

**LEVERAGING ICT ORGANIZATIONAL CAPABILITY FOR SME  
COMPETITIVENESS IN THE AGRICULTURAL SECTOR IN  
KENYA**

**TERESA LAGAT**

**A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE  
REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTERS OF  
BUSINESS ADMINISTRATION SCHOOL OF BUSINESS, UNIVERSITY OF  
NAIROBI**

**OCTOBER, 2014**

## DECLARATION

This project is my original work and has NOT been presented for a degree in any other university.

**Teresa Lagat**..... Date: .....

**D61/73486/2009**

### **Declaration by Supervisor**

This research project has been submitted for examination with my approval as the University Supervisor.

Name of Supervisor:

**Dr. J.M. Njihia**

Sign:..... Date: .....

## **ACKNOWLEDGEMENTS**

I am greatly grateful to the almighty God by whose grace I have been able to complete this project. I wish to express my sincere gratitude to Dr. Njihia who supervised this project and offered very useful criticisms and suggestions to make this study a success. His patience and professional guidance went beyond the call of duty. Many thanks also go to my family for standing with me during this and assisted me complete this study. Lastly I wish to express my gratitude to all my friends who provided me all the needed information and support to make this work a success.

God richly bless you all.

## **DEDICATION**

I dedicate this project to my parents.

## TABLE OF CONTENT

<b>DECLARATION.....</b>	<b>ii</b>
<b>ACKNOWLEDGEMENTS .....</b>	<b>iii</b>
<b>DEDICATION.....</b>	<b>iv</b>
<b>LIST OF TABLES .....</b>	<b>vii</b>
<b>ABSTRACT.....</b>	<b>viii</b>
<b>CHAPTER ONE: INTRODUCTION.....</b>	<b>1</b>
1.1 Background of the Study.....	1
1.1.1ICT Capability .....	2
1.1.2Competitiveness.....	3
1.1.3ICT Capability and Competitiveness in SMEs .....	4
1.1.4Agribusiness in Uasin Gishu County .....	6
1.2 Statement of the problem .....	7
1.3 Research Objectives .....	9
1.3.1Specific Objectives .....	9
1.4 Value of the study .....	9
<b>CHAPTER TWO: LITERATURE REVIEW.....</b>	<b>11</b>
2.1 Introduction .....	11
2.2 Information and Communication Technology in Small and Medium-sized Enterprises.....	11
2.3 Technologies in use in SMEs .....	13
2.4 ICT Capability.....	16
2.5 Leveraging ICT capability for competitive advantage.....	17
2.6 Challenges for SMEs in using ICT .....	19
2.7 Summary of Literature reviewed.....	21
2.8 Conceptual framework .....	21
<b>CHAPTER THREE: RESEARCH METHODOLOGY .....</b>	<b>23</b>
3.1 Introduction .....	23
3.2 Research Design.....	23
3.3 Study Population .....	23
3.4 Sampling Design .....	23

3.5 Data Collection.....	24
3.6 Data Analysis .....	24
<b>CHAPTER FOUR.....</b>	<b>26</b>
<b>DATA ANALYSIS, RESULTS AND DISCUSSION.....</b>	<b>26</b>
4.1 Introduction .....	26
4.2 Response Rate .....	26
4.3 General Information .....	27
4.4 Level of ICT use.....	30
4.5 ICT Capability.....	31
4.6 Challenges .....	32
4.7 Regression and Correlation Analysis .....	34
4.8 Correlation Analysis.....	34
4.9 Regression Analysis .....	35
4.10 Discussions.....	38
<b>CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS ...</b>	<b>40</b>
5.1 Introduction .....	40
5.2 Summary .....	40
5.3 Conclusion.....	41
5.4 Recommendations .....	42
5.5 Limitations of the Study.....	43
5.6 Recommendations for further research .....	44
<b>REFERENCES.....</b>	<b>45</b>
<b>APPENDIX 1: QUESTIONNAIRE.....</b>	<b>i</b>

## LIST OF TABLES

Table 4.1 Response Rate .....	27
Table 4.2 Number of employees .....	27
Table 4.3 Number of years in the business .....	28
Table 4.4 Size of the market.....	29
Table 4.5 Business type.....	29
Table 4.6 Level of ICT use.....	30
Table 4.8 ICT Capability.....	31
Table 4.9 ICT Capability.....	33
Table 4.9 Correlation Coefficients .....	35
Table 4.10 Coefficient of determination (Regression) (Model Summary) .....	36
Table 4.11 Analysis of Variance (ANOVA).....	36
Table 4.12 Coefficient Results .....	37

## ABSTRACT

In today's global economy, successful SMEs need to take full advantage of technological advancements dealing with all aspects of their business models. SME must find some competitive advantage through the technological advancements that gives them an edge that their competitors cannot reproduce. The main objective of this study was to determine how SMEs can leverage ICT capability for greater competitiveness. The study used descriptive research design; this study established associations between variables. The population of the study consisted of SMEs in the Agricultural Sector in Uasin Gishu County .The population under study comprised all the 528 Agricultural SMEs within Uasin Gishu County. Primary data was obtained by using structured questionnaires. The respondents consisted of, SME owners, managers and employees. The study used descriptive and inferential statistics to analyze the data. The findings identified in this research paper shows that the access and use of ICT in Agri-business SMES has not been embraced by majority of the enterprises in Uasin Gishu County thereby indicating a low level of ICT use. Agri-business SMES also have expressed the weak financial capacity in investing in ICT structures and tools for better management of their business. The findings further shows that SMEs financial capacity is limited to the basic requirements of a business thus reason for high use of the mobile phone technology, that the level of knowledge on various ICT tools hinders use because most of SMEs have low level of literacy. The findings also show that although most of them are aware of their existence they do not think that such technologies are necessary for their businesses and that most of the SMEs in this study did not have appropriate ICT expertise to decide on which ICT to invest in and to implement the use of ICT. The study recommends that the Government should therefore make ICT more affordable and readily available to Agri-business SMEs, this can be done through Ministry of Information, Communication and Technology of Kenya who can initiate and support training programmes to develop the capacity of Agri-business SMEs in Uasin Gishu County to embrace ICT and this will scale up productivity and increase production.



## **CHAPTER ONE: INTRODUCTION**

### **1.1 Background of the Study**

Small and Medium Enterprises (SMEs) are considered to be a key driver of economic growth for many developing countries and comprise over 90 percent of all businesses globally (Maurel, 2009; Tang et al, 2007; Krake, 2005). SMEs influence many governments' economic and developmental strategies (Tang et al, 2007; NORAD Report, 2002). In Kenya SMEs play a very important role by significantly contributing to the Country's Gross Domestic Product (GDP) and its labor market this is because it provided for approximately 80% of total employment and contributed over 92% of the new jobs created in 2008 (Economic Survey of 2009). This has led to new systems and strategies being developed that have helped SMEs become more efficient and productive this is not only beneficial to SMEs but for the economy as a whole.

Agriculture is facing new and severe challenges in its own right. With rising food prices that have pushed over 40 million people into poverty since 2010, more effective interventions are essential in agriculture (World Bank 2011). The growing global population, expected to hit 9 billion by 2050, has heightened the demand for food and placed pressure on already-fragile resources. Feeding that population will require a 70 percent increase in food production (FAO 2009). ICTs in agriculture has the potential to facilitate greater access to information that drive or support knowledge sharing. ICTs essentially facilitate the creation, management, storage, retrieval, and dissemination of any relevant data, knowledge, and information that may have been already been processed and adapted (Batchelor 2002; Chapman and Slaymaker 2002; Rao 2007; Heeks 2002).

In the past, television and radio were the main electronic broadcast technologies used to reach rural communities; however, in the past two decades, Internet- and mobile-based channels have emerged. ICTs now include computer-based applications and such communication tools as social media, digital information repositories (online or offline), and digital photography and video, as well as mobile phones (Balaji, Meera, and Dixit 2007). However, in agriculture, despite the rapid spread and potential of ICTs to facilitate farmers' access to information, many of the initiatives face common challenges, such as issues of sustainability, affordability, ease of use, accessibility, scalability, and availability of relevant and localized content in an appropriate language (Keniston 2002; Dossani, Misra, and Jhaveri 2005; Saravanan 2010).

In addition, increase in liberalization of the world economy and the impact of ICT on consumer behaviour has demanded SMEs to improve their competitiveness. Sustainable competitive advantage is dependent not on technology itself, but rather on the creation of distinct and inimitable IT capabilities that differentiate a company from its competitors (Limburg, 2012). As outlined by Uden (2007), "only sustainable strategies will save (SMEs) from the destructive power of the heavyweight companies...the only way to remain competitive in business today is to be constantly and fully alive to new ideas, new practices, and new opportunities". Adopting ICT capability is one way to remain "fully alive" to new ideas, practices, and opportunities and to leverage technological potential to enhance the overall SME's competitiveness.

### **1.1.1 ICT Capability**

ICT capability can be defined as the ability of a company controlling its IT expenditure and cost, and delivering in time to promote the realization of the company's targets

(Ross, 1996). Ross believed that the IT capability comes from three kinds of relative resources; they are the IT human resources, IT technology resources and the IT relationship resources. Bharadwaj, 2000) also did research about the issues, he defined this ability as the competence to mobilize and deploy its IT-based resources and this kind of IT resource should be combined with other resources of the company. While Van der heijden thought that IT capabilities are of organizing abilities based on a firm's behaviors, business processing, technology and resources. Chinese scholar Zengqingfeng(Zeng& Huang, 2003) defined IT capability as a competence that a company mobilizes its related IT resources to achieve operation goals. We can find that IT resources are important to a company and its IT capability. Augmenting the conceptual analysis of IT effects on firm performance is the resource-based view (RBV) of the firm which links the performance of organizations to resources and skills that are firm-specific, rare, and difficult to imitate or substitute. The resource-based view is presently the dominant theoretical perspective in strategic management literature, and focuses on costly-to-copy attributes of a firm which are seen as the fundamental drivers of performance.

