UNIVERSITY OF CAPE COAST

# USING INFORMATION AND COMMUNICATION TECHNOLOGY FOR ADMINISTRATIVE PURPOSES IN COLLEGES OF EDUCATION IN THE VOLTA REGION

BY

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# DECLARATION

## Candidate's declaration

I hereby declare that this thesis is the result of my own original research and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature……Date…….

Name:…….

We hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

Principal Supervisor's Signature……date ……

Name:…….

Co-Supervisor's Signature……date ……

Name:……..

## ABSTRACT

The purpose of this study was to explore the use of Information and Communication Technology (ICT) tools for administrative purposes by administrators in colleges of education in the Volta Region. The descriptive survey design was adopted to achieve the study objectives. A Closed-Ended Questionnaire and observation guide were the instruments employed for the data collection. The individual items were rated on a 4 Likert type scale. A self-made questionnaire was administered to 109 out of 122 respondents of the five sampled colleges of education in the Volta Region. Percentages and frequencies were generated to determine the level of availability of ICTs tools that existed for college administration. Also chi-square was employed to test for the mean differences in usage of ICT tools for administrative purposes between male and female administrators. Finally mean and standard deviation were computed to determine the factors that impacted the use of ICT tools by the college administrators. The results of the study indicated that, ICT tools are moderately available to administrators. It was also revealed that, they mainly use ICT tools for sending SMS messages to communicate with staff, for staff performance appraisal and to communicate academic results to students. The study also depicted that, insufficient number of internet-connected computers, inappropriate on-the-job ICT training for administrators were some of the factors that hindered full utilisation of ICT tools for college administration. In view of this, it is recommended that, periodic workshops and in-service training are organised for administrators on the use of ICT for college administration and provision of bandwidth for internet services is required.

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.

## DEDICATION

To my beloved mother, Faustina Beatrice Yawlui and my siblings, Mrs Doris Kafui Ansah and Frederick Etse Khehor

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# CHAPTER ONE

# INTRODUCTION

Information and Communication Technologies (ICT) application in education has gained popularity over the past 20 years. This has led to changes in the way educational institutions carry out activities and processes not only in teaching and learning process or monitoring of students' progress but it has also had an impact on educational administrative processes and management of higher educational institutions. Hence the application of technological tools in Colleges of Education is connected with changes, not only at the level of teaching and learning, but also in carrying out administrative tasks.

## Background to the Study

Information and Communication Technology (ICT) has become an important driver of everyday life in the present world and educational administration is not excluded. The on-going technology revolution encompasses new ways of capturing, processing, storing and displaying information and is capable of increasing productivity and competitiveness through information provision. The use of ICT can improve education quality, expand learning opportunities and make education accessible.

School administration is a key determinant for the realization of desired outcomes and success in both public and private schools hence is seen as critical by all stakeholders. Gray and Smith (2007) observe that the twenty-first century principal administrator faces numerous challenges emanating from technology. ICTs are increasingly used and viewed as important in all spheres of operation including education. This requires effective and dynamic school administration. ICTs are technologies that provide access to

information through telecommunications in general but specifically to computers. Consequently, Whitehead, Jensen, and Boschee (2003) are concerned that "the current movement toward putting the latest technology into classrooms is causing educators to reassess school programs-and-policies and-to examine-the impact computers and other data-processing equipment are having on teaching and learning" (p. 3). Due to these rapid changes, administrators and other educators globally are compelled to carefully analyze the academic and social needs of their students (Whitehead, Jensen, & Boschee 2003).

According to Mangesi (2010), the improvement in ICT is the most important world ground-breaking discovery in modern day history as computer manufacturing firms re-invent new computer technologies at a tremendous rate. The 21st century has witnessed tremendous advancements in technology which has led to far reaching developments in the administrative system. Cost-effective technology combined with the flexibility in learning and administrative activities is essential to enhance efficiency (Mangesi, 2010).

Maki (2008) stipulates that ICT plays a vital role in supporting powerful, efficient management and administration in the education sector: technology can be used for student administration (i.e., students' record) to various resource administrations in an education institution. According to Zainally (2008), ICT provides several facilities and possibilities for educational administrators to perform their task. (p. 283). This statement implies that ICT creates so many avenues which enable the school administrator do his/her work with less difficulty. The electronic spread sheet

software for instance, the SPSS, excel, and others is very useful for administrators in recording and analysing the financial data of the educational institutions.

In this regard, Voogt and Knezek (2008) observe that the development of computer technology from processing information to supporting communication augmented its potential for education. Our society, without exception, is in transition towards an information society due to the enormous impact of these technologies in all facets of life. However, the importance and use of ICT in schools differ due to a number of factors including academic, economic, political, and cultural levels of development. Fullan (1993) advises that there is an urgent need to unpack the complexity of change to provide guidance for those who must deal with it. Also, Day and Leithwood (2007) remark that this is the 'golden age' of school leadership change. Educators should re-examine their attitudes, perceptions, plans, and implementation of ICT in their daily administrative operations however challenging it might be. This is central to the success with which favoured solutions actually work in schools. If new technologies are being embraced by students and teachers, including computers as educational tools it is imperative that school administrators, as key educators, also embrace it for effective administration.

ICT in educational administration is rapidly increasing in importance worldwide and is becoming an enterprise of importance in its own right. There is universal recognition for the need to use ICT in education as we enter the era of globalisation where the free flow of information via satellite and the internet hold sway in global information dissemination of knowledge (Ogiegbaen & Iyamu, 2005, p.104). The importance of ICT is widely

recognized both in the workplace and at home (Preston, Cox & Cox, 2000). More so, ICT has been affiliated with the ability to integrate world economies and its role in the effectiveness, efficiency and service delivery of any institution is undoubtedly vital. ICT has also contributed greatly to educational management in schools worldwide (Zhao & Frank, 2003). It has the advantage of improving administrative efficiency and overall quality of the teaching and learning process. Garrett (2006) states ICTs are making dynamic changes in society, they are influencing all aspects of life, and the influences are felt more and more at schools. Because ICTs provide both students and teachers with more opportunities in adapting learning and teaching to individual needs, society is, forcing schools to aptly respond to this technical innovation. Tinio (2002), states the potentials of ICTs in increasing access and improving relevance and quality of education in developing countries.

Change occurs at an uneven pace in any growth-oriented industry, and the education sector is no exception. Taking into account the rate of change in the sector, it is expedient for administrators to find ways of ensuring effective management systems that will enhance productivity. Without efficient and effective school administration, the aims and objectives of any educational system cannot be achieved (Maki, 2008). According to Chaka (2008), ensuring effective management system in this 21st century requires technology. He describes technology as the application of knowledge to the achievement of a particular goal or to the solution of a particular problem. This undoubtedly involves deployment and exploitation of ICT in facilitating and acceleration of administrative processes in schools.

Computers can be used extensively for educational administration. The following are some of the areas where computers can be used for effective educational administration purposes; General Administration, Pay Roll and Financial Accounting; Administration of Student Data, Inventory Management; Personnel Records Maintenance, Library System (Krishnaveni & Meenakumari, 2010). Moreover, many studies have revealed the need for ICT integration into administrative activities of higher education institutions. The various ways of introducing technology in education institution administration are the following (Salerno, 2009): sending e-mail notices and agenda to staff, rather than printing and distributing them, submission of lesson plans through e-mail; insist that all teachers create a class Web page, attend technology conferences to see what other schools are doing, what other teachers are doing to integrate technology, and what principals are doing to encourage the use of technology in their schools and classrooms; admissions through web-enabled services, all day-to-day activities of the institution (General Administration), staff administration

Maki (2008) said ICT fosters the dissemination of information and knowledge by separating content from its physical location. This flow of information is largely impervious to geographic boundaries allowing remote communities to become integrated into global networks and making information, knowledge and culture accessible, in theory, to anyone. It is also mentioned that ICT enhances day-to-day management of institutions and the various functional areas in which it could be used are specified below: Timetabling, student admission and tracking; financial management, medical services; procurement and store management, data distribution and

management (Maki, 2008). ICT is technology-based and knowledge-driven and is indispensable in the present age. Vernon (2001) stated that ICT is a collective term covering all those technologies, hardware and software, dedicated to the capture, storage, and processing, transmission, and presentation of information. Tilya (2008) stipulates that ICTs are perceived to provide a window of opportunity for educational institutions and other organizations to harness and use technology to complement and support the teaching and learning process.

In the current information age, educational institutions are expected to play a crucial role as the engine for knowledge generation and learning environment. In this regard, ICT has become the vital means to facilitate administrative processes. ICT has become an important part of our everyday life; accordingly, its integration in education is inevitable. Various documents are kept in the form of records and these records provide information on the past, present and anticipated future activities of the school including relevant information from the external environment, which aid decision-making. This is due to the fact that using ICT in education has become one of the most effective factors in school improvement not only for the purpose of teaching and learning, but also for administrative use (Tosun & Barris, 2011).

According to Kumar (2008), the integration of Information and Communication Technology in the administration of schools has positive effects. These may include improvement of the school standards in terms of academics, financial status and in co-curricular activities. When such technologies are used for school administrative purposes, namely to support and improve School Administration, ICT can be considered as a sub field of

Educational Technology (Kumar, 2008). In Watson's (2001) description, ICTs have revolutionized the way people work today and are now transforming education systems. As a result, if educational institutions train learners in yesterday's skills and technologies they may not be effective and fit in tomorrow's world. This is a sufficient reason for ICTs to be used and integrated in all school activities.

School administration plays a critical role in ensuring that education is passed on to the students as recommended. It is also the duty of school administration to monitor the enrolment of students in schools, ensure the availability of educational resources, human labour and availability of finance to sustain the daily activities of the school (Meador, 2011). Alexis (2003) argues that schools' administrations have to monitor all these records (ensuring the availability of educational resources, human labour and availability of finance to sustain the daily activities and others) of the school activities by entering the details manually on the books and records of the schools. But with the introduction of ICT in education, there are various programs that come in handy to minimize the efforts put by the administration in monitoring and managing the school activities. These programs help the administration to monitor their daily activities in the school by a click on a button (Alexis, 2003).

Colleges of Education working environments are bound to overwhelm the abilities of today's administrator who is the person in charge of the overall school management, if they are not aided in the performance of their school administrative duties. This statement is true because as Menjo and Boit (2008), observed educational institutions in the 21st century are increasingly

becoming complex multi-dimensional organisations requiring tremendous input in terms of human, financial and physical resources. These developments therefore demand that educational institutions modernise their tools of conducting business to enhance the effectiveness of management and leadership. In view of the above, it is imperative for support staff, teachers, heads of departments and principals to be able to readily identify and access ICT tools that meets their skills and requirements (Menjo & Boit, 2008)

According to Bandele (2006), ICT is simply about sharing and having access to data with ease. The United Nations Development Programme [UNDP] (2010) has defined ICT to include the full range of electronic technologies and techniques used to manage information and knowledge. ICT as an umbrella term includes "radio, television, cellular phones, computers and network, hardware and software, satellite system as well as the services and application associated with them, such as video-conferencing and distance learning" (MOE, 2008. p. 7). However, whether ICT is viewed as information handling tool or as a subject aimed at acquiring knowledge and skills on how to use ICT, the central focus is on the ability to acquire and manipulate mammoth information available to users.

The advent of ICT brings all citizens of this planet closer than ever imagined (Abiodun-Oyebanji & Omotoya, 2012). ICT has permeated all nooks and crannies of our society because of the enormous benefits it presents to users. One defining feature of ICTs is their ability to transcend time and space. Technologies such as texting, instant messaging and video conferencing allow users to communicate instantaneously with people across the world for a

nominal fee, a concept which may have seemed ludicrous before the advent of computers.

In addition, text-based computer communication can give those with speech or social problems a level playing field to communicate with their peers (Wallton & Mark, 2009). Considering the phenomenal benefits of ICT, organisations of all kinds and sizes, including schools, have recognised that the usage of ICT in the work environment is important as it presents with unprecedented challenges that helps individuals to acquire an inquiring, critical and creative mind to capitalise on the opportunities driven by the explosive growth of information, knowledge and technology (Kumar, Che Rose & D' Silva, 2008).

Undeniably ICT has revolutionised the society and as result, demands corresponding changes in the education sector in line with societal changes (Mbakwem & Okeke, 2007). Specifically, in schools, ICT has made very profound and remarkable impact on the quality and quantity of teaching, learning and research. Haddad and Drexler (2002) identify at least five levels of ICT use in education: Presentation, demonstration, drill and practice, interaction and collaboration.

United Nations Institutions for Training and Research (UNITAR), for instance, uses the internet as a medium to offer training programmes for thousands of public sector workers around the world (UNDP, 2010). The internet allows cost effective information delivery services, collaborative and distance education, more than has ever been imagined (Clyde, 1995; Todd, 1997). According to Awotua-Efebo (1999), most internet-based collaborative learning projects include teacher support and training, conference proceedings

are published regularly on the web. Chart rooms or forums may become a laboratory for new ideas. Students also learn more quickly, demonstrate greater retention, and are better motivated to learn when they work with computers (Koert, 2000).

Additionally, Condie and Munro (2007) stated that "the use of ICT has had positive effects in a number of subjects" (p.5). For instance, many researchers have conducted studies to evaluate the benefits of using ICT in teaching Mathematics (Kebritch, Hirumi, & Bai, 2010; Witte & Rogge, 2014). In their studies it is noted that ICT aids students in certain standard tasks such as performing computations and complex analysis (examples are calculators; excel application and statistical package for social sciences). According to Kebritch, Hirumi, and Bai (2010), the most recent educational technology has made mathematics more flexible and more interactive in the sense that it is adaptive to the individual needs of the students.

