INFORMATION AND COMMUNICATION TECHNOLOGY AND SERVICE DELIVERY IN KENYA'S TEACHERS SERVICE COMMISSION

PRESENTED BY:

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A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENT OF MASTER OF BUSINESS ADMINISTRATION (MBA) SCHOOL OF BUSINESS, UNIVERSITY OF NAIROBI

OCTOBER 2012

DECLARATION

I declare that this research project is my original work and has never been submitted to any other University for assessment or award of a degree.

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Signature…….. Date……

This project has been submitted with my authority as the university supervisors.

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ACKNOWLEDGEMENT

A large number of people have contributed to this project. I am thankful to all of them for their continuous support and encouragement, which has uniquely helped shape my education and life. My sincere appreciation goes to my supervisor Dr. James Njihia who tirelessly through his effort, experience, expertise and initiative guided me through the whole process.

I would like to acknowledge all the MBA students, colleagues, friends and my family especially for their moral and material support for the completion of this project. My greatest gratitude goes to God, for I would not have been able to complete this course without his immense help and guidance.

DEDICATION

I dedicate this project to my supportive and concerned father Mr. Andrew Soi, and to my caring and loving mother, Mrs. Martha Soi. I am indebted to them for the resources and support they have given me. To my loving siblings: Edith, Jacky, Jared and Linnet. I cannot also forget Gibson for his moral support throughout this course.

ABBREVIATIONS AND ACRONYMS

ICT	Information and Communication Technology
IS	Information Systems
IT	Information Technology
HR	Human Resource
HRIS	Human Resource Management System
TSC	Teachers Service Commission
KNUT	Kenya National Union of Teachers
KUPPET	Kenya Union of Post Primary Education Teachers
PIT:	Publish Interact and Transform model
TAM:	Technology Acceptance Model
SERVQUAL:	Service quality model
NPM:	New Public Management Theory

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CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

The fast economic and technological developments in the global business world make the use of Information and Communication Technology (ICT) necessary. As noted by Frempong (2004), the great expansion of ICT that has taken place during the last decade has set the stage for a new age of opportunities and challenges in many economic regions. While the growth of the ICT sector in Kenya has been significantly influenced by global trends, it can be evaluated in terms of number of fixed and mobile telephone lines; the number of computers and services; Internet Service Providers , the number of Internet users; broadcasting stations; and market share of each one of them (Mureithi, 2002).

The usage of ICT has seen tremendous growth in service industries in the recent past. It allows users to join in a rapidly changing world in which work activities are transformed by access to diverse and developing technologies. ICT tools can be used to find, explore, analyze, exchange and present information. It gives users speedy access to ideas and experiences from a wide range of people, communities and cultures. ICT deals with the use of electronic computers and computer software to convert, store, protect, transmit, and securely retrieve information (Oliner and Sichel, 2000).

1.1.1 Information and Communication Technology

The use of Information Communication Technologies has dramatically changed services, business models, and people's expectations of the quality and efficiency of information

sharing and service delivery. ICT reduces costs of transactions, improves the quality of production, empowers consumers, and ultimately boosts profits (Brown, 2005). Quinnox (2012) notes that development in ICT, especially the Internet helps the application of alliances used by the manufacturers to become more effective through the integration of firm's Information Technology infrastructure.

Managers use ICT to get information to help in their decision-making. For example, when deciding whether to grant credit to a customer, a manager can use an information system to examine the customer's credit history (Maniam, 2005). With many functions to track and huge amount of information to process frequently and accurately, Human Resource (HR) executives have turned to ICT to help them meet the organization's information needs. This has led to the development and use of computer based Human Resource Information Systems (HRIS) in organizations to acquire, store, manipulate, analyze, retrieve, and distribute pertinent information regarding an organization's human resources (Kavach, 2000).

Today, the term information includes aspects of computing and technology, and the term has become very recognizable. ICT professionals perform a variety of duties that range from installing applications to designing computer networks and information databases (Maniam, 2005). A few of the duties that ICT professionals perform may include data management, networking, engineering computer hardware, database and software design, as well as the management and administration of entire systems. Information Technology is starting to spread further than the conventional personal computer and network

technology and more into integrations of other technologies such as the use of cell phones, television, automobiles and more, which is increasing the demand for such jobs (Harris, 2001).

According to Spyros (2004), ICT investments should help early-adopting firms to achieve higher levels of performance, for example, by improving the efficiency with which various tasks are performed by different sections of the workforce; and by facilitating more rapid monitoring of trends in customer demand and improvements in communications with suppliers of key components and services. However, in common with some previous new general purpose technologies such as impact of ICT investments on firm-level performance may be small or even negative due to the time and resources needed to develop complementary production inputs (Helpman and Trajtenberg, 1998).

1.1.2 Service Delivery and Information and Communication Technology

Service delivery involves the actual production or provision of goods and services to customers in an organization. Services represent substantial part of business output and investments. Effective service delivery relates to the cost effective, easy, and timely access to the services provided by the organization. According to Mineruini (2003), for any organization to continually improve the delivery of services, the skills of employees should be constantly developed to keep abreast with the demands of the job. This is achieved by continuous training in new aspects to ensure that employees are comfortable with the latest developments.

Satisfaction and service quality are functions of customer's perceptions and expectations. Service quality is ensuring customers, both internal and external, get what they want. Customer satisfaction is the feeling or attitude of a customer towards a product or service after it has been used. Customer satisfaction is determined by defining customer perceptions of quality, expectations, and preferences (Kajogbola, 2004). ICT business value and service delivery include productivity enhancement, profitability improvement, improved work relations, competitive advantage and efficient use of resources at both intermediate level and organizational level (Prasad 2008).

1.1.3 Kenya's Teachers Service Commission

The Teacher Service Commission is one of the Government Agencies under the Ministry of Education. It was established in 1967 through an Act of Parliament Cap. 212 of the laws of Kenya. It is mandated to perform the following functions: teacher registration, recruitment, deployment, remuneration, promotion, discipline, and maintenance of teaching standards. The commission has the responsibility for managing teachers in primary schools, secondary schools, and tertiary institutions. At its inception in 1967, the commission provided service to 39,725 teachers serving in 6,501 educational institutions (TSC Strategic plan, 2010-2012).

The commission is implementing the wider government's development policies including the implementation of public sector reforms. To do this, it has established internal structures to manage the change required to inject efficiency and effectiveness in its operations. The role of the commission is continuously evolving in response to the

reforms taking place in the education sector. It faces a task of serving the largest workforce not only in Kenya but also in East & Central Africa (Teachers Image, 2004). Similarly, there is unrelenting pressure from the government, customers, stakeholders in teacher management and Trade Unions (KNUT &KUPPET), all with varied and diverse needs on the commission to offer quality services to Kenyans and in particular the teachers. Teachers want to access information as fast as possible for example salary adjustments, loans, vacancies for promotion, discipline issues and new regulations.

According to TSC ICT policy (2010), the Commission initiated its first computerization project with the implementation of the Education Management Information System in collaboration with the Ministry of Education in 1999. Since then, it has consistently developed systems to automate various functions in the service areas. These systems include the Integrated Personnel Payroll Database, the Integrated Financial Management Information System, and the on-going development of the File Tracking system. The IPPD is a computer-based system that integrates payroll administration, establishment, budgets projection, and education and skill inventory that reforms a strong basis for making critical management decisions. This was a departure from the manual system of keeping information. This method was clumsy, time consuming and prone to errors.

