

EVALUATION OF EFFECTIVE USE OF INFORMATION AND COMMUNICATIONS TECHNOLOGY (ICT) IN ELECTION ADMINISTRATION IN NORTHERN GHANA REGION

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Abstract

The effective use of Information and Communications Technology (ICT) has the potential to yield significant benefits in electoral administration. The study sought to evaluate the effective use of ICT in electoral administration in Northern Region. The study population consisted of district officers, election supervisors, returning officers and secretaries. Cross sectional survey design was used. Data were collected using questionnaires and interviews. A systematic sampling method was used to select the various office staff and returning officers of the EC in the twenty (20) districts including staff of the regional office in the northern region. The study revealed that the majority of the respondents were aware of the ICT policy of the electoral commission. However, the level of understanding of the staff on ICT policy was mixed. Generally, most of the respondents used ICT in their field operations. The study also revealed that training in ICT skills were inadequate.

Keywords: elections, electoral commission, ICT, administration, returning officer

INTRODUCTION

Information and Communication Technology (ICT) has become indispensable for enhancing effectiveness and efficiency in every aspect of human activities. ICTs have become very critical part of many organisations in the world. This is because ICT plays a strategic role in modern management. Organisations rely heavily on technical solutions in their everyday work and may face huge problems if ICT systems are not up-to-date. A great number of organisations have therefore integrated Information and Communication Technologies (ICTs) into their procedures, products and services (Robert, 2010, Asgarkhani and Young, 2010). According to Rabindra (2012), the effective use of ICT allows organisation to increase productivity, cut costs, improving efficiency, as well as providing better customer services. Furthermore, it is well acknowledged that employees' work effectively if they are exposed to the use of modern office technologies. ICT also facilitates information systems which help to make internal processes of organisations more efficient (Boody et al, 2005). ICT thus, provides an opportunity for organisational transformation through efficient management.

An election is a decision-making process by which a population chooses individuals to hold public office (Wikipedia, 2012). A modern election administration, however, involves many processes and procedures. The enormity and complexity of modern electoral process and procedures require critical investments and application of ICT to electoral administration. Some basic elections technologies include office automation tools such as word processing and

spread sheets. There are, however, more sophisticated tools, such as optical scanning, biometric systems and geographic information systems (EKN, 2012). These technological tools have been used in the compilation of the voters register, drawing constituencies and electoral boundaries, voter education, printing ballots, conducting voter education and publishing results of election (Osei, 2012).

Currently, most electoral management bodies (EMBs) around the world use ICT with the aim of improving electoral process in their respective countries. Specifically, ICT is used at every stage of the electoral process. According to Therese (2001), the application of ICT to elections can increase administrative efficiency, reduce costs and enhance transparency. This view is supported by News Africa (2012) that ICT can promote and instil confidence in the electoral system and reduce elections induced conflicts. Currently, there is no single operation in the electoral process that cannot be computer-aided or even be completely taken over by ICT.

Given that the EC has real challenges in terms of work load and expectations of stakeholders for credible and flawless elections, the EC has introduced modern ICT tools in several aspects of its operation. Despite the introduction of ICT tools into the electoral process and related activities, the integration of ICT in the electoral process faces a number of problems.

It was anticipated that with supply of computers and it accessories to the district offices and a biometric system in place, it would result into effectiveness and efficiency in the registration of voters and processing of documents. The causes of such problems remain uncertain. One wonders whether it emanates from the way the ICT system was introduced, workers attitudes, lack of policy, inadequate skills of staff, and complexity of the system.

With the persistent problems in elections management, the electoral commission may lose its reputable image. This, therefore, necessitated for immediate study to establish the reality of the matter. This study, therefore, seeks to evaluate the effective use of these ICT facilities in electoral administration in the offices of the Electoral Commission.

Scope of the Study

The study covered only the Northern Region of Ghana as a result of financial constraints to conduct a nationwide study. Nonetheless, the results could be generalised across Ghana.

Objectives of the Study

1. To assess the ICT policies of the Electoral Commission in Northern Region.
2. To ascertain the effective use of ICT in election administration in Northern Region.

LITERATURE REVIEW

Perspectives on ICT

Information Technology has been around for a long time. There are always ways of communicating through technology throughout the evolution of all species (Kyeyune and Tusubira, 2001). The history of ICT has been associated with the evolution of computers. The early computer was a calculating machine to perform computations. The history of Information and Communications Technologies is, however, written information science discipline (Hahn & Buckland, 1998). In fact, majority of references to information technology have always been concerned with computers, though the exact meaning has shifted over time (Kline, 2006).

The phrase received its first prominent usage in a *Harvard Business Review* article to promote a technical vision for the future of business management. Its initial definition was in conjunction with computers (Haigh, 2001 Leavitt & Whisler, 1958). In the 1970s Thomas Haigh brought new meaning to Information Technology as a convergence of the computing and telecommunications technologies (Webster, 1995). As IT spread widely during the 1980s and 90s, it came to be associated with Information and Communication Technologies or ICTs.