The British Educational Communication and Technology Agency [BECTA] (2003), summarised the key benefits as: (i) ICT promotes better collaboration among students and encourages communication and sharing of knowledge; (ii) ICT gives rapid and accurate feedback to students and contribute towards positive motivation; (iii) ICT allows students to focus on strategies and interpretation of answers rather than spend time on tedious computational calculation. There is empirical evidence that students, who are having difficulties in reading, can be motivated and engaged through the use of ICT (Lynch, Fawcett & Nicolson, 2000; Segers & Verhoeven, 2002).

It is evident now that teaching and learning has gone beyond teacher standing in front of a group of pupils and disseminating information to them

without the students' adequate preparation (Ajayi, 2008). This new development is a strong indication that any school with adequate ICTs and professional skills in ICT utilisation will have its students perform better in the classroom learning. Consequently, Whitehead, Jensen, and Boschee (2003) are concerned that "the current movement toward putting the latest technology into classroom is causing educators to reassess school programs and policies and to examine the impact computers and data-processing equipment are having on teaching and learning" (p.3). Due to these rapid changes, administrators and other educators globally are compelled to carefully analyse the academic, social and administrative needs of the schools.

Ezziane (2007) also noted that the 21st century electronic office or office automation can play a major part in diminishing the work load of the administrator and his/her staff especially in keeping daily records of students and staff, in analysing students' attendance records, and in marking students' scripts and recording results. Significantly, ICT can be used in preparation of time-tables of different classes so that the classes can be run without time and room conflicts. It may also be used to keep track of appointments and obligations. It has been found that a computer system compared to a manual system produces more accurate resource, student, and personnel records (Tinio, 2013). Conclusively, the use of ICT in educational administration reduces time expended on clerical or paper work tasks, produces accurate information, ensure generation of reports when needed (Ezziane, 2007), and facilitate decision-making process (Zainally, 2008). In effect, school efficiency is increased whilst unnecessary bureaucracy in school administration can be reduced.

Despite these massive benefits ICT presents to its users, many school educators and administrators mostly in Africa are still disadvantaged to a large extent (Makewa, Meremo, Role & Role, 2013) and seemingly isolated within the Global Village. Gray and Smith (2007) observed that the twenty-first century principal administrator faces numerous challenges emanating from the technology. A major drawback to using ICT in Ghanaian schools is the fact that computers are expensive and the cost of acquisition of hardware and software are high. Pelgrum (2001) stated that ICT will be the single largest curriculum budget cost in most schools. This statement is true because for close to ten years after the introduction of ICT course in the curriculum, many schools in Ghana are incapable of purchasing computers or maintaining technologies for ICT lessons (Sey, 2013).

Bosu (2015) reviewed the relationship among ICT, curriculum content and pedagogy while considering implications for tertiary education administration, policy and practice. She mentioned that challenges tertiary institutions face with the integration of ICT are cost of equipment, maintenance and replacement. She again reveals that most tertiary institutions particularly in Ghana do not have feasible replacement plans. Bosu acknowledged that training in ICT is increasing but institutions do not have adequate technical and managerial support staff to promote the effective use of ICT. This statement is true because according to the Association of African Universities [AAU] (2014), the low utilisation of ICT in Africa is attributable, partly to high cost of bandwidth, inadequate expertise in ICT, and the related costs of software and hardware.

Another challenge inhibiting full adoption of ICT use in Ghanaian schools is the sporadic power cuts. Ghana like any other African countries suffers the rationing of electricity power (Sey, 2013). In the event of power cut, computers might get damaged and users may lose relevant data which they were working with. School administration and teachers interested in using ICTs will have no option than to resort to the traditional way of doing things. In many developing nations lack of ICT policy, poor project management and corruption has led to ineffective implementation, duplication of efforts and wastage of technology resources.

The ICT in education policy is based on the premise that, there are several key elements that underpin the use of ICTs in schools. These include: teaching and learning; management and administration; communication; and access to information (MOE, 2008). In Education Strategic Plan (2010-2020) (2012), document, the purpose of ICT policy framework is to ensure that there are adequate opportunities for those in the formal and non-formal sectors to develop skills that will enable them benefit from ICTs. To achieve this aim, "ICT will be utilised in relation to equitable access, quality, science and technology and especially educational management for 21st century" (Government of Ghana, 2012, p.16)

The strategies for achieving the policy's goal have placed emphasis on the use of ICT for educational management and administration. The policy focus implies that, the use of ICT in administrative system in schools is foremost and indispensable in the course of integrating ICT in education. Administrators take a lot of decisions daily, based on information available in the past, present and expected future and therefore should use ICT as an

efficient way in management. In addition, the maintenance of students and staff records, communication and document management are paramount hence school administrators should employ ICTs in their administrative operations (Organisation for Economic Cooperation and Development, 2009). Most importantly, to ensure success of ICT integration in schools, thus administrators of educational institutions should be directly involved in ICT integration. The decision on the extent to which ICT is integrated in educational institutions is directly linked with the competencies, attitudes and perceptions the school authorities have towards the use of ICT. (Amenyedzi, Lartey & Dzomeku, 2011)

It is a general knowledge that Government of Ghana distributed laptops computers to pre tertiary institutions in 2012 and 2013 as part of measures taken to integrate ICT in education (Ghana News Agency, 2014). However, these computers were distributed to the basic and senior high schools specifically for teaching and learning ICT. This initiative by government is believed to have equipped the schools with necessary requirements for full integration of ICT. However, Singh and Muniandi (2012) contend that the availability of the ICTs, both hardware and software is only one element of effective integration of ICT in schools.

A study by Amenyedzi, Lartey and Dzomeku (2011) on the use of computers and internet as a supplementary source of educational resources, it was found that teachers used computers to write lesson plans, prepare materials for teaching, record and calculate student's grades, and communicate with other teachers. However, findings from the study in relation to the use of ICT to improve educational management and planning, the authors revealed

that, the heads of schools communicated with parents on issues concerning their wards but not through computers and internet but through students' reports, telephone calls and letters. There was no use of internet-based interaction amongst the school management (Amenyedzi, Lartey & Dzomeku, 2011). Mere installation of computers and networks in education institutions is insufficient for educational reform and initiatives (Flanagan & Jacopsen, 2003). Therefore, educational administrators should have awareness on the obstacles that limit ICT tools integration and translate the knowledge into effective leadership approaches. BECTA (2004) notes that the use of ICTs in educational management is greatly under-emphasized, as such, a more holistic approach requires that schools be receptive and open to the changes ICTs may make in education.

The entire programme of integrating ICT tools into Education is a crucial and important endeavour that requires strategically targeted interventions to achieve success. The educational administrator acts as a key agent of change in the integration of ICT in a school. It is therefore imperative to address the various aspects of ICT Literacy, Continuity and Change in the use of ICT tools in educational administration. This warrants a study to investigate the use of ICT for administrative purposes in the Colleges of Education.

**Statement of the Problem**

Over the years, the administrative work of administrators has been manually done. Zhao and Frank (2003), argued that Africa as a region is lagging behind in adoption, use and innovation in the ICT sector. Therefore, its people are missing out on better and well managed education systems and

entities considering that ICT has contributed greatly to educational management in schools worldwide. Abreh (2010), studied integration of educational technology in the curriculum of Colleges of Education in the Central Region of Ghana and found that colleges of education were not readily prepared for educational technology owing to inadequate structures and facilities. Many empirical studies on ICT in education have also concentrated on its use in the classroom (Ayebi-Arthur, Aidoo & Bentum, 2009; Amenyedzi, Lartey & Dzomeku, 2011; Sey, 2013). Also, one of the objectives of the ICT in Ghana education policy is to promote an improved educational system within which ICTs are widely deployed to facilitate the delivery of educational institutions particularly at the tertiary level.

One key area undeniably required for favourable use of ICT in education is the school administration. Few years ago, the elevation of Teacher Training Colleges to Colleges of Education backed by the passage of Colleges of Education Act 2012, made them to assume tertiary status, one would expect that principals and administrators in the Colleges of Education in the country would adopt mechanisms to fully deploy ICT into the administrative processes. But looking through various literatures available there was little known about how ICT tools were deployed for administrative purposes in Colleges of Education in Volta Region. It is therefore necessary to explore the use of ICTs for administrative purposes in the Colleges of Education in the Volta Region.

**Purpose of the Study**

The aim of the study was to determine the use of ICT for administrative purposes by administrators in the Colleges of Education in Ghana with specific reference to Colleges of Education in the Volta Region

**Research Questions**

The following research questions were formulated to guide the study:

1. What are the available ICT tools used for administrative purposes in Colleges of Education in Volta Region?
2. In what ways do administrators use ICT tools in rendering administrative duties in the Colleges of Education in Volta Region?
3. Which factors inhibit administrators' use of ICT tools in the Colleges of Education in Volta Region?

**Hypothesis**

$H_0$: there is no significant difference between male and female administrators' view on the ways ICT tools are used to render administrative duties in the College of Education.

$H_1$: there is a significant difference between male and female administrators' view on the ways ICT tools are used to render administrative duties in the College of Education.

**Significance of the Study**

The results of the study may give information on the relevance of integration of ICT in the administrative work to improve efficiency of work. The findings of the study may inform the ministry of education on the hindrances to ICT integration in school administration. The findings of this research may add to the existing body of knowledge on the use of ICT in

administrative work in colleges of education. The study would also provide information to the Institute for Educational Planning and Administration (IEPA) and the University of Cape Coast on the need to provide on-the-job-training for the educational administrators in the areas of computer application since it takes training and workshop programs for college of education administrators.

The research findings may also guide policy-makers, decision-makers and investors to make well-informed decisions about policies and investment in ICT at the colleges of education by understanding the views of administrators in line with the utilisation of ICT in school administration. The results of the study may create the awareness and attention among institutional administrators to improve upon their administrative work by ICT for their day-to-day activities. The findings would equip trainers and aspiring administrators to seek the needed competence for effective and efficient administrative practices. Finally, the study may help future researchers to make references to this work with the aim of building more knowledge in the field of ICT and educational administration.

**Delimitation of the Study**

The study was delimited to Colleges of Education in Ghana. It was further delimited to all administrators in some selected Colleges of Education in the Volta Region. The ICT tools in this study was limited to computers, laptops, desktops, digital projectors, photocopy machines, printers, scanners, internet facilities, intercom, telephones/mobile phones and challenges faced by administrators in using ICT in the Colleges of Education.

**Limitation of the Study**

In the conduct of the study, the issue of bias cannot be ruled out completely since the study was descriptive in nature and questionnaire was also used in collecting the data. The close ended questionnaire as a tool for data collection does not give the opportunity to collect additional information but it was used to illicit responses from the participants. Literature on ICT use in administration of colleges of education in Ghana is scarce. The literature review was therefore drawn from some specific countries across the world.

**Definition of Terms**

Words and phrases have got different meanings in the contexts in which they are used. As such the following terms have been operationally defined to reflect how they have been used in this study.

**Information and Communication Technology** (ICT) for the purposes of this study, the tools and resources include computers/laptops/desktops, data projectors, software programs, printers, scanners and interacting teaching box, photocopy machines, intercom, internal storage devices, internet facilities, CCTV and routers.

**Administrator**: For the purposes of this study, principals, vice principals, heads of departments, account officers, quality assurance, assessment officers, secretaries, store keepers, matrons, librarians, estate section officers and hall masters were included as administrators because of their respective peculiar roles they execute for the day-to-day running of the college.

**Organization of the Study**

The rest of the study is organised as follows. Chapter two deals with literature review concerning the objectives of the study. Chapter three is

concerned with methodology of the study and focuses on research design, population, sample and sampling procedures. Chapter three also dealt with instrument, data collection procedures and data analysis. Chapter four presents the results and discussion of the findings of the study. Chapter five is the final chapter of the study. It gives the summary of the study and draws conclusions on the key findings of the study. It outlines recommendations from the study and suggested areas for further research.

# CHAPTER TWO

# LITERATURE REVIEW

This review of literature looks at ICT from the perspective of its use in education, but particularly in administration of schools thus colleges of education. Three theories underpinned the conduct of this study. The theories are the Technology Acceptance Model (Davis, 1989) and Unified Theory of Acceptance and Use of Technology (Venkatesh, Morris, Davis and Davis, 2003). To provide a clear view to the interactions that take place among the various school administrators, the Activity theory was partly adopted for this study. Literature was also reviewed on the availability of ICT infrastructure for use in school administration, administrative use of ICT for administrative purposes in tertiary institutions, challenges facing the use of ICT in school administration and there was a review on the gender differences that exist in the use of ICT in administration of schools.

## Theoretical Framework

### Technology acceptance model

Although many models have been proposed to explain and predict the use of a system, one of the well-known models related to technology use is the Technology Acceptance Model (TAM). The model originally proposed by Fred Davies in 1989, has proven to be a theoretical model to explain and predict user behaviour of information technology (Legris, Ingham & Collerette, 2003). According to Park (2009), TAM appears to be able to account for 40 per cent to 50 per cent of user acceptance. TAM has evolved over time. Park further explains that the original model was extended to explain usefulness and usage intentions including social influence (subjective

norm, voluntariness and image), cognitive instrumental processes (job relevance, output quality and result demonstrability) and experience. The extended model was tested in both voluntary and mandatory settings. The results strongly supported the initial TAM and explained 60 per cent of user adoption using this updated version of TAM (Ventakesh & Davies, 2000).

TAM is also considered an influential extension of theory of reasoned action (TRA), according to Ajzen and Fishbein (1980). This implies that TAM is an adaptation of the Theory of Reasoned Action (TRA) because the social psychological determinant of conscious intended behaviour in TRA is congruent to the behavioural intentions in TAM. However, TAM is a more specific theory which provides a basic with which one traces how external variables (such as accessibility, job relevance, skills, awareness among others) influence attitude, and intention to use technology. Two cognitive beliefs are posited by TAM: perceived usefulness and perceived ease of use. According to TAM, one's actual use of a technology system is influenced directly or indirectly by the user's behavioural intentions, attitude, perceived usefulness of the system, and perceived ease of the system. However, the current study was not necessarily interested in the perception of the respondents' behavioural intention which influences actual use of the system but employed the facilitating conditions or the external variables as determinants for users' behaviour and use of the system. TAM also proposes that external factors affect intention and actual use through mediated effects on perceived usefulness and perceived ease of use. Figure 1 depicts the original TAM (Davis, 1989).