### **1.1.2 Competitiveness**

The competitiveness of a certain region depends on the nature of the business environment in which firms or industries emerge (Porter, 1990). In order to assess the competitiveness of nations, the World Economic Forum developed the Global Competitiveness Report, which defines competitiveness as the ability of a country to achieve sustained high rates of growth in terms of gross domestic product (GDP) percapita (Schwab and Porter, 2003).Porter (1990) argues that a firm can gain

competitive advantage over its rivals in two ways, namely through cost advantage and differentiation. By lowering costs, Porter describes the ability of a firm to produce and sell comparable products more efficiently than its competitors, while differentiation is the ability to fulfill customer expectations, through providing unique products or services.

The concept of the competitive advantage is given by Barney (1991) who writes that a firm has sustainable competitive advantage when it implements the strategy of the value creation that is not implemented by other competitors. Competitive advantage is the capability of the organization to do its activity in a way or in different ways, that other competitors can not realize (Kotler, 2000). Competitive advantage is a base for a good strategy and a good one creates competitive advantage (Analou and Karami 2003). The importance of the competitive advantage is increased these last decades (Coplin, 2002). A firm has competitive advantage when it is able to create more economic value than its rivals (Barney and Hesterly 2010) do. Porter's (1985) arguments reflect the strengths, weaknesses, opportunities, and threats (SWOT) of the framework for assessing competitive advantage. Competitive advantages are those factors that a firm needs to have in order to succeed in business (Analou and Karami, 2003).

### **1.1.3 ICT Capability and Competitiveness in SMEs**

Since SMEs play a role of increasing importance in the economy especially when we consider their contribution to the generation of jobs as well as the social-economic development of the community where they are located (Hartigan, 2005), it is then desirable that SMEs are stimulated into adopting new technologies more rapidly, and creating innovative products more competitively. Teece et al. (1997) see dynamic capabilities as the firm's ability to update and improve the sources of its own competitive

advantage, thus positioning them as extended strategic assets. SMEs need distinctive assets and capabilities to be successful and coexist with, or even compete with, larger enterprises.

Moreover, new capabilities for communicating information faster, less expensively, and more selectively, may help to create a rapidly changing organization with highly decentralized networks of shifting projects teams Roberts (2000). Webb and Schlemmer (2008) argue that, as such technologies are relatively inexpensive and accessible, competitive advantage is not derived from simply ‘having it’, but has to come from “individual and organisational capabilities in the development and management of web services...” (p. 5). This fits with a broader IS capabilities perspective, which holds that, as IT investments as such can be easily duplicated, sustainable competitive advantage can only be derived from the creation of unique IS capabilities (Mata et al 1995) rather than from the IT investments themselves (Chan, 2000)

In addition, the sum of these changes is creating a pervasive feeling in business today that global interdependencies are becoming more critical. Thus, companies realize that they need to take advantage of ICT capabilities for improving their competitiveness and productivity (Ragaswamy and Lilien, 1997). This enables SMEs to identify its strengths in terms of inimitable IT capabilities, its areas of weakness, and its priority areas for improvement. This awareness helps to shape strategic and operational discussions around resource allocation, and the implementation timelines of strategic objectives, and moves the focus from one of IT cost management to one of IT strategic enablement of business competitiveness (McLaughlin, 2012a; 2012b).

#### **1.1.4 Agribusiness in Uasin Gishu County**

Uasin Gishu County is one of the 47 Counties of Kenya Located in the North Rift Region. The estimated size of Uasin Gishu County is 3218 square km with a Population of 894,179 people (2009 national Statistics). Eldoret town is its capital, administrative and commercial centre. Located on a plateau thus making it one of the best counties offering a serene environment for both commercial and agricultural activities, Uasin Gishu is endowed with good land resources and varied agro-ecological potential. It is the bread basket for the country; producing over 4.5million bags of maize and about 1million bags of wheat. Agriculture supports over 80% of the rural population of Uasin Gishu County in terms of household income and food security.

In agriculture, agribusiness is the business of agricultural production. It includes crop production, seed supply, agrichemicals, farm machinery, distribution, processing, marketing, and retail sales. With World Bank economic growth projections for Kenya at 4.8 per cent, it is expected that this increased growth will translate into increased income by consumers and thus more demand for value added products such as processed food. It therefore makes economic sense for small scale farmers in Uasin Gishu County to transition to larger scale agribusiness practices in order to cater for the expected increase in consumer demand. It is thus necessary to increase competitiveness among farmers to get better yields and better quality produce.

Vision 2030 has identified agriculture as one of the key sectors to deliver the 10 percent annual economic growth rate envisaged under the economic pillar. To achieve this growth, transforming smallholder agriculture from subsistence to an innovative,

commercially oriented and modern agricultural sector is critical. However; the full potential of the County's agricultural production has not been realized. Thus need to work towards achieving Kenya's Vision 2030 theme in Food Security and Poverty Eradication through Innovation and Technology Transfer.

## **1.2 Statement of the problem**

In today's global economy, successful SMEs need to take full advantage of technological advancements dealing with all aspects of their business models. SME must find some competitive advantage through the technological advancements that gives them an edge that their competitors cannot reproduce. According to Ritchie and Brindley (2005) and Lucchetti and Sterlacchini (2004) ICT plays a very important role in the current "knowledge economy". It is vital for SMEs to become a part of this economy in order to compete and thrive in future. The problem is that SMEs are mainly using traditional tools to stay competitive; they need to take advantage of the power of ICT in order to achieve sustainable competitive advantage. ICT-based smart farming systems are being developed to improve management, to reduce the inputs while enhancing the outputs of farming systems. The mobile phone is the most used ICT tool in that is rated most significantly in terms of desirability, accessibility and affordability. Mobile phones emerge as the preferred ICT tool to SMEs due to affordability, ease of use, and a reliable network. More than 95% of SMEs in Kenya own mobile phones with subscription reaching 30.7 million in April, 2013 and mobile penetration at 78%. (CCK, 2012) Thus need the need to find ways Agricultural SMEs in Kenya could leverage ICT for business competitiveness

Santanam and Hartono (2003) found that companies with superior IT capabilities have higher than average performance they also point out that one of the difficulties in

measuring the impact of IS capabilities on firm performance is the lack of an agreed framework for measuring IS capabilities. They used a dichotomous perspective, classifying organisations as either 'IT leaders' (as selected by industry experts) or not. Feeny and Willcocks (1998) provide more detail by proposing 9 core IS capabilities that are investigated further in Willcocks et al 2007. These 9 core IS capabilities include (1) Leadership, (2) Business systems thinking, (3) Relationship building, (4) Architecture planning, (5) Making technology work, (6) Informed buying, (7) Contract facilitation, (8). Contract monitoring and (9) Vendor development. Mithas et al (2011) found that information management capabilities play an important role in developing other business capabilities such as customer management, performance management, and process management.

Kiveu and Ofafa (2013) in their study of market access and ICTs in Kenya conclude that to improve market access by SMEs there is need to improve ICT use by SMEs for marketing and recommend that increased awareness creation by the government and other stakeholders to promote the use of various available ICT applications already in use to improve market access.

ICT has allowed for innovations in SMEs that bring financial services, including mobile money, to smallholder farmers. M-PESA in Kenya, and others have brought financial services to the previously unbanked, a critical component of improving smallholders' competitiveness. As a result this research looks at the how SMEs can achieve sustainable competitive advantage by leveraging ICT capability. The main central question that this



research attempts to address specifically is how can SMEs leverage ICT to greater competitiveness?

### **1.3 Research Objectives**

The main objective of this study will be to determine how SMEs can leverage ICT capability for greater competitiveness.

#### **1.3.1 Specific Objectives**

The specific objectives of this study are to:

1. Establish extent of use of ICT by Agri-business SMEs
2. Establish the ICT capability of SMEs
3. Determine the relationship between ICT capabilities and SME competitiveness in the Agricultural sector
4. Establish the challenges SMEs face in using ICT as a competitive tool

### **1.4 Value of the study**

The findings of this research are expected to benefit the government of Kenya by aiding policy makers and other relevant stakeholders to come up with appropriate programmes and policies that are market driven to support SMEs in Kenya. SMEs are considered catalysts for economic growth and because of their potential for job creation and distribution of wealth which results in a multiplier effect on the socio-economic activities of the country they play an important role in the Kenyan economy.

SMEs owners will benefit from this research as they need the information in order to compete and sustain successfully, locally, and globally by embracing effective use of ICT capability in their businesses. It will encourage the SME to re-evaluate its use of ICT to

support the company's goals of agility, competitiveness and growth, forcing the company as a whole to examine not just what it does now, but what ICT capabilities it needs for the future to support the business. Further, it enables the SME to identify its strengths in terms of inimitable ICT capabilities, its areas of weakness, and its priority areas for improvement

Equally important is that results from this research would contribute to existing studies and aid academicians and researchers interested on issues related to ICT capability and SME competitiveness thus providing a basis for further research.

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

As the world economy continues to move toward increased integration as a result of advances in information communications technology, and the increasing reduction in trade barriers, some of the greatest opportunities for small businesses will derive from their ability to participate in the regional and international markets (Mutula and Brakel, 2006). Adoption of the ICT is considered to be a means to enable Agri-businesses to compete on a global scale, with improved efficiency, and closer customer and supplier relationships (Chong et al., 2001). In this respect, SMEs should consider information and communication technology (ICT) as an important approach in their business to take competitive advantage from the global markets (Mutsaers et al., 1998).