The challenge of providing quality education services is a central concern of the government today. To enhance effectiveness and efficiency in the teaching service, the commission has embraced reforms undertaken in the broad public sector by boosting of financial and human resource management through harnessing Information and

Communication Technology (Teachers Image, 2007). As Kenya's single largest employer, the TSC is an important national institution. Despite the increase in scope of TSC mandate, functions, and implementations of reforms and undertakings of many changes, the commission continues to experience operational constraints and challenges in many areas of its operations. TSC cannot ignore embracing Information and Communication Technology in order to survive and fulfill its mandate effectively. The Commission is an important national institution and serves unique customers and it therefore faces a lot of political, cultural, social and technology pressure (Teachers Image, 2009).

1.2 Statement of the Problem

Information and Communication Technology is necessary in the modern fast economic and technological developments in the global business environment in order to remain competitive. As a result of an increased emphasis on a knowledge-based economy, many organizations are realizing that their people and information resources are critical to survival and success (Laudon and Laudon, 2006).

A number of researchers have conducted studies on different aspects of Information and Communication Technology. For instance, Baldwin and Sabourin (2001) conducted a study on impact of adoption of advanced Information and Communication Technology on firm performance in Canadian manufacturing sector. The study concluded that the adoption of many of the ICTs was associated with greater growth in labour productivity and market share. Karuga (2010) did a survey of impact of ICT on business value

creation in Kenya banking sector. The study concluded that ICT has a positive effect on banking industry.

Researcher Ssweanyana (2007) from Uganda examined the extent of adoption and usage of ICT on firms in Uganda. With respect to the contribution of ICT to the firm, the study illustrated that the majority of respondents strongly agree that ICT provides increased savings, increased efficiency, low transaction costs, and improved market performance to the organization that invests in ICT. Chowdhury (2006) did a research on effect of ICT investment on the labour productivity of East African small and medium-size enterprises and found a negative effect which is due to the low cost of labour relative to capital in East Africa which prevents substitutability being a profit maximizing approach and a lack of knowledge of best practices in ICT usage as well as -related skill deficiencies in the workforce constrain the benefits from ICT.

However, related studies that have been carried out were too general and did not focus specifically on Information and Communication Technology and service delivery in TSC

Arising from the findings of the above studies, it is clear that, there are many areas about Information and Communication Technology and service delivery in TSC that have not yet been fully addressed. Therefore, this study sought to find out if ICT has a positive or negative impact on service delivery at TSC. The study sought to answer the following questions: What is the extent of ICT adoption in TSC? What is the impact of ICT on service delivery in TSC? What are the challenges experienced by TSC in use of ICT for service delivery.

1.3 Objectives of the Study

The study will seek to achieve the following objectives;

i. To establish the extend of adoption of ICT in TSC

ii. To determine the impact of ICT on service delivery in TSC

iii. To establish the challenges experienced by TSC in use of ICT for service delivery

1.4 Value of the study

The research findings will give an understanding of value addition of ICT on service delivery at TSC. This study will enable TSC to improve its application of ICT for better service.

The government and other service providing state corporations may use the research findings to implement the effectiveness and efficiency of services in order to meet the expectations of stakeholders. Organizations who have not adopted ICT may be inspired to do so. It may form a basis for other service providers to address the challenges they may be facing in the implementation of ICT.

Academically, this study will contribute to the body of knowledge in the area of ICT, hence form a basis reference material, and as a basis for further research.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter reviews the information from other researchers who have carried out research in the same field of study and other existing literature by scholars. Among the issues discussed include Information and Communication Technology, service delivery, adoption of ICT, theories of ICT and service delivery, and conceptual framework.

2.2 Information and Communication Technology

Several studies suggest that adoption of ICT can provide organizations with valuable information, increase knowledge, improved relationships with customers and suppliers, maintaining collaboration with other firms, increase efficiency, offer new distribution and communication channels, reduce cost of production and better target customers. Being able to effectively utilize ICT can provide firms with a strategic advantage which can positively influence their competitiveness (Fillis et al., 2003; Karagozoglu and Lindell, 2004; Nieto and Fernandez, 2006).

According to Clemons and Row (1991), ICT applications have a positive impact on a firm's communication with its trading partners, such as increasing the degree of vertical collaboration, which seems to be a prominent feature of the ongoing globalization. These technological communication setups can eliminate geographical barriers and facilitate the forming of collaboration with new firms (Ozer, 2004). Firms with access to ICT are able to use this for transmitting and/or processing information, which includes wide array of

technology, ranging from database programs to local area networks. ICT has also speeded up the pace of globalization and increased the complexity of business practices, because firms today not only need to be familiar with their local context but also with global developments (Matlay and Addis, 2003).

2.3 Adoption of Information and Communication Technology

According to Matley (2001), adoption of ICT is not a digital on and off process, but according to research in the field normally a process consisting of different phases. There are different views on the adoption process of ICT. The first is the "adoption ladder approach." The main idea behind this model is that a firm approaches ICT adoption through a series of stages, in a well-planned and sequential manner. The business benefits associated with ICT drive the adoption process and results in increased organizational change and ICT sophistication at each step. Firms' usage of ICT ranges from basic technology such as emails and fixed lines to more advanced technology such as e-commerce, and information processing systems.

Using advanced ICT to improve business processes falls into the category of e-business and finally representing a transformed organization. The advantage of this "adoption ladder" approach is that it highlights the transformation aspects of technology and the key social needs from which it emerges. The second model regarded as PIT (Publicise, Interact Transform) model represents another view on the adoption of ICT by small firms. This model illustrates the diversity of applications and adoption of ICT approaches in organizations. It has two dimensions; first it focuses on what functions ICT can be

used for in the firm, and secondly it focuses on what activities ICT can be applied for. According to the model, ICT can be used for three specific purposes in small firms; to publish, to interact and to transform (Matley, 2001).

Braunerhjelm (2010), agrees that the PIT and adoption ladder models shares certain similarities as both show different levels of ICT adoption feasible by the small firms and what this would mean for performing different activities. The adoption process depends on the ability of the firm, but also could be driven by the benefits firms foresee as being associated with moving into more advanced use of ICT.

Bakes and Treacy (1986) suggest that opportunities arising from Information and Communication Technology can be viewed from three perspectives: that of an organizational designer trying to improve efficiency and effectiveness of the current firm, that of an industry insider trying to out manoeuvre other participants in the competitive game, and that of an outsider investigating whether to enter an industry. The three strategic views arising from these perspectives create opportunities for firms in formulating their internal strategy, competitive strategy and business portfolio strategies. Internal strategy focuses on moves that develop efficient and effective organizational structures and processes for achieving strategic and operational objectives. Competitive strategy is concerned with the competitive moves within the industry and how Information Technology supports competitive objectives. Business portfolio strategy refers to the choice of which industries choose to compete in and how to position the firm

in those industries. These components of strategy are closely related and ICT can affect all of them simultaneously or separately at different stages (Bakes & Treacy, 1986).