The first business application of computers in organisations in the mid- 1950s performed repetitive, high-volume, transaction-computing tasks. The computers summarise and organize transactions and data in the accounting, finance, and human resources areas. Such systems are generally called Transaction Processing Systems (TPSs).

According to David (2009), in the 1960s, another role was added to the use of computers in the processing of data into useful reports. The concept of management information systems (MIS) was born. This new role focused on developing business applications that provided managerial end-users with predefined management reports that would give managers the information they needed for decision-making purposes. By the 1970s, the concept of decision support systems (DSS) was born. The new role for information systems was to provide managerial end users with interactive support of their decision-making processes (David, 2009). In the 1980s, the introduction of microcomputers into the workplace ushered in a new era. The rapid development of application software packages, telecommunication devices and networks gave birth to a more enhanced ICT package to end-users (David, 2009).

ICT and Administration

The use of Information and Communication Technology (ICT) has considerably changed the way in which organisations operate and communicate. ICT plays an essential role in all operational functions within the organization (Muhammad 2009, Asgarkhani 2010). According to Spanos et al. (2002), ICT has the ability to enhance, coordinate and control the operations of an

organisation. Furthermore, it is widely accepted that the integration of ICT in organisational functions is necessary to increased efficiency and cost effectiveness (Tusubira & Mulira 2004).

Shanker (2008), further states that the use of ICT in many organisations has assisted in reducing the constraints of distance across geographic boundaries; thus, helping to improve coordination of activities within organisations. Jiménez-Zarco et al., (2006) also added that ICT plays an important role in acquiring, creating and enables the diffusion of organisational data that can be crucial for effective decision making and control at all levels. Likewise, ICT helps in organisational planning and improves organisational flexibility. Therefore, ICT could be a vital tool for the efficient electoral administration.

ICT and Electoral Administration

The advent of ICT has also changed electoral process in several different ways. This includes political campaign, citizen participation, debates, news room discussion, conducting opinion polls, and enhancement of election administration. Moreover, a number of countries now use ICT in monitoring their election. For example, countries such as Brazil and Chile, have successfully deployed voting machines in the election process. The use of voting machine has resulted in fast voting and the counting of votes. This has reduced disputes in results declaration since political parties can check the machine and be satisfied with its performance or output (Darkwa, 2011).

There are calls from election observers to make electronic technologies to be more integrated into the electoral process. This is because electronic technologies have the potential to make elections more efficient, more transparent and more responsive to the needs of the electorate. For example, technologies can assist election administrators to store and search huge amounts of data; easily identify multiple registration in voters register; prevent voters from voting in more than one polling stations; prevent multiple voting; speed up the tabulation of results and expedite boundary delimitation exercises (Davis and Chelsea, 2010)

A number of countries including neighbouring Nigeria and Togo have extensively applied ICT in their recent elections. For the first time, the EC of Ghana in 2012 introduced Biometric voter data capturing of eligible voters from 18 years and above in a nationwide exercise by deploying laptops, digital cameras and thumb scanners. In addition, the EC set up it elections website to provide users with credible information. The website was to ensure that visitors to the site receive complete and authentic information from the EC.

The presence of ICT in the 2012 general election in Ghana also saw deployment of 26,000 electronic voter verification devices, in addition to hundreds of back-ups devices. The use of verification devices with back-ups was to make the 2012 elections more transparent,

prevent impersonation and make results acceptable by party agents. The success of biometric registration of voters and introduction of verification devices in the 2012 elections are clear examples of application of ICT tools in elections. Although the EC may not be deploying the electronic voting system now, but the steps taken so far is Commendable.

Assessment of ICT Policies of the EC

ICT policy-making is becoming a priority for many organisations. It often technically complicated, yet so important and cannot be ignored (Souter, 2009). While the EC management recognize this fact, they are faced with the challenges of ICT infrastructure and establishment of acceptable use policy as well as maintenance compliance. In 2000, the EC, through their consultants, included a policy for ICT in its nine year strategic and modernisation plan of 2000-2009. The policy was revised in 2005. In 2005 therefore, a working group of commissioners and headquarters directors of the EC provided an updated programmes emanated from the modernisation policy, reflecting the implementation of ICT programmes that have taken place over the years.

The policy document set out the objectives for ICT Policy for the electoral commission and also enlists the policy options; software, training, hardware, and schedule for each rationale, which are further broken down into short-term and the long-term. It also provide for training and recruitment of technicians as well as ensuring acceptable use of information communication technology by staff of the Commission.

Key ICT programmes in the EC Modernisation Plan

Staff Training

Different levels of ICT training was advocated for EC staff in the policy. Much of this takes the form of in-service training. The aim is to assist staff in handling the changes in ICT skills, software and applications within the policy requirement. Training needs of staff are normally identified through staff appraisal system. Within the policy schedule, all administrative staffs were expected to receive ICT training and apply them in their respective departments. However, the appraisal system does not include all the staff. As a matter of priority, a programme must be revised to ensure training is offered to all categories of staff.