This chapter will cover the following topics: (a) Information and Communication Technology in SMEs, (b) technologies in use in SMEs, (c) ICT capability, (e) leveraging ICT capability for competitive advantage, and (f) challenges for SMEs in using ICT.

### **2.2 Information and Communication Technology in Small and Medium-sized**

#### **Enterprises**

According to Uzoka (2004), the global wave of ICT development has become a strong driving force in almost every aspect of human endeavor. ICT is rapidly changing global production, work and business methods and trade and consumption patterns in and between enterprises and consumers. Denni (1996) stress every business must bring ICT into their business operation and take advantage of the benefits they offer. In the developed countries including Australia and United Kingdom Small and Medium

enterprises (SMEs) account for more than half of all business and over half of all employment (Kazi, 2007). Nowadays small businesses are increasingly using and embracing ICT due to the advent of Personal Computer, cost-effectiveness and cheaper ICT products. Alberto and Fernando (2007) argued that the use of ICT can improve business competitiveness with internet providing numerous opportunities for SMEs to compete equally with large corporations.

On the other hand Gagnon and Toulouse (1996) ascribe the use of ICT in business is no longer a matter of choice but rather one of survival, with a better understanding of the process of adopting new technologies as both essential and urgent. Similarly, a research carried out in Portugal by Caldeira and Ward (2002) showed that SMEs that were doing well locally were losing out to outside firms that were employing more aggressive business methods and tactics and hence saw their market share eroded. A similar argument was put forward by Lawson et al (2003) attributing that organizations that do not embrace new technologies will be left behind and encourages the use of e-commerce, an idea supported by Al-Qirim (2005). Kotelnikov (2007) also suggested that SMEs 'who have not yet adopted ICT will have trouble surviving' and will lose out to competition.

Furthermore empirical studies by Bartelsman and Doms (2000), Brynjolfsson and Yang (1996), Dedrick et al. (2003), Kohli and Devaraj (2003) and Melville et al. (2004) confirms the positive effect of information and communication technologies (ICT) on firm performance in terms of productivity, profitability, market value and market share. Their study also reveals that ICT has some effect in terms of intermediate performance measures, such as process efficiency, service quality, cost savings, organization and

process flexibility and customer satisfaction. The introduction of ICT will offer various new investment opportunities within local industries particular in the area of SMEs.

### **2.3 Technologies in use in SMEs**

There are various ICT resources that are drivers of innovation some of these resources include: the social networks, mobile technology, internet and computing E- business. These technologies enable new ways of developing products, interacting with customers and partnering with others to compete and succeed. Top-performing companies show greater mastery in how they leverage these digital technologies to plan, innovate, measure results, interact with customers, and create value.

The Internet is the most significant technological phenomenon today, as it provides competitive opportunities to firms (Othman, et.al, 2010). Getting online is much cheaper than most businesses think and it is opening a whole new world of opportunity for attracting customers (Titman, 2012). The use of the Internet is increasing worldwide (Santana, L. 2010); therefore, it is imperative to determine the competitive advantage of SMEs who are engaged in e-business in terms of their profitability, quality, and price of products offered. The firm's competitive advantage is not only affected by the environment, but also depends on competitive strategy it involved. The competition strategy is the strategic choice that can influence firm's performance (Yan, S., 2010).

A number of studies (Chetty and Agndal 2007; Coviello and Munro 1995, 1997) have shown that SMEs rely extensively on networks in pursuing international opportunities. Network resources also help SMEs to overcome the risks and challenges associated with foreign market entry decisions .In particular, research into entrepreneurship in transition

economies shows that social capital is an important determinant of resource acquisition and that many of the competitive advantages of transition economies are based on network relationships (Hoskisson et al. 2000; Manevet al. 2005; Manolova et al. 2002).

Social networking allows businesses to gain access to resources that might otherwise not be available to them. It can also aid the development of a firm's worthiness, increase the customer and supplier contacts, and bring to light where resources and funding are available, promote innovation and help in the cultivation of strategic partnerships (Zontanos and Anderson, 2004).

Business owners rarely possess all the skills and knowledge needed to expand their enterprise, and finding people with the necessary skills, and getting them to contribute, is a vital aspect of their networking (Simon, 2012). Facebook, Skype and discussion forums are examples of social media tools (Tapscott and Williams, 2008). Mangold and Faulds (2009) recognize that social media allows an enterprise to connect with both existing and potential customers, engage with them and reinforce a sense of community around the enterprise's offering(s). Owing to the flexibility of social networking tools, businesses can realize different benefits. Marketers can no longer rely on mass media channels alone to communicate with their consumers. They must adopt new strategies if they wish to succeed (Kotler and Armstrong, 2011).

E-Business refers to the use of electronic networks and associated technologies to enable, improve, enhance, transform or invent a business process or business system to create superior value for current or potential customers" (Saehney and Zabin, 2001). Electronic business (e-business) has been widely incorporated into business strategies, helping firms

to grow, identify new markets, and outperform their competitors. Firms use e-business to speed up transactions along value chain activities, achieve real-time communications, lower transaction costs, and enhance flexibility (Lee and Whang 2001). E-business provides these companies with operational, managerial and strategic advantages such as great internal and external process integration, close links with customers and other business partners, great market penetration and expansion capabilities, rich information for decision-making, good competitive intelligence, and great access to external resources and expertise that contribute to the development of small businesses (Raymond et al. 2005).

Mobile technology is gaining importance and popularity in organizations (Gayeski, 2002; Andersen *et al.*, 2003; Siau and Shen 2003; Siau *et al.* 2004). Examples of applications of mobile technology in organizations include mobile access to company intranet (Nah *et al.*, 2005), mobile brokerage services (Looney *et al.*, 2004), mobile payment and banking services (Herzberg, 2003; Mallat *et al.*, 2004), and electronic procurement application systems based on WAP using mobile phones and laptops (Gebauer and Shaw, 2004). The strategic importance of mobile technology cannot be underestimated. The rapid pace of adoption and advancement of mobile technology creates opportunities for new and innovative services provided through mobile devices. The emergence of mobile technology is expected to drastically affect a number of industries and to impact their strategic management (Barnes, 2002).

## **2.4 ICT Capability**

Strategies are formed in order to obtain competitive advantage in the long run. Good strategies focus on the feasibility of the strategy in respect to the used resources and skills within the business, which will lead to clear competitive advantage, by making a fit between the business and the external environment (Rumelt, 1991). According to Barney (1991), the capabilities, resources, and skills of a firm are key in the Resource-Based View (RBV) of a firm. These resources are the source of competitive advantage. Following Rangone (1998, p. 235), there are three basic capabilities for SMEs that are needed to gain (sustainable) competitive advantage: (a) innovation capability: that is a company's ability to develop new products and processes, and achieve superior technological and/or management performance (e.g. development costs, time-to-market); (b) production capability: that is the ability to produce and deliver products to customers, while ensuring competitive priorities, such as quality, flexibility, lead time, cost, and dependability; (c) market management capability: that is a company's ability to market and sell its products effectively and efficiently.

According to the RBV, the benefits of superior IT capability must be sustainable over time. Barney (1991) states that sustained competitive advantage do not imply that the benefits will last forever but indicate that it will not "be competed away by the duplication efforts of other firms." He states this as an important research issue. Grant (1991) emphasized that the primary task of the resource-based approach in strategy formulation is to provide a way to maximize returns over several periods. Specifically, the concept of IT capability was developed using the premise that while resources can be easily duplicated, a unique set of capabilities mobilized by a firm cannot be easily



duplicated and will result in sustained competitive advantages. Barney (1991) proposed that firms could obtain competitive advantages on the basis of corporate resources that are firm specific, valuable, rare, imperfectly imitable, and not strategically substitutable by other resources. Grant (1991) and Makadok (1991) emphasize that while resources by themselves can serve as the basic units of analyses, firms create competitive advantage by assembling these resources to create organizational capabilities.

## **2.5 Leveraging ICT capability for competitive advantage**

Competitive advantage refers to the situation an organisation finds itself in when it implements a value creating strategy which is not being simultaneously implemented by any of its competitors (Hoffman, 2000). This competitive advantage becomes a sustainable one if none of the current or potential competitors in the industry are able to duplicate the benefits of the strategy implemented. This allows the firm to be the only organisation in the respective industry to have this 'edge' and reap the benefits thereof, whilst competitors are still using "older" means of doing business (Hoffman, 2000). According to Porter, businesses can gain a competitive advantage in their respective industry in two main ways, namely cost advantage, or differentiation advantage (Porter, 2001). Both sources of advantage can be gained by businesses through strategic positioning with the use of the internet (Porter, 2001).

The problem which arises with organisations gaining a competitive advantage is that it tends to be more of a once off occurrence than something sustained. Peppard and Ward (2004) qualify this by stating that recent surveys on competitive advantage have deemed it both "temporary and non-lasting". They also see the problem to be that, although some ICT initiatives taken do reap rewards for the business that implements it, many of these

initiatives can be easily replicated by other competitors in the industry, thus causing any competitive advantage gained to be minimised quickly.

However, the insight to harness some ICT initiative's usefulness may not necessarily become ubiquitous, and that is where the opportunity for strategic advantage within Information Technology lies. In order to extract real value from IT, business process re-engineering and business process innovation is required (Carr, 2004). First mover businesses, that is, those that tend to act on the possibilities that IT brings before rivals do, will continue to differentiate themselves in the light of their respective industry competitors and thus, reap the economic rewards of the IT investment.

