order entry, transaction processing, payment, authentication and non-repudiation, inventory control, order fulfillment, and customer support. When a buyer pays with a bank card swiped through a magnetic-stripe-reader, he or she is participating in e-commerce”. The European Commission states “electronic commerce is about doing business electronically. It is based on the electronic processing and transmission of data, including text, sound, and video (UNCTAD, 2000). Others, such as, (Turban, Lee, King, McKay, Lee & Viehland 2008, 27) define e-Commerce as the process of buying, selling, transferring, or exchanging products, services, and/or information via computer networks, including the Internet.

There also exist a number of other differing definitions often depending on the different perspectives; from a communications perspective EC is the delivery of information, products or services, or payments via telephone lines, computer networks, or any other electronic means; from a business process perspective EC is the application of technology toward the automation of business transactions and work flows; from a service perspective EC is a tool that addresses the desire of firms, consumers, and management to cut service costs while improving the quality of goods and increasing the speed of service delivery; from an online perspective EC provides the capability of buying and

selling products and information on the Internet and other online services. (Kalakota & Whinston, 1997, 3)

With respect to the aforementioned descriptions, one can with certainty affirm that e-commerce is a complex phenomenon whose specific definition can vary considerably. However, that being said, it should be taken into account that there is a general consensus among researchers that summarizes e-commerce as an emerging model that enables customers to participate in all phases of a purchase decision – access product information, select items to purchase, purchase items securely and have the purchase settled financially all through electronically rather than physical store or by phone. As such, this study adopts the definition of the Organization for Economic Co-operation and Development (OECD) which delineates e-commerce as “the total of all applications that pertain to online communications and transactions (OECD, 2000).

Based on the handful exploratory definitions presented above, it is imperative to explore as well the various models of e-commerce as well as the enabling technologies and solutions. Although there are so many different components that clearly need to be systematically categorized (Chaffey et al 2009, 11) have better categorized the various models of e-commerce into following models:

Customer to Customer (C2C) model involves consumers directly transacting with other consumers in the cyberspace. (Hoffman & Novak, 1996) identified C2C interaction as important model in Internet based transactions and suggested the need for companies to take it into consideration in their market planning effort. Their assertion is exemplified by the growth of social network site in recent times.

Business to Customer (B2C) model involves transactions between business entities and consumers. More precisely, customers learn about products or services through electronic publishing, and buy them using electronic cash and

secure payment systems, and have them delivered electronically or through physical channel (Vaithianathan, 2010).

Business to Business (B2B) model involves electronic transactions in which businesses, governments, and other organizations depend on computer-to-computer communications as a fast, economical, and a dependable way to conduct business transactions (Vaithianathan, 2010). Customer to Business (C2B) model involves transactions conducted between a consumer (s) and a business organization. In other words, an online transaction in which consumer initiates trading with companies. This model is quite similar to the B2C model. Customer to Government (C2G) is type of online interaction where feedback is given to government through pressure group or individual sites. Business to Government (B2G) is type of online interaction where feedback from businesses is given to government and non-government organizations. Government to Citizen (G2C) is type of online interaction through which government offer national transactions such as local government services, national government information, and tax information.

In an attempt to understand the benefits, challenges and barriers of e-commerce particularly for emerging SMEs, efforts are made to understand these issues in which SMEs experience through their transition of participating in e-commerce. The following part will also investigate the technological outlook of the owner from the perspective that the owner's view have a major influence on whether the business does adopt e-commerce and, if it does, how much the success depends upon it.

2.4.1 Benefits

Is e-commerce the great equalizer between SMEs and larger companies? Can SMEs now compete head to head with their larger counterparts? These were research topics of a study conducted by Lomerson, McGrath, and Schwager (2004). If according to the popular trend that e-commerce is a prerequisite for the survival of small and medium-sized enterprises, what does e-commerce

yield them in terms of financial and strategic point of view? In general terms, most authors agree that e-commerce has potential benefits and will significantly increase as e-commerce expands. Generally, specific benefits small and medium-sized enterprises are to realize is framed in two main categories: financial and strategic. In financial terms, e-commerce is dramatically changing the dynamics of how businesses are conducted. With a minimum outlay, a firm can simply and quickly locate more customers, outsource best suppliers, and most importantly reach suitable business partners worldwide.

E-commerce decreases the cost of creating, processing, distributing, storing, and retrieving paper-based information. For example, by introducing an electronic procurement system, companies can cut the purchasing administrative costs by as much as 85 percent. It also enables reduced inventories and overhead by facilitating the “pull”- type supply chain management. Furthermore, e-commerce decreases the time between the outlay of capital and the receipt of products and services. In addition, financial benefits include the creation of highly specialized businesses and the initiation of completely new unique business processes and reengineering projects. In support to the above, Maloff (1996) identified four general areas of benefit. The first category specifies benefits arising from the reduction of internal and external communication reductions, e.g. the speed-up of business processes and administrative tasks. The second which relates to revenues that can be generated either from current business or from new initiatives. The third category speaks of the tangible benefits for example reduced costs and flexible working practices while the fourth category speaks of the intangible benefits such as enhanced competitive positioning and improved customer relationships.

Strategically, e-commerce is highly strategic with many potential benefits. For the survival and growth of any business small or large, Slywotzky (2000, 39) revealed that strategically e-commerce adoption is a necessity for the future success of any business. Some of the strategic benefits include expanding geographical reach as well as into new markets, increasing brand awareness,

increasing revenue and market share, improving customer services and interaction as well as competing with bigger rivals. In support, according to Lee (2001, 349-359), where once a company used raw materials, transformed those raw materials into products, displayed those products, and ultimately sold those products to customers, with e-commerce this has changed. Now, the raw materials are information about the customer, the transformation is the synthesis and packaging of this information, the products are designed, very often, by the customer and are sold with information services to entice future interaction.

2.4.2 Challenges and barriers of e-commerce

The concept of e-commerce is still pretty new and as such needs to be explicitly understood in its real sense. This is where the challenge arises. To some e-commerce sounds just a technology but in reality e-commerce is simply more than technology it is in fact a whole new modern business strategy in which if small or large firms integrate into their existing strategies can gain more in productivity, market share or even bottom-line profitability. Today SMEs in both developed and developing countries continue to fail due to either poor implementation or understanding of e-commerce strategies and technology. It has been revealed that regardless of the business environment, the biggest challenge most SMEs managers or entrepreneurs face is one of transformation – how to basically transform their brick and mortar companies into one of click and mortar company in order to be competitive in this inevitable digital economy. These challenges are predominantly enormous in developing countries particularly in Africa where the digital age is still taking its roots gradually. The challenges primarily include lack of proper commercial and legal system for conducting the business and commerce through the electronic commerce. Added to this are hindrances such as security, poor telecommunication infrastructure, lack of skilled labor and trust, privacy and psychological barriers, digital divide as well as poor e-commerce planning and strategy.

Majority of African SMEs although aware of its benefits perceive that doing business online as being of high risk due to security breaches. Security being the major stumbling block for SMEs, there is also reluctance culture among SMEs owners or managers to adjust their businesses with the requirements of e-commerce participation because they believe that it is first and foremost costly and complex as well as time consuming assuming further that such participation involves complete re-design of their business strategy.

There is also a societal illiteracy and failure to see any advantage of using e-commerce. Many researchers express that the later continues to convince many managers that e-commerce does not fit the products or services their firms offer. Indeed, while e-commerce adoption has eroded trading barriers for SMEs, this has to often come at the price of altering or eliminating commercial relationships and exposing the business to external risks (Ritchie and Brindley, 2001, 575-583). Lee (2001, 44 -57) agrees that the biggest challenge for SMEs is not to find the best E-commerce model but to change the mindset of the owner/managers themselves. For those who have developed an organization-wide strategy (in anticipation of E-commerce), these changes can lead to an increase in efficiency in the business. For those who have not, this can reduce the flexibility of the business (Tetteh & Burn, 2001, 171–180) and often lead to a duplication of the work effort (MacGregor et al, 1998). A summary of different e-commerce adoption barriers in small businesses based on an extensive literature review is presented in Table 1.

Barriers to E-commerce adoption	Related literature
E-commerce is too complex to implement	Fielding (1996), Quayle (2002)
Small businesses require short-term ROI and e-commerce is long-term	Lawrence (1997) McGowan & Madey (1998)
Resistance to change because of the fear of new technology amongst employees	Van Akkeren & Cavaye (1999), Lawrence (1997)
Preference for and satisfaction with traditional	Lawrence (1997)

manual methods (phone, fax, etc)	Venkatesan & Fink (2002)
Lack of technical skills and IT knowledge amongst employees; Lack of computer literate/specialized staff	Riquelme (2002) Van Akkeren & Cavaye (1999), Damsgaard & Lyytinen (1998)
E-commerce not deemed to be suited to the way the organization does business, or the way our clients do business	Poon & Swatman (1997) Hadjimonolis (1999) Iacovou et al (1995)
E-commerce not deemed to be suited to the products/services	Poon & Swatman (1997) Hadjimonolis (1999)
E-commerce perceived as a technology lacking direction	Lawrence (1997)
Lack of awareness about business advantages/opportunities e-commerce can provide	Iacovou et al (1995) Quayle (2002)
Lack of available information about e-commerce	Lawrence (1997)
Concern about security of e-commerce	Riquelme (2002), Van Akkeren & Cavaye (1999), Hadjimonolis (1999), Quayle (2002)
SMEs have a lack of technical knowledge and specialist staff and provide little IT training for staff	Martin & Matlay (2001) Cragg & King (1993) Bunker & MacGregor (2000) Reynolds et al (1994) Blili & Raymond (1993)
SMEs are more reluctant to spend on information technology and take risks	Walczuch et al (2000) Dennis (2000), Walczuch et al (2000), Dennis (2000)
Lack of e-commerce standards	Tuunainen (1998), Robertson & Gatignon

	(1986)
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Table 1.1. Summary of e-commerce adoption barriers in small businesses

2.5 E-marketing

In the broadest context, electronic marketing (e-marketing) can be regarded as a new business practice involved with the marketing of goods, services, information and ideas via the Internet and other electronic means. Although many authors have since the inception of e-marketing tried to explain the term it is apparent that definitions of e-marketing vary according to each author's point of view, background or specialization. Smith and Chaffey (2005, 11) describe it as: "Achieving marketing objectives through applying digital technologies".

Strauss and Frost (2001, 454) define it as: "The use of electronic data and applications for planning and executing the conception, distribution and pricing of ideas, goods and services to create exchanges that satisfy individual and organizational goals". Others like, Reedy and Schullo (2004, 16) define it as: the process aimed at facilitating and conducting business communication and transactions over networks.

Whatever the case may be, one potential problem that is likely to create confusion is the use of the terms: E-Marketing / Internet-marketing / E-commerce / E-business as equivalents by some of the researchers. It is important to distinguish between these terms because for instance internet marketing (IM) can be justified to refer only to the Internet, World Wide Web, e-mails while e-marketing includes all of that plus all other E-Marketing tools like: Intranets, Extranets and mobile phones. In contrast, e-commerce and e-business have a wider and broader scope than e-marketing. These differences can be illustrated in figure 2.



Figure 2.2. Differences between internet-marketing, e-marketing, e-commerce and e-business (El-Gohary et al. 2010)

2.5.1 E-marketing tools

E-marketing tools are evolving rapidly as new technologies emerge everyday and firms have no choice but to adopt these technological trends. A company using the internet as a part of its marketing mix is often perceived as a company at the leading edge of its sector. The new e-marketing tools have dramatically reduced traditional media dependence, including Yellow Pages and mailing-list brokers. One of the most effective popular e-marketing methods is the banner ad – a form of advertising, often small four-sided and horizontal shaped advert which very often appears in most sites. Their presence and importance for internet-based business is immense. Banner ads are typically hyperlinked to the advertiser's primary page or one with more information about the specific product or service advertised (Kaye & Medoff, 2001, 6).

According to Banner works (2010), there are three common file types of banners: static, animated, and flash. Static web banners are cost effective and simple ads, often containing graphics and text with .jpg, .png or .gif file format. Static banners are the most widely recognized and accepted file sizes. Similarly, animated banners are types of banners which use animation in the

text or images to transfer their messages. They came in as .gif file format. Because of the movement, it attracts viewers more than the static banners. Flash banner is a sophisticated animated banner that flows smoothly like a movie and can also include sound. They are usually come in .swf files format. They can also be interactive, and include rollover buttons, checkboxes, in-banner navigation systems, sound on/off buttons, play-pause buttons, close buttons and so on (Banner works 2010).

Interstitials are another form of online marketing often regarded as controversial. Pop-ups and pop-under advertisements are generally new web browser windows intended to attract web traffic. Interstitials are perceived to be intrusive because they put audiences in a forced exposure mode (Cho 2000) resulting in negative response such as feelings of irritation and ad avoidance (Li, Edwards and Lee 2002, Edwards, Li and Lee 2002, 83-95).

Sponsorship is also another type of marketing Online involving placements of the sponsor's identity (corporate logo or brand name) in sponsored Web sites to build good-will more than traffic to its site. Meenaghan (1983, 5-71) defined sponsorship as the provision of assistance either financial or in kind to an activity by a commercial organization for the purpose of achieving commercial objectives.

Added to the above are *internet discussion groups* and the *e-mail* marketing methods. Internet discussion groups are deemed to be effective in terms of marketing in that they attract a large number of daily users and visitors. Company marketers and users who are already familiar with the company products or services help satisfy both visiting and existing customers many of their concerns leading sometimes to convince them acquiring additional relevant products and services.

Electronic mailing also known as e-mail has become an important online marketing tool as well. In addition to text, e-mail messages also contain pictures, videos and sounds, and can be personalized for certain customer groups (Kotler & Armstrong 2008, 503). Recent studies on e-mail marketing

indicate that nearly half of all businesses used e-mail marketing to reach their customers.

According to Kotler and Armstrong, e-mail can be the best direct marketing medium. Internet-based companies such as Amazon.com and Dell have been using email marketing successfully. Both companies have adopted a permission-based marketing approach and they offer highly personalized messages to customers. For instance Amazon.com is known for sending marketing e-mails based on the customers' previous purchases (Kotler & Armstrong 2008, 504). However, given that fact, e-mail marketing has also some crippling problems – the spam messages. A spam message is an unwanted commercial e-mail message and at present 84% of all inbound e-mail is considered spam. Unwanted commercial e-mail messages may even distance the customer from the company and therefore companies are encouraged to ask for permission to send marketing e-mail messages. This approach is called permission-based marketing and is considered the new standard model for e-mail marketing (Kotler & Armstrong 2008, 503-504).

Rich media is a generic term for a variety of highly interactive, visually influential internet advertising formats. Research studies of on rich media ads reveal that rich media is more effective than banner ads. Including Flash, DHTML, and many 3D modeling applications, video and audio streaming, rich media ads deliver enhanced impact and result in improved user response. The premise of rich media ads lies in the assumptions that messages appealing to multiple perceptual systems are better perceived than those that call on single or fewer perceptual systems, and that high quality messages (e.g., vividness or distinctiveness) are more effective than low quality messages (Reeves and Nass 1998).

Keyword searches are also popular form of internet advertising. Also called as paid listings, keyword search rises to meet the new needs of consumers, advertisers and search and content sites. It is estimated that 30-40 percent

searches are out of commercial motivations, making keyword search a potentially lucrative lead to web sites that are designed to sell.