IT Technicians

This class of EC staff have higher ICT skills than the administrative staff. The ICT policy makes provision for them to be trained by IT consultant. Beyond their normal work schedule, they also assist in providing in-service training of staff and evaluate performance.

Networking

Networking provides for local (LAN) and wide area network (WAN) services, which ensures communication between clients, servers and ultimately between people. All the district offices of the EC are now networked with the aim of increasing communication, improving efficiency, and data transmission.

Security

Computer systems used for elections need to include high levels of security. Digital Security protects users, the infrastructure and resources. There are security systems required to authenticate and authorize EC staff in accessing election related data and ICT resources. Various mechanisms exist to provide for computer security. These include password protection, encryption, and verification programmes. This ensure only authorized people can read and change information.

THEORETICAL AND CONCEPTUAL FRAMEWORK

Adaptive Structuration Theory

The theory that guided this study was Adaptive Structuration Theory (AST) of DeSanctis and Poole, (1994). Adaptive Structuration Theory is based on Anthony Giddens'(1984) structuration theory. (AST) Adaptive structuration theory (AST) has been used for a number of years in the information systems discipline to study the use of new technologies in organizations (West, & Turner 2000). Proponents of AST contend that developers and users of these systems (ICT) hold high hopes for their potential to change organizations for the better, but actual changes often do not occur, or occur inconsistently. AST examines the change process from two vantage points: the types of structures (Hardware and Software) that are provided by technologies and the structures that actually emerge in human action (ICT Policies) as people interact with these technologies.

Acceptable Use Policy (AUP)

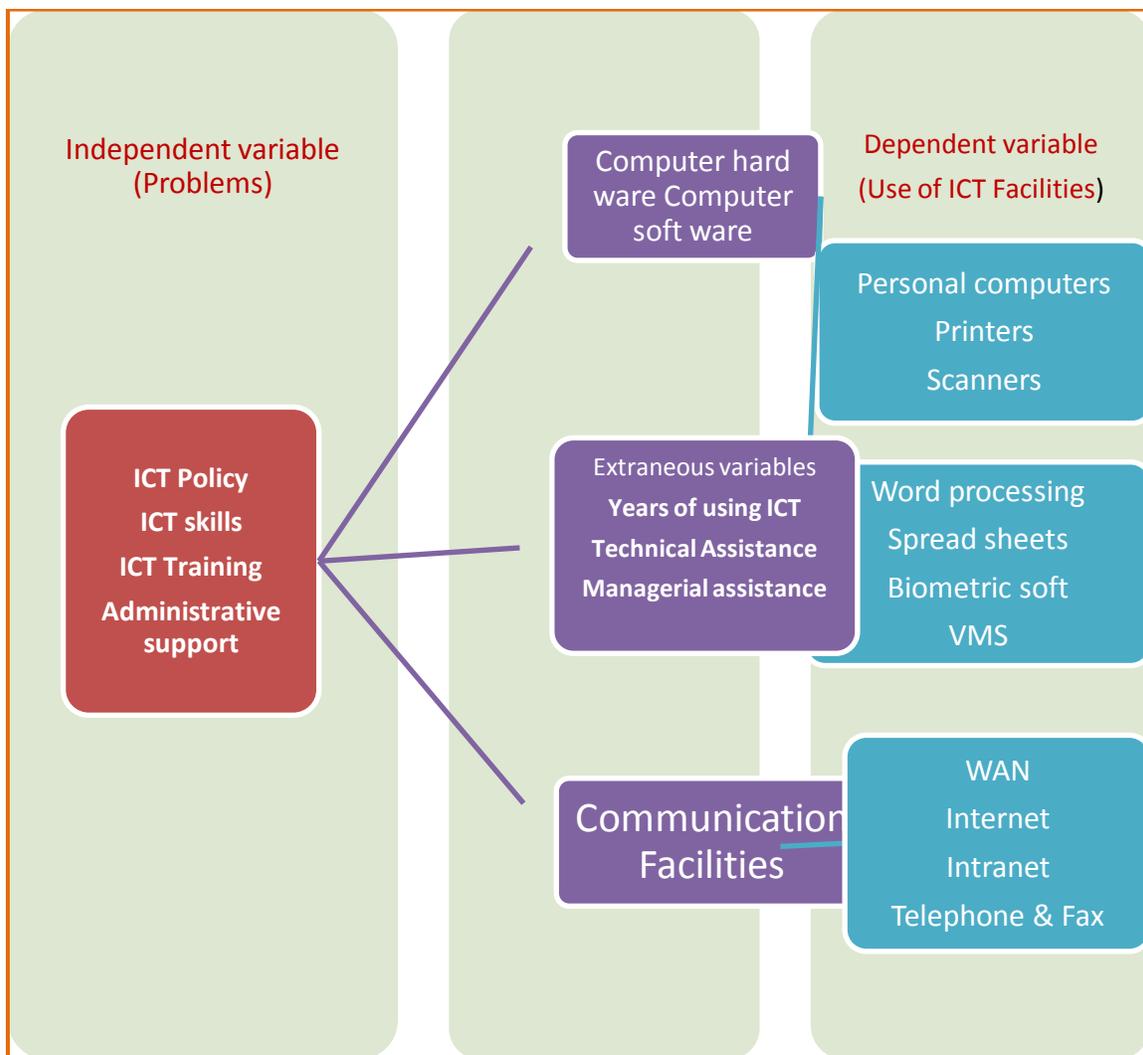
An Acceptable Use Policy (AUP) is the policy which provides this information to users of the organisation's ICT resources to the staff, trainees and management. Organisation needs to inform its workers about the type of behaviour it expects of those using ICT and about the consequences for abusing technology privileges.