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

From a competitive perspective, Information Technology can change the rules of competition in various ways. Porter and Millar (1985) suggested that there are five main competitive forces within an industry structure which determine industry profitability for an organisation. Hence, organizations need to accentuate new success factors of speed, flexibility, integration, innovation, and customer focus, as opposed to old success factors such as size, specialization, role clarity, control, and products, in order to effectively sense and respond to market dynamics (McLaughlin, 2012a; Uden, 2007).

## **2.6 Challenges for SMEs in using ICT**

The acceptance and implementation of ICT in businesses have not had the same outcome for all businesses. Not all small to medium business owners have taken up ICT or do they intend on doing so in the near future (Ramsey, Ibbotson, Bell, and Gray, 2003). Directly affecting the way owners manage their businesses is their educational and family background. Many do not have high level qualifications (Fuller-Love, 2006) or strong leadership skills (Jones, 2003). Their innovativeness influences the business performance (Stanworth and Gray, 1992) and the culture of the firm (Smith and Whittaker, 1999). They see their business as a reflection of themselves, an extension of their self-image or personal achievements. Some of them hold that their authority allows them to do whatever they want because their ownership of the businesses (Fuller-Love, 2006). Some of these managers perceive they will lose their power, control and influence when it comes to IT adoption (Maori *et al.*, 2001). In businesses where there are two or more owner-managers, there is often a conflict over who should play the central role (Cromie, 1990). Another problem is that often, in smaller firms, family members are hired to hold vital positions (Jones, 2003; Lema and Durendez, 2007; Smith, 2007). This often leads to management problems due to their non-qualification for positions compared to external hires who are better fitted for the positions (Lana and Durendez, 2007).

Another factor that prevents or inhibits the adoption of ICT in small firms is the cost of the project (Premkumar, 2003). Costs seem to be the problem for the majority of SMEs (Lema and Durendez, 2007), although others argue that both time and costs are fundamental issues (Smith and Whittaker, 1999; Westhead and Storey, 1996). A study by Lefebvre *et al* (1995) suggests that there is no link between IT investment and financial performance. The reason

behind this is that gains normally offset the cost of investment so the change is not significant. A study by Ballantine and Stray (1998) examines the IS/IT investment in UK companies and suggests that it is difficult to measure the benefits and costs associated with such investment. On the other hand, Gadenne (1998) demonstrates that firms that invest using internal finance are often more successful than firms that acquire finance externally. However, cost is still a fundamental issue when it comes to ICT adoption and implementation. Most small businesses do not have sufficient financial resources, and most owner-managers mortgage their own personal property (Fuller-Love, 2006). This is one of the reasons why before investing further, either to expand or to survive in the market, these owner-managers frequently have to have some indications or guarantee of a return on their investment (Lee and Runge, 2001).

SMEs, when working with larger enterprises, are often unable to keep up with IT efficiency of their larger partners although there is a recognition that a knowledge benefit lies in supply chain management. It all depends on the ability of each partner to keep up with the rapid change in the chain (Beecham and Cordey-Hayes, 1998). Another issue is SMEs' lack of codification of their business processes as compared to large corporations (Ward, 2004). Another barrier is that IT adoption requires long-term planning and investment. For some companies, acquiring new IT is planned as it is seen as providing competitive advantage or an investment toward growth in the future. However, for many others, acquiring IT is not planned (Levy *et al*, 2001) as managers do not have enough time to focus on the long-term planning process (Fuller, 1996; Fuller-Love, 2006). Lema and Durendez (2007) suggest most owner-manager is not good in long-term or strategic planning but they often benefit from sufficient flexibility to exploit innovation in short-term investment (Thorpe *et al.*, 2005).

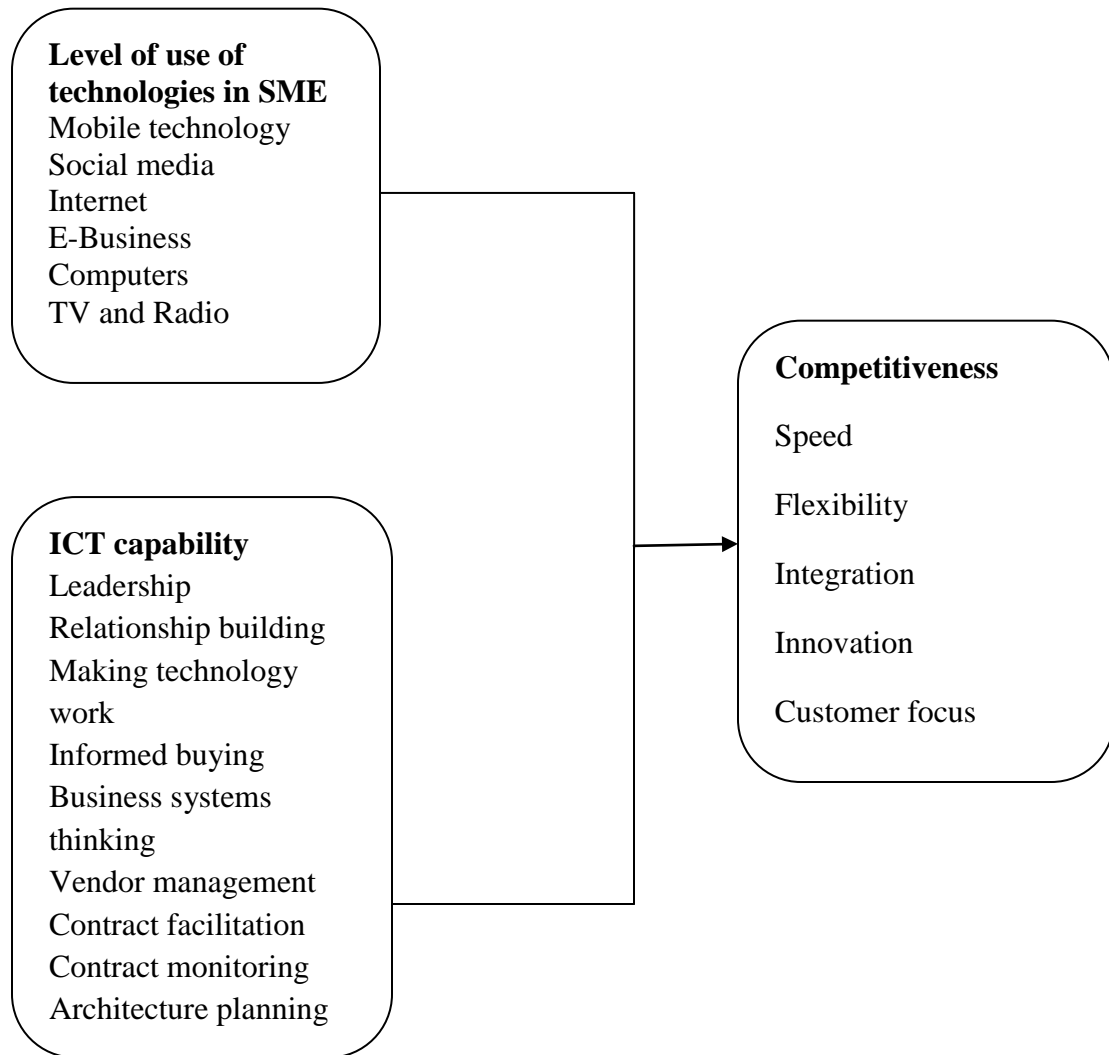
## **2.7 Summary of Literature reviewed**

SMEs are the backbone for economic development in Kenya. However, SMEs in Kenya is obviously lacking of productivity compare to their larger counterpart. In addition, increase in liberalization of the world economy and the impact of ICT on consumer behaviour has demanded SMEs to improve their competitiveness. ICT would be seemed as a good solution to all these problems as speed, agility, and responsiveness are a few of the traits required for SMEs to thrive in todays globalized and dynamic landscape, characterized by hyper competitiveness. Rapid technological advances undoubtedly have played a significant role in changing the nature of the business landscape, and as such play a vital role within SMEs in ensuring they keep pace with market dynamics.

## **2.8 Conceptual framework**

A conceptual framework concerning ICT capability and SMEs is generated, there are two independent variables in the framework, and these are the level of use of ICT resources in SMEs and the ICT capability in SMEs. The dependent variable in the framework is measured by competitiveness as shown in Figure 2.1.

**Figure 2.1 Conceptual Framework**



**Source; Researcher, (2014)**

From Figure 2.1 it is clear that the researcher presumed that competitiveness of SMEs in agricultural sector are influenced by level of use of technologies and ICT capabilities.

## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Introduction**

This chapter presents a methodological orientation of the study and includes a systematic description of research design, target population, sampling design and data collection techniques.

### **3.2 Research Design**

The study used descriptive research design; this study established associations between variables. The design involved gathering of data using structured research instruments and the results was based on larger sample sizes that are representative of the population. The study utilized quantitative methodologies and this involves explaining phenomena by collecting numerical data that are analysed using mathematically based methods in particular statistics (Aliaga and Gunderson, 2000).

### **3.3 Study Population**

The population of the study consisted of SMEs in the Agricultural Sector in Uasin Gishu County .The population under study comprised all the 528 Agricultural SMEs within Uasin Gishu town, the list of the Agricultural SMEs was sourced from the Ministry of Trade Uasin Gishu County.