Different from many banner ads is the *3-D visualization*. The interfaces of 3-D visualization offer a natural approach to product inspection and represent a form of “object interactivity” (Schlosser 2004, 184-198). For example, consumers can inspect a 3-D product by rotating it for view from any angle, zooming in and out for details, and even trying some product (e.g., a digital camera or a laptop) functions through prescribed animation. Studies have shown that compared with graphical presentation of products on the Web, 3-D production visualization results in improved product knowledge, more positive brand attitude and heightened purchase intention for products for which touching is not essential for purchase decision (Li, Daugherty and Biocca 2003, 395-407).

Other methods include the *advert-games* – an ad-content, where interactive technology is used to embed brand messages in an entertaining fashion. According to Chen and Ringel (2001) there are three levels of integration: associative, illustrative and demonstrative. Associative integration is the lowest level, where a brand can be placed in the background of an activity or event. Illustrative places a brand in a prominent position in a game, such as an adventure game that features a story line. Demonstrative integration represents the highest level of brand integration, such as a slam-dunk game in which a character demonstrate the performance features of the Nike Shox basketball shoes chosen by the player in the opening sequences of the game (Chen and Ringel 2001).

2.5.2 Benefits and disadvantages of e-marketing

Many theoretical and empirical studies have provided adequate evidence that e-marketing can help firms of all sizes to improve their performance and reap benefits same as large companies do. In this part, the benefits realized through e-marketing will be discussed whilst in the meantime taking into consideration the driving factors, methods and tools used in e-marketing. A seemingly

significant benefit of e-marketing compared to traditional marketing is the number of reaching alternatives that become available for companies within a given product or a service category.

Platforms for e-marketing create an increase in reach, generate cost reduction and provide advantages for customers. Without human intervention, a company can provide a customer with a limitless amount of information. This amount of information delivered via internet communicated messages is exemplary in comparison to any other form of communication means. Such information can additionally be delivered in a very easily understandable form to the consumer. E-marketing firm is also able to create interaction with the customer in a way that customers can themselves design products and services according to their liking. Domains for e-marketing also provide a modern substitute for human contact service as consumer is able to do transactions with the firm via automated sites (Nitish & Krishnamurthy, 2005, 612-613).

E-marketing affects traditional marketing in two ways. First, it increases efficiency in established marketing functions. Second, the technology of e-marketing transforms many marketing strategies resulting in new business models that add customer value and/or increase company profitability (Strauss and Frost, 2001). Moreover, Kotler (2006) indicated that the Internet eliminates the economic consequences of geographic distance to insignificant levels, which opens up substantial opportunities for reaching international as well as domestic markets. In the view of the increasing number of firms aiming to expand outside markets in order to maximize their sales revenue via tapping the untapped markets; e-marketing indeed have the potential to achieve greater cost savings, reach more potential customers as well as exchange continuously information with them simply by streamlining their business processes and strategies with the current internet and technology practices. Smith and Chaffey (2005) defined 5Ss of e-marketing which suggest five broad benefits or reasons for adopting e-marketing which marketers can use to set objectives.

Benefit of e-marketing	How benefit is delivered	Typical objectives
Sell – Grow sales	Achieved through wider distribution to customers you can't readily service offline or perhaps through a wider product range than in-store, or lower prices compared to other channels	<ul style="list-style-type: none"> • Achieve 10% of sales online in market • Increase online sales for product by 20% in year
Serve – Add value	Achieved through giving customers extra benefits online or inform product development through online dialogue and feedback	<ul style="list-style-type: none"> • Increase interaction with different content on site • Increase dwell-time duration on site by 10% (sometimes known as 'stickiness') • Increasing number of customers actively using online services (at least once per month) to 30%
Speak – Get closer to customers	This is creating a two-way dialogue through web and e-mail forms and polls and conducting online market research through formal surveys and informally monitoring chat rooms to learn about them. Also speak through reaching them online through PR	<ul style="list-style-type: none"> • Grow e-mail coverage to 50% of current customer database • Survey 1000 customers online each month • Increase visitors to community site section by 5%
Save – Save costs	Achieved through online e-mail communications, sales and service transactions to reduce staff, print and postage costs	<ul style="list-style-type: none"> • Generate 10% more sales for same communications budget • Reduce cost of direct marketing by 15% through e-mail • Increase web self-service to 40% of all service enquiries and reduce overall cost-to-serve by 10%
Sizzle – Extend the brand online	Achieved through providing a new proposition and new experience online while at the same time appearing familiar	<ul style="list-style-type: none"> • Improve branding metrics such as: brand awareness, reach, brand favourability and purchase intent

Table 2.1. The 5Ss of e-marketing (Smith and Chaffey 2005).

To put into context, the main task of e-marketing is to take advantage of the web in order to develop a positive, enduring relationship with customers using the Internet (Kotler et al, 2006, 555; Laudon & Traver, 2002, 379-380) Hence, the primary purpose of online marketing is to spawn sales directly and rapidly through a transactional web site of the marketer (Berkowitz, Kerin, Hartley, Rudelius, 2000, 216).

Although not having any presence on the internet at all increasingly leads to a competitive disadvantage. Typical risks encountered include security issues. As confidentiality of personal communications is extremely important in business

marketing the potential loss of proprietary data over the internet remains a critical issue. On the other hand, in most cases, information gathering and use of personal information for marketing purposes is often seen as suspicious unless otherwise clearly stated and guaranteed. Privacy invasion and the possibility of becoming conned online are of huge concern. The fact that marketers increasingly gather detailed personal information from consumers to increase the efficiency and effectiveness of their marketing strategy, private information on consumers has now become a commodity that is routinely bought, sold, and traded (Gillmor, 1998, 38-39).

Moreover, it is now virtually impossible for consumers to transact business online without having to reveal personal information (Rust, Kannan and Peng, 2002, 455-464). Personal information is also often asked for when consumers are required to register at web sites before being able to browse free content. In addition, consumers' personal information could be obtained involuntarily by the use of cookies that track people's online surfing behavior (Pierson and Heyman, 2011, 30-42). Vast amounts of individual information can be easily collected over the Internet, and digital networks can link all this private information in databases (Caruso, 1998, 57-61).

Consequently, this information can then be bought, sold and traded, possibly without the consumers' permission, which increases consumers' concerns regarding having to reveal personal information online, and regarding the way in which such information might be used (Yao, Rice and Wallis, 2007; Ohm, 2010; Fletcher, 2003, 710-722). Online privacy concerns are felt globally, as the Internet is a global medium, and allows the transfer of massive amounts of consumer information instantly across national borders (Nijhawan, 2003, 939-976.). Building on the evidences stated above, there are still other drawbacks of online marketing. For example, many consumers are worried about the fact that online marketing does not offer them the luxury of examining and getting a feel of the quality and fit of the goods sold online and this generally leads them to require the seller to have liberal return and refund policies. In addition, the lack

of after sales service is another concern of online shoppers. Time is also a problem with online marketing in that consumers are not able to take immediate possession of their purchases and are faced with added expense for faster delivery.

2.6 Marketing in social media

What started out as a way for individuals to communicate and share information online has now become trend in which almost all businesses see no longer as an option but as an obligation. Companies are now using social media as an integral part of their marketing strategy. Businesses have now realized that traditional marketing techniques are no longer viable for surviving in the online world.

Kaplan and Haenlein (2010, 59-68), explain social media as “a group of internet-based applications that build on the ideological and technological foundations of web 2.0, which allows the creation and exchange of user-generated content”. Social Media covers a wide variety of “online and mobile, word-of-mouth forums including social networking websites, blogs, company sponsored discussion boards and chat rooms, consumer-to-consumer email, consumer product or service ratings websites and forums, internet discussion boards and forums, and sites containing digital audio, images, movies, or photographs, to name a few” (Hollensen, 2011). Social media & more particularly social networks have enabled businesses of all forms to interact, reach and create relationship with large number of customers (Brogan 2010).

Turning into an influential marketing channel, social media and networks have been great news for many companies and organizations (Drury 2008, 274) Social media marketing is a process that empowers individuals and companies to promote their websites, products or services through online social channels and to communicate with and tap into a much larger community that may not have been otherwise available via traditional advertising channels. It connects service providers, companies and corporations with a broad audience of influencers and consumers (Weinberg 2009, 2-3). Weber (2009) argues that

social media marketing is not only for the largest multinational corporations. It might be even easier and more effective for a small and medium-size company to take maximum advantage of it. Not only social media is a tool for staying linked with other respective stakeholders such as technology vendors, and distributors, but it is also seen as an opportunity for R&D projects.

Marketing through social media requires different techniques than marketing through traditional channels because marketing through social media challenges a company to adapt different techniques than marketing through traditional channels. Weber (2009) explains that marketing to the social media requires adopting a completely new way of communication with an audience in a digital environment. Drury (2008) clarifies that marketing with traditional media was much about delivering the marketing message to the target audience. With the increase of social media networking, building a relationship and conversation has become a major and focal part of marketing adopting the pull marketing strategy. Marketing is no longer one dimensional; it has become a two-way process engaging a brand and an audience. Marketing within social media is not just about telling and giving a message, it is more about receiving and exchanging perceptions and ideas. Also the way of segmentation changes radically with the event of the social web (Drury 2008).

Demographics like gender, age, education and income, together with lifestyle factors have become less relevant compared to what people do, think, like and dislike. Further the communication in social media is less about creating contained and controlled messages and more about creating compelling environments to which people are attracted. The best web sites will combine both professional and user-generated content. (Weber 2009, 35-38.)

Mangold and Faulds (2009, 357-65) explicate that in the era of social media, marketing managers' control over the content, timing, and frequency of information is being severely eroded. In the new era of social media, information about products and services also originates in the marketplace. This information is based on the experiences of individual consumers and is expressed through

the traditional promotion mix. Figure 2.3 below illustrates the new communication paradigm presented by Mangold and Faulds (2009).

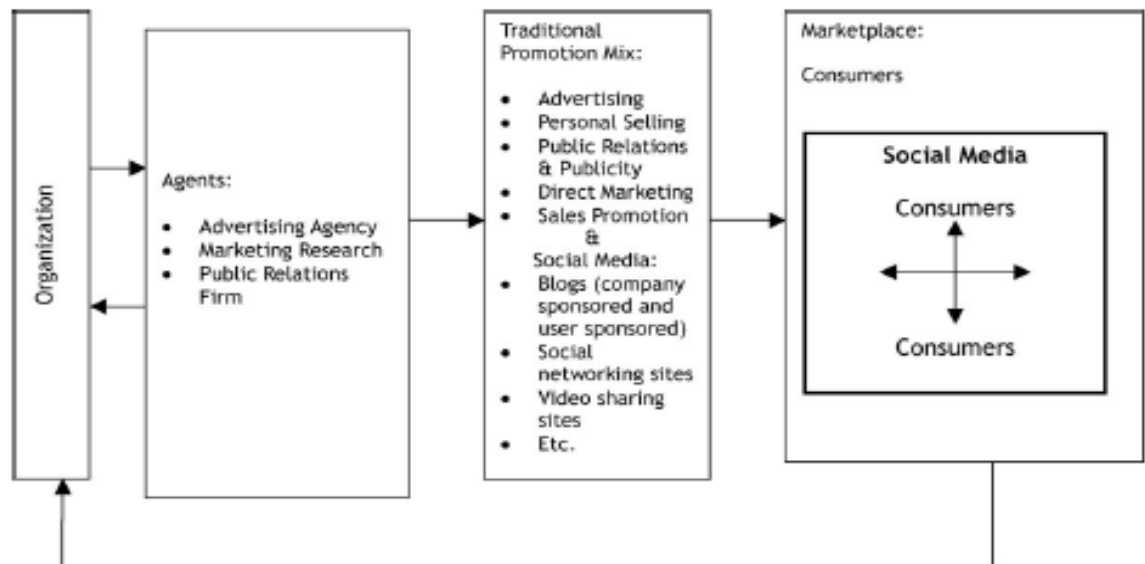


Figure 2.3. The new communication paradigm Mangold and Faulds (2009)

2.7 Web 2.0

The concept of Web 2.0 is relatively new and today marketers are compelled no less than to take advantage of its potential. However, there is no specific definition for the term web 2.0 because it doesn't have clear boundaries. Tim O'Reilly, who created the term 'Web 2.0', describes it as, "the business revolution in the computer industry caused by the move to the internet as platform, and an attempt to understand the rules for success on that new platform". According to Murugesan (2007) the Web 2.0 concept was developed to express the new evolving trends of web. It can be considered to be a joint name for a collection of new technologies, applications, concepts, ideas, business strategies, and social trends in the web (Mur 2007). Web 2.0 has also been called wisdom web, people-centered web, participative web and read/write web (Mur 2007). Web 2.0 is driven by a range of interrelated web technologies which include social networks (e.g. Facebook, YouTube, Myspace, LinkedIn,

and Twitter), blogs, Mash-ups, Podcasts, RSS, Wikis and audio and video streaming. From marketing perspective, creative and intelligent use of Web 2.0 tools can help marketers reach customers, build awareness and manage their image on the web; and refine operational practices to stay ahead of the competition.

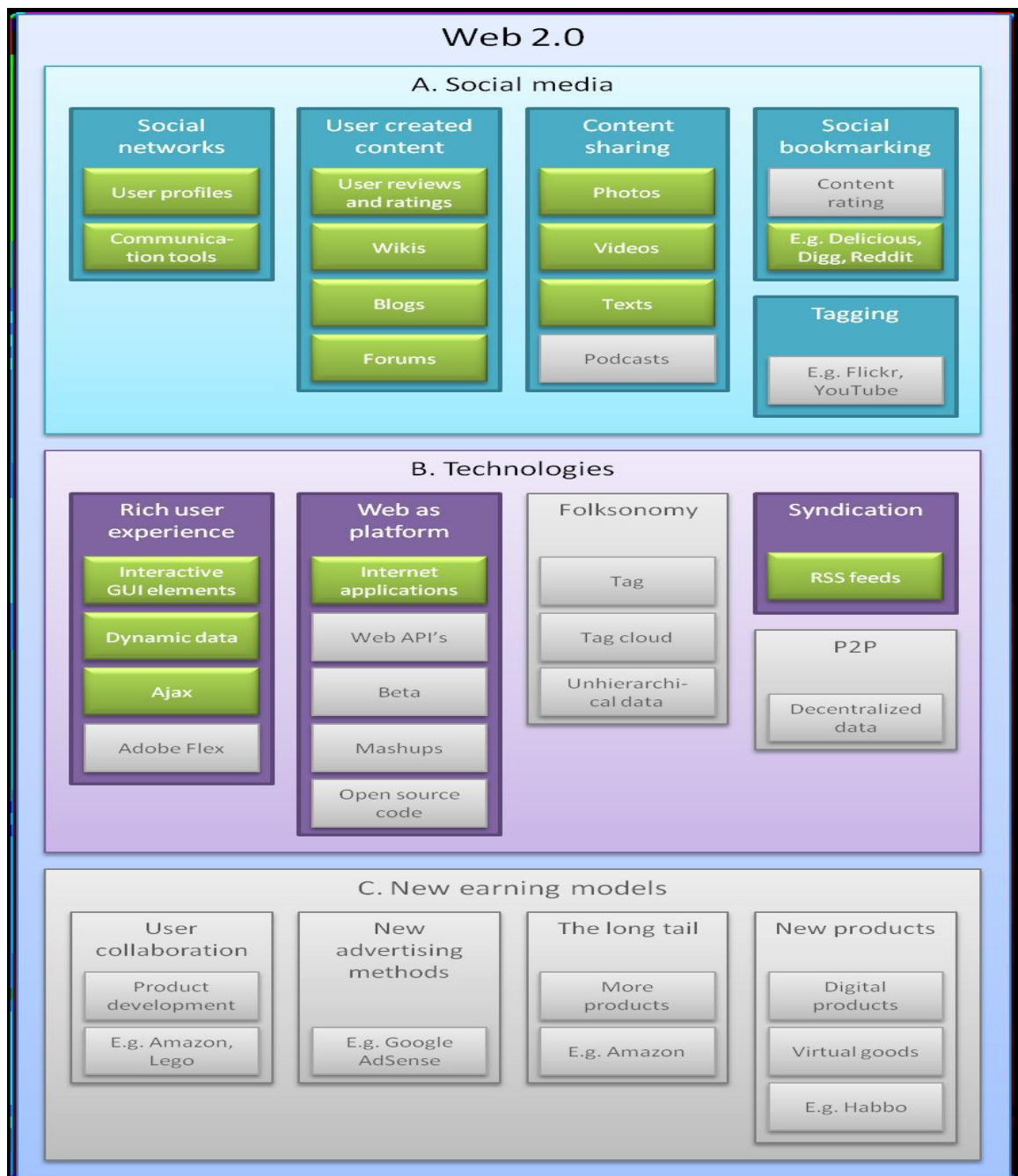


Figure 2.4. Some main characteristics of Web 2.0 concept.

