INTERNATIONAL JOURNAL OF SOCIAL Sciences and Information Technology
ISSN 2412-0294 www.ijssit.com

http://www.ijssit.com

INFORMATION AND COMMUNICATION TECHNOLOGY AND SERVICE DELIVERY IN TEACHERS SERVICE COMMISSION, KENYA

[1*] **Judith Cherono Soi**
soij1689@gmail..com

[1*] *Student, University of Nairobi*

Abstract

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. 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. The study sought to find out if ICT has a positive or negative impact on service delivery at TSC. The study adopted a longitudinal case study design in establishing the impact of ICT on service delivery. The population of the study in this research was the secretariat of Teachers Service Commission from different departments and teachers from 50 public schools in Nairobi County. 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 to determine the sample size. The findings indicate that TSC endeavor to achieve competitive advantage over their competitors in such a dynamic environment by using ICT. The study concluded that if a proper mechanism is put in place in implementing ICT practices, TSC will be an excellent organization in service delivery.

Keywords: *Technology, service delivery, Information and Communication Technology, customer satisfaction*

Introduction

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).

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) posit 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).

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). Information and Communication Technology is employed in organizations to improve operational efficiency by automating information-based processes to enable firms do things faster, cheaper, accurately and concisely (Yazici, 2002).

Teacher Service 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 including 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. The 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).

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.

It is against this background that the study was motivated to find out the impact of ICT on service delivery using TSC as an example. The study sought to find out if ICT has a positive or negative impact on service delivery at TSC. The study seeks 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 adoption of ICT.

Specific Objectives

The study sought to achieve the following objectives;

i. To establish the extent 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

Literature Review

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 stakeholder's 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).

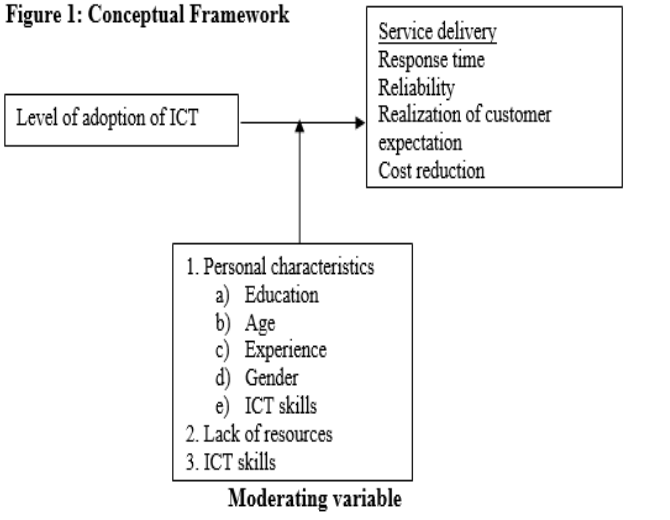
New Public Management Theory: NPM originated in the late 1970s in the United Kingdom, Australia, and New Zealand. Since then, it has come to dominate thinking about the public sector reform and is hailed as a new paradigm. Different factors led to the emergence of NPM, some of which are: fiscal crises 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.

Research Gap

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.

Figure 1: Conceptual Framework



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.

Research Methodology

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 customer service before and after the implementation of ICT at TSC (Ruspini, 1999).

The population of the study in this research was 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 were 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 was about 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.

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 to determine the sample size. From the table, 115 respondents were selected. There were approximately 2400 teachers employed by TSC. The researcher also adopted convenience sampling to select 50 teachers who participated in the study. 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. The data collected was analyzed using descriptive statistics with the help of SPSS program. The researcher used percentages and frequencies to establish the extent to which TSC has adopted ICT and the challenges experienced by TSC in adoption of ICT. Data collected was analyzed and presented using tables.

Findings and Discussions

Response Rate

The response rate of 80 respondents was achieved from the total target Population of 115 TSC Secretariat employees and the response rate of 50 respondents was achieved from the total target population of 50 teachers who were registered by the TSC in schools within Nairobi County. This good response has been attributed to the fact that quite a good number of the respondents were knowledgeable to fill the questionnaires themselves.

