

**EFFECT OF STRATEGIC INFORMATION COMMUNICATION
TECHNOLOGY ADOPTION ON PERFORMANCE OF DEPOSIT
TAKING SACCOS IN KISII REGION, KENYA**

BY

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ABSTRACT

Globally, performance is a concern to every organization while information communication technology (ICT) has been viewed as a tool that can be adopted to strategically enhance it. Consequently, organizations have unprecedentedly adopted ICT in recent years. The unprecedented adoption of ICT has raised expectations about their potential effect on firms' performance. Deposit taking Saccos (DTSs) are preoccupied with sustainable performance hence contribution to Kenya's Vision 2030 yet they face competition from financial institutions. DTSs have consequently been adopting ICT yet some continue to perform poorly as seen in their dwindling membership and rate of dividend as witnessed in their final accounts. Literature acknowledges strategic contributions of ICT adoption to performance. Prior studies on ICT adoption have concentrated on its contributions to performance of manufacturing firms, micro-finance institutions, small and medium enterprises, banks and governments in terms of efficiency, profitability and service delivery. However, ICT infrastructure, innovation and policy implementation have not been studied in relation to DTS performance, therefore, their effect are not known. The main purpose was to evaluate effect of strategic ICT adoption on performance of DTSs in Kisii region. Specific objectives were to evaluate effect of ICT: infrastructure; innovations; and policy implementation on performance. Resource Based Theory considering organizational performance as a function of tangible and intangible resources and Innovation Diffusion Theory explaining how, why and what rate new technology spread guided the study within a conceptual framework. Research was designed as a correlational survey. The target population was 45 respondents comprising nine top managers and 36 departmental heads in nine Saccos. A pretest on five respondents in one Sacco confirmed instrument reliability (Cronbach's $\alpha=0.836$). Subject experts at Maseno University ascertained validity. Primary data were collected from a saturated sample of 40 respondents. Using multiple regression analysis, the study found ICT infrastructure ($\beta=0.144$, $p=.028$) and ICT policy implementation ($\beta=0.255$, $p=.022$) as statistically significant positive predictors of Sacco performance, implying that a unit adoption of ICT infrastructure and policy implementation will respectively lead to an increase in the level of performance by 14.4% and 25.5% respectively. ICT innovation ($\beta=0.171$, $p=.199$) was not a statistically significant predictor of performance. Study concluded that continued adoption of ICT infrastructure and improved ICT policy implementation yielded better Sacco performance. Study recommended strategic adoption of ICT infrastructure and implementation of ICT policies. The study's significance is in informing: Sacco managers in adoption of ICT infrastructure and implementation of ICT policies; governments in making ICT policy implementation policies and future academic research directions.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Performance is a key concern to every organization and literature identifies various ways of improving performance of an organization. For example, Barney (2001), acknowledged the important place of a firm's resources in its performance. He observed that the resource based theory sees the firm as a collection of assets, or capabilities which are intangible and can be used to enhance performance. Wernerfelt (1984) argued that highly efficient resources form a resource position barrier that is effective because of the lower expected returns on the same type of resources if acquired by a competitor.

Information Communication Technology (ICT), just like other resources, has been viewed as a tool that can be strategically adopted to enhance performance in an organization. ICT is defined as the computer and developments in telecommunication while Rogers (2003) defines adoption as a decision to make full use of an innovation as the best course of action. ICTs, whether older ICTs such as telephone, radio and television, or the newer ICTs such as computers or the Internet, have been used to improve organizational efficiency and effectiveness hence improved performance. According to Brynjolfsson (2003), ICT increases productivity and operational efficiency in specific business processes, not only by reducing costs but also by impacting on intangible assets such as quality improvement in design processes or life-cycle enhancement in inventory management systems.

Although interest in adoption of ICT has grown substantially, research on the effect of strategic ICT adoption on performance of Saccos has not been given prominence despite the fact that globally, the cooperative sector has evolved in the adoption of ICT in their day-day activities. In Kenya, what propels ICT to the forefront is Kenya's intention to be a fully developed nation by the year 2030 – Vision 2030. The vision aims to transform Kenya into a newly industrializing middle income country providing high quality life to all its citizens by the year 2030 (GoK, 2007). With regard to financial services, it is envisaged that Kenya will have a vibrant and globally competitive financial sector that will create jobs and also promote high levels of savings. Kenya will also streamline informal finance and Saccos. The vision is supported by SASRA (2013) report that Kenya Sacco industry is a critical player to achieving the 10% annual economic growth

target as envisioned by Kenya's economic blueprint, Vision 2030. Saccos' central role of mobilizing both domestic and international financial resources is key to achieving this high level growth target and funding the key Vision 2030 projects. This is demonstrated by the membership served by the Saccos, which in December 2013 increased to 3.3 million from 2.97 million in 2012 (SASRA,2013). The data underscore the Saccos pivotal contribution to Kenya's economic growth. The empirical studies do not focus on effect of strategic ICT adoption on performance of Saccos. Hence, the effect of strategic ICT adoption on performance of Saccos remains unknown.

The strategic management literature recognizes numerous concepts and variables to measure performance. Effect of ICT on the organization as a whole has frequently been measured using variables representing market performance, such as market share and market value of the firm, among others (Liang *et al.*, 2010). The impact on operational performance has been studied mainly using productivity measures and cost reduction (Liang *et al.*, 2010; Das *et al.*, 2011). In this study, performance was measured in terms of total membership and rate of dividend since they represent growth and return on investment respectively which is universally acclaimed dimensions of performance.

The growth of the ICT sector in co-operative societies in Kenya has been significantly influenced by local and global trends. It can be evaluated in terms of number of fixed and mobile telephone lines; the number of computers and services; Sacco-link services, the number of Internet users; broadcasting stations; and market share of each one of them.

From the literature it is evident that ICT can be conceptualized as composed of hardware and software. Moreover ICT is a tool that can be utilized to enhance performance (Rai, 2012, Brynjolfsson & Hitt, 2002, Lucheti & Sterlacchin, 2002). The impact of ICT infrastructure on performance has therefore been widely acknowledged in the strategic management empirical literature (Rodgers, 2007, Okiro & Ndungu 2013, Rai, 2012). Studies on contributions of ICT infrastructure to performance of organizations had been undertaken. For example, Rai (2012) investigated the role and impact of ICT in Indian microfinance in terms of outreach and sustainability. Brynjolfsson & Hitt (2002) focused on contributions of ICT to business performance in Brazil while Baldwin & Sabourin (2003) linked technology to performance of manufacturing plants in Canada. The prior studies focused on contributions of ICT infrastructure to business performance

(Brynjolfsson & Hitt,2002); mobile phones to finance outreach in SME in India (Rai,2012) and effect of technology on performance of manufacturing plants in Canada (Baldwin & Sabourin, 2003).The studies appreciate the effect of ICT infrastructure on performance of various organizations. However but none was on the relationship between ICT infrastructure and deposit taking Saccos' performance in Kisii region. Therefore the relationship between ICT infrastructure and deposit taking Saccos' performance remains unknown.

The contributions of information communication technology innovations to performance of organizations are acclaimed in the literature (Hine & Kapeleris, 2006). From the literature on innovation, it is clear that innovation comprises of new products and services (Hine and Kapeleris, 2006) and organizations become innovative to remain competitive hence improved performance. Innovations in technology have brought tremendous changes in the financial sector, resulting in new delivery channels for banking products, and services, which include Automated Teller Machines (ATMs), Internet banking, tele-banking, and various others. Moreover, the Organization for Economic Cooperation and Development, OECD (2010) observed that in times of crisis there must be a focus on the contribution of ICT to performance.