### **3.4 Sampling Design**

A sample of SMEs in the Agricultural sector was picked from Uasin Gishu County. Cluster sampling was used. The choice of the cluster itself, as opposed to dealing with the aggregate Agricultural sector in the county, is in itself a sampling method. Singleton *et al.* (1993) noted that clustering concentrate interviews within fewer and smaller

geographical areas, thereby spreading the travel over several cases and saving on the costs of any one interview. To select a representative sample, the researcher divided the entire population into clusters according to the business type. To get a representative sample size an acceptable margin of error of 3% was used and the alpha level used in determining the sample size was 0.5 with this the required sample size for this research was 100(Bartlett et al, 2001).

### **3.5 Data Collection**

To collect data during this research the procedure was based on a survey. Primary data was obtained by using structured questionnaires. The respondents consisted of, SME owners, managers and employees. The questionnaires was administered to the respondents through drop and pick method. The questionnaire was divided into five sections. Section A dealt with the general information of the organization; section B addressed the level of ICT use resources in SMEs, section C addressed ICT capability, section D addressed issues on competitiveness and finally section E addressed the challenges SMEs face in using ICT.

### **3.6 Data Analysis**

After administering and collecting the questionnaires, the data was organized, coded, and analyzed using descriptive statistics. The study used descriptive statistics to analyze the data. In order to accomplish objective one, two and four, percentages was used to indicate the proportion and the frequency by which SMEs use mobile money transaction. In objective three, the collected data was analyzed using multiple regression analysis in order to test the relationship between ICT capability and competitiveness. The following equation was used



$$Y = a + b_1X_1 + b_2X_2$$

**Y** is the value of the Dependent variable (Y), what is being predicted or explained

**a** (Alpha) is the Constant or intercept

**b<sub>1</sub>** is the Slope (Beta coefficient) for **X<sub>1</sub>**

**X<sub>1</sub>** First independent variable that is explaining the variance in Y

**b<sub>2</sub>** is the Slope (Beta coefficient) for **X<sub>2</sub>**

**X<sub>2</sub>** Second independent variable that is explaining the variance in Y

## **CHAPTER FOUR**

### **DATA ANALYSIS, RESULTS AND DISCUSSION**

#### **4.1 Introduction**

This chapter is a presentation of results and findings obtained from field responses and data broken into two parts. The first section deals with the background information, while the other section presents findings of the analysis, based on the objectives of the study as explored by the questionnaires where both descriptive and inferential statistics have been employed.

#### **4.2 Response Rate**

From the data collected, out of the 100 questionnaires administered, 92 were filled and returned. This represented 86.67% response rate, which is considered satisfactory to make conclusions for the study. According to Mugenda and Mugenda (2003) a 50% response rate is adequate, 60% good and above 70% rated very well. This also collaborates Bailey (2000) assertion that a response rate of 50% is adequate, while a response rate greater than 70% is very good. This implies that based on this assertion; the response rate in this case of 86.67% is very good as presented in Table 4.1.

This high response rate can be attributed to the data collection procedures, where the researcher pre-notified the potential participants and applied the drop and pick method where the questionnaires were picked at a later date to allow the respondents ample time to fill the questionnaires.

**Table 4.1 Response Rate**

Questionnaires administered	Questionnaires filled & returned	Percentage
100	92	86.67

**Source; Researcher, (2014)**

### **4.3 General Information**

The study sought to find out the general information of the respondents which included business size, business age, market focus, business type and qualification of owner/manager. The findings of the study are discussed in the subsections below.

The study first established the number of employees in the SMEs in the agricultural sector. This was to establish if the SMEs in the agricultural sector play an important role of creating employment. The findings were indicated in Table 4.2

**Table 4.2 Number of employees**

Number of employees	Frequency	Percentage
0	8	2.00
1-9	41	44.00
10-19	13	12.00
20-50	12	8.00
More than 50	11	4.00

**Source; Researcher, (2014)**

The study findings in Table 4.2 indicates that majority 41(44.00%) of the SMEs in agricultural sector has 1-9 employees followed by 13(12.00%) who indicated 10-19 years, 12(8.00%) indicated that their employee number ranges between 20-50 with few

11(4.00%) and 8(2.00%) indicating that their employee number are more than 50 and 0 respectively. This implies that most SMEs have an average number of employees due to low production and operations.

The study further sought to determine the number of years the business has been in operation. This was to establish if they are equipped with the necessary ICT and if their information could be relied upon to make conclusions for the study variables. The findings were as indicated in Table 4.3

**Table 4.3 Number of years in the business**

	Frequency	Percentage
Less than 1 year	12	7.69
1-2 years	12	7.69
3-5 years	14	15.38
6-10 years	53	50.00
11-20 years	15	19.23
Over 20 years	16	20.34

**Source; Researcher, (2014)**

The study findings in Table 4.3 indicates that majority 53(50%) of the SMEs in agricultural sector have been in operation for 6-10 years, 16(20.34%) indicated being in operation for over 20 years, 15(19.23%) indicated 11-20 years with few 12(7.69%) indicating 1-2 years and less than 1 year respectively. This means that SMEs in agricultural sector have been in the operation for long haul and therefore their information can be relied upon to make conclusions for the study about leveraging ICT capability to create competitive advantage.

The study further established the size of the market coverage i.e. if the SME operates local, regional or national. This is aimed to evaluate the market share of the SMEs and if they have leveraged ICT in its market creation. The study findings were as indicated in Table 4.4.

**Table 4.4 Size of the market**

	Frequency	Percentage
Local Area	62	73.89
Regional Area	22	15.43
National	14	11.24

**Source; Researcher, (2014)**

The findings in Table 4.4 indicates that majority 62(73.89%) of the SMEs in agricultural sector operate locally, 22(15.43%) operate regionally with only few 14(11.24%) operating nationally. This means that most of the SMEs have low capacity in terms of leveraged ICT and production level to meet large market and therefore they optimize their sales locally.

The study further established if the SMEs are sole proprietorship, partnership or limited companies. The findings were as indicated in Table 4.5

**Table 4.5 Business type**

	Frequency	Percentage
Sole proprietorship	52	56.21
Partnership	40	30.00
Limited company	8	13.69

**Source; Researcher, (2014)**

From the study findings in Table 4.6 majority 52(56.21%) of the SMEs are sole proprietorship followed by 40(30.00%) who are partnership with only few 8(13.69%) being limited company. This implies that most of the SMEs in agricultural sector are owned by individuals which may pose a challenge in raising required capital to acquire capital necessary to boost competitive advantage of the business.

#### 4.4 Level of ICT use

The study determined the most used ICT tools by SMEs in agricultural sector including mobile technology, computers, internet, social networks and TV and Radio on a Likert scale where 1-not applicable.2-low3-fairly high 4-high 5-highly important.. The findings were indicated in Table 4.7

**Table 4.6 Level of ICT use**

ICT tools	Mean	SD
Mobile technology	4.32	0.456
Computer	3.99	0.352
Internet	4.10	0.421
Social network	4.22	0.433
TV and Radio	4.11	0.422

**Source; Researcher, (2014)**

The study findings indicates that mobile technology is the most used ICT tool by the SMEs in agricultural sector (Mean=4.32, SD=0.456) followed by social network (Mean=4.22, SD=0.433). Further SMEs in agricultural sector also use TV and radio (Mean=4.11, SD=0.422), Internet (mean=4.10, SD=0.421) and computer (Mean=3.99, SD=0.352). This implies that mobile technology and radio technology have been highly embraced by the SMEs in agricultural sector which may be due to less expertise and cost

involved and also convenient to use. Less use of computers may be due to high cost involved during purchase and maintenance.

#### 4.5 ICT Capability

The study also found it necessary to evaluate ICT capability in SMEs in agricultural sector and their competitive advantage on a Likert scale where 1-not applicable.2-low3-fairly high 4-high 5-highly important. The findings were indicated in Table 4.8

**Table 4.8: ICT Capability**

ICT CAPABILITY	Mean	Standard deviation
Organization Integrating ICT Efforts with Business Purpose and Activities	4.11	0.474
Organization Predicting the Business Processes that Technology makes possible	4.13	0.435
Organization Getting the Business Constructively Engaged in ICT Issues	4.23	0.520
Organization Creating a Sound Business Plan for a technical Platform that Responds to Current and Future Business Needs	4.21	0.678
Organization Rapidly Achieving Technical Progress by One means or Another	4.34	0.342
Organization Managing An ICT Strategy that meets the Interest of the Business	4.04	0.321
Organization Ensuring the Success of Existing Contracts	4.11	0.432
Organization Protecting the Business' Contractual Position Current and Future	3.99	0.531
Organization Identifying the Potential Added Value of ICT Services	4.22	0.578

**Source; Researcher, (2014)**

The study findings indicates that respondents rated the statements concerning the ICT capability to high extent. Organization Integrating ICT Efforts with Business Purpose and Activities as indicated by mean of 4.11, organization Predicting the Business Processes that Technology makes possible as indicated by mean of 4.13, organization Getting the Business Constructively Engaged in ICT Issues as indicated by mean of 4.23, Organization Creating a Sound Business Plan for a technical Platform that Responds to Current and Future Business Needs as indicated by mean of 4.21, Organization Rapidly Achieving Technical Progress by One means or Another as indicated by mean of 4.34, Organization Managing An ICT Strategy that meets the Interest of the Business as indicated by mean of 4.04, Organization Ensuring the Success of Existing Contracts as indicated by mean of 4.11, Organization Protecting the Business' Contractual Position Current and Future as indicated by mean of 3.99 and that Organization Identifying the Potential Added Value of ICT Services as indicated by mean of 4.22. This implies that there is ICT capability in SMEs in agricultural sector.

#### **4.6 Challenges**

ICT use is progressively growing but the rate of growth is being impeded by a number of challenges. It is in the light of this that the researcher intended identifying some of the challenges of using ICT as a competitive tool. The respondent's perception was to strongly agree, agree; neither agrees or disagrees, disagree and strongly disagree with the challenges perceived to be a hindrance the use of ICT.