Extent of ICT Adoption at TSC in 2007

Respondents were asked to indicate the Extent of ICT Adoption at TSC in 2007 and indicated as shown in Table 1:

Table 1: Extent of ICT Adoption at TSC in 2007

	N	To a Very Large Extent [5]	To a Large Extent [4]	To a moderate Extent [3]	To a small Extent [2]	Very Small extent [1]	Total (%)	Mean Score	S.D
Automation of payroll processing	80	4.9	4.9	22.0	43.9	24.4	100	3.88	1.221
Electronic database of all teachers is maintained	80	0.00	29.3	29.3	41.5	0.00	100	3.88	1.221
Use of internet based communication with teachers	80	2.4	2.4	22.0	39.0	34.1	100	3.71	1.309
Online application for TSC registration for new teachers	80	2.4	24.4	0.00	34.1	39.0	100	3.71	1.309
Use of ERP to link departments	80	0.00	0.00	48.8	34.1	17.1	100	3.63	1.301
Use of online recruitment	80	2.4	2.4	17.1	26.8	51.2	100	3.63	1.301
Automation of the recruitment process	80	2.4	4.9	14.6	29.3	51.2	100	3.30	1.165
Teleconferencing between TSC head office and teachers	80	0.00	4.8	14.6	34.1	46.3	100	3.30	1.165
Total	80								

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 (3.30) due to

little emphasize of the TSC management to invest in ICT.

Extent of ICT Adoption at TSC in 2012

Respondents were asked to indicate the Extent of ICT Adoption at TSC in 2012 and indicated as shown in Table 2:

Table 2: Extent of ICT Adoption at TSC in 2012

	N	To a Very Large Extent [5]	To a Large Extent [4]	To a moderate Extent [3]	To a small Extent [2]	Very Small extent [1]	Total (%)	Mean Score	S.D
Automation of payroll processing	80	51.2	2.4	17.1	26.8	2.4	100	4.38	2.117
Electronic database of all teachers is maintained	80	41.5	29.3	29.3	0.00	0.00	100	4.38	2.117
Use of internet based communication with teachers	80	39.0	2.4	22.0	2.5	34.1	100	4.38	2.117
Online application for TSC registration for new teachers	80	39.0	2.4	34.1	0.00	24.4	100	4.38	2.117
Use of ERP to link departments	80	48.8	0.00	0.00	34.1	17.1	100	4.36	2.116
Use of online recruitment	80	34.1	4.9	2.4	34.1	24.4	100	4.36	1.244
Automation of the recruitment process	80	2.4	2.4	29.3	14.6	51.2	100	2.81	1.137
Teleconferencing between TSC head office and teachers	80	2.4	2.4	34.1	14.6	46.3	100	2.81	1.046
Total	80								

As shown in Table 2, 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 (2.81) due to lack of knowledgeable staff with regard to ICT practices and inadequate resources to implement the exercise.

Level of Service Delivery in TSC in 2007

Respondents were asked to indicate the Level of Service Delivery in TSC in 2007 and indicated as shown in Table 3:

Table 3: Level of Service Delivery in TSC in 2007

	N	Very high level [5]	High level [4]	Moderate level [3]	low level [2]	Very low level [1]	Total (%)	Mean
Timeliness in payroll processing	80	2.4	2.4	29.3	51.2	14.6	100	4.34
Efficiency and effectiveness in service delivery	80	2.4	2.4	29.3	51.2	14.6	100	4.34
Customer satisfaction	80	2.4	2.4	22.0	34.1	39.0	100	4.17
Communication between TSC and teachers	80	2.4	2.4	22.0	39.0	34.1	100	4.17
Faster complaint handling	80	0.00	29.3	29.3	0.00	41.5	100	3.68
Reduction in cost of operations	80	2.4	2.4	22.0	0.00	73.1	100	3.63
Record keeping	80	0.00	2.4	39.0	34.1	24.4	100	3.34
Harmony between departments	80	0.00	2.4	36.6	61.0	0.00	100	3.30
Customer complaint handling	80	0.00	0.00	2.4	36.6	61.0	100	3.30
Total	80							

As shown in Table 3, 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 (3.4) 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.