Several studies on various aspects of ICT innovations have consequently been undertaken. This is exemplified by studies that had been conducted on ICT innovation which appreciate its contribution to performance. For example, a study by Otieno et al (2013) on effect of information system on revenue collection in Homa Bay County, Kenya reported positive contributions. Muinde & Shale (2014) also reported that e-procurement can improve performance of Saccos in terms of efficiency. Research in Korea also indicates that use of sophisticated ICT can increase a government's competitiveness (Tobin, 2013,). ICT innovation particularly mobile phones and Internet banking can also impact on service delivery (Okiro & Ndungu (2013). For example, Otieno et al (2013) conducted a study on the effect of information systems on revenue collection by local authorities while Rogers (2007) examined the role of ICT and in particular mobile phones in the delivery of financial services in various countries. Tobin (2013) assessed whether the use of sophisticated ICT in Seoul, Korea to spur citizen interaction has increased government competitiveness and appreciated the contributions of technological innovations to spur interactions. These studies appreciated the effect of

ICT innovation has on various organizations such as governments (Tobin, 2013), Saccos (Muinde & Shale, 2014), and local authorities (Otieno et al, 2013).None of the studies focused on the effect of such innovations in relation to performance of Saccos. Therefore the relationship between ICT innovation and deposit taking Saccos' performance is unknown.

The strategic adoption of ICT infrastructure and innovation has been taking place within some policy frameworks. A policy may be defined as a set of guidelines geared at streamlining the operations of an organization. ICT is an emerging phenomenon and its evolution in many countries has taken place with or without a systematic, comprehensive and articulated policy. University of Manchester's Centre for Development Informatics (2010) observes that if there is a lack of ICT policy incoherence can emerge. In Kenya SASRA has been formulating policies geared at streamlining the operation of Saccos (SASRA, 2013). Habib (2011) also found that ICT policy implementation can enhance performance and even recommended the implementation of ICT development policies in order to improve SME growth. The literature on ICT policy implementation is scanty yet the little that is available, though appreciating its contribution to performance, is not in relation to Sacco performance.

1.2 Statement of the Research Problem

Performance is a key concern to every organization and Information Communication Technology (ICT) has been viewed as a tool that can strategically be adopted to enhance it. Consequently, it is in the face of the rise in competition coupled with technological advancements that institutions in the financial services sector (FSS) sector have been strategically adopting ICT. Savings and credit cooperative organizations (Saccos) have also not been left behind in adoption of ICT yet some continue to perform poorly. The poor performance of some Saccos in Kenya is a concern. This is because according to SASRA (2013) report the Kenya Saccó industry is a critical player to achieving the 10% annual economic growth target as envisioned by Kenya's Vision 2030. Studies on contributions of ICT to performance of organizations such as banks, governments, manufacturing and micro finance institutions have been undertaken in various parts of the world and the studies acknowledge the pivotal role that ICT plays in terms of efficiency, profitability and service delivery. However despite the established fact that organizations can only remain competitive if they strategically adopt technology in this rapidly

changing environment no research had been conducted to establish the relationship between strategic ICT adoption and performance of deposit taking Saccos. Specifically, no studies exist that relate ICT infrastructure; ICT innovation and ICT policy implementation to performance of deposit taking Saccos. In the absence of supporting empirical literature, Saccos particularly the deposit taking Saccos will continue to invest in ICT infrastructure and consequently use the infrastructure to innovate products and processes within some policy framework without any academic justification. The main purpose of this research was therefore to evaluate the effect of strategic ICT adoption on performance of DTSSs in Kisii region, Kenya.

1.3 Objectives of the Study

The general objective was to evaluate the effect of strategic ICT adoption on performance of DTSSs in Kisii region, Kenya. The specific objectives of the study were:

- i. To evaluate the effect of ICT infrastructure on performance of DTSSs Kisii region.
- ii. To evaluate the effect of ICT innovation on performance of DTSSs Kisii region.
- iii. To determine the effect of ICT policy implementation on DTSSs Kisii region.

1.4 Research Hypotheses

H₁: There is no relationship between ICT infrastructure and performance of DTSSs in Kisii region.

H₂: There is no relationship between ICT innovations and performance of DTSSs in Kisii region.

H₃: There is no relationship between ICT policy implementation and performance of DTSSs in Kisii region.

1.5 Scope of the Study

Mugenda & Mugenda (2003) acknowledge the various dimensions of scope of a study. The study on effect of strategic ICT adoption on performance of deposits taking Saccos was conducted in Kisii region which covers Kisii and Nyamira counties. It was conducted during the months of June and July 2015. The study was conducted in all the nine (9) deposit taking Saccos in the region, primary data being collected by the researcher using questionnaires and interview schedule.

1.6 Justification of the Study

According to (Mugenda & Mugenda, 2003) study justification provides relevance of the study to both scholars and practioners. The researcher aimed to establish a benchmark that can be used for further research; the Sacco managers will gain a deeper understanding of the Sacco operating environment particularly the ICT aspect and this will assist in prudent decision making in the light of the ever evolving ICT; the findings may also be used by governments in formulating ICT policy guidelines geared at streamlining the operation of Saccos sub sector because of its important contribution to the economy.

1.7 Conceptual Framework

Organizational performance is at the centre of strategic management since performance is the true test of any strategy. Hofer (1983) acknowledged that performance is a contextual concept associated with the phenomenon being studied. Since performance is a contextual concept, multiple performance criteria have been suggested in the strategic management literature. However, the dominant performance criteria used in empirical strategy research are financial measures of performance that address the profitability or growth of the organization (Venkatraman and Ramunujan, 1986; Woo and Willard, 1983). These criteria include sales growth, return on investment, return on sales, return on equity and earnings per share.

Growth of an organization comprises the actual output or results of an organization as measured against its intended output (or goals and objectives). According to Richard (2008), organizational growth encompasses three specific areas of firm outcomes namely financial performance ; product market performance and shareholder return. In this study performance will be measured by the growth of Sacco growth in terms of total membership and also by return on equity as reflected on rate of dividend payment.

Information Communication Technology (ICT) has been viewed as a tool that can be strategically adopted to enhance performance in an organization. As Baryamureeba (2014) observed, ICT makes it easier for a large company or organization to do market research at a competitive price. He also recommended that Saccos should invest in ICT innovations that have potential to drive economic growth and stability.

ICT infrastructure has been considered as composed of both the hardware and software. Manuelli, Latu & Koh (2007) observed that ICT infrastructure covers all forms of technologies such as computers, Internet, websites as well as fixed-line telephones, mobile phones and other wireless communications devices, networks, broadband and various specialized devices. Beckinsale and Ram (2006) defined ICT as any technology used to support information gathering, processing, distribution and use. ICT infrastructures such as computer hardware, computer software, and Internet usage have been viewed as having the potential to improve performance. Saccos have therefore been strategically adopting information technology with the main objective of improving performance. Rogers (2003) defines adoption as a decision to make full use of an innovation as the best course of action available.

Hine and Kapeleris (2006) consider innovation to be anything that is new to a business or as comprising new products and processes and significant technological changes of products and processes. Studies have suggested that technological innovations can lead to improved performance of organizations. The improvement in performance can be attributed to new products and services (Hine & Kapeleris, 2006) and that use of sophisticated ICT can increase a government's competitiveness (Tobin, 2013). ICT can also impact on service delivery (Rodgers, 2007, Okiro & Ndungu 2013, Rodgers 2007). The literature on innovation (Rodgers, 2007, Okiro and Ndungu 2013, Rodgers, 2007) suggest that ICT infrastructure as a resource in itself is not enough. It must be utilized by the organization to innovate products, processes and services so that improved performance can be realized.

Kenya the ICT Master Plan (2014) appreciates the fact that these ICT innovations can only be effective in an organized ICT policy environment. The document observes the need for ICT policy in organizations. The Kenya government as a result came with an integrated ICT master plan. Moreover SASRA also periodically issues policy guidelines to streamline operations of Saccos. Saccos at organization level also have ICT policies but a policy that is never implemented is useless. Hence, ICT policy implementation is important if improved performance is to be realized.