In addition, policies exist for the protection and guidance of the organisation and individuals by giving users ground rules for acceptable use of the ICT facilities and communication equipment. Once ICT has become central to the operations, the organisation

must put in place policies to ensure that it is managed properly, that staff get adequate training, as well as and workable procedures for dealing with breakdowns of key equipment.

The framework in Fig. 1 illustrates that the independent variable conceptualized as four problems namely; lack of ICT policy, skills, training in ICT and as well as administrative support. The dependent variables include the effective use of ICT resources such as availability of computer hardware, application of software and communication facilities are conceptualized as shown in Fig.1. It was proposed that the four problems; ICT policy, skills, training in ICT and administrative support have a positive relationship with effective use of ICT facilities. Fig. 1 provides a framework, relating the variables in the study.

Figure 1 Conceptual framework relating problems influencing Effective use of ICT



Source: Adopted from Justus 2011 problems influencing ICT implementation

RESEARCH METHODOLOGY

Research Design

The survey method was adopted for this study. This was because the method allowed the researchers to collect quantitative data which were analysed quantitatively using descriptive and inferential statistics (Saunders, Lewis and Thornville, 2007).

Target Population

The target population for this study consisted of all the staff of the Electoral Commission in the Northern region of Ghana. The total staff of the Electoral Commission in the northern region is 150 (EC April 2009 staff returns report); permanent staff and 93 non-permanent Returning Officers of the Commission. The study population, therefore, focused on all the staff of Electoral Commission from the twenty districts in the Northern Region.

Sample Size and Sampling Technique

This study relied on the published tables which provide a sample size for a given set of population. The sample size selected for this study was generated from the sample size determination tables. The sample size for this study by the table was 152 with a 95% level of confidence at 0.05 margin of error.

A systematic random sampling was used for the study. This method was used to select the various office staff and returning officers of the EC in the twenty (20) districts including staff of the regional office in the northern region.

Data Collection Procedure

The questionnaires were personally given out to the respondents. The researchers personally collected all completed questionnaires from the respondents at the point where the questionnaires were administered to them. Instances where the respondents were unable to fill the questionnaires at the first time of administering them, another day was rescheduled for the collection. The researcher scanned through each questionnaire after it had been filled out to ensure that the respondents answered all relevant questions

Data Presentation and Analysis

The data analysis consisted of examining the surveys for correctness and completeness, coding and keying data into a database in Statistical Package for Social Sciences (SPSS), and performing an analysis of descriptive responses. All incomplete responses were discarded from

the analysis. Frequency tables and descriptive statistics were constructed to display results with respect to each of the research questions.

Ethical Considerations

According to Sekran (2003) ethical issues should be addressed while collecting data. This may include the purpose of the research, confidentiality of data obtained, respect of the participant in all aspects, and not forcing the participants in case he/she takes time to respond. During the study, strict compliance was ensured with regard to the guidelines by Homan, (1991) for the need to explain the purpose of study and the benefits expected from respondents, the rights of respondents and how these would be protected and kept confidential and obtaining the informed consent of respondents during the process of interviews. In this study, therefore, it was ensured that the fundamental aspects of ethical consideration were complied with. Participants were assured of full confidentiality of their identity (personal) and the information provided.

Quality Assurance

A pilot study was used to ensure content validity. For content validity, the questionnaire was circulated to three senior peers from the EC. Validity was also sought through the circulation of the questionnaire to ten pilot respondents, who made recommendations regarding the layout, content and instructions.

EMPIRICAL RESULTS AND DISCUSSIONS

Demographic Characteristics of Respondents

Sex of Respondents

The respondents were made up of 106 staff of which 23.6% were females and 76.4 % were males. Thus, the majority of the respondents were males. This implied the EC was quite dominated with male workers irrespective of the national statistics on gender distribution.

Table 1. Sex of Respondents

Gender	Frequency	Percentage (%)
Females	25	23.6
Males	81	76.4
Total	106	100

Age of Respondents

The ages of the respondents ranged between 25 years and 55. It can be observed that the majority 51.9% of the respondents were in the active working age bracket whilst few that are

10.4% were nearing their retiring age bracket. The age range suggests that most of the respondents were youth. This gives the EC an opportunity to take steps to prepare them for the future task in election management.