2.3.1 Operational functions and Information and Communication Technology

Fillis et al.,(2003) suggest that ICT affects the firm by increasing the potential of internal and external coordinating efficiencies and firms that do not adopt ICT will have higher cost structures and therefore competitive advantages.ICT is therefore necessary to guarantee continued existence of firm today.Mirani & Lederer (1998) observe ICT affects on the firm from three dimentions: competitive, informational and transaction or automation dimentions. Adoption of ICT has resulted in more effective use of time. It has contributed significantly to closing of communication gaps, as users and suppliers can now communicate more easily and faster, through electronic mail and website, when placing orders or sourcing for raw materials (Kajogbola, 2004). It has positively influenced time and space in the sending and retrieving of information both within and across diverse organizations. ICT provide faster response to market needs and allow more flexibility in product design, production and equipment delivery.

Information and Communication Technology is employed in organizations to improve operational efficiency by automating information-based processes to enabe firms do things faster, cheaper, accurately and consistly (Yazici, 2002). Mirani & Lederer (1998) identifies three main types of automation or transactional objectives that a firm can have: communication efficiency, cost reduction and business efficiency. Communication efficiency improves collaboration within and without the firm and makes information

sharing easier. It also reduces the costs of organizational communication. Cost reduction arises as a result of automation of manual processes resulting to execution of activities faster and more cheaply. Business efficiency benefits improve the overall efficiency of employees, business process and financial resources.

Firms are implemeting information systems that give them an edge on the competition. Information systems help the firm implement strategies to improve efficiency. These systems are not directly linked to the strategy formulation process or intergrated with a strategic plan. They process routine transactions, produce outputs that goes to the customers and provides exeption reporting A business has a competitve advantage when customers clearly prefer its products over those of other businesses. Information systems can help a business gain a competitive advantage. For example, it can help reduce the cost of production so that a business can have the least expensive product (Ozer, 2004).

ICT helps to ensure that data is well managed in an organization. Data management involves making the data available for processing, keeping the data up to date and managing control of the data to be sure it is correct and secure from loss or destruction. Data are more than the raw material and information systems. Data captured as a result of a common transaction is stored, processed and analysed using sophisticated software applications that can reveal complex relationships about sales, customers competitors and markets (Lucas, 2004).

2.3.2 Service Delivery and Information Communication Technology

According to Avison et al (2003), Information and Communication Technology in an organisation provides and processes information useful to its members and clients. This helps it to operate more effectively. The information may concern its customers, suppliers, products, equipment, procedures and operations. Information Communication Technology in an organisation is required to help it analyse the business along with its environment and formulate and check that it achieves its goal.

ICT facilitates flatening of hierachies by broadening the distribution of information to empower lower-level employees and increase management efficiency (O'Brien,2004). ICT pushes decision making rights lower in the organization because lower lever employees receive the information they need to make decisions without supervision.Because managers can now receive so much more accurate information on time, they become much faster at making decisions, so fewer managers are required. Management cost declines as a percentage of revenues, and the hierachy become more efficient businesses are using ICT to support basic information-proccessing tasks. These task range from computing payroll checks, to creating presentations, to setting up websites from which customers can order products (Roztocki and Weistroffer, 2008).

Investment in information technology can have remarkable effects on both the internal and external operations of a business organization. Internally, improved ICT can enhance and strengthen organizational infrastructure and capacity by increasing employees' efficiency, service coordination, information sharing between departments, financial

record keeping and tracking of an organization's production and impact. Externally, ICT can fundamentally transform business organization service delivery (Ozer, 2004).

According to Karagozoglu and Lindell (2004) , Information and Communication system provides the methods and technology to support information needs and processing in businesses. ICT controls the flow of information in business operations. They make information readilly available to help in managing decision making. Information system and technology can control the information flow in business operations. Computers and networks can transmit data from one department to another. For exanple a computer can send sales information through a network from sales department to shipping department, to the billing department and finally transmit billing inforrmation to the accounts receivable department.Computer information systems operate at any time of the day or night and process data faster than humans. Thus organisations and businesses serve their customers and clients more conviniently and efficiently . Improved service means that customers may be attracted to a certain business because of its service.

2.3.4 Customer Satisfaction and Information and Communication Technology

According to Seybold et al (2001), customer relationships is a critical asset for firms, because the focus of power across industries and businesses is increasingly shifting towards customers. Firms are moving from a product oriented model to a customer focus model to sense and meet customer demands for changes in the features of products and services, distribution channels, and pricing structure Customer satisfaction and customer retention have emerged as key metrics for measuring the effectiveness of ICT and the competitive success of firms. Research shows that higher levels of customer satisfaction

have the potential to double or triple firm profits. To improve their customer satisfaction, firms are making greater use of ICT in their internal and customer facing business processes (Srinivasan et al, 2002).

Managers always rank improvement in customer satisfaction as one of the prime motivations for making ICT investments. Significant investments in ICT applications indicate the industry belief that it can streamline both internal and customer-interfacing business processes (Karimi et al, 2001). Since customer satisfaction is a top indicator of firm performance, it is important to understand the role of ICT investments in enhancing customer satisfaction. According to O'Brien (2004), organisations and their managers need to practice data resource management, manegerial activity that applies Information and Communication Technologies like database management, data warehousing, and other data management tools to the task of managing an organisation's data resources to meet the information needs of their business stakeholders.

2.4 Theories of ICT and Service Delivery

Technology Acceptance Model (TAM): TAM developed by Davis (1989) aims to predict and explain ICT usage behavior, that is, what causes potential adopters to accept or reject the use of information technology. In TAM, two theoretical constructs, supposed usefulness, and perceived ease of use are the fundamental determinants of system use, and predict attitudes toward the use of the system, that is, the user's willingness to use the system. Perceived usefulness refers to the degree to which a person believes that using a particular system would enhance his or her job performance and perceived ease of use

refers to “the degree to which a person believes that using a particular system would be free of effort” (Davis, 1989).

The DeLone and McLean model: According to Heo and Han (2003) and Myers (1997), the DeLone and McLean Model of IS Success is one of the most widely cited in the IS literature. According to Myers, the basic contributions of the model are extremely important to the IS researchers because (1) it provides a classification for all the evaluation measures that have been reported in the IS literature; (2) the model commences to identify potential stakeholders groups subject to be evaluated in the model, and (3) it suggests how the constructs may interact with each other.

DeLone and McLean propose six different categories or dimensions of IS success: system quality, information quality, use, user satisfaction, individual impact, and organizational impact. According to DeLone and McLean (2004), one of the most studied dimensions of IS success is system quality. It refers to measures of the information processing system itself, how well the hardware and the software work together. System quality has been operationalized in many different ways in the IS literature, but some of the most relevant are convenience of access, flexibility of system, integration of system, response time

Service Quality (Servqual) model: Parasuraman et al., (1985) pioneered the development of the model. The model was based on the theory relating service quality to the clients’ satisfaction. According to Lewis and Booms (1983), it is a measure of how well the service level of an organization matches clients’/customers expectations. The

SERVQUAL represents service quality as the discrepancy between a customer's expectations for a service offering and the customer's perceptions of the service received, requiring respondents to answer questions about both their expectations and their perceptions Parasuraman et al., (1988).