Level of Service Delivery in TSC in 2012

Respondents were asked to indicate the Level of Service Delivery in TSC in 2012 and indicated as shown in Table 4:

Table 4: Level of Service Delivery in TSC in 2012

	N	Very high level [5]	High level [4]	Moderate level [3]	low level [2]	Very low level [1]	Total (%)	Mean
Timeliness in payroll processing	80	51.2	2.4	29.3	2.4	14.6	100	4.34
Efficiency and effectiveness in service delivery	80	51.2	2.4	29.3	2.4	14.6	100	4.34
Customer satisfaction	80	39.0	2.4	22.0	2.4	34.1	100	4.17
Communication between TSC and teachers	80	39.0	2.4	22.0	2.4	34.1	100	4.17
Faster complaint handling	80	41.5	29.3	29.3	0.00	0.00	100	3.68
Reduction in cost of operations	80	2.4	73.1	22.0	0.00	2.4	100	3.63
Record keeping	80	39.0	2.4	0.00	34.1	24.4	100	3.34
Harmony between departments	80	61.0	0.00	2.4	36.6	0.00	100	3.30
Customer complaint handling	80	61.0	0.00	2.4	36.6	0.00	100	3.30
Total	80							

Respondents indicated that timeliness in payroll processing and efficiency and effectiveness in service delivery were applied on a very high level in 2012 with a mean of (3.4) due to the ability of management to value ICT to organizational performance. Customer satisfaction and communication between TSC and teachers were applied on a very high level with a mean of (4.17) due to adequate management support of ICT. Faster complaint handling was ranked on a very high level in 2012 with a mean of (3.68) due to adequate knowledge on customer care relations by TSC. Reduction in cost of operations was ranked on a very high level with a mean of (3.63) due to adequate training and knowledge of the TSC staff with regard to ICT practices. 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. Harmony between departments and Customer complaint handling was ranked on very high level with a mean of (3.30) due to adequate team spirit towards ICT practices within TSC in 2012.

Challenges of ICT Adoption in 2007

Respondents were asked to indicate the Challenges of ICT Adoption in 2007 and indicated as shown in Table 5:

Table 5: Challenges of ICT Adoption in 2007

	N	Strongly agree [5]	Agree [4]	Undecided [3]	Disagree [2]	Strongly disagree [1]	Total (%)	Mean Score	S.D
Lack of enough financial resources	80	46.3	2.4	34.1	14.6	2.4	100	3.88	1.221
Resistance from teachers and TSC employees	80	56.1	0.00	39.0	0.00	4.9	100	3.88	1.221
Lack of qualified staff to manage ICT programmes	80	61.0	0.00	2.4	36.6	0.00	100	3.71	1.309
Poor record keeping before implementation of ICT makes it difficult to automate	80	61.0	0.00	2.4	36.6	0.00	100	3.71	1.309
Political interference that leads to delay in implementation	80	61.0	0.00	2.4	36.6	0.00	100	3.63	1.301
Large number of teachers makes it difficult to capture data	80	0.00	0.00	2.4	61.0	36.6	100	3.63	1.288
Total	80								

Respondents indicated that lack of enough financial resources and resistance from employees and were major challenges of integrating ICT practices in the system in 2007 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 systems and poor record keeping before implementation of ICT makes it difficult to automate were factors respondents indicated that had contributed to slow implementation of ICT practices in 2007 with a mean of (3.71). 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 in 2007 with a mean of (3.63) due to lack of transparency in resource allocation and democratic management within TSC.

Challenges of ICT Adoption in 2012

Respondents were asked to indicate the Challenges of ICT Adoption in 2012 and indicated as shown in Table 6:

Table 6: Challenges of ICT Adoption in 2012

	N	Strongly agree [5]	Agree [4]	Undecided [3]	Disagree [2]	Strongly disagree [1]	Total (%)	Mean Score	S.D
Lack of enough financial resources	80	43.9	4.9	22.0	4.9	24.4	100	3.88	1.321
Resistance from teachers and TSC employees	80	41.5	29.3	29.3	0.00	0.00	100	3.88	1.321
Lack of qualified staff to manage ICT programmes	80	39.0	2.4	22.0	2.4	34.1	100	3.71	1.309
Poor record keeping before implementation of ICT makes it difficult to automate	80	39.0	2.4	0.00	34.1	24.4	100	3.71	1.309
Political interference that leads to delay in implementation	80	48.8	0.00	0.00	34.1	17.1	100	3.63	1.301
Large number of teachers makes it difficult to capture data	80	51.2	2.4	17.1	26.8	2.4	100	3.63	1.301
Total	80								

Respondents agreed that lack of enough financial resources and resistance from employees and were major challenges of integrating ICT practices in the system in 2012 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 in 2012 with a mean of (3.71). The reason behind this was inadequate resources to employ skilled manpower and install the softwares were the challenges suggested by workers in 2012. 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 in 2012 with a mean of (3.63) due to lack of transparency in resource allocation and democratic management within TSC.