3 INFORMATION AND COMMUNICATION TECHNOLOGY

The aim of this chapter is to provide a general overview of the role of ICT on firm competitiveness and performance as well as its role on business innovation. The chapter will also illustrate the challenges and barriers of ICT adoption.

3.1 ICT role on firm competitiveness and performance

The concept of competitiveness can be conceptualized as vague one in that much of its mistiness stems from the fact that the term means different for different organizations however, at a firm level, competitiveness resides in the ability of firms to consistently and profitably produce products that meet the requirements of an open market in terms of price and quality. According to Barney (1991, 99-120), a firm is said to have a sustained competitive advantage when it is implementing a value creating strategy not simultaneously being implemented by any or potential players. Porter (1990) defines competitive advantage as the heart of a company's performance. It reflects a company's ability to offer consumers greater value either by means of lowering prices or by providing greater benefits and services that justifies higher prices. When it comes to ICT's role in connection with company competitiveness, authors Alam and Noor (2009, 112-125) argue that ICT offers enterprises avenues to compete on a global scale with improved efficiency and closer customer and supplier relationships.

Similarly, Melville et al. (2004), highlight that the use of ICT brings about customer satisfaction by improving service quality thereby offering new opportunities for companies. Moreover, Apulu and Latham (2010), claim that ICT enables customers to give immediate feedbacks that allow companies to react fast to customers' demands and recognize new market niches. This entails that organizations that are able to exploit the potentials offered by ICT can handle various types of innovative processes in their businesses since ICT influences the performance of an organization in multifaceted ways. Thus, ICT

can bring about change in organizations and make them more competitive, innovative and assist to increase organizational growth (Obijiofor et al., 2005). For these reasons, Kapurubandara and Lawson (2006) recommend that organizations need to adopt ICT in order to remain competitive in the present competitive global economy.

3.2 ICT & business innovation

In addition to identifying the impact of ICT on firm competitiveness, this part ascertains how ICT promotes and effects innovation and productivity of firms. The Oslo Manual defines innovation as “the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations” (OECD, 2005, 46). Moreover, Porter (2001) argues that today the issue for organizations is not the acquisition and deployment of technology but rather how companies innovate. Product initiation or development can no longer be solely determined by internal R&D functions, but rather depends on the contributions of a broad range of external players. External players might include suppliers, customers and research institutes. Here the concepts of open and closed innovations come into play.

3.3 Open & closed innovations

Open innovation defined as “the use of purposive inflows and outflows of knowledge to accelerate internal innovation” encourages companies to explore internal and external sources of innovation opportunities, integrate those with the capabilities and resources of a company and broadly exploit the new opportunities through multiple channels (West, Gallagher, 2006, 319-331). Open innovation differs from closed innovation rather it means diffusion of internal knowledge – sharing knowledge with third parties. The underlying assumption of the closed innovation model says that “successful innovation requires control”. It is a logic that is strongly internally focused and based on the following implicit rules:

- A firm should hire the best and smartest people.
- Profiting from innovative efforts requires a firm to discover, develop, and market everything itself.
- Being first to market requires that research discoveries originate within the own firm.
- Being first to market also ensures that the firm will win the competition.
- Leading the industry in R&D investments results in coming up with the best and most ideas and eventually in winning the competition.
- Restrictive IP management must prevent other firms from profiting from the firm's ideas and technologies.

In contrast, in open innovation, ideas do not need to solely originate within the firm and the release of those ideas into the market does not need to be accomplished by the firm alone. Rather external ideas and technologies are used in order to advance innovation projects without compromising corporate secret. The open innovation approach makes the boundary between a firm and its environment more porous, turning the former solid boundary into a semi-permeable membrane. Having explained the underlying rationale of open innovation, the following principles and figure 3.1 reflect open innovation explicitly.

- A firm does not need to employ all the smart people, but rather work with them inside and outside the firm.
- Internal innovation activities are needed to claim some of the significant value which can be created by external innovation efforts.
- In order to win the competition, it is more important to have the better business model than getting to market first.
- Winning the competition does not require coming up with the best and most ideas, but to make the best use of internal and external ideas.
- Proactive IP management allows other firms to use the firm's IP. It also considers to buy other firms' IP whenever it advances the own business model.

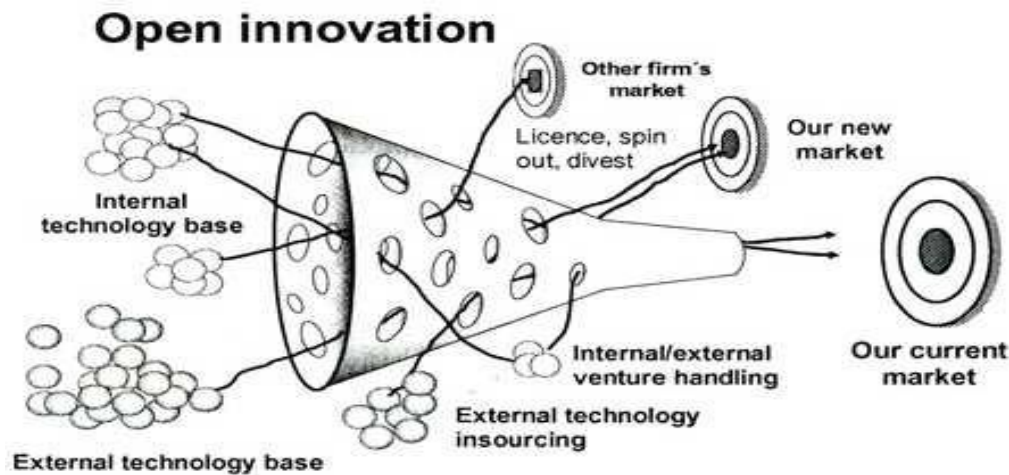


Figure 3.1. Open innovation (Chesbrough, 2004)

When taking a closer look at the role of ICT on innovation, literature on the role of ICT on innovation offers a multitude of different views that stress out the importance of ICT in terms of accelerating innovation processes from idea generation to development and commercialization and most importantly to simultaneously reducing costs and increasing quality. According to Koellinger (2005, p. 6) ICT makes it possible to reduce transaction costs, improve business processes, facilitate coordination with suppliers, fragment processes along the value chain (both horizontally and vertically) and across different geographical locations, and increase diversification. ICT is not just a technological phenomenon but the impact of ICT as an enabler has become noticeable. Today firms in both manufacturing and service sectors who use ICT more intensively are more productive, grow faster, invest more, and are more profitable.

Theoretical studies on the economic role of ICT are in general presented from two arguments: strategic management and cost reduction. The ICT use could change the optimal structure of the organization by enabling complementary organizational investments such as business processes and work practices and thus allow firms to be flexible and adaptive may allow firm to access to

complementary or new compete (Bresnahan, et al 2002, 339-376.). According to these studies, ICT use may allow firm to access to complementary or new competencies developed elsewhere while concentrate in developing their specific internal ones, to roll out (new) products and to manage knowledge flows within and between firms (Brynjolfsson and Hitt, 2000; Kogut and Zander, 1993; Nelson and Winter, 1982, 23 -48).

Implementing these investments could, in turn, result in substantial improvements in productivity by reducing costs and in improvements in organizational flexibility and intangible aspects of existing products like convenience, timeliness, quality and variety (Brynjolfsson and Hitt, 1997).

Numerous studies have also investigated the complementarity between organizational innovation and ICT by highlighting the importance of technological change as a driver of organizational changes within the firm (Henderson and Clark, 1990, 9-30; Danneels, 2002, 1095–1121). These studies have focused on the fact that ICT usually conduces to new methods or ways of organizing firms. Firms introducing ICT would be constrained to reorganize their production, workforce, sale and distribution systems.

Another research line points out the inverse relationship by stressing the role of organizational innovation in enhancing flexibility, creativity - that in turn facilitates the development of ICT use. Using a sample of firms in the fast-moving consumer goods industry in Germany, Lokshin, van Gils, and Bauer (2008) studied the effect of organizational skills on firms' innovative performance, showing that firms implementing a combination of customer, organizational and technological skills tend to introduce more innovation.

Although the processes of innovation considerably differ between small and large firms in that SMEs are labeled often to be less capable to invest in innovation projects due to lack of finance, technology and skilled force. Among literature studies are theories that indicate SMEs are generally more flexible,

adaptive and are better placed to develop and implement new ideas. This is to say that their simple organizational structure, their low risk and receptivity are in fact essential features facilitating them to be innovative (The World Bank, 2010). With open innovation, SMEs can obtain external support of knowledge and expertise. However, it has been revealed through many observations that earlier findings strongly depend on owners' education and prior work experience, technical skills of the workforce, and investment in R&D and training are some of the important internal factors which facilitate the development of innovative capabilities in SMEs (Romijn and Albaladejo, 2002). The background and role of entrepreneurs are crucial for SME innovations. Ciemleja and Lace (2008) found that innovative activity of the enterprise is directly connected with the educational level of managers. Technical education background and work experience of entrepreneurs in the same industry generate necessary technological capability and thereby facilitate the technological innovations of small firms.

In summary, ICT enables closer links between businesses, suppliers, customers and collaborative partners. By enabling closer communication and collaboration, ICT assists businesses to be more responsive to innovation opportunities and provides significant efficiency gains. In fact, the skills and knowledge required to successfully develop and implement business innovations mean that many innovations occur in conjunction with collaboration.

3.4 Challenges of ICT adoption

Reasons why SMEs do not take advantage of ICT vary widely across sectors and nations. In developing countries particularly in Africa SMEs often lack the human technological resources needed for ICT implementation. Researchers have discovered that lack of awareness; uncertainty of ICT benefits, set-up costs and pricing issues and security concerns are the most visible barriers to ICT adoption. Moreover, research studies on ICT adoption by SMEs in Africa reason that economic, political uncertainty and cultural factors are barriers for ICT adoption (Mehrtens et al 2001). From technological perspective, a firm

should have at least someone within the company who has reasonable amount of knowledge for technology in general. Therefore, without internal technological capabilities, utilization of ICT applications might be difficult and sometimes dangerous in terms of system maintenance failures. The opposite is to seek advice and support from IT professionals but most SMEs do not simply afford to do that because of the relatively high cost.

From managerial perspective, small and medium-sized enterprises may also lack the managerial understanding and skills. According to Rodgers et al. (2002), a small and medium-sized enterprise needs to entirely reshape its current systems because ICT adoption projects are complex in nature. For example the successful implementation of e-business requires restructuring business process and redefining core competence of the firm. Undertaking such changes cannot be successfully implemented without relevant skills and a visionary mindset. Further, lack of long-term corporate strategy is another factor. That is SMEs strategies are often confined on survival and on short-term activities. More precisely, very often managers of SMEs set their decisions on current needs and situation. The decision-making process of the managers is rather intuitive, based on instinctive decisions and a less dependent on formal models of decision-making. They tend not to pass information and not to delegate decision-making authorities to their inferiors. They are often the only people in the company who have the authority, responsibility and access to the information necessary for identifying business opportunities including utilization of information technologies for strategic and competitive purposes.

4 RWANDA

4.1 Knowledge-based economy

Rwanda is a small land-locked country in East Africa covering 26 338 km². It is the most densely populated country in Africa with a population of approximately 11 million people. It has borders with Uganda to the north, Tanzania to the east, Burundi to the south, and the Democratic Republic of Congo to the west and northwest. The country has no single natural resource of sufficient long- term productivity that would on its own become a primary or even a satisfactory source of growth. Confronted with this reality, the Rwandan government was compelled to set up an exit strategy that would lead the country to become and remain a competitive modern economy. The Ministry of Finance and Economic Planning has from the results of a broad national consultative consensus on the necessity for Rwandans to clearly define the future of the country projected and inspired the “the Rwanda Vision of 2020”.

The vision which comprises six pillars in which this research will only go briefly into detail the second pillar – human resource development and a knowledge-based economy- seeks to fundamentally transform Rwanda into a middle-income and knowledge-led economy by the year 2020. To reach this requires achieving annual per capita income of US\$ 900, a poverty rate of 30% and an average life expectance of 55 years. This means also that major infrastructural investments in the areas of energy, telecommunications and transportation, improvements in education and health standards are crucial to be undertaken in order to make sure an efficient and productive citizens.

Apart from raising the general welfare of the population, Rwanda did impressive improvements in education in order to build productive human capital. This was essential for Rwanda to become a sophisticated knowledge-based economy. Rwanda’s commitment to reaching “Universal Education for All”, which is one of the most important Millennium Development Goals clearly confirms the need to

educate and train people at all levels: primary, secondary and tertiary while placing special attention on vocational and technical training in the fields of technology, engineering and management and more importantly innovative small-scale entrepreneurs.

The emergence of a viable private sector that can take over as the principle growth engine of the economy is a key for Rwanda's development. Not only will such development be conducive for economic growth, but it will also ensure the emergence of a vibrant middle class community, which will help develop and embed the principles of democracy. Although foreign direct investment is encouraged, a local-based business class remains a crucial component for the nation's development. This calls the state to act as a catalyst to ensure that infrastructure, human resources and legal frameworks are geared towards stimulating economic activity and private investment.

4.2 Business environment

According to the World Bank (2010), it is now easier, faster and less expensive to operate a business in Rwanda than in most other African countries. Only Mauritius, South Africa, Botswana and Tunisia now fare better. Indeed, a healthy business environment streamlined with the use of ICT applications is fundamental for all businesses particularly growing small and medium-sized enterprises to thrive and prosper in the face of this rapidly changing world. This means that a transparent, open and competitive business framework, clear independent rule of law for all firms, easy set up and dissolution of businesses, transparent, simple and accessible corporate regulation, and equal and stable legal treatment for national and cross-border transactions are all necessary to be in place.