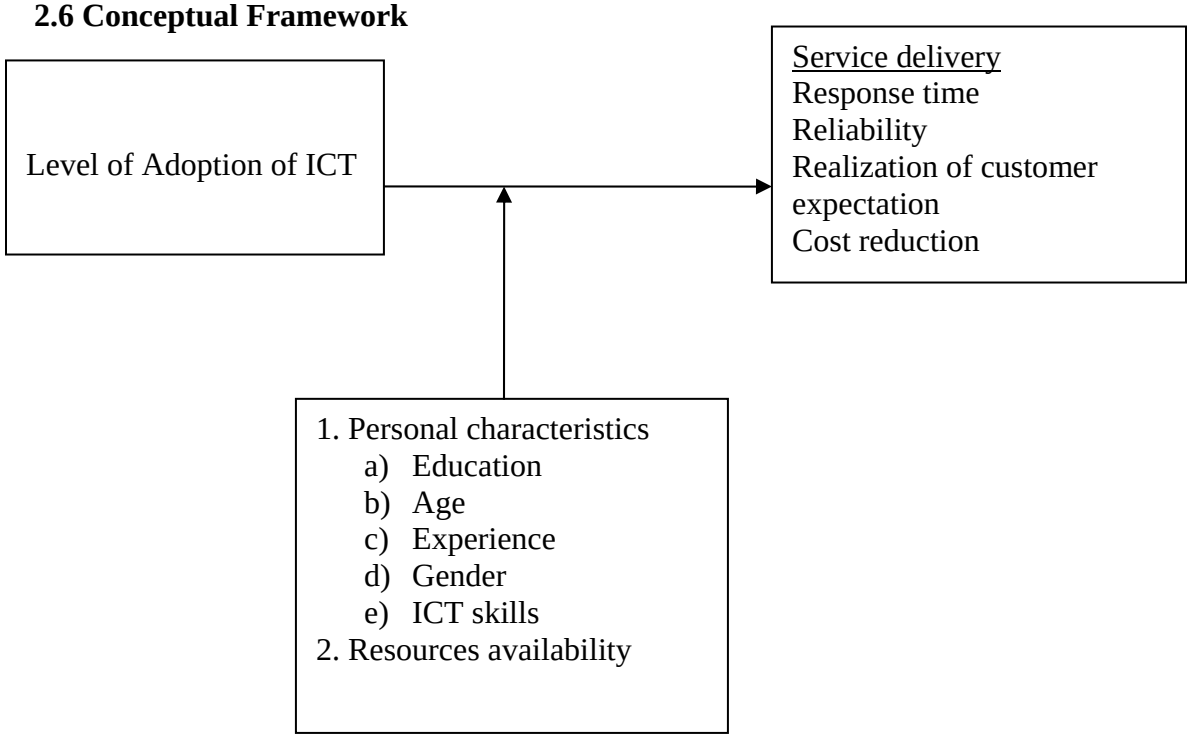
New Public Management Theory: NPM originated in the late 1970s in the United Kingdom, Australia, and New Zealand. Since then, it has come to dominate thinking about the public sector reform and is hailed as a new paradigm. Different factors led to the emergence of NPM, some of which are: fiscal crises of governments, poor performance of the public sector in different arenas, imperious bureaucracy, and lack of accountability, corruption, changes of people's expectations and the emergence of better alternative forms of service delivery (Sarker 2006). As per NPM philosophy modern government should be customer oriented, competitive and result oriented, and thus ICT has a room to play for enhancing the effectiveness of government services. As a strong theoretical foundation, the concept of new public management is used to strengthen the need and importance of ICT in the public sector.

2.5 Summary

A gap exists on the understanding of the impact of ICT on service delivery especially in developing countries. Most developing countries lag behind in terms of technology. It will be prudent to address the impact and degree of adoption of ICT in developing countries such as Kenya. Implementing ICT is a very expensive undertaking and requires heavy investments by organizations (Karagozoglu and Lindell (2004). Much of the

research in value of Information and Communication Technology focuses on the effect of ICT expenditures on tangible measures of firm performance such as market value. It has been observed that very little research is reported about the impact of IT investments on business value and service delivery in organizations (Ozer, 2004). Researchers are increasingly calling for the discovery of the effect of ICT investments on intangible measures of firm performance, such as greater responsiveness to customers, more variety, and overall customer experience, which are reflected in customer satisfaction (Matlay and Addis, 2003). The study focuses to learn the impact of ICT on service delivery in TSC.

2.6 Conceptual Framework



Moderating Variable

Independent Variable **Dependent Variable**

(Source: Researcher, 2012)

Service delivery in an organization depends on the level of adoption of Information Communication Technology. When there is proper and widespread use of ICT in an organization, the level of customer delivery is high and the reverse is true. Service response time, system reliability, accessibility, realization of user expectations, and cost reduction, according to SERVQUAL model, are measures of Service delivery.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the methodology that was used in conducting the study. The issues discussed included the research design, the target population, the sampling design the sample size, the data collection methods as well as the data analysis and presentation methods.

3.2 Research Design

The study adopted a longitudinal case study design in establishing the impact of ICT on service delivery. Longitudinal surveys usually combined both extensive (quantitative) and intensive (qualitative) approaches. Life history surveys facilitated the construction of individual trajectories since they collected continuous information throughout the life course of an activity. The design was suitable for this study since it assisted in collecting longitudinal data on service delivery before and after the implementation of ICT at TSC (Ruspini, 1999).

3.3 Population of the Study

The respondents of the study were the secretariat of Teachers Service Commission from different departments and teachers from 50 public schools in Nairobi County. The teachers were included in the study since they are the customers of TSC. It was important to get the views of the teachers on the situation of service delivered before and after implementation of ICT at TSC. The total number of the secretariat is approximately 2,400. According to TSC ICT policy (2010), the Commission initiated its first

computerization project with the implementation of the Education Management Information System in collaboration with the Ministry of Education in 1999. Since then, it had consistently developed systems to automate various functions in the service areas. These systems included the Integrated Personnel Payroll Database, the Integrated Financial Management Information System, and File Tracking system.

3.4 Sampling Design

Stratified random sampling was used to select employees of TSC. The researcher used sample size determination table for continuous data with margin error of 0.03 developed by Bartlett, Kotrlik, & Higgins (2001) to determine the sample size. From the table, 115 respondents were selected. There are approximately 2400 employees of TSC. The researcher also adopted random sampling of 50 teachers from Nairobi County as customers of TSC.

Table 3.1: Sample Size (TSC Secretariat)

Department	**No of employees**	**Percentage**	**No selected**
Finance/Accounting	250	10	12
Staffing	500	21	24
H .R. Management	600	25	29
Administration	700	29	33
Internal Audit	350	15	17
Total	**2400**	**100%**	**115**

Source: Researcher, (2012)

3.5 Data Collection

This study was conducted using both primary and secondary data. Primary data was collected through administration of questionnaires. Questionnaires were used to obtain

important information about the population. The questionnaires were divided into four parts. Part A focused on the demographic data of the respondents, Part B contained questions on the extent to which TSC had adopted ICT, and Part C sought data on the impact of ICT on service delivery While Part D contained questions on the challenges experienced by TSC in the implementation of ICT. The questionnaires were administered by drop and pick method.

3.6 Data Analysis

The data collected was analyzed using descriptive statistics (measures of central tendency and measures of variations). This method of analysis was most desirable as it enabled the researcher to have an insight on ICT impact in TSC in 2007 and 2012 in relation to service delivery. Once the data was collected, the questionnaires were edited for accuracy, consistency, and completeness. The responses were then coded into numerical form to facilitate statistical analysis. Data was analyzed using SPSS. After descriptive analysis of data collected, tables, percentages, mean and standard deviations were used to present the information.