Table 2: Age of Respondents

Age	Frequency	Percent (%)
25-34	12	11.3 %
35-44	55	51.9 %
45-50	28	26.4 %
51-55	11	10.4 %
Total	106	100.0

Educational level of the Respondents

It can be observed that 56.6% of the respondents had first degree, 11.3% had GCE O' level certificates, and 17% had second degrees, whilst 1.9% each had PH.D and MSLC respectively. Generally, most of the staff had attained considerably high levels of education.

Table 3: Educational level of the respondents

Educational Background	Frequency	Percent (%)
MSLC	2	1.9
G.C.E O' Level / SSSCE	12	11.3
G.C.E A' Level	2	1.9
Diploma	9	8.5
B.A./Bsc. Degree	60	56.6
MBA/M.A/M.Phil	18	17.0
PH.D	2	1.9
NVTI	1	0.9
Total	106	100.0

Length of Years of Work at the Electoral Commission

The data also revealed that respondents had worked at the EC for between 1 year and 40 years. Table 4.2.5 below shows that: 42.5% of the respondents had worked for between 1-10 years. The average length of service by the respondents was 12.91 years; the mode was 10 with the median being 11 years. Thus, the respondents had worked at the EC for a considerable number of years. This year of employment is also encouraging. This means they are already abreast with most of the electoral processes, therefore integrating ICT into the work schedule will be much easier.

Table 4: Length of Service of the Respondents

Years	Frequency	Percent(%)
1-10	45	42.5
11-20	37	34.9
21-30	11	10.4
31-40	13	12.3
Total	106	100.0

Knowledge and awareness of ICT Policy of the Electoral Commission

When the respondents were asked if the EC had an ICT policy, 56.6% answered in the affirmative whilst 43.4% stated otherwise. The study showed that the majority of the respondents were aware of the ICT policy and also had appreciable knowledge of it. However, only 28.3% of those who were aware of the policy affirmed that it had been communicated to them.

Table 5: Knowledge and awareness of ICT Policy

Years	Frequency	Percent (%)
YES	60	56.6%
NO	46	43.4%
	106	100.0

Medium of Communicating ICT Policy to Staff

The results on Table 6 show the medium used in communicating the policy to staff. It can be observed that 27.4% of the respondents said that the common means by which the ICT policy was communicated to staff was during formal briefing 27.4%, by hear say 35.8% and during seminars and symposiums 14.2%. Thus, the EC used diversified means to communicate information on ICT policy to the staff.

Table 6: Medium of Communicating ICT Policy to Staff

Medium of communication	Frequency	Percent (%)
During recruitment	12	11.3
Formal briefing	29	27.4
During promotion	12	11.3
Seminar	15	14.2
By hear say	38	35.8
Total	106	100.0

Level of Understanding of Staff about the ICT Policy

On the level of understanding of the staff on ICT policy at the EC, the results on Table 4.2.2 were obtained. It can be observed that with the exception of 22.6% of the staff who rated their level of understanding of the ICT policy as poor, 39.6% of the respondents rated their understanding between average and excellent. This implies that majority of the respondents had knowledge of the ICT policy at EC.

Table 7: Level of understanding of ICT policy

Level of understanding	Frequency	Percent(%)
Excellent	6	5.7 %
Very good	14	13.2 %
Good	20	18.9 %
Average	42	39.6 %
Poor	24	22.6 %
Total	106	100.0

Level of Skill of staff in using ICT at the Electoral Commission

The researcher sought the opinions of the respondents on the ICT facilities systems the respondents at the EC were aware of. The respondents mentioned among others computers, scanners, satellite, fax, printers, broadband, GIS, and photocopies among others. They further indicated that they were familiar with ACCPAC, computers, printers, fax, VSAT, internet, CPU.

Areas of Operations in which ICT was used

The results in Table 8 show the areas of operation that respondents personally used ICT. It can be observed that the EC had diverse operational areas.

The results further showed that 76.4% respondents used ICT for the declaration of results, 56.6% for communicating with stakeholders 46.2% used it for the issuance of voter ID cards and among others. Generally, it implies that most of the respondents used ICT in their field operations at the Electoral Commission.

Table 8: Areas of operation respondents personally used ICT

Area of Operation	YES	%	NO	%
Voter education	34	32.1%	72	67.9%
Delimitation and demarcation of electoral boundaries	45	42.5%	61	57.5%
Voter registration	49	46.2%	57	53.8%
Issuance of voter ID	49	46.2%	57	53.8%
Nomination of candidates	41	38.7%	65	61.3%
Conduct of polls	46	43.4%	60	56.6%
Declaration of results	81	76.4%	25	23.6%
Communicating with stakeholders	60	56.6%	46	43.4%
Monitoring and evaluating electoral processes	56	52.8%	50	47.2%

Level of Expertise of Staff in ICT Systems or Services

It can be observed that the 42.5% of the respondents rated themselves as excellent on word processing 42.5%, and 36.8% in spreadsheet. 33.0% rated their expertise in presentation tools 33.0%, project management skills 37.7%, desktop publishing 37.7%, web-page designing 29.2%, database management 28.3% and programming 27.4% as poor.