Accordingly, Rwanda has implemented several business regulation reforms that address issues mentioned above. As far as reforms are concerned, Rwanda has recently seen a great success in the World Bank Doing Business 2010 report. For the first time since Doing Business started tracking reforms,

Rwanda, led the world reforms. Overall, major reforms that have been implemented to assist the business community include easing the process of starting a business and property registration; investor protection, trade across borders, credit access and paying taxes. For example, getting credit was made easier with a new secured transactions act and insolvency act to make secured lending more flexible, allowing a wider range of assets to be used as collateral and a general description of debts and obligations. Property registration was simplified by decreasing the number of days required to transfer a property. Business start-up was eased by introducing standardized memorandums of association; enabling online publication; consolidating name checking, registration fee payment, tax registration, and company registration procedures. These reforms made Rwanda to rise from 143rd to 67th place on the ease of doing business rankings 2010.

Moreover, the government's ambitious plans to transform the country into a regional high-tech hub proved to be working. The first plan, from 2000 to 2005, focused on creating an enabling environment for ICT initiatives. The second, from 2006 to 2010, built the ICT backbone, including laying high capacity fiber-optic cables. The network connects Rwanda to the outside world by means of Seacom's east African undersea cable. It provides faster and cheaper Internet access than the satellite. The third, scheduled to run from 2011 to 2015, will speed up skill upgrading and technology exploitation. Mounting evidence shows that the government is committed to encouraging, strengthening and supporting network infrastructures such as broadband connectivity which is a key component in ICT development, adoption and use.

To summarize, Rwanda is amongst the few African countries that embarked on developing an integrated ICT Policy in the late 1990s with a clear vision of making ICT an integral part of its global socio-economic development plan, with the hope that the country would move from an agricultural-based economy into a knowledge-based economy through the development of competitive service-based industries.

4.3 Placing Rwandan SMEs in global framework

Small and medium-sized enterprises in Rwanda play a pivotal role in the country's economic development. The current trends in socio-economic development have made Rwanda as one of the freer economies in the world. Today, SMEs comprise approximately 98% of the total businesses in Rwanda and account for 41% of all private sector employment. Generally speaking, small and medium-sized enterprises are described as being flexible, active and informal. Due to their unique characteristics SMEs are able to deliver to market in a timely manner and provide customers in a more personal way compared to corporate firms and therefore are accredited with a competitive edge (Van Beveren 2002a, 1-17). However, due to the emergence of the twin forces of liberalization and globalization, SMEs are similarly compelled too to expand their business into international markets in order to stay competitive.

The term internationalization is in broad economical terms viewed as the process in which firms increase their involvement in foreign or international markets. As a result, more and more firms are internationalizing in greater numbers than ever before and are internationalizing faster than ever before. This is due to the fundamental shift in world economy in which as a result markets have become one huge global marketplace because of reductions in trade barriers and advances in information and transportation technologies. Internationalization is acknowledged to be one of the main drivers SMEs can participate in international trade even possibly right from inception.

Many firms including small and medium-sized enterprises have overcome the traditional barriers to export; gain access to geographically distant markets and have now full advanced international business participation with the use and help of Internet. In fact, the Internet is changing the dynamics of international business marketing. Chaffey (2002) states that in particular SMEs that do not have existing sales channels into overseas countries might use the Internet to sell into new geographical markets.

However, there is little knowledge about the number of Rwandan SMEs operating in international markets. There are also no findings that reveal the sharpness of international focus among the vast smaller business in Rwanda. Nevertheless, the vast empirical findings around internationalization of African SMEs highlight several constraining issues including inadequate business infrastructure, lack of information on foreign markets, high customs duties as well as difficulties in establishing contacts with foreign partners and overseas customers. Even though there are a number of countries such as South Africa, Botswana, Mauritius, Ghana, Tanzania and Rwanda itself who have made significant improvements in easing regulations and cost of doing business in their countries, SMEs from these countries still somehow seem to be restrained from tapping into potential counter-markets thus making their business activities less diverse and only limited to domestic markets. There are few SMEs however who despite the constraining difficulties venture into international markets but they do so to a lesser degree. Lack of credit access has often been identified to place a heavy burden on SMEs to develop themselves and go international. Credit access is believed to be essential for SMEs to reach their potential and rebound better rather than failing.

Illustrating from this view and considering the relative age, size and capacity of Rwandan SMEs, it can be assumed that at present time Rwandan SMEs are less likely to be greatly involved in foreign markets for several internal and external reasons. First, from managerial perspective, firm growth is generally dependent on managerial urge, knowledge and motivation. Not only it is important that the enterprise has a competitive product, technological skills and enough resources, internationalization is not possible without the right attitude (Saarenketo 2003, 43).

Managerial commitment is equally fundamental for enduring stagnation and sometimes setbacks and failure (Czinkota et al. 2005, 350). This type of managerial commitment is particularly essential for the international orientation of employees. Considering this, a significant proportion of SMEs owners or

managers are generally less internationally experienced or trained. Added to this is the lack of skilled labor which is one of the major bottlenecks SMEs face today. It has been highlighted that SMEs in developing countries in general encounter difficulties to attract highly educated workers due to the fact that educated workers prefer to work for larger firms who can offer them higher pay, job security and long-term career possibilities and development.

Marketing is on the other hand another hurdle for most SMEs in Rwanda to grow internationally in that they confront even in home markets challenges for successfully setting up distribution channels as well as communicating their product features and services in an attractive way. Also their short period of existence and limited human resource make it impossible for them to undertake constant product development, brand their image internationally.

Technological incompetence is another impediment. Often SMEs use outdated and in-advanced technologies and this makes them technology users rather than technology adopters. The World Bank (2009) claims that investments in technology are required in order to build up existing capacity and to improve the quality and productivity of production which will generate in higher value-added products that will improve the competitiveness of firms. However, having listed possible restraining factors, SMEs in Rwanda have undoubtedly very good chance to grow and expand internationally as the country is at the crossroads of rebounding economically and technologically better.

Generally, there are four different stages that determine the ability of a country to compete successfully in international markets. These four country conditions are: factor conditions, firm strategy, structure and rivalry, demand conditions and related and supporting industries. During the first three stages, the country's competitive advantage develops and increases until in the last it declines. Each stage determines the success of the home country. These conditions form the so called Porter's diamond (see figure 4.1).

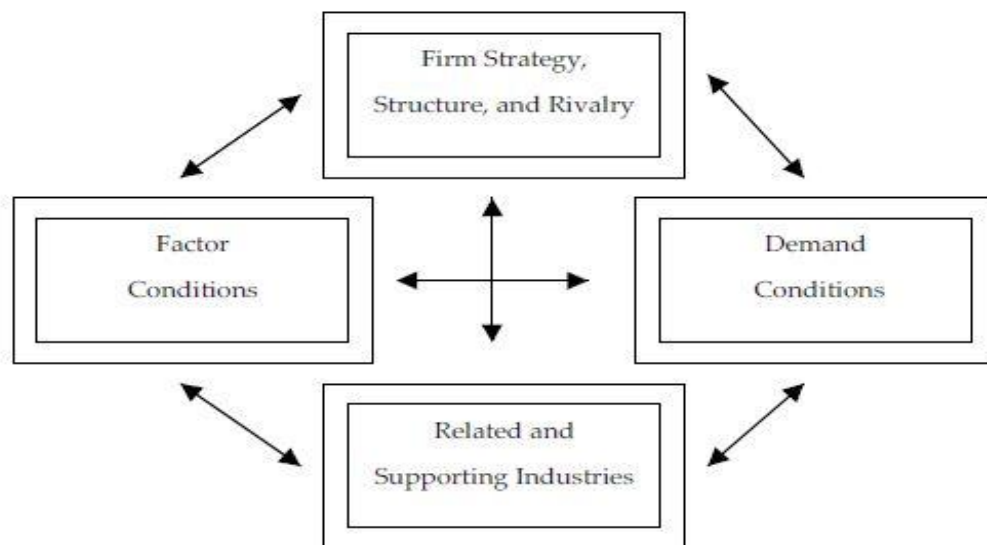


Figure 4:1. Determinants of Global Competitive Advantage (Porter 2006)

In the first stage, the country advantage is based on factor conditions e.g. cheap labor and natural resources. It can compete internationally with low prices. In second stage, the enterprises are able to concentrate on investing, the know-how gets better and competition in the home country becomes more intense. This prepares the enterprises to compete internationally and receive licensing contracts from abroad. In the third stage, all aspects of the diamond are in use meaning that enterprises concentrate on innovation and are constantly leaders in product development and design compete globally with technology and differentiation. The last stage, enterprises start to lose their competitive advantage in the global markets and don't want to take risks anymore, innovation slows down and foreign enterprises start buying domestic enterprises. (Porter 2006, 614-616,620,624-625) Countries do not necessarily go through all these stages (Porter 2006, 612). Due to the increased openness of countries to information, production factors, supplies and competition, enterprises can still become globally competitive even though one of the factor conditions is missing.

Being operating in small and landlocked country with small domestic markets and yet open for foreign competitors will force and drive Rwandan SMEs sooner

than later to internationalize even at an earlier stage. The fact that the country is aiming to be an IT hub in Africa, government agencies that promote export will also encourage Rwandan enterprises to internationalize. However, it should be remembered that internationalization needs long-term commitment and planning. Lack of long-term strategic planning can be devastating especially when enterprises go international. They need not to be equally good as their competitors but a lot better. That is they need to consider several situations. Often many enterprises think that their product or service is one of a kind however the situation might not be so in international markets. For instance, firm products or services might not be suitable to the target markets in that they lack added value for customers in those markets. If the enterprise is unable to adapt its products or services to local customers needs and is unable to base its pricing decisions on profit rather than for sales growth, it will undoubtedly fail.

Equally important is the establishment and building relationship with partners. Rwandan small and medium-sized enterprises will have to particularly strive for building networks and getting the right partners with the right capabilities to help them penetrate desired markets more effectively. These networks are essential for them because the geographical and physical distances separate the clients, sellers and partners in the international markets. Networks and partnerships provide members with knowledge that improves their access to markets and lessens risks and time spent on establishment processes.

As a matter of fact, today, collaboration of even two competing enterprises has become part of the adjustment and flexibility required in the global markets. Even a new term – *coopetition* – has emerged to describe the collaboration between competitors (Kurkilahti & Äijö 2007, 67). If Rwanda succeeds with its ambitions of becoming an ICT hub in Africa, such technological know-how would enable SMEs to compete in knowledge-intensive fields and seize new opportunities, utilize first mover advantages and spread their operations across countries.

SMEs managers by virtue of their position should also strive to gain international experience. Many studies have shown that management's international experience helps enterprises anticipate and pursue new opportunities available both in national and foreign markets. To put into context, the more entrepreneurs and managers [posses international business skills, the more likely their businesses are to internationalize (Antoncic et al. 2007).

5 RESEARCH METHODOLOGY AND ANALYSIS

5.1 Introduction

This chapter details the research methodology adopted in this thesis. It first outlines the research objectives and the appropriate methodology the research will be based on. Next, the rationale for the research design and analysis will be discussed. Then, trustworthiness of data collection will be discussed. Finally, the chapter will end with research conclusions followed by research limitations and recommendations for future studies.

The objectives of this research is to investigate the impact of ICT on growing SMEs in Rwanda with particular attention on how ICT improves their competitiveness and business performance in the face of this rapidly changing and globalised world. Further, the research aims to compare and contrast the competitiveness and ICT uptake of Rwandan small and medium enterprises globally for the purpose of measuring their capacity, innovativeness and performance.

5.2 Research design

There are generally two types of research methods according Ghauri *et al.* (1995); the quantitative and qualitative methods. The quantitative method

entails systematic empirical studies which involve quantifying through the assistance of mathematics and statistics (Bryman and Bell, 2007). Data is collected and transformed into numbers which are empirically tested to see if a relationship can be found in order to be able to draw conclusions from the results gained. On the other hand, qualitative research does not rely on statistics or numbers rather qualitative research often refers to case studies where the collection of information can be received from a few studying objects (Bryman and Bell, 2007). Furthermore, qualitative methods emphasize on understanding, interpretation, observations in natural settings and closeness to data with a sort of insider view (Ghauri *et al.*, 1995).

The choice of the research methodology is influenced by the researcher's theoretical perspective and also his attitude towards the ways in which the data will be used (Gray, 2004). Although the qualitative method takes into consideration the overall picture, a quantitative approach will be more suitable in order to draw conclusions from the survey analysis and reach the objectives of this research which is finding out how use of ICT affects the competitiveness and business performance of Rwandan small and medium-sized enterprises.

5.3 Research rational

This thesis is concerned about identifying the impact on how and to what extent ICT can improve the competitiveness and performance of emerging SMEs in country like Rwanda. Chapters two and three have shown the increasing significant role of ICT in improving firm performance in terms of productivity, profitability, market value and market share regardless of firm size and location.

It is important to bear in mind that the nature of this research is exploratory, building on existing theories and practices supported by the empirical findings of this research. The research also seeks to suggest possible recommendations on issues that have not been researched or undertaken yet. Further it seeks to analyze the general perception and opinion of ICT adoption and integration of small and medium-sized enterprises in Rwanda.

5.4 Data collection

According to Ghauri *et al.* (1995) data collection can be either primary or secondary. Primary data is information that the researcher gathers on his own, for instance by using interviews, questionnaires and tests. On the other hand, secondary data refers to the data such as literature, documents and articles that is collected by other researchers and institutions (Bryman and Bell, 2007). In this thesis, while primary data is collected in the form of questionnaire it also emphasis on secondary data. This is because it tends to compensate for the loop holes of primary data and as such the documents used for secondary data are from a broad range of sources such books, scientific articles, company reports and internet sources as well as government institutions policy strategies and reforms. All sources are in general treated and assessed as of high quality and the diversity of sources and nature of data is in accordance with the multifaceted and holistic approach this thesis is based on.

5.5 Validity and reliability

Whether the data is collected through in the form of direct observations, questionnaire, and focus groups or through interviewing; the quality of the research is often judged by the validity, reliability and trustworthiness of the research methodology and data. While this thesis is based on a quantitative assessment, the quality criteria will be applied for the purpose of generating deeper understanding on issues identified in relation to the impact of ICT on small and medium-sized enterprises. In addition, according to Patton (2002), validity and reliability are two factors that any researcher should be concerned while designing a study, analyzing results and judging the quality of the study.

Validity refers to the extent to which a measure reflects the concept it tends to measure. If the measures used actually measure what they claim to, and if there are no logical errors when drawing conclusions from the data, the study is said to be valid (Trochim, 2005).

Generally empirical research quality can be assessed through the following four specific tests described by Yin (1994).