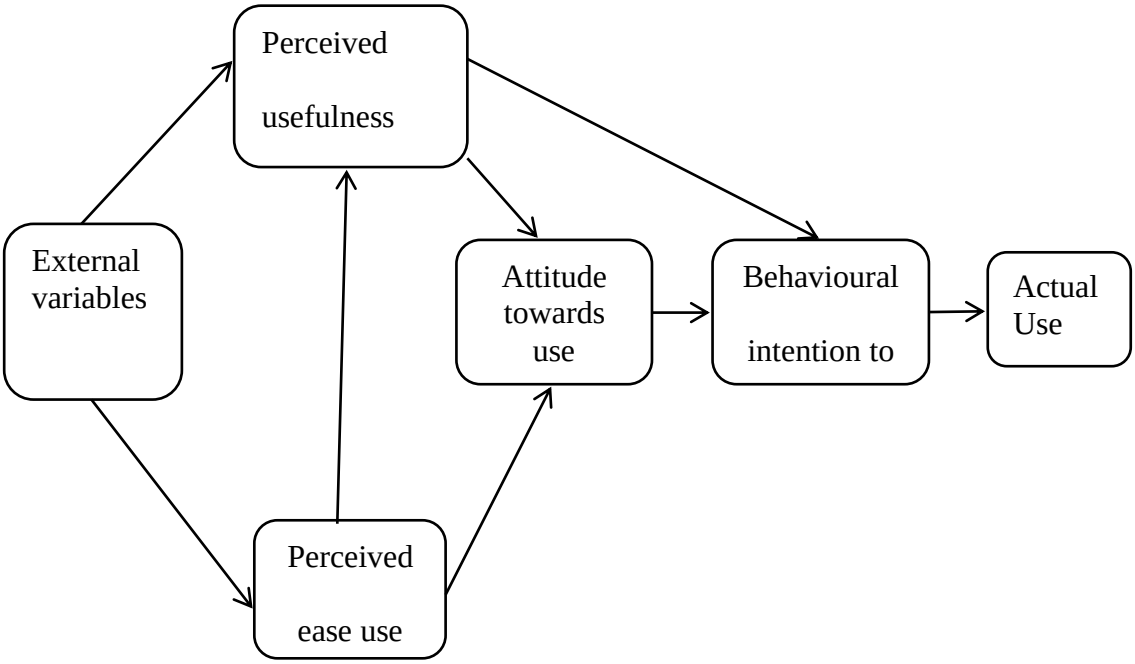


***Figure 1*: Technology Acceptance Model (Davies, 1989)**

In 1989, Davis used TAM to explain computer usage behaviour as shown in Figure 1. The goal of Davis (1989) TAM is to explain the general determinants of computer acceptance that lead to explaining users' behaviour across a broad range of end-user computing technologies and user populations. The basic TAM model included and tested two specific beliefs: Perceived usefulness (PU) explains prospective user's subjective probability that using a specific application system will increase his or her job performance within an organizational context. Some scales that indicate perceived usefulness include; work more quickly, job performance, increase productivity, effectiveness, makes job easier, useful. In other words, Perceived Usefulness is defined as the potential user's subjective likelihood that the use of a certain system (e.g.: single platform E-payment System) will improve his/her action. Perceived ease of use (PEOU) is also showed by the degree to which the prospective user expects the target system to be free of effort. Indicators of perceived ease of

use are; easy to learn, clear and understandable, easy to become skilful, easy to use, controllable, easy to remember. Perceived Ease of Use refers to the degree to which the potential user expects the target system to be effortless (Davis, 1989).

Schultz and Slevin (1975) carried out an explanatory study and found that perceived usefulness provided a reliable prediction for self-predicted use of decision model. Robey (1979) also later replicated the work of Schultz and Slevin (1975) and confirmed the high correlation that existed between perceived usefulness and system usage. However, TAM attempts not only for prediction but also for explanation to help researchers and practitioners identify why a particular technology system may be unacceptable and pursue appropriate steps. The purpose of TAM is to assess the user acceptance of emerging information and communication technology (ICT). Nonetheless, TAM is a more specific theory and applies only to the use of computers (usage behaviour) which address the human-computer interface (HCI). An important factor in TAM is to trace the impact of external factors on the internal beliefs, attitudes and intentions. According to Kamel (2004), the determinants of managerial ICT use can be traced to from the TAM framework, thus, people's ICT use can be predicted reasonably well from their intentions.

Significantly, TAM provides a basis with which one traces how external variables (such as accessibility, job relevance, skills, awareness) influence attitude and the eventual use of ICT as it was displayed in Figure 1. Again in relation to the current study, the researcher sought to find out the availability of ICT tools, ways ICT tools are used and the roles of administrators in their use for administrative duties in the colleges of

education. Considering the model (Figure 1), when ICT tools are made available/accessible to college administrators, it provides a basis for perceived ease of use and a positive attitude towards the use of the particular ICT. Also the relevance of the job with which ICT could be used determines the behavioural intention by the administrator. The assumption with TAM is that availability/accessibility and job relevance are external variables that influence the intentions to use ICT and then the eventual use of ICT for administrative duties in colleges of education.

**Unified theory of acceptance and use of technology**

The unified theory of acceptance and use of technology (UTAUT) is a technology acceptance model formulated by Venkatesh, Morris, Davis and Davis (2003) in "User acceptance of information technology: Toward a unified view". The UTAUT aims to explain user intentions to use an information system and subsequent usage behaviour. The theory holds that there are four key constructs: 1) performance expectancy, 2) effort expectancy, 3) social influence, and 4) facilitating conditions. The first three are direct determinants of usage intention and behaviour, and the fourth is a direct determinant of user behaviour. Gender, age, experience, and voluntariness of use are posited to moderate the impact of the four key constructs on usage intention and behaviour. The theory was developed through a review and consolidation of the constructs of eight models that earlier research had employed to explain information systems usage behaviour (theory of reasoned action, technology acceptance model, motivational model, theory of planned behaviour, a combined theory of planned behaviour/technology acceptance model, model of personal computer use, diffusion of innovations theory, and

social cognitive theory). Subsequent validation by Venkatesh et al. (2003) of UTAUT in a longitudinal study found it to account for 70% of the variance in Behavioural Intention to Use (BI) and about 50% in actual use.

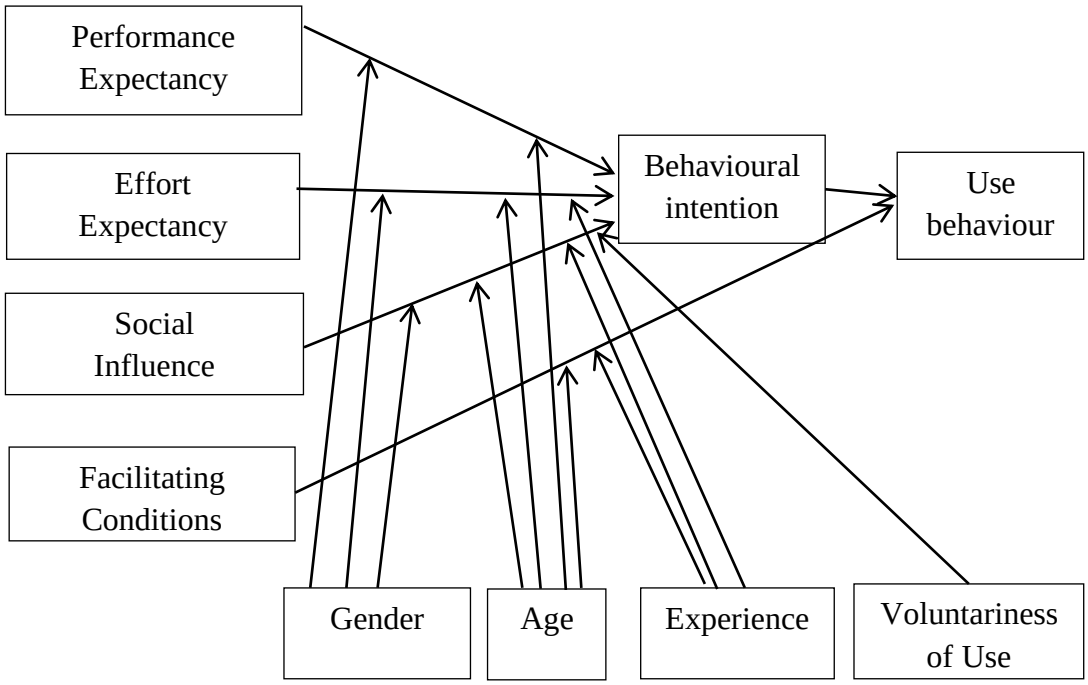


***Figure 2*: Unified Theory of Acceptance and Use of Technology (Venkatesh, Morris, Davis & Davis 2003)**

Performance expectancy is the degree to which an individual believes that using the system will help him/her to attain gains in job performance. The five constructs from the different models that pertain to performance expectancy are perceived usefulness, extrinsic motivation, job-fit, relative advantage and outcome expectations. Even as these constructs evolved in the literature, some authors acknowledged their similarities: usefulness and extrinsic motivation (Davis, Bagozzi & Warshaw, 1989; 1992), usefulness and job-fit (Thompson, Higgins & Howell, 1991), usefulness and relative advantage (Davis et al. 1989; Moore & Benbasat 1991; Plouffe, Hulland & Vandenbosch, 2001), usefulness and outcome expectations (Compeau &

Higgins 1995b; Davis et al. 1989), and job-fit and outcome expectations (Compeau & Higgins 1995b).

From Figure 2, the relationship between performance expectancy construct and intention to use ICT tools is moderated by both gender and age such that the effect will be stronger for men and particularly for younger men. Research on gender differences indicates that men tend to be highly task-oriented (Minton & Schneider 1980) and, therefore performance expectancies which focus on task accomplishment are likely to be salient to men. This research did test the hypothesis of expected differences due to gender. The hypothesis looked at the gender differences that exist among male and female administrators in ICT use for administrative duties. Similar to gender, age also played a moderating role. Research on job-related attitudes (e.g., Hall & Mansfield 1975; Porter 1963) suggests that younger workers (in the current study, college administrators) may place more importance on extrinsic rewards which is external variable in TAM.

Effort expectancy is the degree of ease associated with the system. Three constructs from the existing models capture the concept of effort expectancy are perceived ease of use (TAM/TAM2), complexity (MPCU), and ease of use (IDT). This construct as per the figure 2 is moderated by gender, age and experience. Effort-oriented constructs are expected to be more salient in the early stages of a new behaviour, when process issues represent hurdles to be overcome, and later become overshadowed by instrumentality concerns (Davis et al. 1989; Szajna 1996; Venkatesh 1999). Venkatesh & Morris (2000), drawing upon other research (e.g., Bem & Allen 1974; Bozionelos 1996), suggest that effort expectancy is more salient for women than for men.

As noted earlier, the gender differences predicted here could be driven by cognitions related to gender roles (e.g., Lynott & McCandless 2000; Motowidlo 1982; Wong et al. 1985). Increased age has been shown to be associated with difficulty in processing complex stimuli and allocating attention to information on the job (Plude & Hoyer 1985), both of which may be necessary when using software systems. Prior research supports the notion that constructs related to effort expectancy will be stronger determinants of individuals' intention for women (Venkatesh & Morris 2000) and for older workers and in this case college administrators.

Social expectancy is the degree to which an individual perceives that others believe he/she should use the new system. Social influence as a direct determinant of behavioural intention is represented as subjective norm in TRA, TAM2, TPB/DTPB and C-TAM-TPB, social factors in MPCU, and image in IDT. Thompson et al. (1991) used the term social norms in defining their construct, and acknowledge its similarity to subjective norm within TRA. While they have different labels, each of these constructs contains the explicit or implicit notion that the individual's behaviour is influenced by the way in which they believe others will view them as a result of having used the technology. Venkatesh and Davis (2000) suggested that compliance in mandatory contexts causes social influence to have a direct effect on intention; in contrast, social influence in voluntary contexts operates by influencing perceptions about the technology.

In mandatory settings, social influence appears to be important only in the early stages of individual experience with the technology, with its role eroding over time and eventually becoming no significant with sustained

usage, a pattern consistent with the observations of Venkatesh & Davis (2000). Theory suggests that women tend to be more sensitive to others' opinions and therefore find social influence to be more salient when forming an intention to use new technology (Miller 1976; Venkatesh et al. 2000), with the effect declining with experience (Venkatesh & Morris 2000). The influence of social influence on behavioural intention will be moderated by gender, age, voluntariness, and experience, such that the effect will be stronger for women, particularly older women, particularly in mandatory settings in the early stages of experience.

Facilitating conditions are the degrees to which an individual believes that an organizational and technical infrastructure exists to support use of the system. This construct is similar to perceived ease of use in TAM. From Figure 2, facilitating conditions have a direct influence on usage beyond that explained by behavioural intentions alone. Consistent with TPB/DTPB, facilitating conditions are also modelled as a direct antecedent of usage (i.e., not fully mediated intention). In fact, the effect is expected to increase with experience as users of technology find multiple avenues for help and support throughout the organization, thereby removing impediments to sustained usage (Bergeron, Rivard & De Serre, 1990). Organizational psychologists have noted that older workers attach more importance to receiving help and assistance on the job (e.g., Hall & Mansfield 1995). This is further underscored in the context of complex IT use given the increasing cognitive and physical limitations associated with age. These arguments are in line with empirical evidence from Morris and Venkatesh (2000). Thus, when moderated

by experience and age, facilitating conditions will have a significant influence on usage behaviour.