Performance, viewed specifically in terms of total membership and rate of dividend, was therefore conceptualized as a function of ICT infrastructure, ICT innovation and ICT policy as illustrated in Fig. 1.1

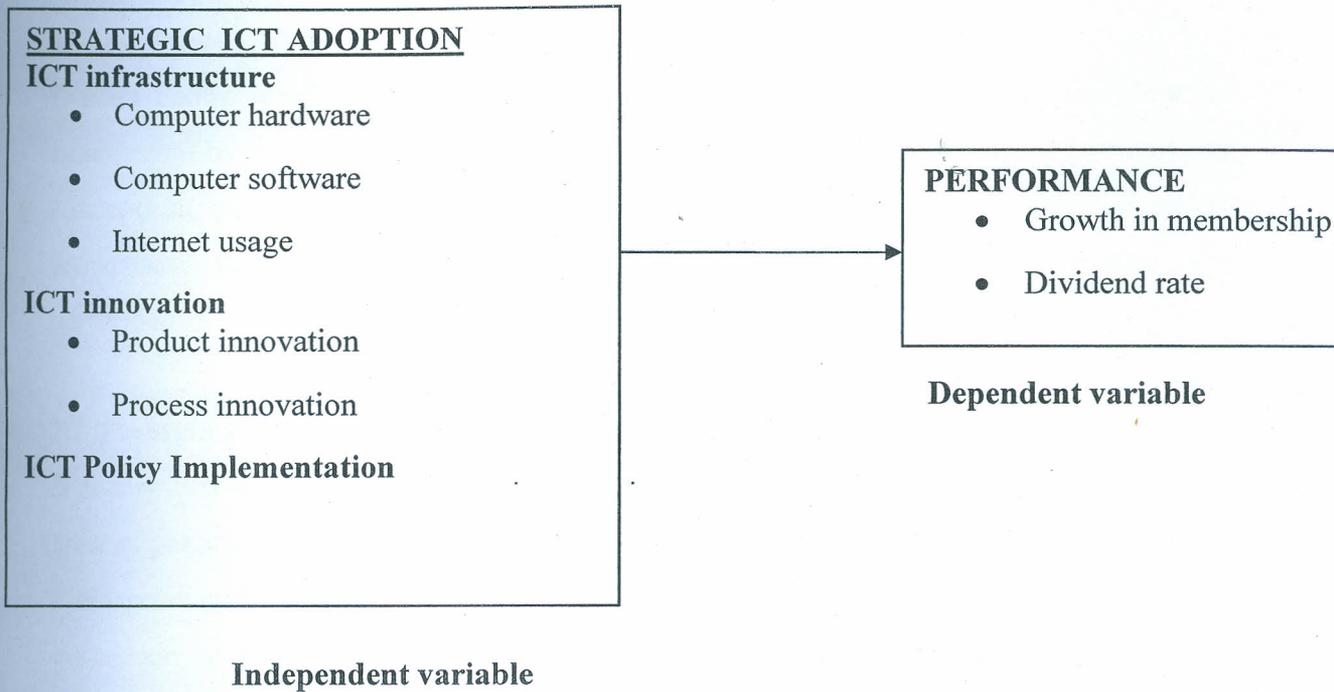


Figure 1.1: Relationship between ICT infrastructure, ICT innovation and ICT policy and Performance

Source: Adapted from Hine & Kapeleris (2006) with some modifications.

CHAPTER TWO

LITERATURE REVIEW

Human nature insists on definition of every concept. This chapter will therefore do exactly that by synthesizing already available theoretical and empirical literature on key concepts in this study. In particular the concepts to be considered include theoretical foundation, ICT infrastructure, ICT innovation, ICT policy implementation and performance.

2.1 Theoretical Foundation

A theory can be defined as a set of interrelated concepts which structure a systematic view of phenomena for the purpose of explaining or predicting that phenomena. It is like a blueprint and a guide for modeling a structure. A theory can also be defined as an expression of knowledge, a creative and rigorous structuring of ideas that project a tentative, purposeful and systematic view of phenomena. A theoretical framework provides a particular perspective or lens through which to examine a topic. This study was grounded on two theories namely resource based theory and innovation diffusion theory. The theories are discussed consecutively.

Hofer & Schendel(1978) defined strategy as the match an organization makes between its internal resources and skills and the opportunities and risks created by its external environment. Grant (1991) observed that the case for making resources and capabilities of the firm the foundation for its long term strategy rests upon the premises that the internal resources and capabilities provide the basic direction for a firm's strategy and that the resources and capabilities are the primary source of profit for the firm. The resource-based theory views the firm as a bundle of resources which can be utilized to achieve a position of advantage over other competing firms in the industry. It is these resources and the way that they are combined, which make firms different from one another. According to Barney (2001), the theory sees the firm as a collection of assets, or capabilities which are intangible. Wernerfelt (1984) argued that highly efficient resources form a resource position barrier that is effective because of the lower expected returns on the same type of resources if acquired by a competitor. Barney (2001) noted that the resource based view of the firm explains its ability to deliver sustainable competitive advantage when resources are managed such that their outcomes cannot be imitated by competitors, which

ultimately creates a competitive barrier. A firm's sustainable competitive advantage can therefore be reached by virtue of unique resources being rare, valuable, inimitable, non-tradable and non-substitutable. The study was theoretically guided by resource based theory because ICT components factored into the study particularly infrastructure and innovation dimensions are in deed a resource because capital is needed in order to acquire them.

Rogers (2003) defined an innovation as any idea, object or practice that is perceived as new by members of the social system and defined the diffusion of innovation as the process by which the innovation is communicated through certain channels over time among members of social systems. Innovation diffusion is a theory of how, why and what rate new ideas and technology spread through cultures, operating at the individual firm level. Diffusion of innovation theory attempts to explain and describe the mechanisms of how new inventions in this context ICT is adopted and becomes successful

Rogers (2003) defined adoption as a decision to make full use of an innovation as the best course of action available. Rogers defined an innovation as an idea, practice, or object that is perceived as new by an individual or other unit of an organization. However not all innovations are adopted even if they are good it may take a long time for an innovation to be adopted. Rogers (2003) identified relative advantage, compatibility, complexity, triability and observability as the five critical attributes that greatly influence the rate of adoption. Rogers (2003) stated that the innovation diffusion of new technology has situational or environmental factors that impact the adoption.

2.2 ICT Infrastructure and Performance

ICT infrastructure has been considered as compost of both the hardware and software. Manuelli, Latu and Koh (2007) observed that ICT infrastructure covers all forms of technologies such as computers, Internet, websites as well as fixed-line telephones, mobile phones and other wireless communications devices, networks, broadband and various specialized devices. Beckinsale and Ram (2006) defined ICT as any technology used to support information gathering, processing, distribution and use. Nicol (2003) classified ICT into information technologies, telecommunication technologies and networking technologies.

Organizational performance is at the centre of strategic management since performance is the true test of any strategy. Literature acknowledges the importance of modern ICT infrastructure particularly the telephone and internet on performance. Several studies on the effect of adoption of ICT on performance have therefore been undertaken in the last decade. Rai (2012) investigated the role and impact of ICT in microfinance on outreach and sustainability at the industry levels in India using a survey research design and reported that ICT has enabled Micro Finance Institutions (MFIs) to reach to the poorest of the poor in India. He reported that ICT is an important driver and the great hope.

Brynjolfsson & Hitt (2000) in a study on the role of ICT on organizational transformation and business performance noted that the use of ICT can help to cut down the costs of coordination, communication, and information processing, and to enable efficient service provision at lower cost. Luchetti & Sterlacchin (2002) carried out an econometric analysis of on the adoption and effective use of ICT among a sample of Italian firms. They concluded that Europe will only become a center of E-business if European SMEs are fully committed to using the internet as a leading edge business tool.

Although the importance of organizational performance is acknowledged widely, the measurement of organizational performance is one of the most difficult issues confronting the researcher in strategic management. Hofer (1983) acknowledges that performance is a contextual concept associated with the phenomenon being studied. Multiple performance criteria are suggested in the strategic management literature. However, the dominant performance criteria used in empirical strategy research are financial measures of performance that address the profitability or growth of the organization (Venkatraman and Ramunujan, 1986; Woo & Willard, 1983). These criteria typically include sales growth, return on investment, return on sales, return on equity and earnings per share. Kennerly & Neely (2003) observed that the message from the history of performance measurement suggests that measurement systems must reflect the context and objectives of the organisation in question. Since SASRA measures performance of Saccos in terms of dimensions of growth such as asset base, total deposits, membership, dividend rate, and total savings, this study will consider performance of Saccos in terms of total membership and rate of dividend since they reflect growth and return on investment respectively.