Tests	Description
Reliability	Demonstrating that the operations of a study can be repeated with the same results
Construct validity	Establishing correct operational measures for the concepts being studied.
Internal validity	Establishing casual from spurious relationships.
External validity	Establishing the domain to which a study's findings can be generalized relationships whereby certain conditions are shown to lead to other conclusions, as distinguished

On the other hand, reliability means dependability or consistency (Neumann, 2006: 196). It indicates the likelihood that a given measurement technique will repeatedly yield the same description of a given phenomenon. The role of reliability is to minimize the errors the errors and biases in a study. (Yin, 1994)

5.6 Description of general characteristics of Rwandan SMEs

Small and medium-sized enterprises (SMEs) are a very heterogeneous group. Definitions vary across countries and are usually based on the number of employees and annual turnover. The new SMEs strategy of Rwanda defines SMEs as any enterprise with less than 100 employees, an annual turnover below 50 million Rwf and a net investment capital below 75 million Rwf. Rwandan SMEs are strikingly found in all sectors, producing and offering different products and services. Although considerably very different with some labor intensive and some capital intensive with different market positions there are some similarities to be found between them. For instance, often there is no power distance between the employees and management which contributes a tighter network and communication both within the firm and outside the firm. From entrepreneurial perspective, Rwanda is one of the most entrepreneurial countries in sub-Saharan African countries. While entrepreneurship is of fundamental significance to the dynamic growth of the economy, the survival rates among new ventures in Rwanda are 50% after their second anniversary, and with the rest closing within one year of operation which means that Rwanda

has to work hard in supporting and building vibrant SME sector and in attaining its vision of creating 3.2 million low level jobs by 2020 against 1.4 million jobs created over the past decade.

5.7 SURVEY RESULTS

5.7.1 Background information

Based on the definition given in SME Policy document of the Government of Rwanda, 50% of the respondents can be classified as Micro Enterprises (between 1-3 employees), 30% as Small Enterprises (4-30), 15% Medium sized Enterprises (31-100) and 5% as larger SMEs (100+) This shows that 95% of SMEs in the survey belong to Micro and Small Enterprises.

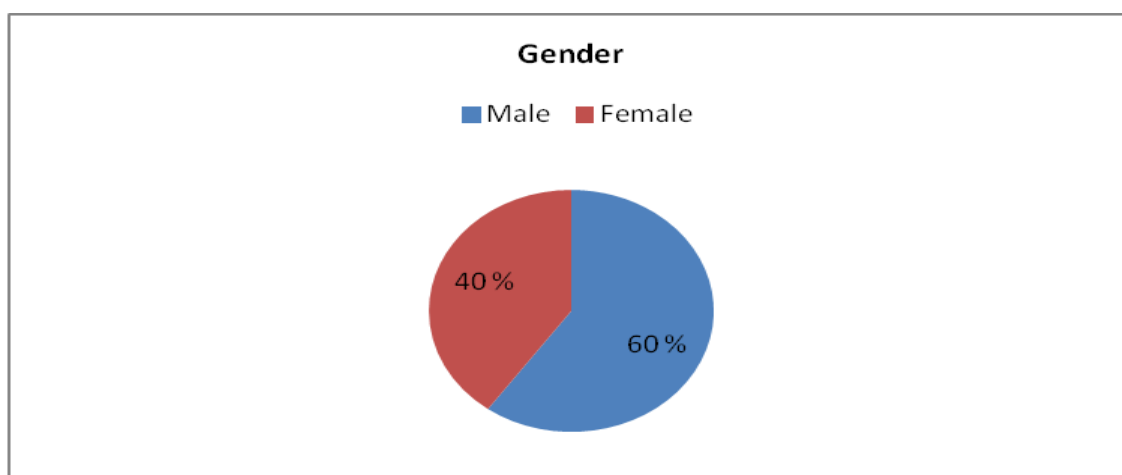


Figure 5.1 The gender distribution of the respondents

As far as the gender is concerned, 60% of the respondents were male and 40% were female. This indicates that men are more entrepreneurial than women. Respectively 50% of all enterprises were owned or managed by respondents classified as the youth (20-29 years of age). In addition, close to 25% and 15% of the enterprises were similarly owned or managed by respondents between

30-39 and 40-49 years old, with no indication of the respondents being over years old.

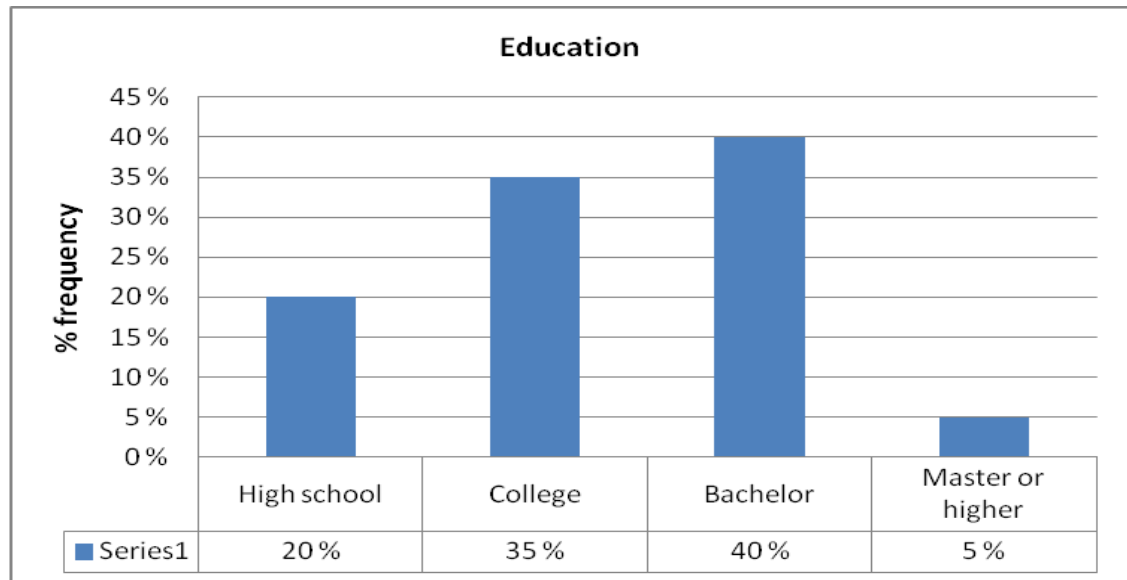


Figure 5.2 The education distribution of the respondents

The educational level of the respondents was high with 40% possessing bachelor's degree, 5% with masters or higher degree, 35% college diplomas and 20% with high school level.

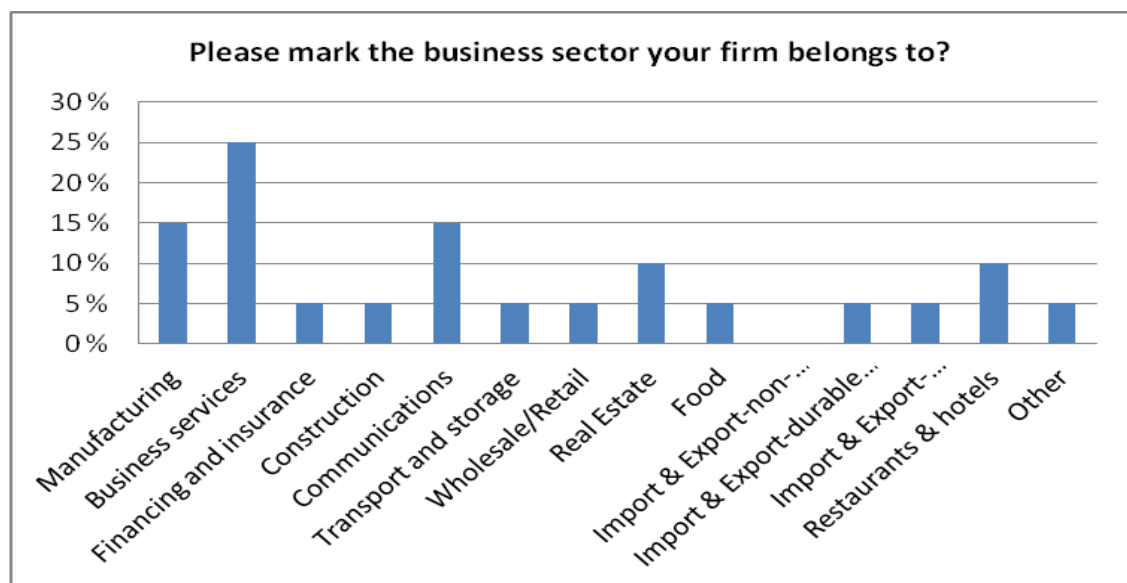


Figure 5.3 The business fields operated by enterprises

With respect to business fields operated in, services form overwhelmingly the largest part, accounting for 22%. Manufacturing, communications and real estate form the second biggest group accounting 22% of the enterprises, while construction, financing and insurance, transport and storage, wholesale/retail, food and hotels form the third group with 21%. Other businesses amounted above 5%.

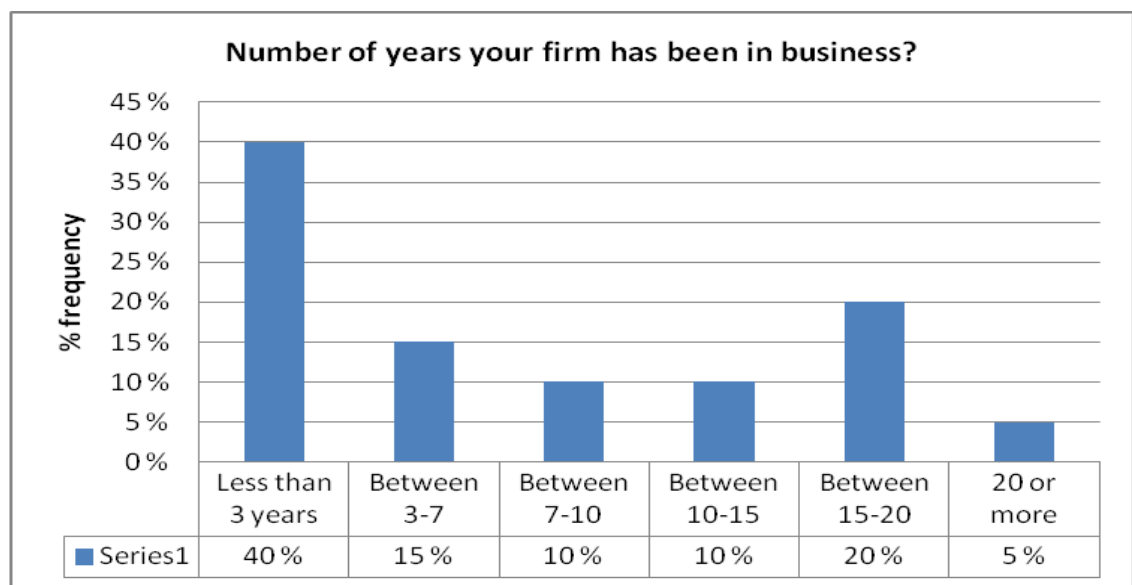


Figure 5.4 The number of years firm has been in business

Majority of the enterprises (40%) had been operating less than 3 years, 20 % between 15-20 years, 15% between 3-7 years and a sum of 20% between 7-15 years. In contrast 5% had only been operating more than 20 years.

5.7.2 ICT usage and adoption

In order to determine the scale of ICT usage and adoption, it was necessary to ascertain the extent of general ICT uptake so that the level of expertise and possible expectations could be gauged.

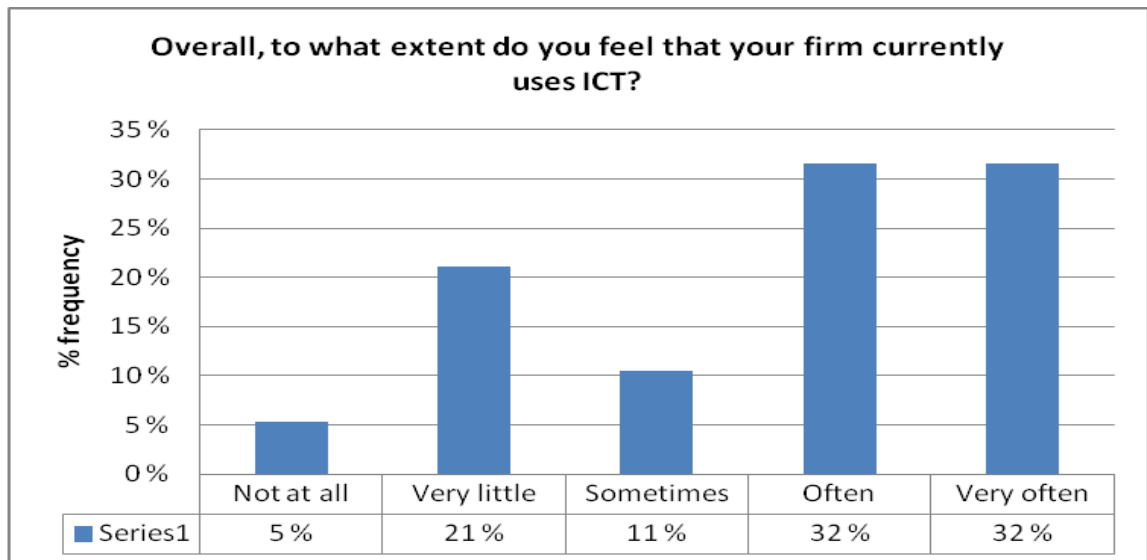


Figure 5.5 The extent firms use ICT

A total of 64% of all enterprises indicated that they use ICTs on a regular basis. 11% expressed to use sometimes while in contrast a total of 21% have very little use of ICT and 5% use not at all.

5.7.3 Use of Internet

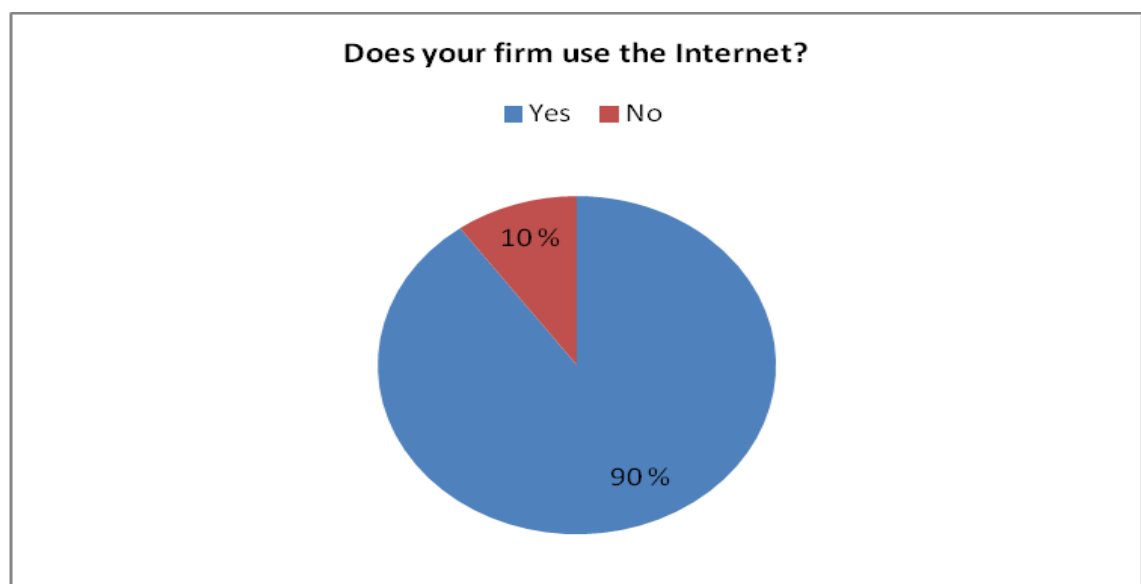


Figure 5.6 Internet usage

When asked whether they use the internet for their business activities and if so to what extent they use it, a significant number of 90% of all enterprises indicated they use the internet for their daily business operations while only 10% showed reluctance in using the internet as indicated in figure. Sending and receiving emails (93%), information sourcing (38%), online ordering (38%) and payments (33%), online sales (31%) and software downloads (33%) as well as customer feedback (35%) are overwhelmingly the main reasons enterprises use and are dependent for the internet.