Again, in relation to the current study, the researcher sought to find out the availability of ICT tools, ways in which ICT tools are used, and the gender differences as the hypothesis that exist between the male and female administrators in their use of ICT tools for administrative duties in the colleges of education. Considering the model (Figure 2), when ICT tools are made available/accessible to college administrators, the performance expectancy of the administrators which is moderated by both gender and age will lead to positive behavioural intention and subsequent use of the particular ICT.

Also, the relevance of the job with which ICT could be used which culminate into the provision of necessary ICT infrastructure by easing the effort that the administrators will put into using the said facilities determines the behavioural intention by the administrator. The assumption is that when the ICT facilities are made readily available/accessible, which constitute the external variable, reliefs the administrators of any difficulties in getting to use, which determines their intention to use and the actual usage of the ICT tool for administrative duties in colleges of education.

**Activity theory (Kuutti, 1996)**

This study was partly informed by "Activity Theory". This theory focuses on the interaction of school administrator's activities and their consciousness within the college of education context. Activity theory was adopted for this study because it provides views to the interactions that take place among the various participants; School Principals, Administration staff and the Administration Tutors in as far as ICT use in school administration are

concerned. The college of education context is an entire activity system that integrates the college principal, the administration staff and heads of departments with ICT tools and resources as well as the school community as a whole. In that various roles as assigned different persons with the aim of ensuring effective administration of the college. The activities performed are different, implying distinct roles but are interconnected.

**Information and Communication Technology**

According to Lever-Duffy, McDonald and Mizell, (2003), ICT comprises the use of at least a computer and the internet as well as computer hardware and software, networks and a host of devices that convert information (text, images, sounds and motion) into general digital formats. Information and communication technology (ICT), in this context, represents a new approach for enhancing the dissemination of information and will be used, applied and integrated into learning on the basis of conceptual understanding and methods of informatics. Computers and application of technology became more pervasive in society which led to a concern about the need for computing skills in everyday life. As public awareness grew, this need for computer literacy became extremely influential and many more in the developed world purchased computers based on this rationale. (Bork, 1980)

**The trend of adoption of ICT in school administration**

Grosshandler (2012) has agreed that the 1980's brought on the dawn of acceptance in regards to the role of technology was to play in the future of the school administration. It was predicted that knowledge of computer use would become a basic part of work in organisational administration, human development and the helping professions (Ekstrom & Johnson, 1984). The

emerging phenomenon was welcomed in the early 1990's that educational systems needed to prepare school heads, administrators, teachers and students to adjust to and survive in this new technological driven society. This meant preparation for the "lifelong learning in an information society" (Pelgrum & Law, 2003, p. 20). Allied to this, early advocates of ICT integrated education saw it as a catalyst for change, fostering skills in problem solving and critical thinking, as well as the development of student- centred learning.

Brockmeier, Sermon and Hope (2005) state that, although teachers were identified early as playing an important role in the success of technology adoption and implementation, nevertheless, the role of school administrators were often overlooked. However, it is worthy to note that the emerging information and communication technology (ICT) cannot deliver improved organisational effectiveness if it is not accepted and used by potential users (Venkatesh & Davis, 1996).

Investment in computer-based tools to support planning, decision making and communication processes are usually risky considering effects such as 'role of change management (Chaka, 2008; Zainally, 2008). Recognising the difficulty of specifying the right system requirements based on their own preferences and logic, technology builders always seek methods for evaluating the acceptability of systems as early as possible (Davis, 1989). In effect, there is the need to know why people adopt or resist ICTs. It is also essential to predict how users will respond to particular technology and reasonably attempt to improve users' responses.

According to Swanson (1988), at attempt to understand why people accept or reject computers had proven to be one of the most challenging issues

in information systems. However, it was realised that users' beliefs and attitude is a major determinant for the acceptance or rejection of a particular technology. Satisfaction measures are also important to consider. Other vital factors which influence the acceptance or rejection of computers include adaptation to change, role of culture, education and awareness.

**Availability of ICT Infrastructure for Use in School Administration**

Oyedimi (2015) conducted a study on the topic "ICT and effective school management: administrators' perspective" The sample for the study consisted of 120 administrative staff randomly selected comprising of 40 principals and 80 vice–principals. He found out from his study that school administrators have a positive perspective towards the use of ICT tools as bringing effectiveness into school administration by solving the problem of poor communication. He also indicated that ICT helps a great deal in effective planning thereby helping the managers of schools to achieve their set goals by reducing complexity in school administration (Oyedimi, 2015).

It is obvious from Oyedimi's (2015) study that when ICT tools are made available and fully functional for administrative purposes in the colleges of education, it will enhance better and effectively contribute to the delivery of administrative duties by the college administrators. The ability of ICT tools to increase the performance of administrators in the colleges of education in the Volta region is an indication that such facilities can be used to enhance administrators' usage of them.

Ezziane (2007) also noted that the 21st century electronic office or office automation can play a major part in diminishing the work load of the administrator and his/her staff especially in keeping daily records of students

and staff, in analysing students' attendance records, and in marking students' scripts and recording results. According to Tinio (2013) ICT can be used in preparation of time-tables of different classes so that the classes can be run without time and room conflicts. It may also be used to keep track of appointments and obligations. It has been found that a computer system compared to a manual system produces more accurate resource, student, and personnel records (Tinio, 2013).

Conclusively, the use of ICT in educational administration reduces time expended on clerical or paper work tasks, produces accurate information, ensure generation of reports when needed (Ezziane, 2007), and facilitate decision-making process (Zainally, 2008). In effect, school efficiency is increased whilst unnecessary bureaucracy in school administration can be reduced.

From the conclusions drawn from the findings of (Ezziane, 2007, (Zainally, 2008; Tinio, 2013) it is obvious that, the rate of work performance by educational administrators will always be high in this 21st century with the use of information and communication technology. It is indicative that the availability and use of ICT tools for administration and management of educational institutions will help to reduce the work load on administrators. They also found that, the availability and use of ICT tools for administrative purposes in the educational institutions and in this case the colleges of education in the Volta region will help to reduce time significantly used in performing administrative duties.

Access to ICT infrastructure and resources in secondary schools is a necessary condition to the integration of ICT in school administration (Plomp,

Anderson, Law & Quale, 2009). Perhaps the effective use and integration of ICT into school administration mainly depends on availability and accessibility of ICT resources such as hardware and software. A survey conducted by Adebi-Ceasar (2012) revealed that a majority of school heads were ill equipped to effectively integrate ICT in school administration. This was due to lack of adequate number of computers, educational application training and policy and strategy on how integration is done. In a survey of ICT and education in Africa: Kenya's Country Report by Farrel (2007), it has been observed that, high level of poverty, limited rural electrification and frequent power disruptions result in limited access to ICT integration in school secondary school administration as well as teaching and learning.

According to Menda (2006) most African public schools are troubled with inadequate technological infrastructure such as such lack of hardware and software and internet, limited individuals and school community members to access ICT thereby posing a barrier to its integration with the school administration as well as teaching and learning. Additionally, the African region faces many external systemic factors such as electricity, technical faults, import duties and network configuration problems. Available literature confirms that West Africa faces a shortage of electrical energy supply. In Ghana, for instance, national electricity grid was limited to both public and private institutions across the country during certain hours of the day between the years 2012 to 2016. This together with frequent breakdown of ICT equipment has increased the cost owning and integrating ICT infrastructure (Farrel, 2007). This has therefore made it impossible for schools in the rural areas specially to access and integrate ICT in school administration.

Hepp, Hinostroza, Laval and Rehbein (2004) claimed the developing countries have become anxious about the widening gap between their realities and the aggressive ICT policies of the developed countries. Consequently, there is a more urgent need to improve the quality and equity of education to bridge the gap between developed and developing nations, and ICTs are perceived as necessary tools for this purpose (Hepp, Hinostroza, Laval & Rehbein (2004). Matovu (2009) studied the levels of availability of ICT for examination management in Makerere University and concluded that, ICT facilities such as computers Management Information System and internet were the most commonly used for examination management.

Such facilities for examination management were mainly applied in processing examination results, tracking students' academic progress, grading of students according to their performance, communication between lecturers and heads of department, communication to students via emails. For the levels of accessibility of ICT for examination management in Makerere University by administrators it was found that ICT was used for communication between administrators and other teaching staff members in the University through use of emails and this was enhanced by internet connectivity in offices.

The Government of Ghana has placed a strong emphasis on the role of ICT in contributing to the country's economy and for that matter, education. The country's medium-term development plan captured in the Ghana Poverty Reduction Strategy Paper (GPRS I&II) and the Education Strategy Plan 2003-2015 all suggest the use of ICT as a means of reaching out to the poor in Ghana (Afshari, Bakar, Luan Samah & Fooi, 2009). In 2004, Parliament passed into law Ghana's ICT for Accelerated Development (ICT4AD) policy,

which is currently at the various stages of implementation. This policy represents the vision of Ghana in the information age and addresses fourteen - priority focus areas. Accelerating human resource development and promoting ICT in education – the deployment and exploitation of ICT in education is among the fourteen priority focus areas.

The ICT in education policy for Ghana has a long gestation period. A committee set up by the Ministry of Education, Youth and Sports outlined an ICT in education framework and produced a document that remained untouched for a long time. The objectives of the policy were to: ensure that students have ICT literacy skills before coming out of each level of education, provide guidelines for integrating ICT tools in all levels of education. The policies provide means of standardizing ICT resources for all schools and also facilitate training of teachers and students in ICT. It determines the type and level of ICT needed by schools for teaching and administration purposes and promotes ICT as a learning tool in the school curriculum at all levels.

Several studies argued that the use of new technologies in the tertiary education is essential for providing opportunities for students to learn to operate in an information age. It is evident, as Yelland, (2001) argued that traditional educational environments do not seem to be suitable for preparing learners to function or be productive in the workplaces of today's society. She claimed that organizations that do not incorporate the use of new technologies in institutions cannot seriously claim to prepare their students for life in the twenty-first century.

This argument is supported by Grimus (2000), who pointed out that "by teaching ICT skills in higher educational institutions the students are

prepared to face future developments based on proper understanding" (p. 362). Similarly, reference to Bransford (2000) reported that "what is now known about learning provides important guidelines for uses of technology that can help students and teachers develop the competencies needed for the twenty-first century" (p. 206). ICT originally is applied to serve as a means of improving efficiency in the educational process (Jones & Knezek, 2010). Furthermore, it has been shown that the use of ICT in education can help improve memory retention, increase motivation and generally deepens understanding (Dede, 1998). ICT can also be used to promote collaborative learning, including role playing, group problem solving activities and articulated projects (Forcheri & Molfino 2000). ICT allows the establishment of rich networks of interconnections and relations between individuals (Rifkin, 2000).

Some authors maintain that technology has the power to change the ways students learn and professors teach. Other authors posit that technology can "revolutionize" the learning process (Schank, 2005). In other words, ICT extend professors' and students' capabilities, and their well determined use can transform roles and rules in the classroom (Breuleux, Laferrière & Bracewell 1998). Many people recognize ICT as catalysts for change; change in working conditions, handling and exchanging information, teaching methods, learning approaches, scientific research, and in accessing information.

Lecturers could use ICT to facilitate learning, critical thinking and peer discussions. Miller, Martineau and Clark (2000), recognize that technology-based teaching may not be essential in all classes but generally it is most

facilitative as a result of providing relevant examples and demonstrations; changing the orientation of the classroom; preparing students for employment; increasing flexibility of delivery; increasing access; and satisfying public demands for efficiency. The whole purpose of using technology in teaching is to give better value to students (Louw, Muller & Tredoux, 2008). This better value should also impact the learners'/students' performance. Louw, Muller and Tredoux, 2008), argued that ICT holds much promise for use in curriculum delivery. Thus, technology can effectively improve teaching and learning abilities, hence increasing learners' performances. As Castro (2003) and Cawthera (2000) posited, ICT has the means to aid in the preparation of learners by developing cognitive skills, critical thinking skills, information access, evaluation and synthesizing skills. In addition, ICT provides fast and accurate feedback to learners (Becta, 2003). It is also believed that the use of ICT in education could promote, deep learning and allow educators to respond better to different needs of different learners (Lau & Sim, 2008). According to Newhouse (2003), ICT-supported learning environments could be beneficial to a constructivist teaching approach.

The important role that higher education plays in the overall personal and intellectual development of the individual cannot be underestimated. Education is perceived as an interrelated structure of ideas, principles and processes and in teaching; its connections among basic concepts should be established to make learning easy for students (Reys, Suydam, & Smith, 1998). Teaching and learning in higher educational institutions are crucial to the future of Ghana's knowledge economy and deserves a special focus in education. Effective higher education teaching requires understanding what

students know and need to learn and then challenging and supporting them to learn it well (NCTE, 2000). Besides, university or tertiary students must learn all courses with understanding, actively building new knowledge from experience and prior knowledge.

In the rapidly changing and technologically dependent society, students are now faced with the need for a solid understanding of skills and concepts. One of the key synergisms of education is technology, and as technology advances it inevitably influences what happens in the classroom. Research indicates that technology plays essential role in the teaching and learning as it influences the courses that is taught and enhances students' learning (NCTE, 2000). Technology influences the skills taught and enhances students' learning. Technology should therefore be used to support learning higher education. In so doing, NCTE (2000) recommends that technology must be embedded in the higher education programme, rather than provided as a supplemental element.

Using technology in classroom provide ample learning opportunities for the students. According to Wahyudi (2008), technology enables students to learn from feedback. The computer (technology) often provides fast and reliable feedback to students. It enables students to produce many examples when exploring problems. Technology helps students to see patterns and connections. The computer enables formulae, tables of numbers and graphs to be linked readily. The use of technology allows students to work with dynamic images that cannot be done within traditional teaching. Students can use computers to draw graphs and manipulate diagrams dynamically. Technology enables students to work with real data which can be represented in a variety

of ways. This supports interpretation and analysis that lead students to higher order thinking skills.