Baldwin & Sabourin (2003) link technology surveys to longitudinal data on the performance of food manufacturing plants in Canada. They find that plants that use advanced technologies are more likely to experience productivity growth and that the superior productivity growth is then reflected in market share gains. Amongst the advanced technologies examined, communications technology is associated with the best performance. But they also point out that it is not ICT use alone that matters. Plants that combine ICT use with other advanced technologies tend to do better than those using only one or two isolated technologies.

Effect of ICT on the organization as a whole has frequently been measured using variables representing market performance, such as market share and market value of the firm, among others (Liang *et al.*, 2010). The impact on operational performance has been studied mainly using productivity measures and cost reduction (Liang *et al.*, 2010; Das *et al.*, 2011). Brynjolfsson *et al.* (2002) observe that ICT increases productivity and operational efficiency in specific business processes, not only by reducing costs but also by impacting on intangible assets such as quality improvement in design processes or life-cycle enhancement in inventory management systems. ICT also enhances coordination of activities by improving information systems and internal and external communication.

From the literature it is evident that ICT can be conceptualized as a composite of hardware and software. Manueji, Latu and Koh (2007) also observed that ICT infrastructure covers all forms of technologies such as computers, Internet, website and mobile phones as well as fixed lines. Beckinsale and Ram (2006) defined ICT as any technology used to support information gathering, processing, distribution and use. Moreover ICT is a tool that can be utilized to enhance performance (Rai, 2012, Brynjolfsson & Hitt, 2002, Lucheti & Sterlacchin, 2002). Consequently, severally studies on contributions of ICT to performance of organizations had been undertaken. For example, Rai (2012) investigated the role and impact of ICT in Indian microfinance in terms of outreach and sustainability. Brynjolfsson & Hitt (2002) focused on contributions of ICT to business performance in Brazil while Baldwin & Sabourin (2003) linked technology to performance of manufacturing plants in Canada. The prior studies focused on contributions of ICT to business performance (Brynjolfsson & Hitt, 2002); mobile phones to finance outreach in SME in India (Rai, 2012) while Baldwin and Sabourin (2003) concentrated on effect of

technology on performance of manufacturing plants in Canada. The components of ICT investigated were mobile phones, advanced technology, and computers. The studies were based in different organizations such as SME, manufacturing plants and businesses. From the literature, no study had been undertaken to investigate the effect of ICT on Sacco performance. Also, none of the studies was based in Kenya and none of them specifically investigated the effect of ICT infrastructure on performance. Therefore the relationship between ICT infrastructure and Sacco performance remain unknown known.

2.3 ICT Innovation and Performance

Hine & Kapeleris (2006) consider innovation to be anything that is new to a business or as comprising new products and processes; and significant technological changes of products and processes. They add that innovation has been implemented if it has been introduced on the market (product innovation) or used within a production process (process innovation). There are five types of innovation, namely, introduction of a new commodity; introduction of a new production method; opening up of a new market; change in source of supply; and re-organization of industry. Hine & Kapeleris (2006) say that process innovation refers to the adaption of new or significantly improved production methods – methods that may involve changes in equipment or production organization or both. They add that there is the non-technological innovation that relates to operation of business.

They use the following model to explain the various forms of innovation:

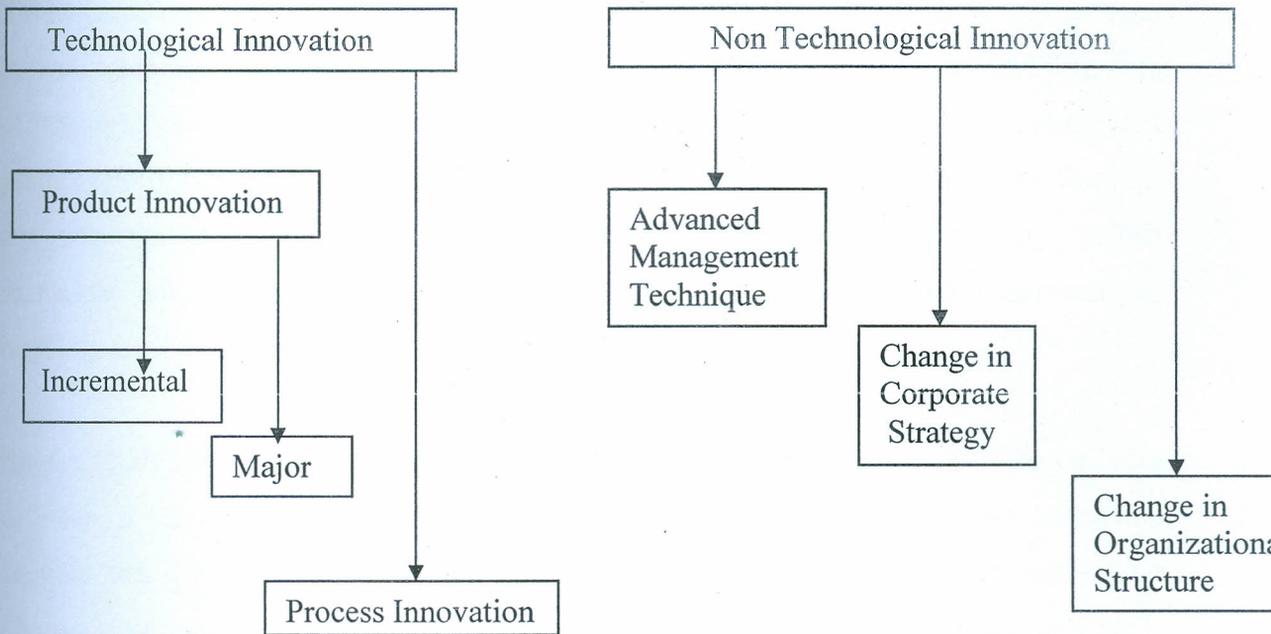


Figure 2.1 Forms of Innovation

Source: Hine & Kapeleris (2006)

Empirical literature on ICT innovation exists. Otieno et al (2013) in a study on the effect of information systems on revenue collection by local authorities in Homa Bay County, Kenya using a structured cross-section survey to collect data found that there is a relationship between information systems on both efficiency and effectiveness in revenue collection by the local authorities. They concluded that investment in information communication technology is very important to local authorities because computerized information systems has a positive effect on revenue collection

Muinde & Shale (2014) conducted a study on the role of e-procurement strategy in enhancing performance of saving and credit cooperatives. They used a descriptive research design that targeted the entire 1000 staff working for Kitui teachers Sacco Limited in Kenya. They found that e-procurement enhances efficiency hence improved performance of Saccos.

Tobin (2013) assessed whether the use of sophisticated ICT in Seoul, Korea to spur citizen interaction has increased government competitiveness(i.e. accountability and efficiency).The analysis was based on a case study of Seoul's Dasan Call Center ICT project and interview with call center managers and government officials. The findings suggested that the call centers, and more generally the use of ICT by the city, buffers municipal administration processes from external accountability and organizational learning.

Rogers (2007) examined the role of ICT and in particular mobile phones in the delivery of financial services in Philippines, India, Bolivia, Peru, South Africa and East Africa and summarized it as follows. In Philippines, more than 2 million people are using their phones as mobile wallets to receive and send payments. In India, rural farmers and MFIs are using mobile phones to do bookkeeping, receive and send payments and to pay utility bills.

Okiro & Ndungu (2013) sought to determine the impact of mobile and internet-banking on performance of financial institutions in Nairobi, Kenya. The study also sought to identify the extent of use of mobile and internet banking in financial institutions. The study investigated 30 financial institutions. The study found that the most prevalent internet banking service is balance inquiry while the least is online bill payment. Cash

withdrawal was the most commonly used mobile banking service whereas purchasing commodities was the least commonly used.

From the literature on innovation, it is clear that innovation comprises of new products and services (Hine and Kapeleris, 2006) and organizations become innovative to remain competitive hence improved performance. This is exemplified by studies that have been conducted on ICT innovation which appreciate its contribution to performance. A study by Otieno et al (2013) on effect of information system on revenue collection in Homa Bay County, Kenya reported positive contributions. Muinde & Shale (2014) also reported that e-procurement can improve performance of Saccos in terms of efficiency. Research in Korea also indicates that use of sophisticated ICT can increase a government's competitiveness (Tobin, 2013,). ICT innovation particularly mobile phones and Internet banking can also impact on service delivery (Okiro & Ndungu (2013). A majority of the studies were conducted in Kenya (Otieno et al 2013, Muinde & shale 2014, Okiro & Ndungu, 2013) with a few being conducted out of Kenya (Tobin, 2013 and Rodgers, 2007). The studies were based on different organizations specifically local authorities, governments and financial services with only Muinde & Shale concentrating on e-procurement in Saccos. The various dimensions of ICT innovation used in the studies included information systems, e-procurement, and mobile phones. However, ICT innovation in terms of product and process innovations were not studied directly in relation to their effect on Sacco performance. Therefore the relationship between ICT innovation and Sacco performance remain unknown.