Similarly, a question aimed to identify what are the key factors that constrain not to use the internet was administered to enterprises particularly those answered no for the previous question. A sum of 62% indicated that uncertainty about internet security is by and large the main reason that they cannot practically rely fully on internet and as such prefer on staying traditional. 68% of them were also of the view that their business partners and customers do not use that much the internet for business activities whilst 37% indicated that internet maintenance is difficult and expensive and with some (33%) worried about employees might waste their time. In contrast, companies that fully rely on internet do not see security as a major bottleneck rather they see the internet as simplifying their business activities if properly used with the right know-how and right technologies with built-in securities.

To summarize, the prominent reason for firms not to fully engage in internet is first and foremost related to the perception that security damages are if encountered devastating enough for good for the existence of their business. The view on internet and e-commerce as an unsuitable medium for business appears relatively strong. That is, because most of these firms see internet as ineffective in that they claim that their customers prefer personal or telephone contact for business deliveries, negotiations and transactions. The view that engaging fully in internet is not suitable for the business holds strong implication for small and medium-sized enterprises aiming to adopt ICT because they will

not be able to take advantage of ICT in general unless its benefits justify the need to adopt it.

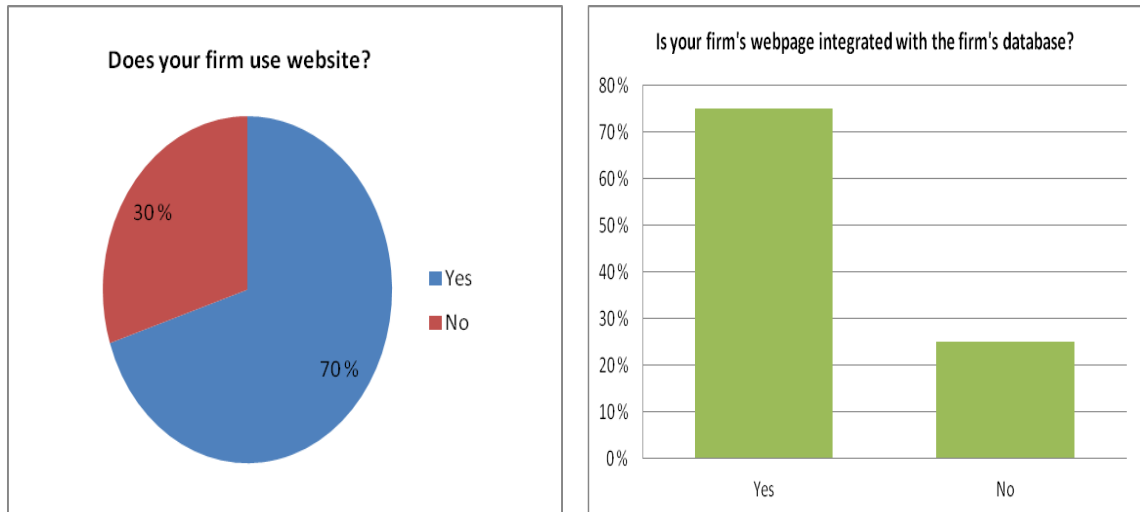


Figure 5.7 Website ownership and database integration

The surveyed enterprises were also asked whether they have website for their business and if their web pages are integrated to their database as well as their business partner's database. 70% of the surveyed enterprises indicated they have webpage. 75% said their webpage is incorporated to their database and 60% of them indicated they are integrated to their partner's database. Enterprises that do not have web pages as indicated earlier are either concerned about security issues or claim that online transaction and or marketing is not common in the industry or that internet cost is unbearable or maintenance is difficult or expensive.

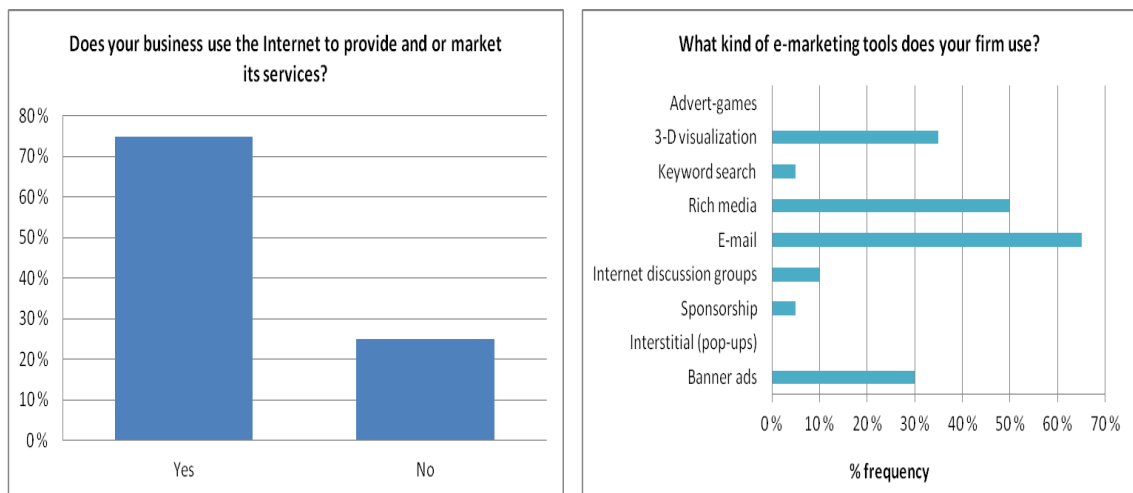


Figure 5.8 Online marketing and the e-marketing tools used

Enterprises were asked too whether they use the internet to provide and/or market their products and services and if so what kind of e-marketing tools they use. 75% of respondents indicated that they use the internet to provide information as well as market their products and services while 25% indicated that they do not use the internet for marketing purposes. In addition among the most popular e-marketing tools used by companies that owned a website were rich media (50%), e-mail (65%), banner ads (30%) and 3-D visualization with 35%. Surprisingly, interstitials, advert-games, sponsorships, keyword search and internet discussion groups were the least used of which advert-games and interstitials were not used at all.

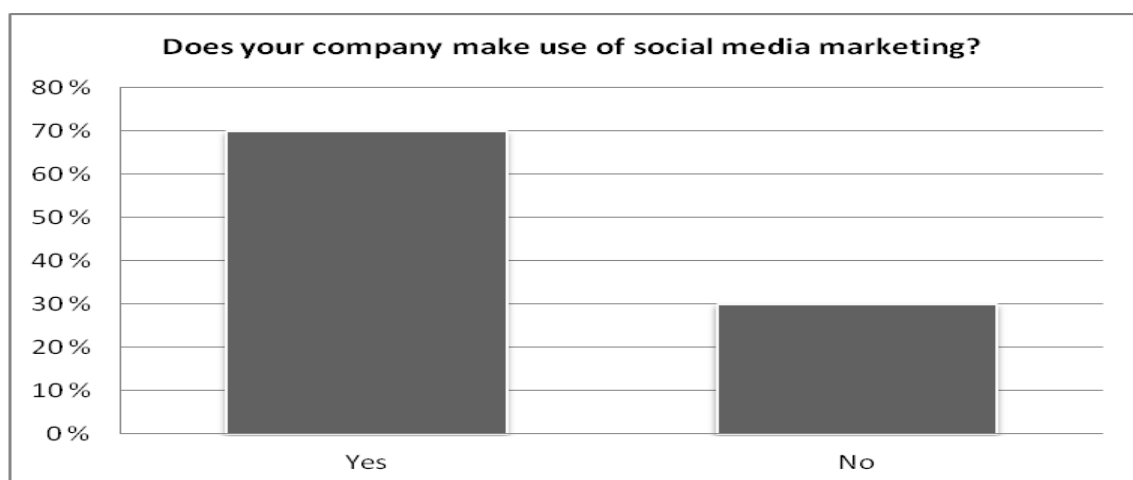


Figure 5.9 Marketing through social media

In light of the results indicated in the above figure, almost 70% of all respondents saw social media as a fast forward means of marketing in that it offers possibility to interact in a real-time a large number of customers and users of social media and networks.

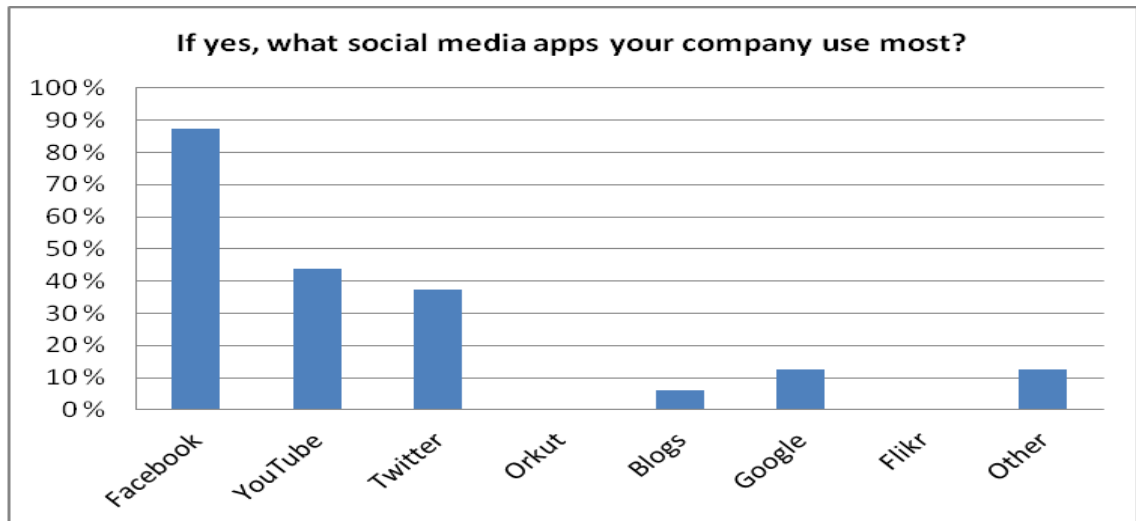


Figure 5.10 Use of social media applications for marketing

Among the most popular social sites were Facebook with a percentage of approximately 88%, YouTube with 44% and Twitter with approximately over 38%. This can be justified by the urge of enterprises to be where majority of users or customers are in social media sites

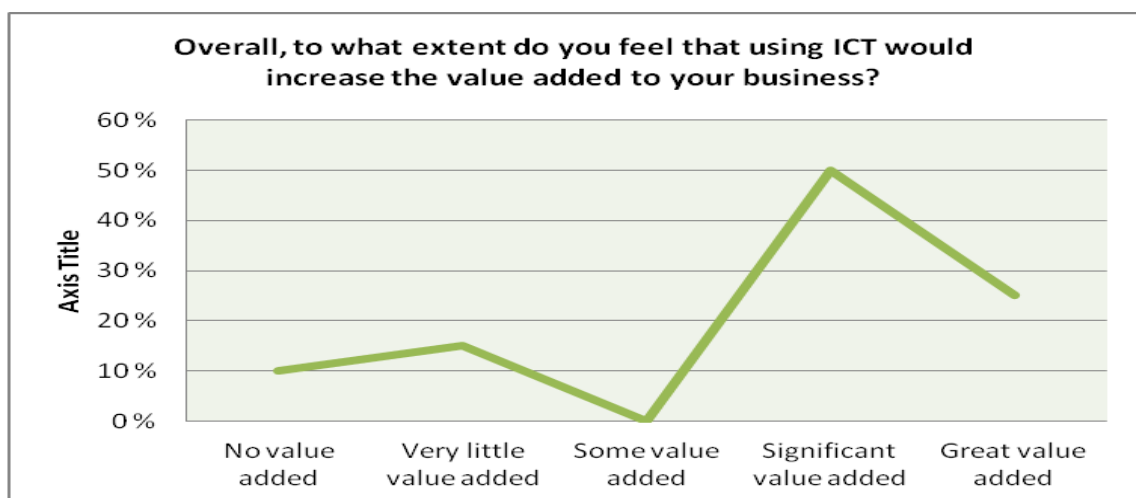


Figure 5.11 The perceived value added ICT could bring

The respondents were also asked if they perceived use of the ICT would further improve the value added of their business. The responses are mixed, with a total of 75% stating that ICT added either significant or great value and improved their business activities, while 15% felt that it added little value and 10% indicated no value added.

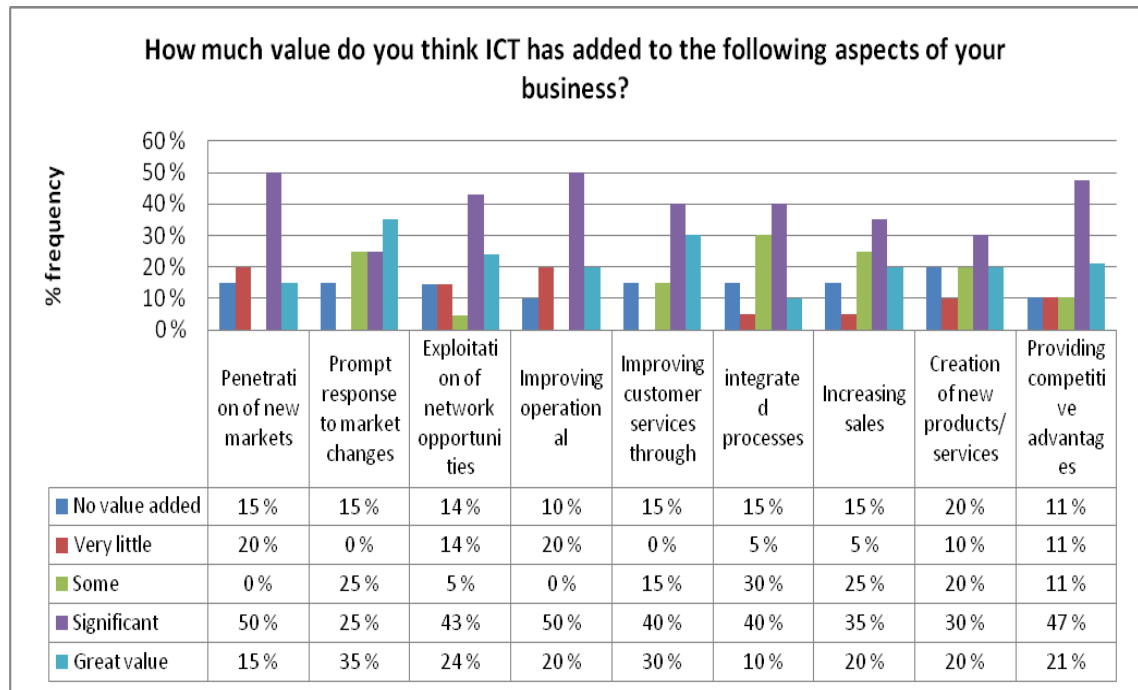


Figure 5.12 The values ICT has added to business

65 percent of all respondents believe that the greatest value that ICT has added to their business was the ability to penetrate into new markets and promptly respond to market changes (60%) as well as exploit network opportunities (67%). 70% of the respondents revealed that ICT has improved their business operations and customer services (70%). Another 50% indicated that ICT had added value for their integrated processes while 80% reported ICT to have increased their sales and enabled creation of new products and services (50%). In terms of securing competitive advantage, a total of 68% of all enterprises showed they have sustained significant competitive advantages with the use of ICT. This reflects that ICT plays a pivotal role in the overall performance and competence of small and medium-sized enterprises.