This shows that respondents had variety of basic ICT skills. This was however, below 50%. The Electoral Commission may therefore have the opportunity to build on this pool of skilled workers.

Table 9: Level of Expertise in ICT Systems or Services

Services	Level of Expertise in ICT systems/services										Total	Total
	Excellent		Very good		Good		Poor		Very poor			
	freq	(%)	freq	(%)	freq	(%)	freq	(%)	freq	(%)		
Word processing	45	42.5	21	19.8	21	19.8	11	10.4	8	7.5	106	100
Spreadsheet	39	36.8	20	18.9	21	19.8	17	16	9	8.55	106	100
Presentation tools	14	13.2	13	12.3	25	23.6	35	33	19	17.9	106	100
Internet/E-mailing	44	41.5	23	21.7	23	21.7	8	7.5	8	7.5	106	100
Statistical tools	17	16	15	14.2	20	18.9	32	30.2	22	20.8	106	100
Desktop publishing	11	10.4	10	9.4	16	15.1	40	37.7	29	27.4	106	100
Web-page designing	14	13.2	10	9.4	13	12.3	31	29.2	38	35.8	106	100
Programming	13	12.3	15	14.2	17	16	29	27.4	32	30.2	106	100
Database management	12	11.3	15	14.2	14	13.2	30	28.3	35	33	106	100
Project management	11	10.4	10	9.4	16	15.1	40	37.7	29	27.4	106	100

Training of Staff in ICT

Responding to the question on whether the respondents received any training on ICT before they joined the EC, 39.6% answered in the negative. On the other hand, 60.4% answered in the affirmative indicating the level of training as basic 58.5%, intermediate 22.6% or advance 18.9%. This implies that majority of the staff were given ICT training by the Electoral Commission to enhance their work on the field.

Table 10: Training of Staff in ICT

Responds to Training	Frequency	Percent(%)
Negative	42	39.6
Affirmative	64	60.4
Basic	62	58.5
Intermediate	24	22.6
Advance	20	18.9

Frequency of Training

When the staffs were asked about how often they underwent ICT training at the EC, the results in Table 4.3.6 were obtained. It can be observed that 27.4 of the respondents stated that they underwent training once a year and a further 14.2% indicated that they underwent training once in 4 years. It must, however, be noted that 7.5% of the respondents stated that the training was conducted monthly, 19.8% indicated that they had never undergone any ICT training at the EC. This implies that generally, the EC does not frequently organize ICT training. According to Schonberger (1994), employees need training to identify and solve problems, to improve work methods and to take responsibility for quality. In other words, being trained in quality-related issues allows employees to improve their quality levels.

Table 11: Frequency of conducting ICT training at Electoral Commission

Conduct of ICT training	Frequency	Percent(%)
Monthly	8	7.5
Quarterly	12	11.3
Every six months	9	8.5
Once a year	29	27.4
Never	21	19.8
Once in 4 years	15	14.2
Once	12	11.3
Total	106	100.0

Quality of ICT Programmes

On the quality of the training programmes, the respondents had participated in, the results in Table 4.3.7 were obtained. With the exception of few of the respondents who were not impressed with the quality of the training programme they had participated in and, therefore, described them as either poor 4.7% or very poor 2.8%, the majority of the respondents were impressed with the quality of the trainings they had participated in and rated them between average and excellent. Specifically, 38.7% of the respondents rated the quality of the training they had participated in as good, 8.5% described it as very good, 45.3% described the quality as average and 2.8% stated that it was excellent.

Thus, the majority of the respondents had positive perceptions about the quality of the course training they had participated in at the EC. This review leads to establish the conclusion that the EC is showing a stronger commitment to training activities. Consequently, training is necessary to improve the quality perceived by the customer or stakeholder, to adapt to the specific industry, to develop the activity more effectively and, finally, to provide a quality service based on the avoidance of mistakes during its delivery (Nankervis and Debrah, 1995).

Table 12: Quality of ICT Training Programmes Attended by Respondents

Quality of Training	Frequency	Percent(%)
Very poor	3	2.8
Poor	5	4.7
Average	48	45.3
Good	41	38.7
Very good	9	8.5
Excellent	3	2.8
Total	106	100.0

Adequacy of Training

When the respondents were asked whether the training they received was adequate, 81.1% answered in the negative. Thus, the majority of the respondents indicated the training they received was not adequate, which implies that, the EC will have to make provisions for more training.

Table 13: Adequacy of Training

Adequacy of Training	Frequency	Percent (%)
Adequate	20	18.9
Inadequate	86	81.1
Total	106	100.0

Requisite ICT Skills

Similarly, the respondents were asked if they had the requisite ICT skills for their daily activities. In response, 34.0% of the respondents answered in the affirmative. Thus, 66.0% of the respondents indicated that they did not have the requisite skills for their daily activities. This supports the earlier assertion that the training they received was not adequate.