2.4 ICT Policy Implementation and Performance

A policy document may be defined as a set of guidelines. ICT is an emerging phenomenon and its evolution in many countries has taken place with or without a systematic, comprehensive and articulated policy. However, the lack of a coherent policy is likely to contribute to the development (or prolonged existence) of ineffective infrastructure and a waste of resources. The Kenya ICT Master Plan (2014) appreciates the need for organizations to embrace ICT. Governments have been coming up with policies geared towards streamlining the ICT environment. This is because ICT policies can foster market conditions that reward the successful adoption of ICT. Moreover, competition needs to be strengthened by governments because it not only helps lower the

costs of ICT products and services, which fosters diffusion but it also strengthens pressures on firms to improve performance and change conservative attitudes.

Unless these deficiencies in ICT policies are adequately addressed, ICT may continue to fall short in its constructive effect on performance of various organizations, Saccos included. Kenya as a result produced its first National ICT Policy in 2006. This policy was guided by the need for infrastructure development, human resource development, stakeholder participation and appropriate policy and regulatory framework. In the light of the prevailing ICT legal framework, Saccos in Kenya have been coming up with internal ICT policies that are in tandem with the government ICT policies with the sole objective of improving organizational performance in terms of operational efficiency and effectiveness. From the literature it is evident that DTSSs enjoy a bigger market share and Saccos, just like other financial institutions have adopted ICT with the aim of improving performance (SASRA, 2013).

University of Manchester's Centre for Development Informatics (2010) observes that if there is a lack of ICT policy incoherence can emerge. Therefore governments have been coming up with policies geared towards streamlining the ICT environment. Kenya as a result produced its first National ICT Policy (2006). This policy was guided by the need for infrastructure development, human resource development, stakeholder participation and appropriate policy and regulatory framework.

Habib (2011) in a study on adoption of information and communication technology in small and medium enterprises in Cameroon verified that there is a relationship between ICT diffusion and SME performance using cross-country evidence. From these results, he found that ICT policy implementation can enhance performance and he even recommended the implementation of ICT development policies in order to improve SME growth.

The literatures on ICT policy implementation appreciate the important role that ICT policy can play in enhancing development of nations and organizations. For example University of Manchester (2010) observe that unless deficiencies in ICT policies are adequately addressed, ICT may continue to fall short in its constructive effect on performance of various organizations. In Kenya SASRA has also been coming up with

policies to streamline operation of Saccos. Habib (2011) also found that there is a relationship between ICT diffusion and SME performance. However, despite the fact that contributions of ICT policy implementation to performance are well documented, literature relating ICT policy implementation to performance of organizations is scanty. Specifically no study on the relationship between ICT policy implementation and performance has ever been undertaken. Therefore the relationship between ICT policy implementation and Sacco performance remain known.

2.5 Summary

In summary, performance is a concern for every organization and ICT has been viewed as a tool that can strategically be adopted to enhance it. Literatures exist that ICT can enhance performance of organizations such as businesses, governments, manufacturing plants, SMEs, banks and even local governments. ICT can be used to enhance performance in such organizations in terms of efficiency, profitability and service delivery. However the effect of strategic ICT adoption on performance of Saccos had not been studied. In particular the effect of ICT specifically ICT infrastructure, ICT innovations and ICT policy implementation in relation to performance of deposit taking Saccos remain unknown

CHAPTER THREE

RESEARCH METHODOLOGY

This chapter outlines stages that were followed in carrying out the study. It involves a blueprint for the collection, measurement and analysis of data. Therefore the researcher identifies the procedures and techniques that were used in the collection, processing and analysis of data. The following subsections are included; research design, study area, study population, sampling techniques, data sources, data collection methods, data sources, data collection procedures, data collection instruments, reliability tests, validity tests, data analysis and presentation.

3.1 Research Design

A research design is the methodology and procedures employed to conduct scientific research (Sharma, 2005). The research design used was a correlation research design. A correlation research is where the researcher aims to determine whether, or not and to what extent an association exists between two or more paired and quantifiable variables. Cooper & Emory (1995) observe that correlation research design is suitable because it provides rigorous and replicable procedure for understanding relationships. Correlational research on the other hand aims at investigating the existence and the degree of a relationship between two or more quantitative variables. If two variables are highly related, scores on one variable could be used to predict scores on the other variable (Mugenda & Mugenda, 2003). Therefore, the researcher collected data to determine which of the ICT variables affected performance and the relationship between performance and strategic ICT adoption.

3.2 Study Area

The study was conducted in Kisii region which encompasses Kisii and Nyamira counties. Kisii region is located in Western Kenya on latitude $00^{\circ} 41^{\circ}$ S and longitude $34^{\circ} 46^{\circ}$ E. The region was selected because it has a relatively high number of deposit taking Saccos (SASRA, 2013). Moreover, the researcher resides near the region hence travelling costs were reduced by conducting the study in the region.

3.3 Target Population

Cooper and Emory (1995) define population as the total collection of elements about which the researcher wishes to make some inferences while Borg and Gall (1996) define population as all members of a real set of people, event or to which a researcher wishes to generalize the results of the study. The study was a correlation research of all the DTSSs in Kisii region. The target population was 45 drawn from nine deposit taking Saccos located in Kisii and Nyamira counties. The sampling unit was the entire population comprising of the CEO and four (4) department heads.

3.4 Sampling Techniques

Mugenda & Mugenda (2003) observe that a sample size is determined by the size of the population. Since the target population is nine DTSSs, a sample size of 45 comprising of the Chief Executive Officers (CEOs), and four department heads were the respondents for the questionnaire.

3.5 Data Collection Methods

Both interview schedule and questionnaires were used to collect data. The interview schedule was used to get qualitative data from the CEOs on Sacco operating environment while the questionnaires were used to collect quantitative data on Sacco performance.

3.5.1 Data Sources

Mugenda & Mugenda (2003) advocate for objectivity through collection of both primary and secondary data. To achieve the objective of the study, secondary data were collected. Qualitative data on Sacco operating environment was collected through an interview schedule while data regarding the Saccos' adoption of ICT were collected through a questionnaire.

3.5.2 Data Collection Procedures

A letter to collect data was obtained from the graduate school. The physical address of the Saccos were got from County Director of Cooperatives of Kisii and Nyamira .Thereafter, a courtesy call was paid to the respective CEOs of the sampled Saccos. An interview appointment was sought. Also, the questionnaire was pretested as championed by Mugenda & Mugenda (2003). The pretesting was done on five respondents. The data collected was treated with utmost confidence and was purely used for academic purposes.

3.5.3 Data Collection Instruments

A questionnaire and interview schedule were used to collect data. The questionnaire was divided into five sections (see Appendix II). The first section provided general information; the second section provided general information on performance trends; the third section was on ICT infrastructure; the fourth section focused on the ICT innovations and the fifth section was on ICT policy implementation. There was also an interview schedule.

3.5.4 Reliability Tests

Mugenda & Mugenda (2003) define reliability as a measure of the degree to which a research instrument yields consistent results or data after repeated trials. To ascertain the reliability of the instruments, a pilot study on one Sacco with a sample of five respondents was conducted. The questionnaire was pre-tested on the selected sample. The procedure used in pre-testing the questionnaire was similar to the actual used in the study. The reliability of the questionnaire was consequently evaluated through Cronbach's α which measures the internal consistency. Cronbach's α was established for every objective as summarized in table 3.1 below.