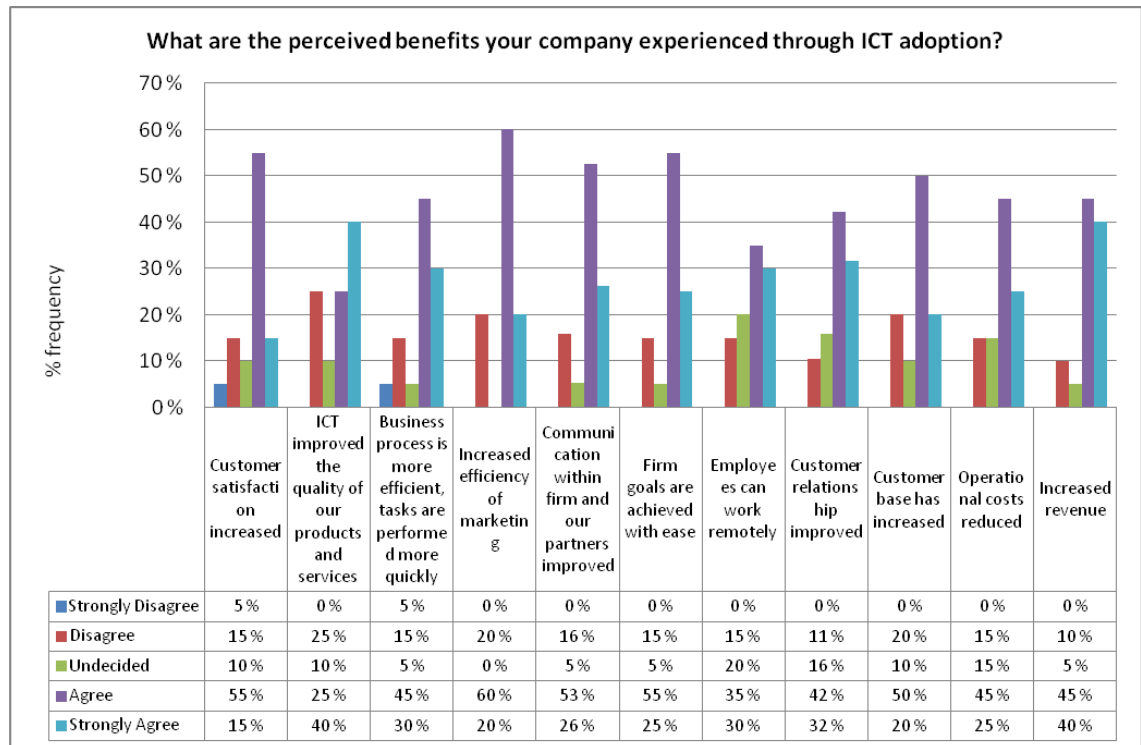


Figure 5.13 The perceived benefits of ICT adoption

To determine what are the specific perceived benefits enterprises experience through ICT adoption, respondents were asked to choose from a list of options designed to best describe benefits of ICT. By far, 80% of all respondents reported ICT to have significantly increased marketing efficiency. Clearly, this percentage indicates the value aspect ICT has already added to marketing. Another encouraging aspect is the increase of customer satisfaction with 70% of all respondents reporting to have achieved their goal in increasing customer satisfaction. 70% of respondents also reported to have managed reducing operational costs and experienced increase in revenue.

Similarly, those respondents that indicated increase in marketing efficiency, customer satisfaction and cost reduction also consider at a percentage level of 80% that their firm goals were achieved with ease and that their communication with partners improved (79%) and even more that their employees can work remotely (65%). More importantly, a total of 65% of all respondents also exercised quality improvement for their products and services hence making

their customer base increased. Clearly, there is a positive correlation between the responses referred on the previous question (extent of value created by ICT) and the specific benefits with regards to ICT usage. The positive correlation clearly suggests that ICT is becoming business critical for a growing percentage of enterprises.

In an attempt to determine the scale in which enterprises were pursuing R&D through ICT, a total of 65% of all respondents rated that they pursue R&D through ICT while 35% indicated that they poorly pursue R&D. The main driving force for enterprises that pursue R&D through ICT is to provide better and faster customer service and to stay ahead of the competition.

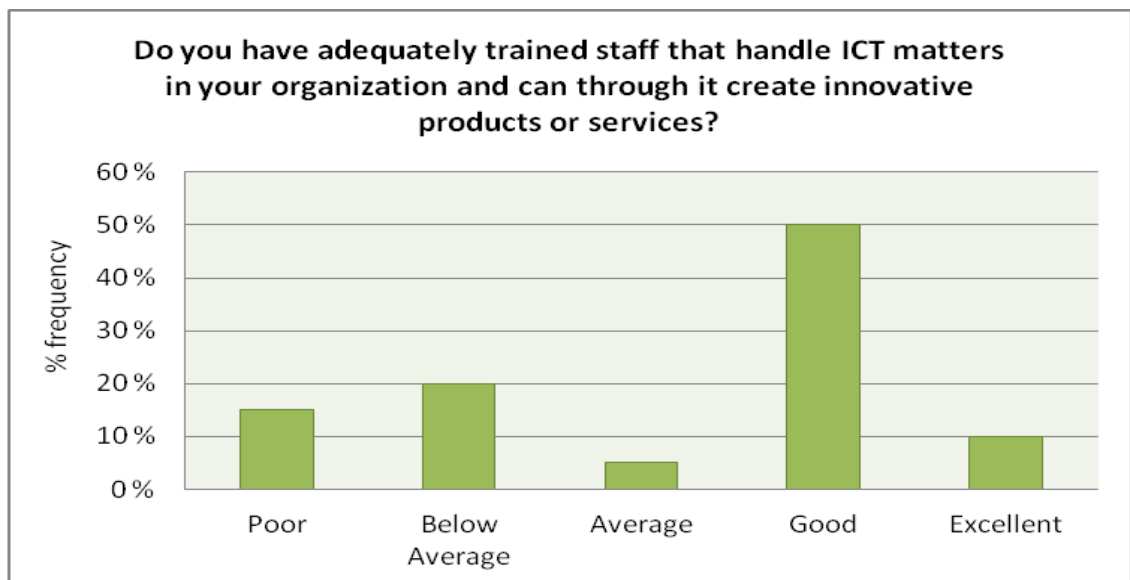


Figure 5.14 The skills of employees in handling ICTs

In line with the previous question, respondents were asked to precisely describe whether they have adequately trained staff that can handle ICT matters and can through it create innovative products or services, 50% indicated to have good capable staff while 10% said their staff's competence is excellent. 15% reported poor while another 20% reported bellow average. The overall assumption here is that the capacity of enterprises in terms of handling and utilizing ICT in innovating their products or services is relatively moderate.

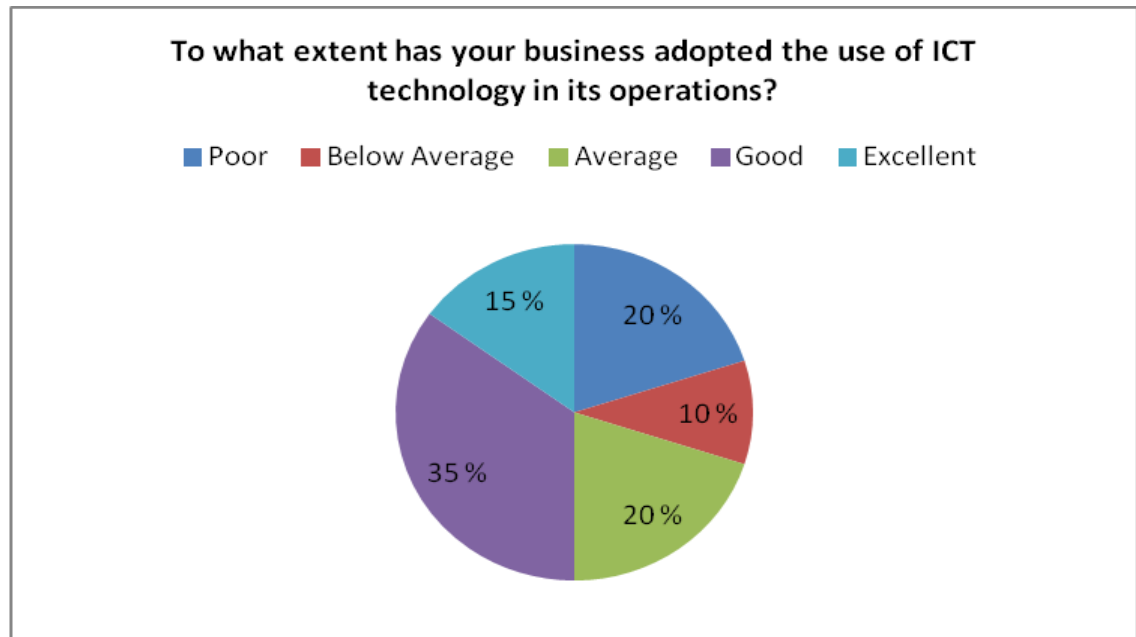


Figure 5.15 ICT usage level in business operations

When considering the extent in which enterprises adopted ICT related technologies in their business operations, a total of 70% mentioned they have adopted ICT related technologies in their business. Thirty percent rated themselves either below average or poor in incorporating ICT technologies in their business.

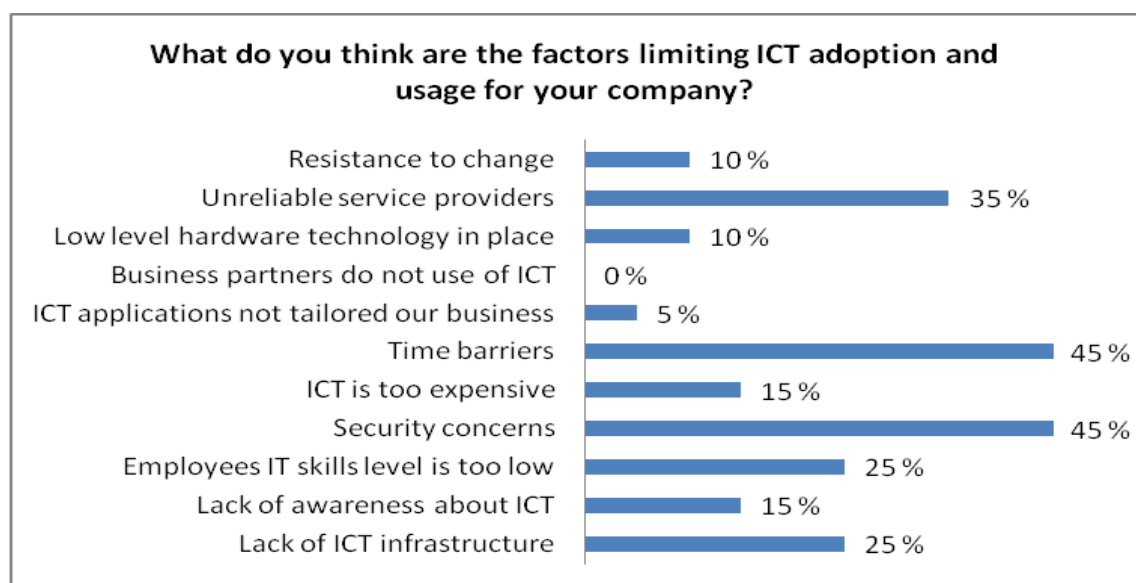


Figure 5.16 The limiting factors of ICT adoption

Regarding the limiting factors of ICT adoption and uptake, some 35% of enterprises expressed that unreliable service providers and security concerns (45%) as the major stumbling blocks for utilizing the full potential of ICT. Some 25% reported that lack of ICT infrastructure and awareness (15%) about the benefits of ICT are contributing the limiting factors. Another 25% expressed that IT skills of their employees is too low. 45% indicated time as a barrier because they simply have no time to implement ICT projects and 15% indicated cost of ICT as a fundamental problem for them to adopt ICTs. 10% saw low level technology hardware as an obstacle. Though quite contradictory, the later could be considered as related to the previous one in which a bit higher percentage expressed the cost of ICT as a fundamental problem. It is important to note though that barriers to ICT adoption change overtime (will not exist forever) and may vary along the adoption ladder. An important aspect in successfully adopting ICT lies on the management's attitude and skill level in restructuring the business process to make better use of ICT.

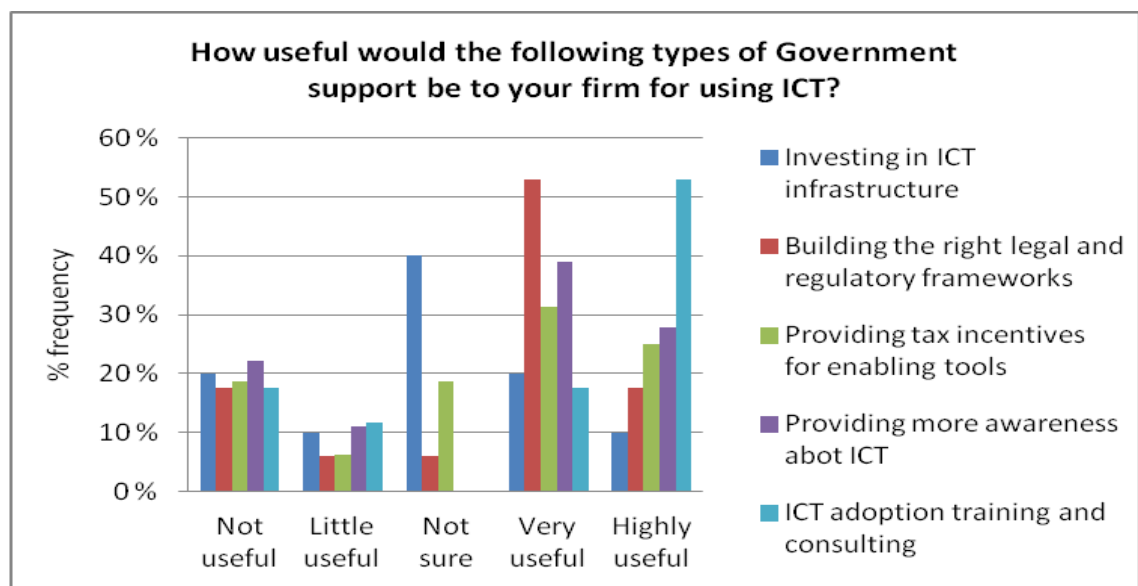


Figure 5.17 The role of government in ICT uptake

Finally, respondents were asked to describe how useful and what sort of government support they need in terms of using ICT effectively. A total of 30% find either very and, or highly useful the government to invest more in ICT

infrastructure. This is because ICT infrastructure and its uptake have not yet reached at the expected saturation level. Majority of SMEs feel that investment in ICT infrastructure would enable them to take advantage of the large different technologies available in the market. Moreover, a total of 71% expressed either as very and, or highly useful the government to build the right legal framework in ensuring security, trust, privacy and customer protection. In addition, almost 56% of the surveyed respondents feel the government to provide tax incentives and awareness of the benefits of using ICT (67%) as well as providing ICT related training and consulting services (71%). This shows that there is a need for advice and relevant information about benefits of ICT for SMEs.