Several studies support the use of technology in teaching and learning in higher education. A study conducted by Roschelle, Pea, Hoadley, Gordin, and Means (2000) supported the use of technology in teaching and learning in higher education. Their finding indicates that computer technology can help support learning, and that it is especially useful in developing the higher-order skills of critical thinking, analysis, and scientific inquiry. The study explores the various ways computer technology can be used to improve how and what students learn in the classroom by helping students understand concepts in Economics. According to them computer-based Economics builds confidences and is a great tool for remediating slower learners.

Besides, Collinson (1999) observed that with the use of technology in the mathematics classroom, students are saved from becoming bogged down in the difficult computations. This allows them to turn their focus to understanding the concepts and how to apply them. Technology also allows open-ended assignments in which the students can learn concepts by "discovery" and are more likely to retain the concepts. The students can also experiment and view different results and methods of solutions to different problems. Without the use of technology, students spend majority of their time and energy attempting to memorize rules and procedures while using sample exercises as models for their homework problems.

The power of technology leads to fundamental changes in educational instruction. Dreyfus (1991) opined that the ability to build and run complex mathematical models, and easy exploration of "what if" questions through

parametric variation has opened up new avenues for higher education. In view of this, weaker students often are better able to succeed with the help of technology, (Wimbish, 1992). Technology allows real-world applications to be more readily used in the classroom (NCTE, 2008). Besides, Kaino (2008) argues that Technology enhances higher education learning by furnishing visual images of ideas, facilitating the organization and analysis of data, as well as computing efficiently and accurately.

Moreover, there are several reasons for integrating technology into tertiary education. According to Ittigson and Zewe (2003) technology is essential in teaching and learning. Technology improves the way Economics should be taught and enhances students understanding of basic concepts. BECTA (2003) however summarized the key benefits of technology education as follows: firstly, technology promotes greater collaboration among students and encourages communication and the sharing of knowledge. Secondly, technology gives rapid and accurate feedback to students and this contributes towards positive motivation. Finally, the use of technology in higher education also allows students to focus on strategies and interpretations of answers rather than spend time on tedious computational calculations. Technology also supports constructivist pedagogy, wherein students use technology to explore and reach an understanding of concepts. This approach promotes higher order thinking and better problem-solving strategies.

The emerging issues from the literature revealed that, the availability of ICT tools for school's administration contribute to effectiveness and efficiency of administrators output and delivery.

**Administrative Use of ICT for Administrative Purposes in Higher Education**

In a study conducted by Juma, Raihan and Clement (2016) on the topic "Role of ICT in Higher Educational Administration in Uganda", descriptive survey method was used, the population of the study comprised of educational administrators from four selected universities in Uganda. Convenience sampling was used to select twelve administrators from each of the selected universities, the sample size was 48. The researchers used questionnaires for gathering information regarding the role of ICT in higher educational administration in Uganda. The questionnaire had both structured and unstructured questions relevant to the study. A total of 40 (83.3%) fully completed questionnaires were returned. Chi square test and Weighted Average (WA) were used to analyse and interpret the data.

The researchers found out and concluded that, "considering the findings of the study, it was concluded that ICT has a significant role in higher educational administration in Uganda. ICT was found to be relevant in facilitating effective and quick decision making, aiding analysing data quickly and accurately, facilitating information gathering & dissemination, enhancing monitoring of educational facilities & resources, facilitating adequate data storage, improving coordination of tasks and activities, making administrators more productive, enhancing effective communication and knowledge sharing, facilitating fast educational planning process, improving skill acquisition & development and enhancing data processing. Therefore, ICT should be fully integrated into the process of higher educational administration" (Juma, Raihan & Clement, 2016).

It is very obvious from the findings and conclusions drawn by Juma, Raihan and Clement (2016) that one cannot downplay the important roles ICT facilities play in the administration of our educational institutions especially tertiary institutions where the current study is situated. The school administrators in such research heavily relied on the ICT tools for their day-to-day official responsibilities such as communications, monitoring of students performance, information gathering and dissemination and many others. The current study as it is situated in the same context of tertiary education certain, the administrators in the colleges of education in the Volta Region have equally depended on the use of ICT tools for daily duties such as student and staff administration, financial administration, communication and dissemination of information to other stakeholders in the colleges.

Aubrey (2012) in his study titled "state, adoption and use of ICTs by students and academic staff at Mzuzu University, Malawi", aimed to find out the recent condition of ICTs at Mzuzu University, decide the stage of approval and the adoption of ICTs by learners and educational workers at Mzuzu institution of higher learning, distinguish different conduct of obtaining internet for equally learners and school staff, create problem effects on learners and educational workers make use of ICTs at Mzuzu institution of higher education. He embraces an analysis process which made a whole model of 431, which incorporated 317 learners, 113 educational personnel and one documentation personnel. Information for the lessons was composed by means of a conference channel and consistent opinion poll that contain both closed and imprecise enquires.

The information composed was evaluated by means of SPSS application. Findings of the revision are that the condition of ICTs at Mzuzu institution of higher education was meagre. Regardless of this, approval and application of ICTs was outrageous. ICTs were mostly adopted for educational associated globe dispensation responsibilities, as well as internet right of entry. On the other hand, majority of the participants adopts individual mini hand held computers linked to a dongle, a private GSM handset, or profit-making internet cafés outside university grounds to use the internet. The school net was not used. Hindrance to the acceptance and application of ICTs includes bad net facilities, the inadequate amount of computers, and the expensive price of internet right to use, constant current failure, and the short of related ICT know how, in the midst of others (Aubrey, 2012).

It was clear from the findings of Aubrey (2012) that, educational personnel and for the purposes of the current study, administrators of higher education use ICT applications and facilities available in the institutions to carry out their daily activities. It is also evident that the adoption and application and of course the use of ICTs in the study area was outrageous, in that, the educational workers solely performed their duties with all the necessary ICT tools available.

In the work of Gedwn (2016) on the topic "Use of ICT for Administration and Management: Case Study Eastern Mediterranean University". The sample for the study consisted of 72 Eastern Mediterranean University staff according to the various demographics of the study. ANOVA and t-test, frequency and percentages were the statistical tools used for the analysis. Findings of this study show that majority of the Eastern

Mediterranean University staff agreed and strongly agree that ICT can be of pertinent help to them and also that ICT helps their work move smoothly and properly and in a timely manner. The findings also revealed that over 85% of the staff agrees that the introduction of newer ICT tools would not be a problem to their usage of such tool. Also, that no staff ever disagreed the importance of ICT for work purpose. The researcher further went on to conclude that, Eastern Mediterranean University staff has great receptive skills as regards the handling and operating ICT tools especially newer tools for the purpose of proper work ethic and conduct. This also shows that ICT has been beneficial to the general staff of the institution, and exposes the great assist which ICT has been to the operation of academic, administrative and managerial activities of the institutions by staff.

It can equally be observed from the study by Gedwn (2016) and its accompanying findings and conclusions that, ICT has helped and contributed immensely to the administration and management of educational institutions. This may apply to the colleges of education in Ghana as far as the current study is concerned since it falls within the remit of higher education institutions. It is also obvious from the Gedwn (2016) findings that, ICT was used for administering their duties as the respondents revealed ICT can be of pertinent help to them and also that ICT helps their work move smoothly, properly and in a timely manner.

Information and Communication Technology according to Opara and Onyije (2013) are facilities, tools or resources that could be used to process, store, preserve, access, retrieve, and disseminate information with ease. It could be seen as the engine for growth and tool for empowerment, with profound implications for education, change, and socio-economic development, the dream of any institution is an effective and efficient

managerial process to accomplish their needs and goals. The knowledge of computer application software such as spread sheet, computer aided design, and databases are important skills in institutional administration. The complexity of institutional system requires more demand from the institutional administrators in processing of relevant data in an attempt to provide information for the governing bodies, institution and other institutional agencies for decision making towards quality assurance and transformational development. Therefore, educational administrators need to have basic information on students and teachers, institutional supplies, and how much the system is spending on various inputs, in order to make the most basic resource allocation decisions (Opara & Onyije, 2013).

ICT plays a vital role in supporting powerful, efficient management and administration in education sector. It is specified that technology can be used right from student administration to various resource administration in an education institution (Maki, 2008). Using ICT in higher education administration is fundamentally about harnessing technology for better planning, setting standards, effecting change and monitoring results of the core functions of universities (Krishnaveni & Meenakumari, 2010). ICT in administration of educational institutions play a major role in efficient utilization of existing resources and simplifies the administration tasks (e.g. in student administration, staff administration, general administration etc.) by reducing the paper work and replaces the manual maintenance of record keeping to electronic maintenance of records which helps in easy retrieval of any information of students, staff and general with in a fraction of seconds can access the required information (Alam, 2016). According to Krishnaveni and

Meenakumari (2010) ICT extensively covers whole process of administration of higher education. Based on literature review the three major functional areas of higher education institution's administration those are of great significance for day-to-day management is identified as follows: Student administration, Staff administration, and Teachers administration.

Based on the literature on the above, information and communication technology (ICT) tools have been used extensively for administrative purposes in all higher education of learning both by educational workers and learners at large. In the case of student administration, ICT has been used for registration of courses by students, also for admission of students and many others to render services to students. ICT in staff administration in the tertiary institutions as revealed by the above researchers' findings could be seen in communication, admissions, financial work, students and staff records, documents processing, data collection and storage and of course pay roll.

Ahmad (2010) in his paper "Effective Educational Management: An Implementation of ICT in Administration of Higher Education Institutions" states that the use of ICT in educational management will be beneficial for analysing the data quickly and accurately quick, decision making, provides the power to the Administrators for efficient management of education and institution, reduces the burden of Teachers, available at lowest total cost of ownership, provides information at the door steps and reduces the Right to Information Applications. He says that **"**the government is now more concerned about the paradigm shift in education system. Now there is a buzz word of 'quality' of education everywhere. But we cannot revamp the education system without making the administration of institutions effective

and efficient. This can only be done with the usage of technology i.e. ICT in the educational management".

Meenakumari and Krishnaveni (2011) in their study "Transforming Higher educational institution administration through ICT" have identified a comprehensive set of functional areas of e-administration. The study revealed that demographic factors do not have a major impact on e-administration in higher education institutions. It is also evident from this study that integration of ICT into knowledge administration for the teaching–learning process is more in comparison with research methodology. Computers can be used extensively for educational administration. The following are some of the areas where computers can be used for effective educational administration (Ben-Zion Barta et. al. 1995): General Administration, Pay Roll and Financial Accounting, Administration of Student Data, Inventory Management, Personnel Records Maintenance and Library System. This was confirmed by Maki (2008), when she noted that, "administrative subsystems include Personnel administration, student administration, resources administration, financial administration and general administration".

Zainally (2008) in his paper "Administration of Faculties by Information and Communication Technology and Its Obstacles" studied the effective utility of ICT for administration by 20 deans of selected faculties of governmental universities in Iran. His research findings show that head of faculties use the technology for planning. It was used by them in Data collecting, decision making, operational planning, budget planning and classroom programming. It was used to large extent in academic affairs, student affairs, research affaires administrative and financial affairs. ICT was

used at high level in supervision and evaluation of student affairs, research affairs and academic affairs, financial affairs and administrative affairs. Moreover it is applied in developing human recourse knowledge and ability as much to increase scientific level of faculty members, students and staffs, and it was used too in communication function in favourable level. It was used to less extent in staff and academic member performances evaluation and supply department affairs. The obstacles recognized were lack of knowledge to staff, lack of professional human resources and lack of financial resource and budget.

It is obvious and could be noted from the above literature how extensive information and communication technology (ICT) has been used for administrative duties in the higher education levels. It is seen that, ICT was used in the areas of supervision and evaluation of student affairs, research affairs and academic affairs, financial affairs and administrative affairs as were the findings of Zainally (2008). These observations from the literature, the use of ICT for administrative purposes in the tertiary institutions and for the purposes of the current study, for administrative purposes in the colleges of education in the Volta Region, cannot be a bargain on any parlance. Mwalongo (2012) discovered that management and administration adopt ICT tools in preparing organizations and institutions announcements, papers for meetings with clients and students, learners' enrolment and registration, and also instructors and staff recruitment. ICT tools also are properly adopted by managers and administrators in decision making, data saving and also online requests of clients and users (Selwood 2004 & Afzaal, 2012).

ICT has altered the way organizations and for the purposes of the current study, the colleges of education in the Volta Region of Ghana work and how staff communicates with one another and their clients (students). The field of information technology in institutions and its effects for management, for administration and for running the affairs of such institutions have gained a growing awareness from various works in education administration and management (Frissen et al. 1992). ICT influences communications within organizational settings between staff and administrators and leaders in management of the educational institutions (Snellen 2002).

Onyije and Opara (2013) studied in the paper "Information and Communication Technologies (ICT): A Panacea to Achieving Effective Goals in Institutional Administration" and identified the use of ICT for institutional administration in order to improve the efficiency in Organization of Information, Computation and Processing of Paper Work, Enhancement of Effective Communication, Enhancement of Planning, Improvement of Monitoring and Managed Instruction. They concluded in their paper that ICT is needed for institutional administrators to function efficiently and the institution to effectively pursue its academic excellence. Several measures are necessary to improve the use of ICT in our higher institutions. Snehi (2009) in her paper "ICT in Indian Universities and Colleges: Opportunities and Challenges" revealed that ICTs can play significant role in bringing efficiency in the universities/organizations. Networking of various departments and sections within the university/colleges and interuniversity networks established would lead to streamlining of university functioning. Contribution of ICTs in developing Management Information System for the Universities/

colleges is vital to ensure collection of information, its analysis for identifying trends, keeping track of resources/funding and their monitoring.