Table 3.1 Reliability Analysis

Coefficients Scale	Cronbach's Alpha	Number of Items
ICT Infrastructure	0.809	12
ICT Innovations	0.893	8
ICP Policy Implementation	0.793	8
Performance	0.850	2
Overall	0.83625	30

Source: Survey, 2015

In this study, the Cronbach's alphas for the each of the variables scales was tested and found to be within the minimum accepted reliability as suggested by Pallant (2012). From the findings in table 3.1, ICT innovation with $\alpha=.893$ was the most reliable while ICT policy implementation with $\alpha=.793$ was the least reliable. The findings of the pilot study showed that all the four scales were reliable as their reliability values exceeded the prescribed threshold of 0.7 (Mugenda & Mugenda, 2003) as illustrated in table 3.1 above.

3.5.5 Validity Tests

Validity indicates the degree to which the instrument measures the constructs under investigation (Mugenda & Mugenda, 2003). It also refers to the extent to which the instrument measures what it purports to measure. Several authors including Wynd, Schmidt and Schaefer (2003), and Grover (1997) have discussed the different approaches to content validation. The process of developing and validating an instrument is in large focused on reducing error in the measurement process. Validity of the instruments was ascertained through subjecting the questionnaire for examination by experts in research from Maseno University, Department of Business Administration.

3.6 Data Analysis and Presentation

According to Bryman and Bell (2003) data analysis refers to a technique used to make inferences from data collected by means of a systematic and objective identification of specific characteristics. Qualitative data was analyzed through content analysis .Content analysis is the systematic qualitative description of the composition of the objects or materials of the study (Mugenda & Mugenda, 2003). Descriptive statistics analysis was done on the quantitative data and most of the results were presented in tables for easy interpretation. In addition, a multiple regression analysis model was used to determine relationship between performance and its various determinants. The determinants of performance that were considered are ICT infrastructure, ICT innovations and ICT policy implementation. The dimensions of performance used in this study were growth in membership and rate of dividend. The model in Equation 3.1 modified from Mugenda & Mugenda (2003) was used.

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \epsilon \dots \dots \dots 3.1 \text{ (Mugenda \& Mugenda, 2003)}$$

Whereby Y = Performance

α = Constant term

β = Beta Coefficient

X_1 = ICT Infrastructure

X_2 = ICT Innovation

X_3 = ICT Policy Implementation

ϵ = Error term

CHAPTER FOUR

RESULTS AND DISCUSSION

Qualitative and quantitative data were collected. The number of respondents who participated in this research and completely filled the questionnaires totaled to 35. This represented a response rate of 87.5%. According to Sekaran (2003), a response rate of 70% or higher is acceptable in social science research. The first part involves the profile of the respondents while the second part presents results on effect of strategic ICT adoption on performance of deposit taking Saccos in Kisii region, Kenya.

4.1 Background of Respondents

Most of the study respondents (45.7%) had Bachelors degree. Those who had Masters were 11.4 % while those with doctorate qualification (2.9%) were the minority. This shows that the respondents were literate enough and adequately responded to the questionnaire. However, 8.6% of the respondents did not state their level of education. Table 4.1 summarizes distribution of the respondents by academic qualifications.

Table 4.1: Distribution of Respondents by Level of Education

Highest Level of Education	Frequency	Percentage	Cumulative percentage
Diploma	11	31.4	34.4
Bachelors	16	45.7	84.4
Masters	4	11.4	96.9
Doctorate	1	2.9	100.0
Total	32	91.4	
Missing system	3	8.6	
Total	35	100.0	

Source: Survey, 2015

On the other hand, distribution by work experience revealed that majority of the respondents had worked for their respective Sacco for over 3 years. A summary of the distribution is captured in the table 4.2 below.



Table 4.2: Distribution of Respondents by Work Experience

Number of Years Worked in Sacco	Frequency	Percent	Valid Percent	Cumulative Percent
Above three years	21	60.0	60.0	60.0
Between 2-3 years	6	17.1	17.1	77.1
Less than 1 year	8	22.9	22.9	100.0
Total	35	100.0	100.0	

Source: Survey, 2015

4.2 Deposit Taking Saccos Operating Environment Qualitative Data Analysis

The interview schedule was used to solicit responses from respective Sacco Chief Executive Officers (CEOs) on the various issues concerning the operating environment. On the issue of technology used by different DTSS to communicate to members, the researcher found out that majority of DTSS use posters, banners and text messages to communicate to members. Social media particularly the internet has not been embraced by the Saccos to communicate to members. However, there was a general agreement that technology can improve efficiency in operations of Saccos. Some of the new technology that have been embraced by some of the Saccos include automated teller machines (ATMs) and M PESA .

Being that the DTSS in Kisii region are mainly farmers based, majority have introduced school fees products because they noted a majority of their members opting for bank loans thus denying them the interest on loans they desperately need for their survival. The stability of the operation environment was observed to be highly turbulent due to competition from Saccos and micro-finance institutions especially Juhudi Kilimo. Moreover the study found that environment turbulence is also brought about by uncertain whether conditions e.g. prolonged drought which was reported to greatly affect farmers' ability to service their loans through proceeds from sale of tea.

On the issue of technological challenges, the study found out that the major technological challenges that the DTSS face in their operations are resistance by employees to embrace technology and the breakdown of computers resulting into loss of data in the process of formatting the computers. Despite the challenges, DTSS have adopted strategies such as

computerization of the Sacco's services by enhancing corporate investment in emerging technology and updating of the information technology (IT) systems continuously to be in line with the current technological advancements.

These findings are in congruence with the literature that acknowledges the important role that ICT can play to make an organization to remain competitive in an environment which is turbulent. For example, the findings support Barney (2001) who posited that resource based view of the firm explains its ability to deliver sustainable competitive advantage. Adoption of technology by a majority of the Saccos also supports Rodgers (2003) view that adoption is a decision to make full use of an innovation as the best course of action available. The fact that social media particularly the internet has not been embraced by the Saccos further support Rodgers (2003) view that not all innovations are adopted even if they are good and it may take a long time for an innovation to be adopted.

4.3 Descriptive Statistics of Study Variables

Table 4.3 presents the descriptive statistics and the distribution of the variables considered in this research . The descriptive statistics considered were minimum, maximum, mean and standard deviation while study variables considered were performance as dependent variable and independent variables namely ICT infrastructure, ICT innovation and ICT policy implementation.

Table 4.3: Descriptive Statistics of Study Variables

	N	Minimum	Maximum	Mean	Std. Deviation
PERFORMANCE	35	18.00	38.00	29.8857	5.32349
ICT Infrastructure	35	18.00	91.00	45.5429	14.32058
ICT Innovation	35	16.00	40.00	30.3714	6.57574
ICT Policy Implementation	35	12.00	40.00	29.4571	8.04525
Valid N (list wise)	35				

Source: Survey, 2015

From the table, the N column represents the total number of respondents which stood at 35. The mean for ICT infrastructure for the eight Saccos was 45.5429. The mean is the average of the set of scores (Mugenda & Mugenda, 2003). The lowest level recorded for ICT infrastructure was 18.00. On the other hand a highest value of 38.00 was also recorded. ICT Infrastructure had a standard deviation of 14.32058 as per the analysis. The standard deviation is defined as the extent to which scores in a distribution deviate from their mean or average (Mugenda & Mugenda, 2003). The standard deviation therefore involves subtracting the mean from each score to obtain the deviation. If the value for standard deviation is small it implies that the variance is small because the scores are close together and vice versa. From table 4.3 ICT infrastructure had the highest standard deviation of 14.32058 implying that the variance is large hence the scores for ICT infrastructure are more spread out.

Adoption of ICT innovation had a mean of 30.3714. The lowest level of ICT innovation recorded was 16.00. On the other hand, a highest value of 40.00 was recorded for ICT innovation with a standard deviation of 6.57574. The different Saccos under study had different levels of adoption of ICT policy implementation according to the summary in the above table. Considering all of them, a minimum value of 12.00 was found to be the lowest level of this implementation. A maximum value of 40.00 was got to be the highest level of the policy implementation. Overall, the level of ICT policy implementation had a mean of 29.4571 and a standard deviation of 8.04525 implying that the variance is relatively small hence the scores for ICT policy implementation are less spread out.