Table 13: Requisite ICT Skills

Requisite ICT Skills	Frequency	Percent(%)
Adequate	36	34.0
Inadequate	70	66.0
Total	106	100.0

ICT Skills Required

When the researcher asked the respondents to indicate the ICT skills they needed to improve their work, the responses showed that the respondents required a variety of skills. It can be observed that statistical tools and advance excel and access dominated the list of skills required by the respondents to improve their work. These accounted for 23.6% and 13.2% of the responses respectively. The least mentioned skills required by the respondents were oracle database (3.8%) and software development (2.8%). This implies that the respondents had adequate skills in advance excel and access in the performance of their work.

Table 14: Skills required for work

Skills required	Frequency	Percentage(%)
Project management	8	7.5
ACCPAC	10	9.4
Power Point presentation	7	6.6
Advance excel, access	14	13.2
Networking engineering	5	4.7
Oracle database	4	3.8
Software development	3	2.8
Statistical tools	25	23.6
Word processing	11	10.4
Financial reporting skills	7	6.6
Hardware	6	5.7
Publishing	6	5.7
Total	106	100.0

Effectiveness of Use of ICT at the Electoral Commission

The researcher sought the opinions of the respondents on the effectiveness, relevance and the effects of ICT on the operations of the EC. In response to the question as to how effective the use of ICT had been in the electoral administrative activities, the results in Table 4.5 were obtained. It can be observed that few of the respondents who indicated that ICT use on electoral administrative activities were not effective at all or not effective, majority of the respondents stated the use of ICT on electoral administrative activities as effective. Generally, 52.8% stated that ICT use was more effective on the declaration of results than the other administrative activities.

Table 15: Effectiveness of ICT use on electoral administrative activities

Electoral administrative activities	Not at all effective		Not effective		Not sure		Effective		Very effective		Total	
	Data	(%)	Data	(%)	Data	(%)	Data	(%)	Data	(%)	Data	(%)
Voter education	19	17.9	28	26	24	23	22	21	13	12	106	100
Delimitation and demarcation of electoral boundaries	13	12.3	33	31	22	21	25	24	13	12	106	100
Voter registration	10	9.4	19	18	21	20	33	31	23	22	106	100
Issuance of voter ID	10	9.4	18	17	18	17	32	30	28	26	106	100
Nomination of candidates	10	9.4	23	22	27	25	29	27	17	16	106	100
Conduct of polls	10	9.4	24	23	18	17	36	34	18	17	106	100
Declaration of results	6	5.7	10	9	5	5	56	53	29	27	106	100
Communicating with stakeholders	9	8.5	25	24	19	18	37	35	16	15	106	100
Monitoring and evaluating electoral processes	9	8.5	21	20	20	19	38	36	18	17	106	100

CONCLUSION

The study showed that the majority of the respondents were aware of the ICT policy of the electoral commission; however, only few of those who were aware of the policy affirmed that it had been communicated to them. The common means by which the ICT policy was communicated to staff was during formal briefing, during seminars and symposiums.

Consequently, the EC used diversified means to communicate information on ICT policy to the staff. The level of understanding of the staff on ICT policy was mixed. This ranged from

being poor, average and excellent. This implies that being aware of ICT policy may not necessarily lead to understanding of the contents.

Respondents' levels of ICT skills were found to include the operation of computers, scanners, fax, printers, and photocopies among others. Others were familiar with ACCPAC, VSAT, internet and GIS. Generally, most of the respondents used ICT in their field operations. This include Microsoft office packages: word, spread sheet, project management, desktop publishing, database management

On the whole majority of the respondent had used ICT tools over the past decade. Most of them had no prior training in ICT before they joined the EC, This implies that majority of the staff were given ICT training by the Electoral Commission. The study reveals that training in ICT skills were inadequate. A few of them went through training once a year, while it took four years for others to be trained.

Some had never undergone any ICT training at the EC. This implied that generally, the EC did not frequently organise ICT training. The inadequate training showed that the respondents did not have the requisite skills for their daily activities. This supports the earlier assertion that the training they received was not adequate.

The ICT skills needed to improve work from respondent perspectives included statistical tools and advance excel and access. The respondents believed that having adequate skills in advance excel and access can improve in the performance of their work. The challenges the respondents faced in the use of ICT tools at the EC, the absence of internet connectivity, frequent power outages and the delays due to supply of PCs and accessories. The state of ICT facilities at EC not impressed. They were described them as very old. This implies that the Electoral commission lacked modern ICT tools for use.

In terms of effectiveness of ICT on the operations of the EC, majority of the respondents stated the use of ICT was more effective on the declaration of results than the other administrative activities. Improving the use of ICT at the EC will require the acquisition of modern ICT equipments, provision of computers; network all operational offices, proper supervision of ICT work.

RECOMMENDATIONS

The EC must consider developing separate ICT Policy as a pre-requisite of organisation -wide implementation of ICT systems. On the issue of blurred policy of ICT, this study recommends that the EC should ensure that a comprehensive policy is completed for effective implementation by all department of the commission.