CHAPTER FOUR: DATA ANALYSIS, RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter presents the analysis of the data collected from the Respondent and discusses the research findings on Information and Communication Technology and Service Delivery in Kenya's Teachers Service Commission. All completed questionnaires were edited for accuracy, uniformity, consistency, and completeness. The response rate of 80 respondents was achieved from the total target respondent of 115 employees of TSC secretariat. 50 teachers were selected from public schools in Nairobi County to measure the impact of ICT at TSC with regard to service delivery. This good response has been attributed to the fact that quite a good number of the respondents were knowledgeable to fill the questionnaires themselves. Summaries of data findings together with their possible interpretations have been presented by use of tables, mean, percentages, frequencies, variances, standard deviation, and graphs.

4.2 Respondents Characteristics

Respondents were asked to indicate their gender and indicated as shown in Table 4.1:

Table 4.1: Gender of Respondents

Gender	Frequency	Percentage (%)
Male	40	50.0
Female	40	50.0
Total	**80**	**100.0**

Source: Research data

As shown in Table 4.1, 50% of the respondents were Male 50% were Female.

Respondents were asked to indicate their Level of Education and indicated as shown in Table 4.2:

Table 4.2: Respondent Level of Education

Respondent Level of Education	Frequency	Percentage (%)
Masters	19	24
Undergraduate degree	30	38
Diploma	31	39
Total	**80**	**100.0**

Source: Research data

As shown in Table 4.2, 39% of the respondents were Diploma holders. 38% of the respondents were Degree holders while 24% were Postgraduate holders.

Respondents were asked to indicate their Departments and indicated as shown in Table 4.3:

Table 4.3: Respondents Department

Respondents Department	Frequency	Percentage (%)
Finance/accounting	7	9
Staffing	14	18
H .R. Management	23	29
Administration	17	21
Internal Audit	19	22
Total	**80**	**100.0**

Source: Research data

29% of the respondents were working in the HRM department. 22% of the respondents were working in Internal Audit department. 21% of them were working in Administration

department. 18% of them were working at the Staffing department and 9% of them were working at the Finance/Accounting department.

Respondents were asked to indicate their work experience and indicated as shown in Table 4.4:

Table 4.4: Respondent Work experience

Respondent Work experience	Frequency	Percentage (%)
5-10	19	24
11-15	40	50
16-20	8	10
21 and above	13	16
Total	**80**	**100.0**

Source: Research data

As shown in Table 4.4, 50% of the respondents had 11-15 years of working experience. 24% of the respondents had 5-10 years of working experience. 16% of them had 21 and above years of working experience and 10% of them had 16-20 years of working experience.

4.3 Respondent Knowledge on ICT

The respondents were asked to indicate whether they had ICT knowledge and indicated as shown in Table 4.5:

Table 4.5: Respondent Knowledge on ICT

Respondent Knowledge on ICT	Frequency	Percentage (%)
Yes	39	49
No	41	51
Total	**80**	**100.0**

Source: Research data

As shown in Table 4.5, 51% of the respondents had knowledge about ICT while 49% of them had little knowledge on ICT

4.4 Extent of ICT Adoption at TSC in 2007 and 2012

The first section of the questionnaire required respondents to indicate the Extent of ICT Adoption at TSC in 2007 and indicated as shown in Table 4.6:

Table 4.6: Extent of ICT Adoption at TSC in 2007

ICT practices	**N**	**Mean Score**	**S.D**
Automation of payroll processing	80	3.88	1.221
Electronic database of all teachers is maintained	80	3.88	1.221
Use of internet based communication with teachers	80	3.71	1.309
Online application for TSC registration for new teachers	80	3.71	1.309
Use of ERP to link departments	80	3.63	1.301
Use of online recruitment	80	3.63	1.301
Automation of the recruitment process	80	2.81	1.165
Teleconferencing between TSC head office and teachers	80	2.34	1.165
Total	**80**	**3.45**	

Source: Research data

As shown in Table 4.6, respondents indicated that automation of payroll processing and electronic database of all teachers was maintained on a small extent in 2007 with a mean

of (3.88) due to inadequate support of ICT practices by the management. Use of internet based communication with teachers and Online application for TSC registration for new teachers was applied on a small extent in 2007 with a mean of (3.71) due to little sensitization of the TSC stakeholders on the value of ICT practices. Use of ERP to link departments and use of online recruitment was applied on a small extent in 2007 with a mean of (3.63). Automation of the recruitment process and teleconferencing between TSC head office and teachers was applied on a very small extent with a mean of 2.81 and 2.34 respectively due to little emphasize of the TSC management to invest in ICT.

The respondents indicated the Level of ICT Adoption at TSC in 2012 as shown in Table 4.7:

Table 4.7: Extent of ICT Adoption at TSC in 2012

ICT practices	**N**	**Mean Score**	**S.D**
Automation of payroll processing	80	4.38	2.117
Electronic database of all teachers is maintained	80	4.38	2.117
Use of internet based communication with teachers	80	4.38	2.117
Online application for TSC registration for new teachers	80	4.38	2.117
Use of ERP to link departments	80	4.36	2.116
Use of online recruitment	80	4.36	1.244
Automation of the recruitment process	80	3.39	1.137
Teleconferencing between TSC head office and teachers	80	2.81	1.046
Total	**80**	**4.06**	

Source: Research data

As shown in Table 4.7, respondents indicated that automation of payroll processing and electronic database of all teachers, use of internet based communication with teachers and Online application for TSC registration for new teachers were maintained on a very large extent in 2012 with a mean of (4.38) due to adequate support of ICT practices by the management. Use of ERP to link departments and use of online recruitment was applied on a great extent in 2012 with a mean of (4.36) due to the changing business environment and competitor activities. Automation of the recruitment process and teleconferencing between TSC head office and teachers were applied on a very small extent with a mean of 3.39 and 2.81 due to inadequate resources to implement the exercise.

4.5 Level of Service Delivery in TSC in 2007 and 2012

The second section of the study the questionnaire required respondents to indicate the Level of Service Delivery in TSC in 2007 and indicated as shown in Table 4.8:

Table 4.8: Level of Service Delivery in TSC in 2007

Service Practices	**N**	**Mean**
Timeliness in payroll processing	80	4.34
Efficiency and effectiveness in service delivery	80	4.34
Customer satisfaction	80	4.17
Communication between TSC and teachers	80	4.17
Faster complaint handling	80	3.68
Reduction in cost of operations	80	3.63
Record keeping	80	3.34
Harmony between departments	80	3.30

Customer complaint handling	80	3.30
Total	**80**	**3.81**

Source: Research data

As shown in Table 4.8, respondents indicated that timeliness in payroll processing and efficiency and effectiveness in service delivery were applied on a very low level in 2007 with a mean of (4.34) due to inability of management to value ICT to organizational performance. Customer satisfaction and communication between TSC and teachers were applied on a very low level with a mean of (4.17) due to lack of management support of ICT. Faster complaint handling was ranked on a very low level in 2007 with a mean of (3.68) due to inadequate knowledge on customer care relations by TSC. Reduction in cost of operations was ranked on a very low level with a mean of (3.63) due to inadequate knowledge of the TSC staff with regard to ICT practices. Record keeping was ranked on a moderate level with a mean of (3.34) due to poor record keeping and maintenance. Harmony between departments and Customer complaint handling was ranked last with a mean of (3.30) due to inadequate team spirit towards ICT practices within TSC in 2007.