5.7.4 Summary of the empirical study

The objective of the empirical study was to answer the research questions of the thesis. The study was conducted in the form of a survey, in which a questionnaire encompassing 26 questions was applied as an instrument for collecting the primary data. The data was then analyzed using quantitative method. In this section, I summarize the results of the empirical study, which have been discussed in details in the previous sections of this chapter.

Pertaining the distinctive characteristics of Rwandan SMEs, the survey data and the literature review combined with the interpretation of theoretical perspectives show that even though micro and small enterprises form the majority making 97.8% of the private sector and accounting for almost 36% of private sector employment, most micro and small enterprises start off as survival with little intention for growth and expansion resulting some 50% to vanish right after their second anniversary and the rest closing within one year of operation. However, that being said the study also found out that most small and medium-sized enterprises have one way or other moderately adopted ICT applications even though it is not clear as to whether they have adopted basic or advanced ICT applications. However, the uptake and usage of mobile telephony technologies is indeed a milestone achieved which certainly helped foster ICT diffusion and adoption. The rapid adoption of mobile phone technologies alone helped realize

the perceived benefits of technology and has led many businesses to heavily rely on for their business operations. The combination of the results indeed adequately answered the first research question. The findings imply that Rwanda has a lot to do in providing support and building a vibrant SMEs sector.

Regarding the second research question based on the role of ICT and how does Rwandan SMEs benefited from using ICT as a competitive tool, it could be concluded that fairly majority of SMEs have gained a significant advantage using ICTs particularly in the areas of communication and customers satisfaction, marketing efficiency, market penetration and promptly responding to market changes, quality improvements for products and services, reducing operational costs and more importantly increasing revenue stream. The research findings correlate positively the gathered findings from the literature review related to the perceived benefits of ICT in terms of enhancing overall performance of the firm.

With respect to third question of the research based on the key driving forces of ICT adoption, it has become apparent through this research that there are a number of key factors that necessitate ICT adoption. The first being in response to the intensification of global competition and the quest of companies to grow faster and sustain competitive advantage and the ease, speed and connectivity that ICT yields. Secondly, because of the country's insufficient natural resources and being landlocked forced Rwanda to position it self as a knowledge-based economy that converges and produces continental IT talents that can be then successfully transferred into commodity. While this thinking initially initiates from the country's insufficient natural resources, its important to note that in order to secure the continuity of building such dynamic knowledge economy, the country will need to be well balanced in terms of structural, economy, education, capital and age for the changes ahead. A precondition for that is the cooperation of both the private and public sectors and their willingness and ability to invest in and adjust to new challenges and demonstrate innovativeness. To put together, undoubtedly, the country's strong commitment to education and high-level quest of technological infrastructure,

the well-functioning public institutions, openness of the economy and integration of international trade blocks in combination can be concluded as the driving forces of embracing technology. These facts and findings inclusively answered the third question.

The fourth question of the research being to what extent government reforms help shape the private sector particularly the SMEs, even though country facts indicate that the government has implemented several business regulation reforms aimed to assist business community in general and in particular SMEs such as easing business start-up processes, property registration, investor protection, access to credit and tax incentives, cross border trade and more importantly creating the enabling environment for ICT initiatives, research findings indicate that the government needs to invest more in ICT infrastructure up to a saturation level. In addition, the findings indicate the need for the government to strengthen legal frameworks, areas such as privacy measurements as well as awareness of ICT benefits and consulting provisions. These two slightly different reflections provide an answer for what has been done so far and what needs to be done yet.

The final fifth questions of the research which relates to stumbling challenges SMEs currently face in terms of ICT adoption, it has been found that SMEs in Rwanda face an array of challenges and constraints like other SMEs in other parts of the world do. When asked what are the most pressing problems that hinder their business operation and growth, respondents indicated unreliable service providers and security concerns as the major stumbling blocks for utilizing the full potential of ICT. Indeed, these two main issues raise a very serious concern as they are the very foundation pillar for companies to invest in and fully adopt ICT applications.

6 CONCLUSION

6.1 Summary of the thesis

The overall aim of this research was to investigate the impact of Information and Communications Technology (ICT) on small and medium-sized enterprises in Rwanda. The research has carefully gone through extensive literature review on the impact of ICT on SMEs particularly in Rwanda. It involved a questionnaire survey as an instrument for collecting the primary data. The data collected through the questionnaire was intended to answer the research questions that were drafted to address the research problem of the thesis. The results obtained through the empirical study proved the validity of the research problem and brought promising answers to the drafted research questions. Both the literature and empirical findings provided valuable insights on how ICT can assist SMEs to perform better and become more competitive. The results of the study indicate that while challenges faced by SMEs in terms of finding ways and means to achieve sustained competitive advantage are many there are on the other hand multiple solutions ICTs offer in terms of fostering company competitiveness.

It was found that even if very small, a firm has the opportunity to attain competitiveness and outmaneuver its rivals if it constructs a culture that fully utilizes the opportunities that come with ICTs be it the internet, electronic commerce, e-business and communication technologies, knowledge-based innovation management. Furthermore, it was found that ICT can simply help firms to quickly locate more customers, outsource best suppliers, and most importantly reach suitable business partners worldwide. Enthusiastic respondents expressed that they have found ICTs as very effective in terms of decreasing the time between the outlay of capital and the receipt of products and services. In addition, financial benefits include the creation of highly specialized businesses and the initiation of completely new unique business processes and reengineering projects.

ICT adoption is highly strategic in that it is firstly potential for the immediate survival and growth of any business whether small or large and secondly it is inescapable necessity for the future success of any business. Some of the strategic benefits respondents indicated include expanding geographical reach as well as increasing brand awareness, increasing revenue, improving customer services and interaction as well as competing with bigger rivals.

Even though the concept of ICT uptake is still pretty new in Africa generally and as such continues to face an array of challenges including poor telecommunication infrastructure, lack of skilled labor and trust, privacy and psychological barriers, digital divide as well as poor ICT adoption planning and strategy and an overall culture of reluctance among general population and more importantly among SMEs owners or managers in adjusting their businesses with the revolution of ICT applications simply with the assumption that such participation involves complete re-design of their business strategy; it seems despite all these challenges, SMEs do explicitly understand the real potential of ICT.

It was found that Rwandan SMEs take advantage the different possibilities ICT has to offer for example marketing through it. A significant number of respondents indicated that tools and platforms for e-marketing offered them to increase their reach, reduce costs and provide advantages for customers. Without human intervention, a company can now provide a customer with a limitless amount of information. E-marketing enables firms not only to create interaction with the customer but also a way that customers too can themselves design products and services according to their desire and need.

Also social media applications become more appealing both for marketers and customers in that that companies can promote their websites, products or services through online social channels and communicate with and tap into a much larger communities that may not have been otherwise available via traditional advertising channels. For customers, adverts channeled or submitted to them through social networks provide them an easy way to find out most

trending marketing activities, stay updated through subscription hence creating broader awareness and connection between companies and customers.

Relating to innovation, the study has found out that although the processes of innovation considerably differ between small and large firms, product initiation or development is no longer determined by internal R&D functions, but rather depends on the contributions of a broad range of external players. In this respect, SMEs are generally more flexible, adaptive and are better placed to develop and implement new innovative ideas because of their simple organizational structure, their low risk and receptivity are in fact essential features facilitating them to be innovative. However, this research notes that it strongly depends on the background and role of entrepreneurs/owners. Education and prior work experience, technical skills of the workforce, and investment in R&D and training are some of the important internal factors which facilitate the development of innovative capabilities in SMEs (Romijn and Albaladejo, 2002). These theoretical reflections were supported by the questionnaire results as the respondent's level of education was high with almost fifty percent holding university degree. This is a positive indication that at least they would not be behind unless otherwise hindered by other factors that their knowledge will generate necessary creativity and mindset for technological capability and thereby facilitate the technological innovations their firms.

In light of the government's role, the study has revealed that there is a need for the government to address more about ICT infrastructure investment and awareness aspects related to the benefits and adoption of ICT. Based on the results, this study recognizes the necessity of all sectors concerned ICT adoption to work together in a networked and in a coordinated manner in order to bring ICT diffusion at required level.

In conclusion, ICT is no longer an afterthought concept but an actual cause and driver which offers enterprises avenues to compete on a global scale with improved efficiency and closer customer and supplier relationships. ICT

adoption often comes at the price of strategic reform or change and this entails that organizations need to view change as a normal way of doing business.

6.2 Limitation of the study

Although this study has provided comprehensive understanding on the impact of ICT on small and medium-sized enterprises it's important to stress out the limitations of this study. Because of the limited number of SMEs surveyed as well as limited available information on SMEs, further research on ICT impact and uptake is needed to be carried out with an ideal sample size of 100 plus prospects.

6.3 Recommendations for future research

Because of the existence of the above mentioned limitations, future studies need to address the above limitations in order to obtain more convincing results. More specifically, special attention should be given obtaining a bigger sample preferably with a sample size of more than 100 prospects. Research should also find out what kind of ICT applications (basic or advanced) firms use. Furthermore, future studies should investigate level of adoption, motivating factors as well as challenges being faced. This is because ICT is just taking its roots in the continent thus further research would be of interest. Lastly, continuation of the subject matter of this research could be based on case study in order to gain a richer and bigger picture of ICT adoption and impact.

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1. Gender

- ☐ Male
- ☐ Female

2. Age

- ☐ less than 20
- ☐ 20-29
- ☐ 30-39
- ☐ 40-49
- ☐ older than 50

3. Education

- ☐ High school
- ☐ College
- ☐ Bachelor
- ☐ Master or higher

4. Please mark the business sector your firm belongs to?

- ☐ Manufacturing
- ☐ Business Services
- ☐ Financing and Insurance
- ☐ Construction
- ☐ Communications
- ☐ Transport and Storage
- ☐ Wholesale/Retail
- ☐ Real Estate
- ☐ Food
- ☐ Import & Export-Consumer non-durable goods
- ☐ Import & Export – Consumer durable goods

- ☐ Import & Export – Miscellaneous goods
- ☐ Restaurants, Hotels and Boarding Houses
- ☐ Other

5. Number of persons engaged in your firm (including overseas operations)?

- ☐ Less than 10 people
- ☐ 10-49 people
- ☐ 50-100 people
- ☐ Over 100 people

6. Number of years your firm has been in business?

- ☐ Less than 3 years
- ☐ 3-7
- ☐ 7-10
- ☐ 10-15
- ☐ 15-20
- ☐ 20 or more

7. Overall, to what extent do you feel that your firm currently uses ICT?

- ☐ Not at all
- ☐ Very little
- ☐ Sometimes
- ☐ Often
- ☐ Very often

8. Does your firm use the Internet?

- ☐ Yes (Please answer question 9)
- ☐ No (Please answer question 10)

9. Please mark to what extent your firm uses the Internet for the following purposes?

	Not at all	Very little	Sometimes	Often	Very often	N/A
E-mail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Online sourcing of general information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Online ordering from suppliers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Online payments to suppliers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Online sales to customers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Online receipt of payments from customers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Government information	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Provision of information/feedback to customers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Software downloads	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
E-banking services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Video conferencing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

10. How important are the following reasons for your firm not to use the Internet?

	Highly important	Not important	Little important	Important	Very important
Uncertainty about Internet security.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Employees waste their time.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Maintenance is difficult and expensive.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Business partners and customers are not using the Internet.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Internet cost is too high.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

11. Does your firm use website?

- ☐ Yes
- ☐ No (if so please answer question 12)

12. *(follows question 11 if answered No)*

- ☐ Business partners do not have a Website
- ☐ Online transaction is not common in the industry
- ☐ Online marketing is not common in the industry
- ☐ Security concerns
- ☐ Maintenance is difficult and expensive

13. Is your firm's Website/webpage integrated with the firm's database?

- ☐ Yes
- ☐ No

14. Is your firm's Website/webpage integrated with your business partners' database?

- ☐ Yes
- ☐ No

15. Does your business use the Internet to provide and/or market its services?

- ☐ Yes
- ☐ No

16. What kind of e-marketing tools does your firm use?

- ☐ Banner ads
- ☐ Interstitial (pop-ups)
- ☐ Sponsorship
- ☐ Internet discussion groups
- ☐ E-mail
- ☐ Rich media

- ☐ Keyword search
- ☐ 3-D visualization
- ☐ Advert-games

17. Does your company make use of social media marketing?

- ☐ Yes (please specify by answering following question 18)
- ☐ No

18. (follows question if answered Yes)

- ☐ Facebook
- ☐ YouTube
- ☐ Twitter
- ☐ Orkut
- ☐ Blogs
- ☐ Google
- ☐ Flickr
- ☐ Other

19. Overall, to what extent do you feel that using ICT would increase the value added to your firm?

- ☐ No value added
- ☐ Very little value added
- ☐ Some value added
- ☐ Significant value added
- ☐ Great value added

20. How much value do you think ICT has added to the following aspects of your business?

	No value added	Very little	Some	Significant	Great value
Penetration of new markets	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Prompt response to market changes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Exploitation of network	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

opportunities

Improving operational	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Improving customer services through integrated processes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increasing sales	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Creation of new products/services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Providing competitive advantages	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

21. What are the perceived benefits your company experienced through ICT adoption?

	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
Customer satisfaction increased	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ICT improved the quality of our products and services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Business process is more efficient, tasks are performed more quickly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increased efficiency of marketing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Communication within firm and our partners improved	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Firm goals are achieved with ease	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Employees can work remotely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Customer relationship improved	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Customer base has increased	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Operational costs reduced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increased revenue	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

22. Does your business actively pursue ICT research and development?

- ☐ Poor
- ☐ Below Average
- ☐ Average
- ☐ Good
- ☐ Excellent

23. Do you have adequately trained staff that handle ICT matters in your organization and can through it create innovative products or services?

- ☐ Poor
- ☐ Below Average
- ☐ Average
- ☐ Good
- ☐ Excellent

24. To what extent has your business adopted the use of ICT technology in its operations?

- ☐ Poor
- ☐ Below Average
- ☐ Average
- ☐ Good
- ☐ Excellent

25. What do you think are the factors limiting ICT adoption and usage for your company?

- ☐ Lack of ICT infrastructure (e.g. internet access)
- ☐ Lack of awareness about the benefits of ICT
- ☐ Employees IT skills level is too low
- ☐ Security concerns
- ☐ ICT is too expensive
- ☐ Time barriers
- ☐ ICT applications not tailored to the way we do business
- ☐ Business partners (suppliers and customers) do not make use of ICT

- ☐ Low level hardware technology in place
- ☐ Unreliable service providers
- ☐ Resistance to change

26. How useful would the following types of Government support be to your firm for using ICT?

	Not useful	Little useful	Not sure	Very useful	Highly useful
Investing in ICT infrastructure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Building the right legal and regulatory framework to ensure security, trust, privacy and consumer protection	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Providing tax incentives for enabling tools e.g. the Internet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Providing more awareness on the benefits of using ICT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Providing ICT adoption training and consulting services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Thank you for your feedback!