Customer Delivery before ICT Adoption at TSC in 2007

Respondents were asked to indicate the Customer Delivery before ICT Adoption at TSC in 2007 and indicated as shown in Table 7:

Table 7: Customer Delivery before ICT Adoption at TSC in 2007

	N	Strongly agree [5]	Agree [4]	Undecided [3]	Disagree [2]	Strongly disagree [1]	Total (%)	Mean Score	S.D
Salary processing is accurate and timely	50	17.1	0.00	0.00	34.1	48.8	100	3.12	.188
There is proper record keeping	50	17.1	0.00	0.00	34.1	48.8	100	3.12	.188
Complaints are handled faster	50	17.1	0.00	0.00	34.1	48.8	100	3.12	.188
No misplacement of documentation	50	17.1	0.00	0.00	34.1	48.8	100	3.12	.188
Waiting time has reduced drastically	50	17.1	0.00	0.00	34.1	48.8	100	3.12	.188
There is more transparency	50	24.4	4.9	22.0	4.9	43.9	100	2.98	.136
Dissemination of information to teachers in fast	50	24.4	4.9	22.0	4.9	43.9	100	2.98	.136.
Misplacement of documentation	50	24.4	4.9	22.0	4.9	43.9	100	2.98	.136
Travelling long distances to get services	50	24.4	4.9	22.0	4.9	43.9	100	2.98	. .136
Delays in handling of disputes	50	24.4	4.9	22.0	4.9	43.9	100	2.98	.136.
Total	50								

As shown in Table 7, respondents indicated that salary processing, poor record keeping, slow response to customer complaints, misplacement of documentation and increased waiting time in 2007 were challenges that negatively affected the performance of the TSC with a mean of (3.12) due to traditional work practices that did not support innovative culture among workers. Some respondents indicated that complaints were handled slowly, lack of transparency dissemination of information to teachers was slow, misplacement of documentation was high, customers travelled long distances to get services and delays in handling disputes were factors that contributed to poor customer services before ICT adoption by TSC with a mean of (2.98).

Customer Delivery after ICT Adoption at TSC in 2012

Respondents were asked to indicate the Customer Delivery before ICT Adoption at TSC in 2012 and indicated as shown in Table 8:

Table 8: Customer Delivery after ICT Adoption at TSC in 2012

	N	Strongly agree [5]	Agree [4]	Undecided [3]	Disagree [2]	Strongly disagree [1]	Total (%)	Mean Score	S.D
Salary processing is accurate and timely	50	48.8	17.1	0.00	0.00	34.1	100	3.12	.188
There is proper record keeping	50	48.8	17.1	0.00	0.00	34.1	100	3.12	.188
Complaints are handled faster	50	48.8	17.1	0.00	0.00	34.1	100	3.12	.188
No misplacement of documentation	50	48.8	17.1	0.00	0.00	34.1	100	3.12	.188
Waiting time has reduced drastically	50	48.8	17.1	0.00	0.00	34.1	100	3.12	.188
There is more transparency	50	43.9	24.4	4.9	22.0	4.9	100	2.98	.136
Dissemination of information to teachers in fast	50	43.9	24.4	4.9	22.0	4.9	100	2.98	.136.
Misplacement of documentation	50	43.9	24.4	4.9	22.0	4.9	100	2.98	.136
Travelling long distances to get services	50	43.9	24.4	4.9	22.0	4.9	100	2.98	. .136
Delays in handling of disputes	50	43.9	24.4	4.9	22.0	4.9	100	2.98	.136.
Total	50								

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.

Conclusions

A strong Information and Communications Technology strategy is pivotal to competitive survival for today's businesses. It has become 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 fueling 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, favor 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 and efficacy

The findings indicate that TSC endeavor to achieve competitive advantage over their competitors in such a dynamic environment by using ICT. It is concluded that if a proper mechanism is put in place in implementing ICT practices, TSC will be an excellent organization in service delivery.

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 recommends 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 to formulate effective policies that will enable public servants to have adequate knowledge on ICT in

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.

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.

Kavach, M. J, & Tannenbaum S. I. (1990). *Human Resource Information System: Development and Application*. Kent: PWS-KENT Publishers.

Laudon K. C., & Laudon, J. P. (2006). *Management Information Systems, Managing the Digital Firm*. (9th edn.). New Delhi: Prentice-Hall of India Private Limited.Lucas Jr, H. (1974a). Systems Quality, User Reactions, and the Use of Information Systems. *Management Informatics*, 3(4), 207-212.

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 Tech Republic.

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.