The respondents indicated the Level of Service Delivery in TSC in 2012 and indicated as shown in Table 4.9:

Table 4.9: Level of Service Delivery in TSC in 2012

Service Practices	**N**	**Mean**
Timeliness in payroll processing	80	4.85
Efficiency and effectiveness in service delivery	80	4.44

Customer satisfaction	80	5.21
Communication between TSC and teachers	80	4.21
Faster complaint handling	80	3.71
Reduction in cost of operations	80	3.83
Record keeping	80	3.34
Harmony between departments	80	3.32
Customer complaint handling	80	3.42
Total	**80**	**4.04**

Source: Research data

As shown in Table 4.9, respondents indicated that customer satisfaction were high with mean of (5.21) in 2012 because of improved service delivery. Timeliness in payroll processing were applied on a very high level in 2012 with a mean of (4.85) due to the ability of management to value ICT to organizational performance. Efficiency and effectiveness in service delivery were applied on a very high level with a mean of (4.44) due to adequate management support of ICT. Reduction in cost of operations was ranked on a very high level with a mean of (3.83) due to adequate training and knowledge of the TSC staff with regard to ICT practices. Faster complaint handling was ranked on high level in 2012 with a mean of (3.71) due to adequate knowledge on customer care relations by TSC. Record keeping was ranked on a very high level with a mean of (3.34) due to effective record keeping and maintenance through electronic data management practices. Customer complaint handling was ranked on high level with a mean of (3.42) whereas harmony between departments was ranked (3.32) due to adequate team spirit towards ICT practices within TSC in 2012.

4.6 Challenges of ICT Adoption in TSC

The third section of the questionnaire required respondents were to indicate the Challenges of ICT Adoption in TSC and indicated as shown in Table 4.10:

Table 4.10: Challenges of ICT Adoption in TSC

Challenges of ICT	**N**	**Mean Score**	**S.D**
Financial constraints	80	3.88	1.321
Resistance from teachers and TSC employees	80	3.88	1.321
Lack of qualified staff to manage ICT programmes	80	3.71	1.309
Poor record keeping before implementation of ICT makes it difficult to automate	80	3.71	1.309
Political interference that leads to delay in implementation	80	3.63	1.301
Large number of teachers makes it difficult to capture data	80	3.63	1.301
Total	**80**	**3.74**	

Source: Research data

As shown in Table 4.10, respondents indicated that lack of enough financial resources and resistance from teachers and were major challenges of integrating ICT practices in the system with a mean of (3.88). The reason behind this was fear from workers with regard to job security and change of management practices. Lack of qualified staff to manage ICT programmes and poor record keeping before implementation of ICT were factors respondents indicated that had contributed to slow implementation of ICT practices with a mean of (3.71).The reason behind this was inadequate resources to employ skilled manpower and install the software. Political interference that led to delays in implementation and large number of teachers made it difficult to capture data were challenges that negatively affected effective implementation ICT practices at TSC with a

mean of (3.63) due to lack of transparency in resource allocation and democratic management within TSC.

4.7 Service Delivery after ICT Adoption at TSC in 2012

The second objective required TSC customers to indicate the Customer service delivery after ICT Adoption at TSC in 2012 and indicated as shown in Table 4.11:

Table 4.11: Customer Delivery after ICT Adoption at TSC in 2012

		2007		2012	
	N	**Mean Score**	**S.D**	**Mean Score**	**S.D**
Salary processing is accurate and timely	50	1.12	.188	3.12	.198
There is proper record keeping	50	1.12	.188	3.12	.198
Complaints are handled faster	50	1.12	.188	3.12	.198
No misplacement of documentation	50	1.12	.188	3.12	.198
Waiting time has reduced drastically	50	1.12	.188	3.12	.188
There is more transparency	50	0.98	.136	2.98	.146
Dissemination of information to teachers in fast	50	0.98	.136.	2.98	.146.
Misplacement of documentation	50	0.98	.136	2.98	.146
Travelling long distances to get services	50	0.98	.136	2.98	.146
Delays in handling of disputes	50	0.98	.136.	2.98	.146.
Total	**50**	**1.05**		**3.05**	

Source: Research data

As shown in Table 4.11, respondents indicated that salary processing, proper record keeping, quick response to customer complaints, retrieval of documents and decreased waiting time in 2012 were values of ICT that positively contribute to improved performance of TSC with a mean of (3.12) due to modern work practices that are automated and support innovative culture among workers. Some respondents indicated that complaints were handled quickly, transparency and dissemination of information to teachers was instant, misplacement of documentation was minimal, customers travelled short distances to get services, and immediate solving of disputes were factors that contributed to quality customer services after ICT adoption by TSC with a mean of (2.98). The reason given by respondents was that, ICT practices has made work easier and enabled TSC to minimize costs and maximize profits in Kenya.

4.8 Discussions

From the findings of the study, it is evident that ICT has played a major role in transforming TSC to achieve better service delivery compared to traditional practices that made organizations to realize increased costs in delivery of services to customers.
The table below were used to compare the findings of the study.

Table 4.12 : Cross-tabulation of service delivery and ICT over time

	2007	**2012**
Extend of ICT adoption	3.45	4.06
Service delivery: TSC secretariates	3.81	4.04
Service delivery: TSC customers	1.05	3.05

Table 4.12 shows that level of ICT adoption at TSC has increased from a mean of 3.45 in 2007 to 4.06 in 2012. This shows that TSC has implemented ICT to help improve their services.The employees of TSC indicated that ICT has helped improve service delivery though in a small extend.This fact can be explained by Lewins theory of change which states that the employees of an organization may not realize improvements brought in due to a change but the customers of the organization notices that there are improvements in service delivery (Casey, 2004). This is evident at TSC whereby the customers feel that there are improvements in service delivery with a mean of 3.05 in 2012, an increase from 2007 where the mean was 1.05 and the employees feels small imrovements in service delivery.

The findings of the study indicated that the extend of adoption of ICT in TSC has increased. Automation of services including payroll processing, database of teachers, use of internet based communication has increased from 2007 to 2012. The finding also shows that there is a positive impact of ICT on service delivery as indicated by both the customers and secretariates of the organization. The challenges of ICT adoption in TSC include financial constraints, resistance from teachers and TSC employees and lack of qualified personnel.

Adoption of ICT has resulted in more effective use of time, Salary processing is accurate and timely, there is proper record keeping, there is increased transparency, it has contributed significantly to closing of communication gaps, as users and suppliers can now communicate more easily and faster, through electronic mail and website,

(Kajogbola, 2004). From the findings of the study, Information and Communication Technology is employed in TSC to improve operational efficiency by automating information-based processes to enabe firms do things faster, cheaper, accurately and consistly .

According to Avison et al (2003), Information and Communication Technology in an organisation provides and processes information useful to its members and clients. This helps it to operate more effectively. The information may concern its customers, suppliers, products, equipment, procedures and operations. Information Communication Technology in an organisation is required to help it analyse the business along with its environment and formulate and check that it achieves its goal. From the sudy, ICT has positively influenced service delivery at TSC and enhanced customer satisfaction.