Educational institutions have adopted a lot more application of ICT tools for administration and management, such as Education Management Information System (EMIS), a semi-system of an educational setting which focuses on collecting, saving, processing, analysing and distributing information to users (Susmita, 2007). ICT is also adopted to upload and download student files, files of applicants, clients, and research works and for submitting and receiving assignments of students, and other mutual users of the same ICT platform. Ghavifekr, Ashfari and Amla (2012), states that ICT, for interacting and management of activities and materials, directly or indirectly, develops organizational (educational) performance. Also, ICT tools and applications have produced large openings for educational administrations and management to control their resources by appearing to be the most prevailing supporter towards cost effective, quick and having a good approach in controlling the administration and management of day to day tasks like, transferring, saving, retrieving and processing data (Susmita, 2007). Per the above findings from the literature, it is reasonable and therefore necessary to suggest that, organizational and educational institutions' administrators and managers have to give immense concentration and awareness to the knowledge and data access on ICT educational tools to every academic and non-academic staff.

A research conducted by Ngugi (2012) on the topic "an investigation into the extent of the use of ICT in education management in public secondary schools in Naivasha District". The study sampled 60 respondents of which the

principals, secretaries and the school bursars were the target. Descriptive survey design was used for the study. The researcher found and concluded that, ICT resources such as computers, telephone lines and internet are used in the managements of secondary schools in Naivasha even though they are inadequate. It was also concluded that head teachers were prepared for the use of ICT in management of schools. The study finally concluded that ICT is used in different areas of management in schools such as curriculum instructional management, student management, financial management, personnel management and material resources management (Ngugi, 2012).

It is clear from the study and findings by Ngugi (2012) that, ICT remains bedrock for every institutional management and administration especially in educational certain. ICT tools were said to be used for financial administration, physical administration and human administration, so the contribution of ICT infrastructure which helps to less burden the workload of all administrators and school management as alluded in the literature above is an indication that, all aspects of educational administration machinery has been made possible and very effective and efficient by ICT tools.

The issues emerging from the literature indicated that administrators of higher education relied heavily on the availability of ICT tools for their daily administrative duties in all areas.

**Factors Affecting the Integration and Use of ICT in Education**

The mere availability of computers, internet and other ICT equipment does not imply the use of this equipment (Singh & Muniandi, 2012). There are factors that influence the consistent use of ICT in schools. These factors include availability/accessibility of ICTs, Competency/literacy in the use of

ICT, attitudes and perception of users towards ICT, adequate funding for the maintenance of ICT infrastructure, provision and implementation of ICT policies, provision of adequate technical and managerial support systems among others (Sheingold & Hadley, 1993; Veen, 1993; Cox, Preston & Cox, 1999; Felto, 2006; Menda, 2006; Farrel, 2007; Adebi-Ceasar, 2012; Bosu, 2015). Other studies conducted, have also revealed that there are a number other variables which were not found in the previous studies, however influenced the use of ICT by school administrators. These studies revealed that negatives perceptions and attitudes towards the use of ICT, gender difference, age difference among administrators as confounding variables that affected the use of ICT by school administrators ( LeBaron & Collier, 2001; Selwood, 2004; Sadik, 2006; Afshari, Bakar & Wong, & Afshari, 2010).

**Challenges Facing the Use of ICT in School Administration**

The study of obstacles to the use of ICT in educational administration may assist educators in overcoming barriers and support educators and students becoming successful technology adopters in the futures. It therefore means that, the removal of one or more of these challenges or barriers in ICT use should assist and perhaps significantly advance the progress of integration.

Selwood (2004) studied on the topic “Primary school teachers’ use of ICT for administration and management”. He concluded in the following findings that, primary teachers are positive about the value of ICT in supporting their administrative and management duties. However, when primary teachers’ actual use of ICT for administration and management was analyzed, the levels of use are quite low. Primary teachers appeared to be aware of the potential of ICT to reduce their workload and improve the quality

of their work but also recognize their need further training, which they are keen to undertake. It was apparent that primary teachers have very little non-contact time in English primary schools, and if they are to make greater use of ICT for administration and management either more non-contact time is essential or they need better and cheaper communications between home and school, or both. Furthermore, concerns over access to quality ICT equipment appears to be a real and major issue (Selwood, 2004).

It is clear from the study of Selwood (2004) that, when ICT tools are available for administrators and school management for use of their duties, they will always have positive attitudes towards their usage and performance of their work is likely to increase. As far as, the current study is concerned, almost all the administrative staff are academic staff who are classroom tutors in the colleges of education in the Volta region. It is also obvious that, though the tutors may be aware of the potential and value of the ICT use for their administrative duties but when less time is made available for them from their classroom contact hours, the usage of ICT tools by the tutors for other responsibilities will be low. It may also be seen that, lack of continuous professional development and constant ICT trainings for the tutors who in many cases double as administrative staff per their roles will affect the quality of work delivery and even sometimes may face a challenge in using and manipulating the ICT tools.

Adeyemi and Olaleye (2010) conducted a study on the topic "Information communication and technology (ICT) for the effective management of secondary schools for sustainable development in Ekiti Stat, Nigeria". They employed frequency counts, percentages and Pearson Product

Moment Correlation analysis with the aim of examining the utilization of information and communication technology (ICT) in the effective management of secondary schools. They found out that the significant relationship in this study between the usage of Information and Communication Technology and effective management of secondary schools in the State implies that the more the usage of ICT equipment the better would be the effective management of schools. This finding was in consonance with the findings made by other researchers (Sybil et al, 2000, Ajabor, 2001) which revealed a strong relationship between the usage of ICT materials of communication facilities and effective management of schools.

The most notable constraints to the usage of information communication and technology in secondary school in Ekiti State, Nigeria were the intermittent disruption of electricity supply. They also reported that inadequate facilities such as well-furnished classrooms for ICT equipment are major constraints to the effective usage of ICT in secondary schools in the State. They also indicated that inadequate funding to provide ICT equipment, lack of expertise on the use of ICT, lack of interest among many members of staff to adopt the use of computers and other modern information technology for management of schools as well as lack of interest by many individuals to learn the usage of ICT facilities in schools (Adeyemi & Olaleye, 2010). The findings have led the researchers to conclude that,

**"**The provision of ICT equipment is significantly related to effective management of schools. It was therefore concluded that intermittent disruption of electricity and that of funding are major problem inhibiting the usage of

ICT equipment and facilities for the effective management of schools in the State" (Adeyemi & Olaleye, 2010, p.112).

It therefore clear from the study of Adeyemi and Olaleye (2010) that administration and management of any educational institution and in this case colleges of education in the Volta region can only be effective and efficiently done when the information and communication technology tools and facilities are made available for such purpose. In that, principals and other administrative staff in the college per their responsibilities can only perform well having these facilities available and of course functioning well.

Howell and Lundall (2000) emphasized that the effective use of ICT in a country impacts strongly on the competitiveness of the economy within the global market place as well as the ability of the governments to deliver on their social goals. The educational system is already facing numerous challenges ranging from inadequate infrastructure for effective teaching and learning to poor quality teachers. This raises the issues of the extents the use of ICT in administrative and managerial duties of the principal will receive adequate attention. (Howell & Lundall, 2000).

Howell and Lundall (2000) are of the view that, generally as the educational system is being faced with challenges to even provide Information and Communication Technology (ICT) tools to enable effective teaching and learning in these institutions and as far as the current study is concerned, ICT tools and facilities can therefore not be readily available for administrative duties by principals and management staff of the educational institution

(colleges of education in the Volta region) to perform their duties that must be done with the help of these instruments.

A study conducted by Organisation for Economic Cooperation Development (OECD) (2009 cited in Rodden, 2010) found out that there are a number of barriers or challenges that inhibit the use if ICT in education. It indicated that, these barriers included an inconsistent number of computers to students and educators, a deficit in maintenance and technical assistance and finally, a lack of computers skills and/or knowledge among educators (OECD, 2009). Edefiogho (2005) classified these barriers as: limited equipment, inadequate skills, minimal support, time constraints and lack of interest or knowledge by teachers. British Educational Communication and Technology Agency (BECTA) in 2004 conducted a survey and found out a number of challenges and barriers that militate against the successful usage of ICT in the educational institutions. These were: lack of confidence, accessibility, lack of time, fear of change, poor appreciation of the benefits of ICT and age. Ertmer (1999) concurs with Schoepp (2005), asserting that if school heads and teachers are aware of and understand such barriers, they can initiate strategies to overcome them.

The findings of BECTA (2004) and Schoepp (2005) are indicative that when administrators and management of educational institutions and in this case, colleges of education in the Volta region are taken through continuous professional training, on-the-job training and in-service training in the use of ICT for performing administrative roles, they will be able to do away with the anxieties and appreciate the importance of ICT facilities in the face of their availability.

In the sub-Saharan countries where Ghana is part, UNESCO (2010) stated that there is a rapid growth in tertiary institutions and in this case, colleges of education in the Volta region which were given tertiary status, but they have the challenge of inadequate favourable conditions (human, financial, physical) to promote the integration ICT in teaching and learning. This statement according to Bosu (2015) is because public expenditure per tertiary student, relative to gross domestic product (GDP) is especially high. With specific examples from Ghana, according to Bon (2010) the main challenges faced in institutions are a lack of strategic vision; a shortage of ICT support staff and tight maintenance budgets; poor ICT staff retention and limited collaboration among peer institutions. Bosu (2015) added that, other challenges institutions face with the integration of ICT is; the high cost of equipment, maintenance and replacement and high cost of electricity.

It is obvious from the findings of UNESCO (2010) and Bosu (2015) that the desire on the part of school administrators and management in the Sub Region where Ghana is part, for rapid development of their institutions with the use of information and communication technology but this is front with lack of ICT infrastructure development which is usually blamed on the high cost of procuring and installing these facilities for use by the schools.

Studies within the 1990s investigated why educators fail to use computers in teaching and running of school affairs (for example, Rosen & Weil, 1995; Winnans & Brown, 1992; Dupagne & Krendl, 1992; Hadley & Sheingold, 1993). Not surprisingly, these researches found a list of inhibitors which include: lack of computer availability; limited accessibility to ICTs; lack of experience teaching/working with ICT and lack of on-site support for

administrators/teachers using technology. The others are: lack of ICT specialist teachers to teach staff, teachers and students computers skills; lack of time required to successfully integrate technology into the curriculum and lack of financial support.

Robertson, Calder, Fung, Jones, O'Shea and Lambreachts (1996) argued that teachers' and administrators' resistance to computers use was divided into several broad-based themes: Resistance to organisational change; Resistance to outside intervention, Time management problems; Lack of support from the administration, Teachers'/administrators perceptions and Personal and psychological factors.

The issues emerging from the literature are that administrators are faced with enormous challenges in their quest to deliver on their administrative duties because of defects that are associated with ICT tools.

**Gender Differences in the Use of ICT in Administration of Schools**

Gender disparity has been seen in various fields such as business and politics. Education is not any better. For instance, the British Council Gender in Nigeria Report (2012) reveals that the school enrolment ratio of girls is significantly lower than that of boys. Gender disparity can also be seen in the area of usage of ICT. The Department for International Development (DFID) in its second report of session 2016-2017, revealed that education prospects are a challenge for all Nigerian children. However, it observed that girls are particularly disadvantaged. According to Wajcman (2006), she observed that many feminists believe that western technology embodies patriarchal values. She further argued that most women are reluctant to go into technology

because of the sex-stereotyped definition of technology as an activity appropriate for men. In her words:

> *"as with science, the very language of technology, its symbolism, is masculine. She also indicated that, it is not simply a question of acquiring skills, because these skills are embedded in a culture of masculinity that is largely coterminous with the culture of technology…therefore to enter this world, to learn its language, women have to first forsake their femininity" (Wajcman, 2006, p.73)*

Form the observations made by Wajcman (2006) it is clear that, women in general have that stereotypical mind on the manipulation of Information and Communication Technology (ICT) to their male counterparts. It is also obvious that, women regard the learning and subsequent acquisitions of ICT skills as a difficult task to enable them perform their duties with ease and hence should be left for the men to do. It must also be understood from the findings of Wajcman (2006) that females of all categories and levels believe that, ICT skills is a language for the men and actually embedded in the culture of masculinity and therefore any attempt to force it on women would be a destruction to their feminist positions.

Sanda and Kurfi (2013) also reiterated that despite the much emphasis placed on the use of ICTs in Nigeria, women are usually underrepresented in terms of access and use of ICT. They also observed that though women play a pivotal role in the development of their societies, yet their impact has been silenced in this new technology due to lack of access and the necessary skills for the operation. From the findings of Sanda and Kurfi (2013), it can be seen that, the ICT facilities may necessarily be available for use but women may

consider that, they should be only accessed by their male counterparts. It is also indicative that women contribute immensely to the development of any areas of their lives but without the use of ICT, because they may be of the view that manipulating ICT and its language to perform these tasks is difficult.

Fenwick (2004) in Mahmood and Bokhari (2012) showed that gender inequity persists both in access to and experience of learning opportunities with ICT. The definitions of availability and access to information and communication technology are based on three factors: quality of services, accessibility and affordability (Verhoest & Cammaerts, 2001). In the words of Warschauer (2004), he defined access to information and communication technology in terms of physical access to ICT device. Dorup (2004) in his study of Danish medical undergraduates expounded that majority of the students had access to computers at homes. He further observed and added that males had more favourable attitudes toward computers than female students. Male students manifested their desire to change traditional learning methods with better ICT. This was confirmed by the study of Schumacher and Morahan (2001), when they found that females exhibited negative attitudes towards computers. They also discovered that females possessed less experience of computer usage than males.