The Table below indicates a summary of the challenges

**Table 4.9: ICT Capability**

CHALLENGES	Mean	SD
Limited resources in terms of finances	3.45	0.16
Low level of literacy among SME owners	3.15	1.35
Lack of the technical know how	4.12	0.89
Lack of awareness on ICT	4.23	0.26
Employee skill too low	4.21	0.25
High cost of internet connectivity	2.98	0.15
Inadequate telecommunication infrastructure	3.15	1.15
Lack of government support	3.43	1.16
Unconvincing benefits to the organization	3.28	0.78
Lack of developed legal and regulatory systems	3.19	0.29
Low level of technology usage within the organization	4.03	0.16

**Source; Researcher, (2014)**

According to Cavayeet al. (1999), most SMEs are concerned about return on investments and for that matter reluctant making substantial investments particularly when short term returns are not guaranteed. Fifty percent of the respondents agreed to the fact that business owners were not willing to spend on ICT when its impact on the business was

not deeply felt. With the statement of literacy majority of the respondents strongly agreed to the statement (Mean=3.15, SD=1.35).

It was realized from the responses that majority also strongly agreed to the statement, that lack of qualified staff to develop, implement and support website.. This responses reinforce the statement made by Kapurubandare (2006), that lack of knowledge on how to use the technology and perceived benefit is a major factor that owners lack to take up to e-business. High cost of Internet connectivity was also a challenge that most of the respondents agreed on. Other challenges of concern were; unconvincing benefit to the organization, lack of developed legal and regulatory systems and low level of technology usage within the organization as indicated by mean of 3.28, 3.19 and 4.03 respectively.

#### **4.7 Regression and Correlation Analysis**

Regression analysis was utilized to investigate the relationship between the variables. These included an error term, whereby a dependent variable was expressed as a combination of independent variables. The unknown parameters in the model were estimated, using observed values of the dependent and independent variables.

#### **4.8 Correlation Analysis**

Pearson correlation was used to measure the degree of association between variables under consideration i.e. independent variables and the dependent variables. Pearson correlation coefficients range from -1 to +1. Negative values indicates negative correlation and positive values indicates positive correlation where Pearson coefficient <0.3 indicates weak correlation, Pearson coefficient >0.3<0.5 indicates moderate correlation and Pearson coefficient >0.5 indicates strong correlation.

**Table 4.9 Correlation Coefficients**

	Extent of use of ICT	ICT capability	SMEs competitiveness in agricultural sector
Extent of use of ICT	1		
ICT capability	0.611	1	
SMEs competitiveness in agricultural sector	0.511	0.713	1

\*. Correlation is significant at the 0.05 level (1-tailed).

**Source; Researcher, (2014)**

The analysis above shows that ICT capability has the strongest positive (Pearson correlation coefficient =.713; P value 0.000) influence on SMEs competitiveness in agricultural sector. In extent of use of ICT is also positively correlated to on SMEs competitiveness in agricultural sector (Pearson correlation coefficient =.511). The correlation matrix implies that the independent variables: extent use of ICT and ICT capability are very crucial determinants of SMEs competitiveness in agricultural sector as shown by their strong and positive relationship with the dependent variable; SMEs competitiveness in agricultural sector.

#### **4.9 Regression Analysis**

Regression model is used here to describe how the mean of the dependent variable changes with changing conditions. Regression Analysis was carried out for extent of use of ICT and ICT capability and SMEs competitiveness in agricultural sector. To test for the relationship that the independent variables have on internal audit performance, the study did the multiple regression analysis.

**Table 4.10 Coefficient of determination (Regression) (Model Summary)**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.777 <sup>a</sup>	.785	.776	.43829

**Source; Researcher, (2014)**

Looking at the variables collectively, it's evident from the Table that 77.6% of variation or change in SMEs competitiveness in agricultural sector is explained by the variables considered in the model i.e. extent of ICT use and ICT capability as indicated by the coefficient of determination ( $R^2$ ). This implies that these variables are very significant therefore need to be considered in any effort to boost SMEs competitiveness in agricultural sector. The study therefore identifies ICT use and capability as critical determinants of SMEs competitiveness in agricultural sector.

**Table 4.11: Analysis of Variance (ANOVA)**

	Sum of Squares	Df	Mean Square	F	F-critical value	Significance
Regression	52.55		14.93	18.33	88.33	0.00
Residual	3.34	22	4.22			
Total	55.89	26				

**NB:** F-critical Value 88.33 (statistically significant if the F-value is less than 88.33: from Table of F-values).

**a. Predictors: (Constant),**extent of ICT use, ICT capability.

**Source; Researcher, (2014)**

The value of the F statistic, 18.33 indicates that the overall regression model is significant hence it has some explanatory value; there is a significant relationship between the predictor extent of ICT use and ICT capability (taken together) and SMEs competitiveness in agricultural sector.

The study ran the procedure of obtaining the coefficients, and the results were as shown on the Table below.

**Table 4.12 Coefficient Results**

	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
(Constant)	11.132	0.332		2.311	0.023
Extent of ICT use	0.231	0.65	0.002	1.532	0.081
ICT capability	0.321	0.332	0.076	1.256	0.022

**Source; Researcher, (2014)**

The study model was therefore;

$$Y = 11.132 + 0.231 (IU) + 0.321 (IC)$$

According to the regression equation established, taking all factors into account (extent of ICT use and ICT capability, SMEs competitiveness in agricultural sector will be 11.132.

The Standardized Beta Coefficients give a measure of the contribution of each variable to the model. A large value indicates that a unit change in this predictor variable has a large effect on the criterion variable. The t and Sig (p) values give a rough indication of the impact of each predictor variable – a big absolute t value and small p value suggests that a predictor variable is having a large impact on the criterion variable. At 5% level of significance and 95% level of confidence, extent of ICT use had a 0.023 level of significance, and ICT capability had a 0.081 level of significance.

#### **4.10 Discussions**

In order to meet the objective of this study, to leveraging ICT organizational capability for SMEs competitiveness in agricultural sector in Kenya, the respondents were required to describe some of the ICT tools in their business, level of ICT use, ICT capability and challenges SMEs face in using ICT as a competitive tool. There are various ICT resources that are drivers of innovation some of these resources include: the social networks, mobile technology, internet and computing E- business. These technologies enable new ways of developing products, interacting with customers and partnering with others to compete and succeed. Top-performing companies show greater mastery in how they leverage these digital technologies to plan, innovate, measure results, interact with customers, and create value.

Mangold and Faulds (2009) recognize that social media allows an enterprise to connect with both existing and potential customers, engage with them and reinforce a sense of community around the enterprise's offering(s). Owing to of the flexibility of social networking tools, businesses can realize different benefits. Marketers can no longer rely on mass media channels alone to communicate with their consumers.

According to Barney (1991), the capabilities, resources, and skills of a firm are key in the Resource-Based View (RBV) of a firm. These resources are the source of competitive advantage. Grant (1991) emphasized that the primary task of the resource-based approach in strategy formulation is to provide a way to maximize returns over several periods. Specifically, the concept of IT capability was developed using the premise that while resources can be easily duplicated, a unique set of capabilities mobilized by a firm cannot be easily duplicated and will result in sustained competitive advantages. The acceptance

and implementation of ICT in businesses have not had the same outcome for all businesses. Not all small to medium business owners have taken up ICT or do they intend on doing so in the near future. Directly affecting the way owners manage their businesses is their educational and family background. Many do not have high level qualifications or strong leadership skills. Their innovativeness influences the business performance and the culture of the firm. They see their business as a reflection of themselves, an extension of their self-image or personal achievements. Some of them hold that their authority allows them to do whatever they want because their ownership of the businesses. Some of these managers perceive they will lose their power, control and influence when it comes to IT adoption.

## **CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS**

### **5.1 Introduction**

This chapter is a synthesis of the entire study, and contains summary of research findings, exposition of the findings, commensurate with the objectives, conclusions and recommendations based thereon.

### **5.2 Summary**

The study findings indicate that mobile technology is the most used ICT tool by the SMEs in agricultural sector followed by social network. Further SMEs in agricultural sector also use TV and radio. This implies that mobile technology and radio technology have been highly embraced by the SMEs in agricultural sector which may be due to less expertise and cost involved and also convenient to use. Less use of computers may be due to high cost involved during purchase and maintenance. The study also found it necessary to evaluate ICT capability in SMEs in agricultural sector and their competitive advantage.

ICT use is progressively growing but the rate of growth is being impeded by a number of challenges. It is in the light of this that the researcher intended identifying some of the challenges of using ICT as a competitive tool. The respondent's perception was to strongly agree, agree; neither agrees or disagrees, disagree and strongly disagree with the challenges perceived to be a hindrance the use of ICT. According to Cavayeet al. (1999), most SMEs are concerned about return on investments and for that matter reluctant making substantial investments particularly when short term returns are not guaranteed. Fifty percent of the respondents agreed to the fact that business owners were not willing to spend on ICT when its impact on the business was not deeply felt. It was realized from the responses that majority also strongly agreed to the statement, that lack of qualified



staff to develop, implement and support website. This responses reinforce the statement made by Kapurubandare (2006), that lack of knowledge on how to use the technology and perceived benefit is a major factor that owners lack to take up to e-business. High cost of Internet connectivity was also a challenge that most of the respondents agreed on. Other challenges of concern were; unconvincing benefit to the organization, lack of developed legal and regulatory systems and low level of technology usage within the organization as indicated by mean of 3.28, 3.19 and 4.03 respectively.