According to Seybold et al (2001), customer relationships is a critical asset for firms, because the focus of power across industries and businesses is increasingly shifting towards customers. Firms are moving from a product oriented model to a customer focus model to sense and meet customer demands for changes in the features of products and services, distribution channels, and pricing structure Customer satisfaction and customer retention have emerged as key metrics for measuring the effectiveness of ICT and the competitive success of firms. The findings of the study indicates that the customers of TSC see great improvements in service delivery from 2007 hence are more satisfied with the service they receive in 2012.

Research shows that higher levels of customer satisfaction have the potential to double or triple firm profits. To improve their customer satisfaction, TSC is making greater use of ICT in their internal and customer facing business processes. Managers always rank improvement in customer satisfaction as one of the prime motivations for making ICT investments. Significant investments in ICT applications indicate the industry belief that it can streamline both internal and customer-interfacing business processes (Karimi et al, 2001).

ICT adoption in 2012 at TSC has enhanced quality service delivery among TSC teachers by salary processing time, comple procedures that were followed in case of disputes, instant response to customer complaints, increased transparency, effective data management and improved convenience of services thus customer loyalty and image of the organization.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This Chapter summarizes the major findings of the study. This study sought to find out Information and Communication Technology and service delivery in Kenya's Teachers Service Commission. In addition, this chapter provides a direction for further studies and gives some recommendations for policy making by the relevant authorities. Questionnaires were used to gather primary data. The questionnaires comprised of both closed and open-ended questions and were strictly administered by the researcher. Both primary and secondary information was used to determine the results findings of the study.

5.2 Summary

This study sought to establish the impact of Information and Communication Technology on service delivery in Kenya's Teachers Service Commission. Due to changes in the business environment and customer tastes and preferences, most organizations have been forced to adopt ICT practices to minimize costs and maximize profits. To gain competitive edge in the dynamic business environment, large and small firms should adopt Information and Communication Technology practices for efficiency and effectiveness.

To achieve objectives like profit maximization, offsetting costs of operations, business survival and gaining competitive advantage in the market, organizations should adopt

Information and Communication Technology practices to compete globally and provide quality services to customers cost effectively.

The researcher established that there was a slow adoption of ICT practices in TSC in 2007 compared to 2012 due to rapid changes in the business environment and changing customer needs and wants. Competition and globalization challenges have necessitated TSC to adopt ICT in order to remain competitive and survive in the future. The study established that adoption of ICT practices have resulted to improved performance of TSC since 2007 in term of cost minimization and profit maximization. The study established rigid organizational culture and bureaucratic systems of management had resulted to slow adoption of ICT practices at TSC.

The study established that the level of service delivery in 2007 was poor and did not meet customer expectations compared to 2012. Slow and complex procedures and generalized customer attention by TSC resulted to poor service delivery in 2007 compared to 2012. The study established that most challenges were experienced when trying to adopt ICT practices in TSC in 2007 compared to 2012. Some challenges include; lack of resources and trained personnel, employee resistance and political interference in management.

According to the findings, most customers experienced poor service delivery in 2007 due to traditional management approaches that were adopted by TSC compared to 2012. Some of the challenges experienced in 2007 included; increased waiting time,

misplacement of documents, delays in attending customer requests, slow response to customer complaints and delayed salary processing.

5.3 Conclusions

A strong ICT strategy is pivotal to competitive survival for today's businesses. It has become a pervasive part of our working and living environments, and will continue to be an integral resource for business, government and society. ICT combines information, knowledge, processes, and technology to provide a foundation for driving efficiencies and fuelling innovation. It is the key to helping organizations of all sizes to connect, collaborate, and compete more effectively.

Overall, ICT applications can provide several benefits across a wide range of intra- and inter-firm business operations and transactions. Certainly, ICT applications can contribute to improve information and knowledge management inside the firm, can reduce transaction costs and can increase the speed and reliability of transactions for both business-to-business (B2B) and business-to-consumer (B2C) transactions. In addition, they are effective tools for improving external communications and quality of services for established and new customers.

More specifically, TSC can obtain a wide range of benefits from the use of ICT. Among these benefits include; enhance the productivity and effectiveness of certain activities or functions, favour the adoption of new organizational, strategic and managerial models, enable the access to new environments as well as the generation of new markets and

business models, improve the qualification and specialization of human resources, which increases the efficiency.

The findings indicate that TSC endeavor to improve their services by using ICT. If a proper mechanism is put in place in implementing ICT practices, TSC will be an excellent organization in service delivery.

5.4 Recommendations

The study found out that ICT practices were adopted on a very small extent in 2007 compared to 2012 in TSC due to inadequate knowledge with regard to benefits of ICT in relation to customer services. Therefore, the study recommend TSC to create awareness of ICT to the existing staff and newly recruited staff through inductions and workshops to enable workers to understand the benefit of ICT with regard to quality customer service delivery.

The study found out that the level of service delivery was poor in 2007 compared to 2012 at TSC due to traditional approaches that were slow and ineffective to offer customer satisfaction. Therefore, the study recommends that TSC management should allocate enough financial resources to implement ICT practices by training the staff and investing on ICT. The study found out that several challenges were experienced when TSC tried to adopt ICT for efficiency and effectiveness of the system in 2007 and 2012. Some of the challenges included; inadequate resources, employee resistance and political interference from the governing regime. Therefore, the study recommends that the Government

should formulate effective policies that will enable public servants to have adequate knowledge on ICT.

5.5 Limitations of the study

The respondents were usually very busy and therefore they required a lot of time in order to fill in the questionnaires. The challenge was overcome by giving the respondents the questionnaires early. Getting accurate information from the respondents was one of the major challenges since some of the respondents were not found to be the subject of interest because they had less than 5 years' work experience. Most of the respondents were unwilling to give the information. The challenge was minimized by giving incentives to respondents in order to win their will to respond and offer accurate information. The location in distance while traversing Nairobi central business area proved to be tiring coupled with dusty grounds. Effective means of transport were sought by using a private car to access respondents without delay.

5.6 Suggestions for Further Research

The researcher suggests that it could be a useful starting point for further academic research. Information and Communication Technology and service delivery is a potential area for further research studies in developing countries of the world. Continued refinement of this study will be valuable to service providing organization both in the domestic and international markets in order to gain competitive edge.

REFERENCES

Avison D., & Fitzgerald, G. (2003). *Information System Development* (3rd edn.). New York: McGraw Hill

Baldwin, J. R., & Sabourin, D. (2002). "The Effect of Changing Technology Use on Productivity and firm productivity: evidence for the Swiss economy", ch9 in "the economic impact of ICT. *OECD,* 2002.

Brown, D. (2005). Electronic Government and Public Administration. *International Review of Administrative Sciences, 71*(2), 241-254.

Chowdhury, S. K. (2006). Investments in ICT-capital and economic performance of small and medium scale enterprises in East Africa. *Journal of International Development, 18*, 533-552.

Casey, A.(2004). Theory of change: A practical Tool for Action, Results and Learning

Clemons, E. K., & Row, M. C. (1991). Sustaining IT Advantage: The Role of Structural Differences. *MIS Quarterly, 15*(3), 275-292.