Finally, a summary of the different levels of performance for the Saccos is presented. Performance being the dependent variable was influenced by the three variables discussed above. Different levels of strategic adoption of the three led to different levels of performance outcome in different Saccos. For instance, a higher level of ICT infrastructure, ICT innovation or ICT policy implementation adoption led to a significant increase in the level of performance. Table 4.3 above gives the summary of descriptive statistics as follows: The lowest level was 18.00 and the highest level was 38.00 and it had a mean of 29.8857 and a standard deviation of 5.32349

4.4 Association between Study Variables

Correlation technique is used to analyze the degree of relationship between variables (Mugenda & Mugenda, 2003). Since it is important to establish the strength of relationship between the variables, a Pearson correlation test was chosen as the most appropriate. The relationship is interpreted by reading the Pearson correlation value on the correlation table. The value lies between -1 and 1. This strength is established by looking at the variation of the value in terms of how far or close it is to zero but within the limits of -1 and 1. Performance as a dependent variable against independent variables namely ICT Infrastructure, ICT Innovation and ICT Policy implementation resulted in Table 4.4.

Table 4.4: Association between ICT Infrastructure, ICT Innovation, ICT Policy Implementation and Performance

		Performance	ICT Infrastructure	ICT Innovation	ICT Policy Implementation
PERFORMANCE	Pearson Correlation	1			
	Sig. (2-tailed)				
	N	35			
ICT Infrastructure	Pearson Correlation	.460**	1		
	Sig. (2-tailed)	.005			
	N	35	35		
ICT Innovation	Pearson Correlation	.367*	.560**	1	
	Sig. (2-tailed)	.030	.000		
	N	35	35	35	
ICT Policy Implementation	Pearson Correlation	.386*	.501**	.624**	1
	Sig. (2-tailed)	.022	.002	.000	
	N	35	35	35	35

** . Correlation is significant at the 0.01 level (2-tailed).

* . Correlation is significant at the 0.05 level (2-tailed).

Source: Survey, 2015

The Pearson correlation value was $r = 0.46$ which is further from zero suggesting a strong relationship between Performance and ICT infrastructure. ICT innovation, with a Pearson correlation value of $r = 0.367$ above also has a strong positive relationship with performance of the Saccos. A value of $r = 0.386$ for the Pearson correlation suggests a

strong relationship between the ICT policy implementation and performance. Table 4.5 gives a summary of performance and its various determinants. Therefore all the three independent variables namely ICT infrastructure, ICT innovation and ICT policy implementation had a strong positive relationship with performance. This suggests that an increase in the level of strategic adoption of any of the three variables will positively lead to an increase in the level of performance.

A summary of performance and its various determinants is given in table 4.5.

Table 4.5: A Summary of Performance and its Various Determinants

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.326 ^a	.122	.085	5.0902

a. Predictors: (Constant) ICT Infrastructure, ICT Innovation, ICT Policy Implementation
Source: Survey, 2015

The R^2 value indicates the percentage of variation in performance, ICT infrastructure, ICT innovation and ICT policy implementation that is explained by the model. The value of R^2 lies between 0 and 1. A value close to zero indicates little association between the set of independent and dependent variables while a value near 1 means a strong association. R^2 values present the strength of the relationship between performance and the independent variables (Mugenda & Mugenda, 2003). The number of independent variables in the multiple regression equation makes the coefficient of determination larger. Each new independent variable causes the prediction to be more accurate. The R^2 increases only because of the total number of independent variables and not because the added independent variable is a good predictor of the dependent variable.

To balance the effect that the number of independent variable has on the coefficient of multiple determinations the researcher found the adjusted coefficient of determination given by adjusted R^2 . From the adjusted determination coefficients, generally moderately weak relationships were established between dependent and independent variables. The adjusted R^2 value of 0.0850 was established and this implies that 8.5% of

the variation in performance is attributed to the changes in ICT infrastructure, ICT innovation and ICT policy implementation.

A regression analysis was also conducted on the study variables. According to (Mugenda & Mugenda, 2003) a regression analysis can be conducted to find out whether the independent variables predict the dependent variable. The regression model contained three independent variables (ICT infrastructure, ICT innovations, and ICT policy implementation) and the dependent variable (Sacco performance). A 5% level of significance and 95% level of confidence were used to determine a significant relationship as they are commonly used in social sciences (Mugenda & Mugenda, 2003). This indicates that 95 times out of 100, the researcher was sure that there is a true or significant correlation between the two variables. A p-value of (0.05) being the generally accepted conventional level in social sciences research.

4.5 Effect of Study variables on Performance

F-test was used to make simultaneous comparisons (thus, testing whether a significant relation exists between variables (dependent and independent variables); thus, helping in bringing out the significance of the regression model (Mugenda & Mugenda, 2003). The information provided by the regression identities for the sum of squares and the degrees of freedom and the F – statistic are summarized in an analysis of variance (ANOVA) in Table 4.6.

Table 4.6: Analysis of Variance (ANOVA^a)

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	107.975	1	107.975	4.255	.032 ^b
1 Residual	915.911	33	25.926		
Total	963.543	34			

a. Dependent variable: Performance

b. Predictors: (constant), ICT infrastructure, ICT innovations, ICT Policy Implementation

Source: Survey, 2015

The F – statistic generally helps measure how far the regression prediction is from zero or how well the model is doing in predicting the dependent variable. The F – test gives whether the regression equation as a whole is useful in making predictions. That is whether the variables X_1 , X_2 and X_3 taken together as a group are useful in predicting Y (Performance). This testing procedure looks at the overall test of significance which helps us to determine whether or not our regression is worth anything. Since the value $p=0.032$ was below 0.05 as shown in Table 4.6, it can be concluded that the regression model is significant, strong and has a positive relation with the dependent variable (Performance).

The value of the F statistic, 4.255 indicates that the overall regression model is significant. Table 4.7 shows the summary of coefficients for the three determinants: ICT infrastructure, ICT innovation and ICT policy implementation, according to the multiple regression analysis conducted on the data.

Table 4.7: Summary of Coefficients

Model	Unstandardized		Standardized	t	Sig.
	Constants	Constants			
	B	Std. Error	Beta		
Constant	23.288	3.546		6.711	.000
ICT Infrastructure	.144	.063	.371	2.297	.028
ICT Innovation	.171	.131	.222	1.310	.199
ICT Policy Implementation	.255	.106	.386	2.442	.022

Source: Survey, 2015

The study model was therefore:

$$\text{Performance} = 23.288 + 0.144\text{ICT Infrastructure} + 0.171\text{ICT Innovation} + 0.255\text{ICT Policy Implementation} + 0.386\text{ICT Policy Implementation}$$

(.000)
(.028)
(.199)

(.022)

So from the equation, a calculation of the estimated increase in level of performance was done as follows.

On average:



ICT Infrastructure = 45.5429

ICT innovation = 30.3714

ICT policy implementation = 29.4571

Performance = $23.288 + 0.144(45.5429) + 0.171(30.3714) + 0.255(29.4571)$

Giving an estimated 42.55% increase in overall performance. This implies that if all other factors that may affect performance are ignored, the three independent variables namely ICT infrastructure, ICT innovation and ICT policy implementation will contribute to performance by an average of 42.55 per cent.

According to the regression equation established, taking all factors (ICT infrastructure, ICT innovation and ICT policy implementation) to be constant, 23.288 level of performance will be realized. The unstandardized beta constant for the independent variables suggest by what margin the variables independently contributes to performance. 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.

According to Mugenda & Mugenda (2003) the t and Sig (p) values give a rough indication of the impact of each predictor variable. The t – test assists us to make inferences concerning the utility of a particular predictor variable. The t – test helps us to decide whether a particular variable say ICT infrastructure, ICT innovation and ICT policy implementation are useful for predicting performance. It helps in revealing whether the model is predicting the outcome variable better with the information from each explanatory variable X_1 , X_2 , and X_3 . A big absolute t value and small sig (p) value suggests that a predictor variable is having a large impact on the criterion variable.

4.5.1 Effect of ICT Infrastructure on Performance

At 5% level of significance and 95% level of confidence, a positive coefficient $\beta=0.144$ ($p=.028$) was established between ICT infrastructure and performance. This suggests that a unit increase in Saccos ICT infrastructure will lead to a 14.4 % units increase in Saccos performance. The values $p=0.028$ (sig. for ICT infrastructure) qualified to satisfy the significance test being that it was below $p=0.05$. For this reason the null hypothesis that

ICT infrastructure has no relationship with performance was rejected. Rejection of the null hypothesis indicates the ICT infrastructure has a significant effect on performance.