### **5.3 Conclusion**

The findings identified in this research paper shows that the access and use of ICT in Agri-business SMES has not been embraced by majority of the enterprises in Uasin Gishu County thereby indicating a low level of ICT use. Agri-business SMES also have expressed the weak financial capacity in investing in ICT structures and tools for better management of their business. Their financial capacity of the SMEs is limited to the basic requirements of a business thus reason for high use of the mobile phone technology.

The level of knowledge on various ICT tools hinders use because most of SMEs have low level of literacy. Although most of them are aware of their existence they do not think that such technologies are necessary for their businesses. SMEs which have not embraced ICT attribute the status to their inability to finance ICT infrastructure. The SMEs are operating on a lean capital base that would not allow them allocate some fund to ICT development some actually, operate from hand to mouth. Lack of investment in ICT is attributed to their subsistence financial capacity. Therefore, the level of education significantly affects the access and use of ICT among business within Uasin Gishu County.

Most of the SMEs in this study did not have appropriate ICT expertise to decide on which ICT to invest in and to implement the use of ICT. SMEs owners believe that the cost of ICT tools is high, which discourages investment in ICT structures and tools hence the poor adoption levels. This means that cost has had a negative impact on the use of ICT by Agri-business SMEs in Uasin Gishu County. Majority of the Agri-business SMEs in Uasin Gishu County do not have ICT capability framework to help them achieve sustainable competitive advantage as shown in the data analysis.

Uasin Gishu County's competitive edge in the dynamic global economy will increasingly depend on building human capital. Building human capacity must be based on clear and dynamic strategies that can effectively respond to the rapid changes taking place. Agri-business owners in Uasin Gishu County must be capable, therefore, of adopting and adapting new technologies. They have to continuously upgrade themselves, and stay ahead of change by learning, re-learning, and learning again, and by making continuous retraining and skills upgrading a pertinent business strategy in their pursuit of increasing product quality and market share. These efforts should first set a good example in acquiring ICT knowledge and skills before trying to motivate their employees to do the same.

#### **5.4 Recommendations**

ICT presents unprecedented opportunities to empower smallholder farmers by strengthening their capabilities in marketing their products. The Government should therefore make ICT more affordable and readily available to Agri-business SMEs, this can be done through Ministry of Information, Communication and Technology of Kenya who can initiate and support training programmes to develop the capacity of Agri-

business SMEs in Uasin Gishu County to embrace ICT and this will scale up productivity and increase production. The Government should invest in telecommunication infrastructure targeting Agri-business SMEs, even if the government were to provide incentives and to improve the country's IT infrastructure, the efforts would be futile if no effort is made to improve the ICT skills of business owners. Therefore the Government should also ensure that awareness programmes on ICT are rolled out and various workshop and seminars held to sensitize Agri-business SMEs. Owners of SMEs in Uasin Gishu County should be encouraged to invest start investing in basic ICT tools to help improve their business management practices thus making the competitive in the dynamic business environment.

### **5.5 Limitations of the Study**

Although this study helped to shed light on the leveraging ICT organizational capability for SMEs competitiveness in the agricultural sector in Kenya, it was subject to a number of limitations. These mainly related to the setup of the study relative to the resources available within the research period. As such the constraints influenced the scale of the study but did not affect the conduct of the research once the design was arrived at.

Since the main purpose of this study is to identify the effect of leveraging ICT organizational capability for SMEs competitiveness in the agricultural sector in Kenya, These companies considered some information sensitive and confidential and thus the researcher had to convince them that the purpose of information is for academic research only and may not be used for any other intentions.

## **5.6 Recommendations for further research**

It is hoped that the findings of this study will contribute to the existing body of knowledge and form a basis for future researches. The following areas of further research are thus suggested: Whereas the current study focused on the leveraging ICT organizational capability for SMEs competitiveness in the agricultural sector in Kenya, future studies should seek to establish whether or not the same are applicable to other sectors of the economy. Further studies should also focus on the implementation of the competitive strategies in agricultural sector and the possible mechanisms that could be employed to enhance the implementation.

## REFERENCES

- Alberto, B.M. & Fernando, L.L. (2007). A firm-level analysis of determinants of ICT adoption in Spain. *Technovation*, 27, 352-366.
- Analoui, F. & Karami, A. (2003) *Strategic Management. In small and Medium Enterprises*. Thomson Learning.
- Andersen, K.V., Pedersen, A., Varshney, U. (2003) Mobile Organizing Using Information Technology (MOBIT), *Information Communication & Society* 6(2) 211-228.
- Anderson, J. and G. Feder (2007). "Agricultural extension." *Handbook of agricultural economics Vol. 3*: 2343-2378.
- Ayyagari, M., Beck, T., Demirguc-Kunt, A. (2007). Small and Medium Enterprises across the Globe. *Small Business Economics*, Vol. 29, pp. 415-434.
- Balaji, V., S. N. Meera, and X. Dixit. 2007. —ICT-Enabled Knowledge Sharing in Support of Extension: Addressing the Agrarian Challenges of the Developing World Threatened by Climate Change, with a Case Study of India. *SAT journal* 4 (1): 18.
- Barnes, S. (2002) The mobile commerce value chain: analysis and future developments, *International Journal of Information Management* 22 91-108.
- Barney, J. B. "Firm Resources and Sustained Competitive Advantage," *Journal of Management* (17:1), 1991, pp. 99-120.
- Bartelsman, E.J., Doms, M. (2000). Understanding productivity: lessons from longitudinal Micro Data. *Journal of Economic Literature*, 38 (3), 569-594.
- Batchelor, S. 2002. *Using ICTs to Generate Development Content*. IICD Research Report 10. The Hague: International Institute for Communication and Development.
- BenYishay A. and A.M. Mobarak (2013). "Using Social Networks to Improve Agricultural Extension Services," Working paper
- Brynjolfsson, E. & Yang, S. (1996). Information technology and productivity: a review of the literature. *Advances in Computers*, 43, 179-214.
- Carr, N. G. (2004). IT Doesn't Matter. *IEEE Engineering Management Review*, 32 (1), 24– 32.

- Chapman, R., and T. Slaymaker. 2002. *ICTs and Rural Development: Review of the Literature, Current Interventions, and Opportunities for Action*. ODI Working Paper 192. London: Overseas Development Institute.
- Chetty, S., & Agndal, H. (2007). Social capital and its influence on changes in internationalization mode among small and medium-sized enterprises. *Journal of International Marketing*, 15(1), 1–29.
- Chong, S., Pervan, G., & Bauer, C. (2001). Implementation Success of Internet-based Electronic Commerce for Small-and Medium-sized Enterprises in Australia. *14th International Bled Electronic Commerce Conference*, Bled, Slovenia, and June 25-26.
- Coviello, N. E., & Munro, H. J. (1995). Growing the entrepreneurial firm: Networking for international market development. *European Journal of Marketing*, 29(7), 49–61.
- Coviello, N. E., & Munro, H. J. (1997). Network relationships and the internationalization process of small software firms. *International Business Review*, 6(4), 361–386.
- Dedrick, J., Gurbaxani, V., & Kraemer, K.L. (2003). Information technology and economic performance: a critical review of the empirical evidence. *ACM Computing Surveys*, 35 (1), 1-28.
- Denni, A.R. (1996). Information exchange and use in group decisions making: You can lead a group to information, but you can't make it think. *MIS Quarterly*, 4(2), 433-457
- Dossani, R., D. C. Misra, and R. Jhaveri. 2005. *Enabling ICT for Rural India*. Stanford, CA: Asia Pacific Research Center, National Informatics Center.
- Fulantelli, G. and Allegra, M. (2003). Small company attitude towards ICT based solutions; some key elements to improve it. *Journal of Educational Technology and Society*, 6(1): 45- 49.
- Gayeski, D.M. (2002) *Learning Unplugged*, American Management Association, New York.

- Gebauer, J., and Shaw, M.J. (2004) Success factors and impacts of mobile business applications: results from a mobile e-procurement study, *International Journal of Electronic Commerce* 8(3) 19-41
- Grant, R. M. "The Resource-Based Theory of Competitive Advantage: Implications for Strategy Formulation," *California Management Review* (33.3), 1991, pp. 114-135.
- Hashim, MohdKhairuddin and Wafa, SyedAzizi (2003).*Small and Medium Enterprises in Malaysia: Development Issue*. Selangor: Prentice-Hall, 1963.
- Heeks, R. 2002. Information Systems and Developing Countries: Failure, Success and Local Improvisations.*The Information Society* 18: 101–112.
- Herzberg, A. (2003) Payments and banking with mobile personal devices, *Communications of theACM* 46(5) 53-58.
- Hoffman, N. P. (2000). "An Examination of the Sustainable Competitive Advantage Concept: Past, Present and Future," *Academy of Marketing Science Review*, 4, 1-16
- Hoskisson, R. E., Eden, L., Lau, C.-M., & Wright, M. (2000).Strategy in emerging economies. *Academy of Management Journal*, 43(3), 249–267.
- Jack, K. (2011). "Market inefficiencies and the adoption of agricultural technologies in developing countries." *White paper, Agricultural Technology Adoption Initiative (AbdulLatifJameel Poverty Action Lab/MIT, Cambridge MA)*
- Kazi, A.U. (2007). Small and Medium Business Enterprises and the use and adoption of Information and Communication Technology: a study of Legal Issues and Legal Perspectives. *International Journal of Organisational Behaviour*, 12(1), 144-160.
- Keniston, K. 2002. —Grassroots ICT Projects in India: Some Preliminary Hypotheses.*ASCI Journal of Management* 31 (1&2).
- Kiveu, M. and Ofafa, G. (2013).Enhancing market access in Kenyan SMEs using ICT.*Global Business and Economics Research Journal*, 2(9): 29-46.
- Kohli, R. and Devaraj, S. (2004) Realizing the business value of information technology investment: an organizational process, *MIS Quarterly Executive* 3(1) 53-68.
- Kohli, R., Devraj, S. (2003). Measuring information technology payoff: a meta-analysis of structural variables infirm-level empirical research.*Information System Research*, 14 (2), 127-145.