There were also found prominent differences regarding computer literacy between males and females. Researchers (Clarke & Chambers, 1989; Ware &Stuck, 1985; Singh, 1995; Watson, 2001) made the observation that young children believed that ICT was the domain of males. Research consistently showed that boys were more likely to be engaged in extracurricular activities with computers, such as using a computer at home

and play computer games. It is also indicated that stereotypical male images found in computing magazines (Ware & Stuck, 1985) acted as deterrents for female involvement in technologies. Gender and ICT interact in complex ways but in the aggregate, females are much less likely to participate in ICT courses, careers and leadership (Withers, 2000). Fenwick (2004) also showed that gender inequity persists both in access to and experience of learning opportunities with ICT. It can be observed from the above studies and findings that, females are less likely to be involved into doing things that engage the dealings of information and communication technology, unlike their male counterparts. The researcher is dared by these findings to believe that, females in the light of this study may lack the creative minds to manipulate the ICT in differing on the administrative duties.

Ware and Stuck (1985) cited in Mahmood and Bokhari (2012) are of the opinion that stereotypical male images found in computing magazines acted as deterrents for female involvement in technologies. Similarly, Withers (2000) cited in Mahmood and Bokhari (2012) believes that gender and ICT interact in complex ways but in the aggregate, females are much less likely to participate in ICT courses, careers and leadership. This position in feminist technology studies has been challenged for placing the burden of change upon women (their socialization, aspirations, and values), instead of asking the broader questions of whether, and in what way, technology and its institutions could be reshaped to accommodate all genders (Wajcman, 2004). Findings from Huyer et al. (2005) indicate a complex relationship between the overall ICT penetration rates in a country and differences in these rates between women and men.

Based on statistical analysis conducted across numerous developing and developed countries, the report found that the "relationship between the gender divide and the overall digital divide is very tenuous and does not support the argument that the two move in tandem" (ibid., p. 145). The findings from the study of (Wajcman, 2004) seem to advocate for a fair playing fields for all genders for ICT manipulations in carrying out various tasks and responsibilities but that assertion was defeated by the findings of Huyer et al. (2005). When they found out that, the relationship between gender divide and digital divide cannot move in tandem and therefore unparalleled and very tenuous.

Gendered differences in ICT use have been described as "rooted in attitudes and perceptions about technology" (Tolbert, Mossberger, King, & Miller, 2007). For instance, women's time is a critical resource in short supply; therefore, any ICT solution aimed at improving the lives of women and increasing their empowerment and choice must be perceived by those women as a relevant and accessible means to enhance efficiency (for both productive and reproductive labour) rather than as an addition to their existing load of responsibilities (Hafkin & Taggart, 2001; Gurumurthy, 2003). Beyond the limited amount of leisure time many women have away from reproductive and productive tasks, they often lack the necessary mobility to visit public access Internet or telephone kiosks; this may be a symptom of cultural restrictions, safety precautions, or a range of other socio-economic factors (Hafkin & Taggart, 2001). According to Hafkin and Taggart (2001), women in developing countries find themselves in the deepest part of the digital divide, further removed from that experience by men whose poverty they share. They

claim that gendered factors such as income, time constraints, language, education, and cultural contexts affect women's access to facilities, training, and employment using.

Fomsi and Emeka (2017) conducted a study on the topic; "Gender differences in the use of ICT among teachers in model primary schools in Rivers State, Nigeria". The purpose of the study was to determine gender differences in the use of ICT among Teachers in Model Primary Schools in Rivers State, Nigeria. The main objectives of the study were; 1. Determine the extent of disparity between the male and female teachers in the model primary schools in Port Harcourt metropolis in the use of ICT. 2. To investigate the extent of disparity between the female teachers in Port Harcourt City Council and female teachers in Obio-Akpor Local Government Area in the use of ICT. The study employed the descriptive survey research design. The investigators used 25 functional model primary schools in each of the two local government areas under study. A sample size of 200 teachers was used for the study. Data was analysed using mean and independent t-test. The study found out that there is no significant difference between the mean scores of the male and female model primary school teachers in the use of information and communication technology.

The results of the analysis indicated no significant difference, t (198) = - 0.398, P > 0.05. The study also found out there is no significant difference between the mean scores of female model primary school teachers in Port Harcourt City Council and female teachers in Obio/Akpor Local Council in the use of ICT. The result of the analysis indicates no significant difference, t (198) = 0.430, P > 0.05. In line with the findings, it is concluded that there is

no gender disparity in the use of ICT among male and female teachers in the model primary schools in Rivers State, Nigeria. The researchers failed to state the total population from which a sample size of 200 was derived. They also failed to state categorically, the sample technique as well as the sample size determination table that aided them in arriving at the sample size used for the study.

Ayoade (2015) in a study determined the gender differences of the institutional administrators in Emmanuel Alayande College of Education, Oyo affect their attitude towards ICT usage and administrative effectiveness of College of Education Administration. The descriptive research design was employed for the study. The population consisted of all the Dean of Schools; Director of Academic Programmes/Service Units, Assistant Directors, Head of Service/Academic Department and School Officer in Emmanuel Alayande College of Education, Oyo, while the sample consisted of forty-five (45) institutional administrators randomly selected from all the category of the institutional administrators available in the college.

Four (4) respondents were selected from Dean of Schools, Director of Academic Programmes/Service Units and Assistant Directors respectively. Thirty (30) respondents were selected from Head of service/Academic Department while the remaining three (3) respondents were selected from the school officers making a total of forty-five (45) Institutional Administrators. Questionnaire was the main instrument for the study. Data was analyzed using t-test analysis at 0.05 level of significant. The result of the study indicated a significant relationship between ICT usage and administrative effectiveness of College of Education Administration. It was concluded that the gender of an

institutional administrator also has no bearing on his/her use of ICT facilities and effective College of Education Administration.

## Conceptual Framework

### The School Administrator's Roles Required for ICT Application

School principals have enormous responsibilities for initiating and implementing school changes through the use of Information and communications technology (Schiller, 2003). Numerous researches find effective leadership as key and crucial ingredient for the success of any innovation in education (Bennet & Hammond, 2002; Fullan, 2008). If one of our goals is to put technology in the hands of students, we must help the teachers gain the necessary access, understanding and confidence. Administrative leadership is one of the best ways to bring teachers to this level of proficiency (Fullan, 2008). There seemed to be an apparent consensus that in educational change literature, leadership is important but not confined to a single individual and this extends to leadership in education also.

Due to the huge potential ICT impact in education, factors that influence the successful integration in school are studied in depth. Fullan (2008) has also recognised leadership as an important element in educational change and school improvement. With the vast amount of accessible technologies, school administrators could solve a wide range of educational problems, learning goals can be identified succinctly ways can be determined by collaborating with others. A large range of student population could be catered for and a multitude of administrative task can be completed successfully (Office of Educational Technology [OET], 1995).

Becker (1994) contends that leadership is even more critical for the successful integration of ICT in school today than it was before. According to Hope and Stakenas (1999), there are three roles played by the school administrators namely the role model, instructional leader and visionary role. School administrators function as a role model when computer technology is applied to administrative and managerial tasks. As instructional leaders, they facilitate teachers' integration of computers in Teaching and Learning. In the form of a visionary role they envisage a context for technology in school and are able to comprehend how teaching can be restructured to empower teachers.

The limited number of researches on school administrators' relationship with computer technology obscures the abilities of the school administrator and their potentials and it impedes an assessment of the administrator's influence in achieving the promise of technology (Brockmeier, Sermon & Hope, 2005). Brockmeier et al. (2005) conclude in their study indicating that achieving the promise of computer technology requires school administrators with the vision and expertise. It is highlighted in various studies that school administrators need to achieve a threshold level of computer expertise before they are able to accomplish task and integrate computers successfully.

The analysis of the 1998 Teaching and Learning Computing survey of more than 800 schools by (Anderson & Dexter, 2005) conclude that, 'although technology infrastructure is important for educational technology to become an integral part of school, technology leadership is more necessary. According to Anderson and Dexter (2005) "technology leadership has greater leverage on desired outcomes than does technology infrastructure and expenditures and

further research in technology leadership is needed in the distributed research" (p.73). Once the role as technology leader is assumed, the school administrators have the crucial accountability for technology planning, financing, decision making, staff development and policy development and implementation (Gooden, 2006).

Information and communication technology has been used in education administration and management to support sustainable development. Packard and Higgins (2004) states that ICT applications are a piece of computer program which execute useful task for education, such as word processing, desktop publishing, running a database, creating a presentation or email program. The researcher in the current study classified the college administrators in the areas under study into three main administration groups that apply these ICT tools in their various day-to-day administration and management of the colleges of education in the Volta region. These are the administrative heads (Principal and the Vice Principals), Administrative tutors (all academic staff who perform other administrative roles) and the Administrative staff.

**Administration head**

Principals are seen as people who will spearhead the procurement and the necessary installation of all the ICT facilities for use by other staff in the colleges for delivering their administrative duties. This confirmed the position of the Singhi and Muniandi (2012) when they found out that heads of schools' function as role models when computer technology is applied to administration and managerial task. As instructional leaders, they facilitate the integration of computers in teaching and learning (Singhi & Muniandi, 2012).

Mwalongo (2012) found out that administrator in educational institution uses ICT application to prepare school announcements, reports, and letters for meetings with other stakeholders, for student registration and teacher and staff employment.

It is clear from the findings in the study conducted by Singhi and Muniandi (2012) and Mwalongo (2012) that the principals in schools must play the leadership roles to incite and motivate the end users of the ICT tools to enable increase work productivity. The success of every innovation in the colleges is largely dependent on the charismatic leadership roles manifested by the principals who are the administrative heads.

**Administrative tutors**

The administrative tutors in this case are the academic staff who by their other duties perform administrative functions. So, for the purposes of this research, they are the heads of departments, quality assurance officers, assessment officers, hall masters/wardens and dean of students and many others.

**Administrative staff**

The administrative staff in this study concerns the roles of the college secretary/registrar, college accountants, clerks, service unit providers (store keepers, matrons and librarians), estate officers among others. In the work of Ghavifekr, Afshari, Siraj and Seger (2013), found out that, ICT can be used by the administrative staff for doing their daily responsibilities faster and more accurate. This was further confirmed by Kawade (2012) and Kazi (2013) when they concluded that using ICT by educational administrators would help them

in recording financial documents such as audit reports, pay slip, balance sheets, non-salary grants and stock keeping as well as students' evaluation reports and records for future references. They also indicated that, administrative staff uses ICT tools to maintain communication, process documents and to collect data. By using ICT application for their work, the administrative staff can handle these duties effectively and efficiently (Kazi, 2012).

From the literature, school administrators and in this study colleges of education in the Volta Region can effectively and efficiently function when they are interconnected by ICT tools in the performance of their duties. The interrelationships that exist among activities to be performed with the use of ICT by the various administrative groups which result in either usage or non-use of facilities are shown in Figure 3

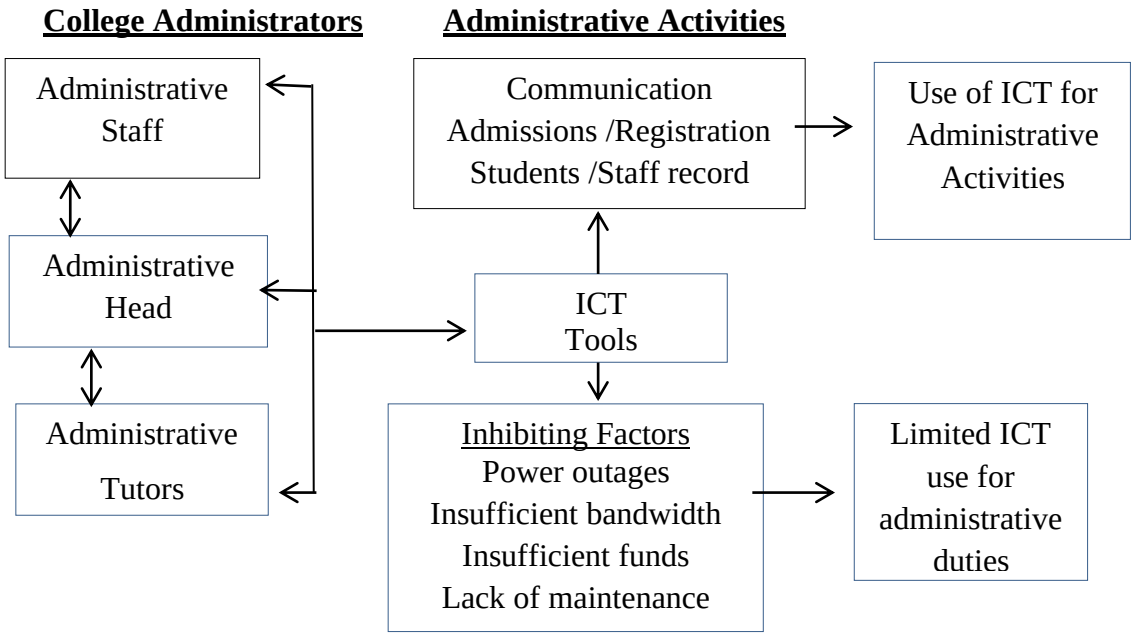


**Figure 3: Administrators Roles and ICT Use**

Source: Researcher's own construct (2018)

Figure 3 shows the central relationship in roles amongst the administrative head thus the principals and the delegated staff and tutors. These delegated staff are what the literature refers to as administrative staff (college secretary/registrar, account clerks among others) and the administrative tutors thus HODs, quality assurance officers, assessment officers among others (Ajayi, & Ekundayo, 2009; Mwalongo, 2012). Ultimately the roles of these classes of administrators could be effectively and efficiently performed through application of ICT (Maki, 2008). The arrows directions in the figure explains the relationship and the interdependence that exist among school head (principals) and assistant (vice principals), administrative staff and the administrative tutors as explained in the "Activity Theory" as it provides views to the interactions that take place among the various participants; school principals, administration staff and administration tutors in as far as ICT use in school administration are concerned. Also, the arrow pointing ICT tools at the centre of the figure establishes the fact that the roles or activities among the various school administrators could be performed effectively and efficiently by integrating and using ICT. However, inhibiting factors lead to limited used of ICT tools for administrative activities.