This is when other factors that may influence the level of performance such as leadership are not taken into account. These other factors are accounted for by the standard error which is 0.063 for ICT infrastructure. The results suggest that an improvement in the level of ICT infrastructure adoption will lead to an increase in the level of Sacco performance.

The findings support several empirical literatures on contributions of ICT infrastructure to performance of organizations. For example, Rai (2012) investigated the role and impact of ICT in Indian microfinance and observed that it leads to easier outreach of services. Brynjolfsson & Hitt (2002) focused on contributions of ICT to business performance in Brazil while Baldwin & Sabourin (2003) linked technology to performance of manufacturing plants in Canada. The prior studies focused on contributions of ICT to business performance (Brynjolfsson & Hitt, 2002); mobile phones to finance outreach in SME in India (Rai, 2012) and effect of technology on performance of manufacturing plants in Canada and Baldwin & Sabourin (2003). The components of ICT investigated were mobile phones, advanced technology, and computers. The studies were based in different organizations such as SME, manufacturing plants and businesses. None of the studies was based in Kenya and none of them specifically investigated the effect of ICT infrastructure on performance of deposit taking Saccos. Therefore, the significant results of strategic ICT infrastructure adoption on deposit taking Saccos performance is new knowledge.

4.5.2 Effect of ICT Innovation on Performance

At 5% level of significance and 95% level of confidence, a positive coefficient $\beta=0.171$ ($p=.199$) was established between strategic ICT innovation and performance. This suggests that a unit increase in Saccos strategic ICT innovation in terms of products and processes will lead to a 17.1 % units increase in Saccos performance. The values $p=0.199$ (sig. for ICT innovation) failed to satisfy the statistical significance test being that it was above $p=0.05$. For this reason the null hypothesis that strategic ICT innovation has no relationship with performance was rejected. However though there is a positive effect of strategic ICT innovation on performance, it is not a statistically significant one because it is above the generally accepted $\alpha \leq 0.05$.

The literature on innovation underscores the fact that innovation comprises of new products and services (Hine and Kapeleris, 2006) and organizations become innovative to remain competitive hence improved performance. This is exemplified by studies that have been conducted on ICT innovation which appreciate its contribution to performance. A study by Otieno et al (2013) on effect of information system on revenue collection in Homa Bay County, Kenya reported positive contributions. Muinde & Shale (2014) also reported that e-procurement can improve performance of Saccos in terms of efficiency. Research in Korea also indicates that use of sophisticated ICT can increase a government's competitiveness (Tobin, 2013,). ICT innovation particularly mobile phones and Internet banking can also impact on service delivery (Okiro & Ndungu (2013). A majority of the studies were conducted in Kenya (Otieno et al 2013, Muinde & shale 2014, Okiro & Ndungu, 2013) with a few being conducted out of Kenya (Tobin, 2013 and Rodgers, 2007). The studies were based on different organizations specifically local authorities, governments and financial services with only Muinde & Shale concentrating on e-procurement in Saccos. The various dimensions of ICT innovation used in the studies included information systems, e-procurement, and mobile phones. However, strategic ICT innovation in terms of product and process innovations were not studied directly in relation to their effect on deposit taking Sacco performance. Though this study finds a positive relationship between the level of strategic ICT innovation and performance, it contradicts the previous studies because a weak relationship with $p=0.199$ which is above the normally accepted 0.05 in social sciences. Therefore strategic ICT innovation was also found to have a positive effect on performance though the effect was statistically insignificant. The findings support Hine & Kapeleris (2006) who observed that organizations innovate to remain competitive. However, the findings contradict those of (Otieno et al, 2013; Tobin, 2013 and Okiro & Ndungu, 2013) which appreciated the contribution of ICT innovation in positively enhancing performance of organizations. Given that the results were found to be statistically insignificant contrary to existing literature, no new knowledge was generated.

4.5.3 Effect of ICT Policy Implementation on Performance

At 5% level of significance and 95% level of confidence, a positive coefficient $\beta=0.255$ ($p=.022$) was established between ICT policy implementation and deposit taking Saccos performance. This suggests that a unit increase in Saccos ICT policy implementation will lead to a 25.5% units increase in Saccos performance. The values

$p=0.022$ (sig. for ICT policy implementation) qualified to satisfy the significance test being that it was below $p=0.05$. For this reason the null hypothesis that ICT policy implementation has no effect on performance was rejected. Rejection of the null hypothesis indicates that ICT policy implementation has a significant effect on performance. This is when other factors that may influence the level of performance such as Sacco size are not taken into account. These other factors are accounted for by the standard error which is 0.106 for ICT policy implementation. The results suggest that an improvement in the level of ICT policy implementation will lead to an increase in the level of Sacco performance.

The literatures on ICT policy implementation appreciated the important role that ICT policy can play in enhancing development of nations and organizations. For example University of Manchester (2010) observed that unless deficiencies in ICT policies are adequately addressed, ICT may continue to fall short in its constructive effect on performance of various organizations. The argument was supported by Habib (2011) who found that there is a relationship between ICT diffusion and SME performance. The study found that ICT policy implementation has a positive effect on performance of Saccos. The findings support Habib (2011) who recommended that there is need for financial institutions to implement ICT policies for them to grow. University of Manchester (2010) also observed that lack of ICT policies in an organization can lead to incoherence. Therefore, the significant results of ICT policy implementation effect on deposit taking Saccos performance presented new knowledge.



CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents a summary of the major findings and conclusions drawn from the findings. For clarity purposes, the findings are presented along the study objectives. The study then makes recommendations based on the conclusions on each objective and suggests areas for further research.

5.1 Summary of the Findings

The general objective was to evaluate the effect of strategic ICT adoption on performance of deposit taking Saccos in Kisii region. There was general agreement amongst the chief executive officers of various DTSs that strategic ICT adoption by DTS can enhance efficiency in operation of the Saccos hence improved performance. The improved performance can consequently be reflected in growth in membership and improvement in rates of dividends.

The first objective of this study was to evaluate the effect of ICT infrastructure on performance of deposit taking Saccos. The dimensions of ICT infrastructure considered were computer hardware, computer software and the Internet. ICT infrastructure was found to have a statistically significant positive effect on performance of deposit taking Saccos.

The second objective of this study was to evaluate the effect of ICT innovation on performance of deposit taking Saccos in Kisii region. The aspects of ICT innovation considered were product and process innovation. ICT innovation was found to have no statistically significant effect on performance of deposit taking Saccos.

The third objective of the study was to determine the effect of ICT policy implementation on performance of deposit taking Saccos in Kisii region. ICT policy implementation was found to have a statistically significant positive effect on performance of deposit taking Saccos.

5.2 Conclusions

Following the results for objective one, it was concluded that ICT infrastructure had a positive effect on performance of deposit taking Saccos. Therefore increased investment in ICT infrastructure will yield better performance in deposit taking Saccos. Based on the results for objective three, it was concluded that ICT policy implementation had a positive effect on performance of deposit taking Saccos. Therefore, improved ICT policy implementation will also lead to improved performance of deposit taking Saccos. No conclusion, however, was drawn on the results for objective two because it contradicted knowledge already available.

5.3. Recommendations

From the first conclusion, this research recommends that Saccos invest in ICT infrastructure for improved performance. Based on the conclusion for objective three, it is recommended that ICT policies implementation be carried out for deposit taking Saccos performance improvement. Also, the study further recommends that ICT innovation be an area of further studies on performance.

5.4 Limitation of the Study

Since the study was conducted only in Kisii region, the findings may not apply in other regions because of differences in cultural dynamics in relation to ICT. Moreover, the quantitative data on performance was also subjective and it is less preferred in case of availability of objective data on performance. Also, the study only focused on DTSSs and therefore the findings may not necessarily reflect the trend in non deposit taking Saccos due to their level of supervision and adoption of ICT especially the policy implementation dimension.

5.5 Areas for Further Research

The study suggests that a similar study be done on other financial organizations that have in one way or the other adopted ICT because different organizations have different operation environment.

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