- Limburg, D. (2012). Ready, willing and capable. How can SMEs gain competitive advantage from using Internet-based technologies? UK AIS Conference Proceedings.
- Looney, C. A., Jessup, L.M., and Valacich, J.S. (2004) Emerging business models for mobile brokerage services, *Communications of the ACM* 47(6) 71-77.
- Lucchetti, R., and Sterlacchini, A. "The Adoption of ICT among SMEs: Evidence from an Italian Survey," *Small Business Economics* (2), 2004, pp. 151-168.
- Mahmood, M.A. and Mann, G. J. (1993) Measuring the organizational
- Makadok, R. "Toward a Synthesis of the Resource-Based and Dynamic-Capability Views of Rent Creation," *Strategic Management Journal* (22:5), 2001, pp. 387-401.
- Mallat, N., Rossi, M., and Tuunainen, V.K. (2004) Mobile banking services, *Communicates of the ACM* 47(5) 42-46.
- Manev, I. M., Gyoshev, B. S., & Manolova, T. S. (2005). The role of human and social capital and entrepreneurial orientation for small business performance in a transition economy. *International Journal of Innovation and Entrepreneurship Management*, 5(3/4), 298–318.
- Manolova, T., Brush, C., Edelman, L., & Greene, P. (2002). Internationalization of small firms: Personal factors revisited. *International Small Business Journal*, 20(1), 9–30.
- McLaughlin, S. (2012a). Positioning the IT-CMF: a Capability versus Process Perspective. Available at: [www.ivu.nuim](http://www.ivu.nuim).
- McLaughlin, S. (2012b). Using IT-CMF to build Competitive Advantage. Available at: [www.ivu.nuim.ie](http://www.ivu.nuim.ie)
- Melville, N., Kraemer, K.L. and Gurbaxani, V. (2004). Information technology and organizational performance: an integrative model of IT business value, *MIS Quarterly*, 28 (22), 283-322.
- Mutsaers, E-J., H. van der Zee, & H. Giertz.(1998).The Evolution of Information Technology.*Information Management and Computer Security*, 6(3), 115–26
- Mutula, S.M. & Brakel, P.V. (2006). E-readiness of SMEs in the ICT sector in Botswana with respect to information access.*The Electronic Library*, 24(3), 402-417.



- Nah, F., Siau, K. and Sheng, H. (2005) The value of mobile applications: a study on a public utility company, *Communications of the ACM* 48(2) 85-90.
- Peppard, J. & Ward, J. (2004). "Beyond Strategic Information Systems: Towards an IS Capability," *Journal of Strategic Information Systems*, 13(2), 167-194.
- Porter, M. (1990), *The Competitive Advantage of Nations*, The Free Press, New York, NY.
- Porter, M. E. & Millar, V. E. (1985). "How Information Gives You Competitive Advantage," *Harvard Business Review*, 63(4), 149-160.
- Porter, M. E. (2001). "Strategy and the Internet," *Harvard Business Review*, 79 (3), 62-79.
- Rao, N. H. 2007. —A Framework for Implementing Information and Communication Technologies in Agricultural Development in India. *Technological Forecasting and Social Change* 74: 491–518.
- Ritchie, B., and Brindley, C. "ICT Adoption by SMEs: Implications for Relationships and Management," *New Technology, Work and Employment* (203), 2005.
- Saravanan, R. 2010. —India. || In *ICTs for Agricultural Extension. Global Experiments, Innovations and Experiences*, edited by R. Saravanan. New Delhi: New India Publishing Agency.
- Schwab, K. and Porter, M. (2003), *The Global Competitiveness Report: 2002-2003*, World Economic Forum Geneva, Switzerland 2003, Oxford University Press, New York, NY.
- Siau, K. and Shen, Z. (2003) Building customer trusts in mobile commerce, *Communications of the ACM* 46(4) 91-94.
- Siau, K., Sheng, H., and Nah, F. (2004) The value of mobile commerce to customers, *Proceedings of the Third Annual Workshop on HCI Research in MIS*, Washington, DC, 65-69.
- Siau, K., Sheng, H., Nah, F., and Davis, S. (2004b) A qualitative investigation on consumer trust in mobile commerce, *International Journal of Electronic Business* 2 (3) 283-300.

- Siau, K., Sheng, H., and Nah, F. (2003) Developing a framework for trust in mobile commerce, Proceedings of the Second Annual Workshop on HCI Research in MIS, Seattle, WA, 85-89
- Swash, G. (1998).UK business information on the Internet.*New Library World*, 99(1144), 238-242.
- Tan, Y. & Macaulay, L. A. (2007, March). Adoption of ICT among small business; vision vs. reality.*International journal of electronic business*, 5(2), 188-203.
- The Economist (2005a, March 12). The real digital divide.8417, 374, p.11.Retrieved September 13, 2005, Academic Search Premier.
- The Economist (2005).Behind the digital divide.8417, 374, pp. 22-25.Retrieved September 13, 2007, Academic Search Premier.
- Uden, L. (2007). How to promote competitive advantages for SMEs: issues, ideas and innovation. *Journal of Business Systems, Governance and Ethics*.2 (2). Available at: <http://www.jbsge.vu.edu.au/issues/vol02no2/Uden.pdf>
- Udry, C. (2010). "The economics of agriculture in Africa: Notes toward a research program." *African Journal of Agricultural and Resource Economics* 5.1
- Uzoka, F.M.E (2004) An investigation of the factors affecting the adoption of B2C e-commerce in SADC Countries: Case study of Botswana, IADIS International Conference, and Portugal 385-389.

## **APPENDIX 1: QUESTIONNAIRE**

This questionnaire is confidentially administered SME owners, employees in the Agricultural sector in Uasin Gishu County for the purpose of collecting primary data for writing a research report in partial fulfillment of masters of Business Administration ,being pursued by the scholar at The University of Nairobi. The response you will provide will be treated with utmost confidentiality.

### **SECTION A: GENERAL INFORMATION**

1. Name of organization\_\_\_\_\_

2. Position in the Organization\_\_\_\_\_

(Tick appropriately ✓ )

#### **3. Business size**

0 employee ( ) 1-9 employees ( ) 10-19 employees ( ) 20-50 employees ( )  
) More than 50 ( )

#### **4. Business age**

Less than 1 year ( ) 1-2 years ( ) 3-5 years ( ) 6-10 years ( )  
11-20 years ( ) Over 20 years ( )

#### **5. Market focus**

Local area ( ) Regional area ( ) National ( ) International ( )

#### **6. Business type**

Sole proprietorship ( ) Partnership ( ) Limited company ( )

**7. Age**

Under 21 years ( ) 21-30 years ( ) 31-40years ( ) 41-50years ( )

Over 50 years ( )

**8. Qualification of the owner/manager**

Primary school ( ) High school ( ) College ( ) Undergraduate ( )

Postgraduate ( ) None ( )

**SECTION B: LEVEL OF ICT USE**

9. Please rate the following on how you communicate with your customers and other partners in business.

Scale 5- highly important, 4- high, 3 -fairly high, 2-low, 1- Not applicable

No.		1	2	3	4	5
1	Mobile technology					
2	Computer					
3	Internet					
4	Social Network					
5	TV and Radio					
6	Others please specify					

**SECTION C: ICT CAPABILITY**

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

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

No.		1	2	3	4	5
1	Integrating ICT effort with business purpose and activities					

2	Predicting the business processes that technology makes possible					
3	Getting the business constructively engaged in ICT issues					
4	Creating a sound business plan for a technical platform that responds to current and future business needs					
5	Rapidly achieving technical progress by one means or another					
6	Managing an ICT strategy that meets the interests of the business					
7	Ensuring the success of existing contracts					
8	Protecting the business's contractual position, current and future					
9	Identifying the potential added value of ICT services					

#### **SECTION D: COMPETITIVENESS**

11. Please rate your organization on the following indicators of competitiveness in relation to your competitors;

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

No.	Indicator	1	2	3	4	5
1	Speedy delivery of produce to the market					
2	Flexibility in operations					
3	Integration and market expansion					
4	Innovation and product differentiation					
5	Customer focus					

## SECTION E: CHALLENGES

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

- (1) Strongly disagree (2) Disagree (3) Neither agree or disagree (4) Agree strongly  
(5) Agree

No.	Statement	1	2	3	4	5
1	Limited resources in terms of finances					
2	Low level of literacy among SME owners					
3	Lack of the technical know how					
5	Lack of awareness on ICT					
6	Employee skill too low					
7	High cost of internet connectivity					
8	Inadequate telecommunication infrastructure					
9	Lack of government support					
10	Unconvincing benefits to the organization					
11	Lack of developed legal and regulatory systems					
12	Low level of technology usage within the organization					

Thank you for participating in this survey.

**APPENDIX 2: TABLE 1**

	Not applicable	Low	Fairly high	High	Highly important
Mobile technology	1	7.1	19.4	16.3	56.1
Computer	32.7	28.6	17.3	14.3	7.1
Internet	37.1	21.6	18.6	15.5	7.2
Social Network	38.1	18.6	15.5	19.6	8.2
TV and Radio	64.9	16.5	6.2	9.3	3.1
Others	57.1	7.1	12.5	7.1	16.1