It is also imperative for the EC to train its staff and provide more ICT facilities with the required ICT facilities like computers, computer software, internet facilities and reliable databases to effectively use ICT at all levels of the commission. The EC should also communicate a formal procedure to be followed to improve the use of ICT facilities in the district offices. This will help to ensure that members of staff can access and use the technology with ease and with efficiency.

Staff training programmes are required to ensure that members of staff are provided with opportunities to improve or acquire relevant ICT skills. After realising the levels of ICT use for election management, the ICT skills of staff need to be upgraded. Frequent training programmes will have to be organized for all categories of staff, irrespective of their department, in so far as it is relevant to their work schedule.

REFERENCES

- Asgarkhani, M., & Young, A. (2010). Industry view of ICT roles and skills in Canterbury, 1st Annual Conference of Computing and Information Technology Research and Education, New Zealand.
- David, C. (2006) Evolution of Information Systems: Principles of Auditing and Management Information Systems. http://www.hkiaat.org/images/uploads/articles/AAT_Paper8_Oct09.pdf [accessed on 12 July, 2012]
- Davis Roberts and Chelsea Bergen (200) Observing ICT based elections [http://www.cmdkenya.org/files/Observing_ICT_based_elections_by_Davis_Roberts_and_Chelsea_Bergen.pdf]
- Davis R., and Chelsea B., (2012) Observing ICT based elections [http://www.cmdkenya.org/files/Observing_ICT_based_elections_by_Davis_Roberts_and_Chelsea_Bergen.pdf]
- Hahn, T. B., & Buckland, M. (Eds.). (1998). Historical Studies in Information Science. Medford, NJ: Information Today.
- Haigh, T. (2001). Inventing Information Systems: The Systems Men and the Computer, 1950-1968. Business History Review.
- Jiménez-Zarco, (2006) Analysis of ICTs Opportunities on Firm's Success: An Innovation Process, Problems and Perspectives in Management.
- Jones, A. (2002) Integrating ICT in the early years: Literacy, math and multimedia. {Date Accessed Retrieved 30 June 2012}, from <http://www.pa.ash.org.au/acec> 2002.
- Kline, R. (2006). Cybernetics, Management Science, and Technology Policy: The Emergence of Malhotra, N. & Birks, D. (2007) Marketing Research: An Applied Orientation (Third Edition Ed.). Essex, UK: Pearson Education International/ Prentice Hall.
- News Africa (2012) Kenya: Elections Managers Assess Appropriate Use of ICT in Elections Monday 5 March 2012 [http://www.newsfromafrica.org/newsfromafrica/articles/art_13228.html Accessed: 19/9/2012]
- Osei Darkwa (2010) ICT and Elections in Africa, Ghana Telecom University College [http://www.gtuc.edu.gh/uploads/speeches/ICT_and_ELECTION.pdf]
- Rabindra Jaggernauth Effective Use of Information and Communications [<http://www.dflcaribbean.com/investment-conference/DJagganauth.pdf>]

- Saunders, M., Lewis P., & Thornhill, A. (2009). *Research Methods for Business Students* (5th edition). New Jersey: Prentice Hall.
- Sekaran, U. (2003), *Research Methods For Business: A Skill Building Approach*, 4th edn., (New York: Wiley).
- Shanker, D. (2008). *ICT and Tourism: Challenges and Opportunities*. Conference on Tourism in India – Challenges Ahead, 15-17 May 2008, IIML. [<http://dspace.iimk.ac.in/bitstream/2259/536/1/50-58.pdf>] (Date Accessed December 3, 2012)..
- Spanos, Y. Et tal (2002) *The relationship between information and communication technologies adoption and management*. Information and Management.
- Therese LAANELA (2001) *Election and Technology Regional Workshop on Capacity Building in Electoral Administration in Africa* Tangier Morocco 24-28 September 2001 [<http://unpan1.un.org/intradoc/groups/public/documents/cafrad/unpan005406.pdf>] [<http://unpan1.un.org/intradoc/groups/public/documents/cafrad/unpan005406.pdf>]
- Thomas Haigh (2010) *The History of Information Technology: Annual Review of Information Science and Technology*, Vol. 45, 2011 [http://www.tomandmaria.com/tom/Writing/HistoryOfInformationTechnologyARIST_Draft.pdf] Date Accessed November 15 2012
- Tusubira F A. Kyeyune (2001) *ICT Awareness Workshop Makerere University Library* 6 –7 July Kampala, Uganda
- Tusubira F.(2005), *Supporting University ICT Developments: The Makerere University Experience*, [<http://www.codesria.org>]
- Tusubira F and N Mulira (2004) *Integration of ICT in Organisations – Challenges and Best Practice* Conference paper 6 – 8 September, Kampala, Uganda.
- Walton, R. E. (1989). *Up and running. Integrating information technology and the organization*. Boston, MA: Harvard Business School Press.
- West, R., & Turner, L. (2000). *Introducing communication theory: Analysis and application* Mountain View, CA: Mayfield, p. 209-223.