DeLone, W., & McLean, E. 2004. Measuring E-Commerce Success: Applying the Delone & Mclean Information Systems Success Model. *International Journal of Electronic Commerce, 9*(1), 31-47.

Fillis, I., Johansson, U., & Wagner, B. (2003). A conceptualization of the opportunities and barriers to economy: a study of manufacturing and services sectors in the Southwestern and Southeastern zones of Nigeria. *African Technology Policy Studies (ATPS) Working Papers* no.39.

Frempong, K. (2004). Restructuring of the Telecoms Sector in Ghana: Experiences and

Policy Implications, *Unpublished PhD Thesis*, University of Ghana, Accra.

Harris, L (2001). The IT productivity paradox-evidence from the U.K retail banking industry. *New Technology, Work, and Employment, 16*(1), 35-48.

Helpman, E., & Trajtenberg, M. (1998). A time to sow and a time to reap: growth based on general purpose technologies, in E. Helpman (ed.), *General Purpose Technologies and Economic Growth*. Cambridge: MIT Press, pp. 55-83.

Karagozoglu, N. & Lindell, M. (2004). Electronic commerce strategy, operations, and performance in small and medium-sized enterprises. *Journal of Small Business and Enterprise Development, 11*(3), 290-301.

Laudon K. C., & Laudon, J. P. (2006). *Management Information Systems, Managing the Digital Firm*. (9th edn.). New Delhi: Prentice-Hall of India

Mairura, B. J. (2003). Teachers' Level of Satisfaction with Changes Resulting from Re-engineering of services at Teachers Service Commission. A Case study of Nairobi Primary Schools, Unpublished MBA Project School of Business University of Nairobi. *Teachers Image Magazine*, Vol.6 of 2004, Oakland Media Services Ltd, Nairobi.

Maniam, K. (2005). Networking Government: E-Government in Malaysia. Paper presented (keynote speaker) at *Conflux 2005*, The Grand Hotel, New Delhi, India, 17-19 October 2005.

Matlay, H., & Addis, M. (2003). Adoption of ICT and e-commerce in small businesses: measurement, evidence, and implications. *OECD*, 2004.

Mureithi, M., (2002). *Telecommunication policy in transition: Mainstream Kenya in the*

global information economy. Nairobi: Institute of Economic Affairs, 42.

Oliner, S., & Sichel, D. (2000). The Resurgence of growth in the late 1990s: Is Information Technology the story? *Journal of Economic Perspectives,* 14, 3-22.

Ozer, M. (2004). The role of the Internet in new product performance: A conceptual investigation. *Industrial Marketing Management, 33*(5), 355-369.

Quinnox, (2012). E - Procurement the Future of Supply Chain. Retrieved on April 2, 2012 from TechRepublic.

Spyros, A. (2004). Information technology, workplace organization, human capital Performance. *Research Paper*. Analytical Studies Branch, Ottawa: Statistics Canada.

Teachers Service Commission (2007), TSC Annual Report, 2006/2007

Teachers Service Commission (2008), TSC Annual Report, 2007/2008

Teachers Service Commission (2010), TSC Annual Report, 2010/2014

TSC, EMIS Education Management Information System, IFMIS Integrated Financial Management Information System. Internet Service Providers (ISPs),

Wong, E. M. L., & Li, S. C. (2008). Framing ICT implementation in a context of educational change: a multilevel analysis. *School Effectiveness and School Improvement, 19*(1), 99-120.

Yazici, H. J. (2002). The role of communication in organizational change: an empirical investigation. *Information and Management*, 39, 539-540.

Appendix 1- Questionnaire for TSC Secretariat Employees

Information collected from this questionnaire will be handled with high confidentiality and will strictly be used for academic purposes by the researcher.

SECTION A: Demographic Information

1. What is your gender? Male [ ] Female [ ]
2. How old are you?

Age (years)	Below 25	26-35	36-45	46-55	Above 56
Response					

3. What is your highest level of education?

Doctorate [] Masters [] Degree [] Diploma []

Specify ……

4. What is your current designation? **.....**
5. How much working experience do you have?

SECTION B: Extent of ICT Adoption at TSC

Please indicate on the extent of ICT adoption in the following functions of the commission in 2007 and 2012.

The following scale will be applicable: 1= Very large extent 2= large extent 3= moderate extent 4= small extent 5= Very small extent

		2007						**2012**				
No.	**Extent of ICT adoption**	**1**	**2**	**3**	**4**	**5**		**1**	**2**	**3**	**4**	**5**
1	Automation of payroll processing											
2	Automation of the recruitment process											
3	Use of internet based communication with teachers											

4	Electronic database of all teachers is maintained											
5	Use of ERP to link departments											
6	Use of online recruitment											
7	Online application for TSC registration for new teachers											
8	Teleconferencing between TSC head office and teachers											

SECTION C: Service Delivery

Please indicate the level of service delivery in TSC in 2007 and 2012.

Use the following scale: 5= Very high level 4= High level 3= moderate level 2= low level 1= Very low level

		2007						**2012**				
No.	**Service Delivery**	**1**	**2**	**3**	**4**	**5**		**1**	**2**	**3**	**4**	**5**
1	Efficiency and effectiveness in service delivery											
2	Timeliness in payroll processing											
3	Faster complaint handling											
4	Teacher satisfaction											
5	Reduction in cost of operations											
6	Communication between TSC and teachers											
7	Record keeping											
8	Harmony between departments											
9	Customer complaint handling											

SECTION D: Challenges of ICT Adoption

Please indicate the extent to which you agree with the following statements concerning the challenges experienced by TSC in the implementation of ICT

The following scale will be applicable: 5= strongly agree 4= agree 3= undecided 2= disagree 1= strongly disagree

No.	Challenges of ICT adoption	1	2	3	4	5
1	Financial Constraints					
2	Resistance from teachers and TSC employees					
3	Political interference that leads to delay in implementation					
4	Poor record keeping before implementation of ICT makes it difficult to automate					
5	Large number of teachers makes it difficult to capture data					
6	Lack of qualified staff to manage ICT programmes					

Appendix II: Questionnaire for Teachers

Information collected from this questionnaire will be handled with high confidentiality and will strictly be used for academic purposes by the researcher.

SECTION A: Demographic Information

1. What is your gender? Male [ ] Female [ ]
2. How old are you?

Age (years)	Below 25	26-35	36-45	46-55	Above 56
Response					

3. What is your highest level of education?

Doctorate [ ] Masters [ ] Degree [ ] Diploma [ ]

Specify ……

4. What is your current designation? **.....**
5. How much working experience do you have? ……

Section B: Service Delivery before Adoption of ICT at TSC

Please indicate the extent to which you agree with the following statements concerning customer service delivery before adoption of ICT at TSC.

The following scale will be applicable: 1= strongly agree 2= agree 3= undecided 4= disagree 5= strongly disagree

		2007						2012				
No.	**Customer Delivery After ICT Adoption**	**1**	**2**	**3**	**4**	**5**		**1**	**2**	**3**	**4**	**5**
1	Complaints are handled faster											
2	Salary processing is accurate and timely											
3	There is proper record keeping											
4	No misplacement of documentation											
5	There is more transparency											
6	Waiting time has reduced drastically											
7	Dissemination of information to teachers in fast											
8	Misplacement of documentation											
9	Travelling long distances to get services											
10	Delays in handling of disputes											