**Summary of Literature Review**

A review of the existing literature indicates that if ICT tools are available and integrated for administrative purposes which are compatible with other needs and ease to adopt, it is most likely to be used by college administrators for administrative duties. Again, the review shows that, school administrators use the ICT infrastructure available to do diverse administrative

duties like student and staff administration, general and financial administration, physical and institutional administration.

The review also states that, irregular power supply, cost of ICT infrastructure, inadequate on-the-job training for administrators sometimes lack of on-site technical support, lack of maintenance and inadequate number of available ICT tools are few underlying challenges militating against the successful integration and use of ICT infrastructure in school administration. The existing literature shows that, there are little or no gender differences that exist between male and female administrators in use of ICT tools for administrative duties in schools.

# CHAPTER THREE

# RESEARCH METHODS

## Introduction

The focus of this study was to examine the use of information and communication technology for administrative purposes by administrators in colleges of education in the Volta Region. This chapter has been developed to cover research procedures and methods for conducting the study. This included the research design, population, sample and sampling procedure, research instruments for the data collection, pre-testing of the research instruments, data collection procedures, validity and reliability of the research instrument, and how the data was processed and analysed.

## Research Design

Research design is defined as a plan or blueprint of how a researcher intends to conduct the research. Descriptive research design was used for the study. The main advantage of this type of design is that, it enables the researcher to assess the situation within the study area at the time of the study (Kothari, 2003). The study therefore sought to explore the current status with regards to the use of ICT for administrative purposes in the colleges of education in the Volta Region. Blumberg, Cooper and Schindler (2008) also state that a descriptive research design tries to discover the answers to the questions "what" and sometimes "which" of a phenomenon. The study sought to find out what activities the administrators use ICT tools for, in their administrative activities within the colleges of education in the Volta Region.

Gravetter and Forzano, (2006) stated that, descriptive research design is appropriate for conducting a study where it deals with the collection of data

concerning issues as they are currently. In this case, the researcher was interested in ascertaining the level of availability of ICT tools and whether they are being used to carry out their administrative duties in the colleges of education in the Volta Region. Again, this design offered the opportunity to describe issues concerning usage of ICT tools for administrative purposes in Colleges of Education. Gravetter and Forzano (2006) explained that a descriptive research design typically involves measuring a variable or a set of variables as they exist naturally. The researcher in the current study wanted to confirm the state in which the administrators use the available ICT tools for the purposes of their administrative duties in the colleges of education. Furthermore, Nwana (2012) argued that in descriptive research design, there is an accurate description of activities and this goes beyond mere fact-finding.

The researcher employed quantitative approach for the study because it relied on hypothesis testing and statistical analysis. The quantitative approach involved gathering of data about or from human subjects (Patton, 2002). In this study, colleges of education data were gathered from administrators on how ICT tools are used in administration. Also, the data was processed through the use of various statistical tools and inferences drawn from the results.

**Population of the Study**

The population of this study included all the administrators in the eight Colleges of Education in the Volta Region, namely; St. Teresa's, St. Francis, Peki, Akatsi, Amedzofe, Jasikan, Holy Spirit and Dambai Colleges of education. The administrators comprised all the college Principals, Vice Principals, Estate Officers, Secretaries, Account officers, procurement officer,

Heads of Academic Departments (HODs), Quality Assurance staff, Hall Masters, Service Units Providers (Matrons, storekeepers and Librarians), Assessment Officers and IT Technicians. Information obtained from field data indicated that, in all, there were 194 college administrators.

**Sampling Procedure**

One of the difficult issues investigators have to consider when designing a project concerns the type and number of respondents who will be included (Sarantakos, 1998). A sample as according to Wagenaar and Babbie (2004) affords the social scientist the capability of describing a larger population based on the selected portion of the population.

A simple random sampling (lottery method) was used to select five out of eight colleges of education in the Volta Region. The simple random sampling was used because all the colleges have the equal chance of being selected or studied. This was achieved by writing out the names of the colleges on pieces of paper which were folded and put into a basket. After thorough reshuffling, the researcher selected a piece of paper, recorded the name of the college until the required number of five colleges were obtained. That is, researcher applied sampling without replacement in selecting the five colleges. The administrators in the sampled colleges totalled 122.

The researcher believed the findings of the five colleges which formed about 75% is representative enough to generalise over the eight of them. The researcher put the college administrators into three categories; namely the administration staff which is made of the Account Officers, Office Clerks, College Secretaries, Procurement Officer, Service Unit Providers and the Estate Officers; the administration head making the Principals and the Vice

Principals; and also the administration tutors comprising the Assessment Officer, HODs, Hall Masters/Mistresses and the Quality Assurance Officer,

A census technique was used in getting the number of the respondents for the study. A census is a study of every unit, everyone or everything, in a population. It is known as a complete enumeration, which means a complete count (Sarantakos, 1998). A census sampling was used to gather data on all respondents because the researcher was interested in the experiences of the administrators' use of the ICT tools available in the colleges for their jobs and responsibilities in relation to the longevity of service. The census sampling was also used because the researcher considered the population not too large to investigate. All enumerated administrators in each of the colleges of education were used as the sample for the study. According to Cooper (1996), the census provides a true measure of the population, there is no sampling error, and also detailed information about small sub-groups within the population is more likely to be available.

**Table 1: Breakdown of the Sample in Each of the Colleges of Education**

| **Respondent** | **COLLEGES OF EDUCATION** | | | | | Total |
|---|---|---|---|---|---|---|
| | **St. Francis** | **St. Teresa** | **Peki** | **Holy Spirit** | **Akatsi** | |
| Administrative Head | SS | SS | SS | SS | SS | TSS |
| Principal | 1 | 1 | 1 | 1 | 1 | 5 |
| Vice Principal | 1 | 1 | 1 | 1 | 1 | 5 |
| Administrative Staff | | | | | | |
| Secretary | 1 | 1 | 1 | 1 | 1 | 5 |
| Account officers | 4 | 3 | 3 | 2 | 4 | 16 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Service Unit Providers | 3 | 1 | 3 | 3 | 4 | 14 |

**Table 1 continued**

| | | | | | | |
|---|---|---|---|---|---|---|
| Estate Officers | 1 | 1 | 1 | 1 | 1 | 5 |
| Administrative Tutors | | | | | | |
| HODs | 6 | 5 | 6 | 3 | 6 | 26 |
| Assessment Officer | 1 | 1 | 1 | 1 | 1 | 5 |
| Quality Assurance | 1 | 1 | 1 | 1 | 1 | 5 |
| Procurement Officer | 1 | 1 | 1 | 1 | 1 | 5 |
| Hall Masters | 6 | 4 | 4 | 2 | 6 | 22 |
| IT Technicians | 2 | 2 | 1 | 1 | 3 | 9 |
| Total | 28 | 22 | 24 | 18 | 30 | 122 |

Source: Field data, (2018) NOTE: SS= Sample Size, TSS= Total Sample Size

**Data Collection Instruments**

The researcher used two different instruments in collecting the data. Self-developed questionnaire, and an observation check list were the main research instruments for the study. The researcher considered questionnaire because it can be used to capture large amount of data while the observation checklist was used due to its abilities to capture information that would have otherwise not been captured by the questionnaire (Sarantakos, 1998).

**Questionnaire**

The researcher used closed-ended questionnaire (See Appendix A) to collect data from all the respondents. The instrument was chosen because the targeted population were considered literates which minimised the

interpretation of the questions for their understanding to capture reliable information.

The questionnaire was divided into four sections (A-D). Section A sought to find out the respondents' bio data and professional information which contained six (6) items like age, gender, educational qualification and others. Questions in section B were concerned with the availability of ICT tools for administrative purposes. It is a two-point Likert scale as available and not available as the options and contained thirteen (13) items and some of the items are personal computer/laptop, digital projector, photocopy machines, printers, intercom and others. Section C coverd the ways in which the administrators use ICT tools in rendering administrative duties with a four point Likert-type scale as strongly agree, agree, disagree and strongly disagree which also contained sixteen (16) items and some of the items in this section are; using ICT tools for student registrations/enrolment, using ICT tools for sending SMS messages to communicate with staff, using ICT tools for staff performance appraisal, using ICT tools for automation of attendance and leave management of staff members in the college and others. The final section D of the questionnaire dealt with the factors that inhibit administrators' use of ICTs for their administrative duties in the colleges of education. This section also has a four point Likert-type scale stating strongly agree, agree, disagree and strongly disagree and contained seventeen items of which some are; Inappropriate on-the-job ICT training for administrators, Irregular power supply hinders the use of ICT facilities where they are available, My knowledge about the use of ICT tools is inadequate and others.

**Observation Checklist**

Kumekpor (2002) has stated that "observation brings the investigator into contact with the phenomenon being studied". (p. 31). In this way, observation becomes an effective means of reporting precisely what prevails about the phenomenon with greater reliability. This observation checklist afforded the researcher the opportunity to witness the actual available ICT tools and their use in college administration in the study area. An observation checklist was prepared (See Appendix A) to cross check the items asked in the questionnaire on availability and use of ICT for administrative purposes in the colleges. The observation checklist was used to help answer research questions 1.

**Pretesting of Instruments**

The instruments were pretested in Jasikan College of Education, which did not participate in the actual study. Jasikan College was used for the pretesting because it shares similar characteristics and structures such as administrators' strength in delivering on education to its clients as those that were used in the study. The pretesting ensured clarity of the final instrument used for the actual data collection. The purpose of this pre-test was to check that the design of the instrument worked in practice, and to identify and amend ambiguous questions and assist to refine the instrument. Problems relating to the content, wording, layout, length and instructions which were uncovered in the pre-test enabled the researcher to do amendment accordingly.

**Validity and Reliability of Research Instrument**

According to Mugenda and Mugenda (2003), validity is the degree to which results obtained from the analysis of data actually represent the

phenomenon under study. A valid instrument should accurately measure what it is supposed to measure. After administering the instruments to the selected respondents, the data obtained should be a true reflection of the variables under study. Expert opinion from my supervisors and professionals well versed in research issues were used to check on the content validity of the instruments. Cronbach's alpha reliability coefficient was used to test the reliability of the instrument.

According to Frankael and Wallen (2003), the coefficient for items is high when its absolute value is greater than or equal 0.7. Therefore, a correlation coefficient of 0.7 should be considered high enough to determine the reliability of the instrument for the study. The Table 2 presents results of reliability coefficient from the pre-test.

Observation from Table 2, the Cronbach's Alpha coefficient of the items in the questionnaire is 0.706. The reliability coefficient of 0.706 means that 70.6% of the variability in the responses is due to true response differences among the respondents, while the remaining 29.4% (1 – 0.706) is due to measurement error.

According to George and Mallery (2003) and Kline (1999), the reliability coefficient greater than 0.70 it indicates a homogenous test. Therefore, the reliability coefficient of 0.706 obtained in this study confirmed that the questionnaires used in the study are within the acceptable benchmark of instrument being reliable.

**Table 2: The Reliability of the Items in the Questionnaire**

| Number of Respondents | Cronbach's Alpha | N of Items |
|---|---|---|
| 26 | .706 | 46 |

**Data Collection Procedure**

Data was collected from St Teresa's, St Francis, Holy Spirit, Akatsi and Peki colleges of education in the Volta Region. The aim of the research was discussed, after an introductory letter which was taken from the Institute for Educational Planning and Administration (IEPA) was issued to the management of the colleges to help get the needed assistance and cooperation from the participants. The researcher administered the instrument to the respondents by the help of an administrative staff in each of the colleges who spearheaded the completion of the questionnaire and also its collection as soon as the respondents answer them. This ensured a return rate of 89.3% percent from 109 respondents out of 122 questionnaires distributed to the respondents.

Based on the information that was obtained from the questionnaires, the researcher through the help of the observation checklist took time of about two (2) to three (3) days in each of the colleges to observe if the ICTs listed by the respondents were actually available and were being used for their administrative duties. The observation was done in the offices of the administrators of the five colleges of education in the Volta Region. The researcher first of all explain the rationale to carry out the observation exercise to the administrators in those selected offices to allow him witness what ICT tools are available and what duties they use them for per their assigned roles. The aim of the researcher adopting triangulation to validate data by using

observation checklist as second instrument of data collection was to equip him with another source of data to enable him compare data from the questionnaire to see if information given by the respondents were actually the situation on the ground.

**Ethical Considerations**

Ethics guiding the conduct of research was duly observed in the study. An introductory letter from the Institute for Educational Planning and Administration (IEPA) was issued to the principals of each college where the researcher was offered the permission to access the respondents to carry out the administration of the questionnaire on the administrators in the colleges. Respondents were guaranteed anonymity and confidentiality regarding the information that they provided. As a result, all respondents have agreed to participate in the research willingly devoid of compulsion and any deceit. References to other peoples' work were also made to avoid plagiarism. Furthermore, expert opinion from my supervisors and from others well versed in research issues helped to check on the content validity of the instruments.

**Data Processing and Analysis**

Data from the completed questionnaires was coded, described and statistically analysed and interpreted. The Statistical Package for Social Sciences (SPSS) version 21.0 was used. Percentages, frequency, mean and standard deviation, were used to analyse the data. Mean and standard deviation was employed to describe the use of ICT for administrative purposes by the administrators in the colleges. The mean of means and mean of standard deviations was generated and used to determine the unanimity or variation that exist in the levels of responses of administrators' use of ICT.

The means show the extent to which the use of ICT for administrative purposes while the standard deviation explains the extent to which the administrators' responses vary from each other. The SPSS was used due to its effectiveness and efficiency as an analytical tool for analysing even more complex data (Pallant, 2005). Due to the descriptive nature of the study, descriptive statistical tools would be employed for the presentation of the analysis. Also, inferential statistics, chi square was used to analyse the data to answer the hypothesis one. The responses were tabulated using percentages, frequencies, means and standard deviations for discussion.

Table 3 gives the details of the tools used for the analysis of the data for each research question.

**Table 3: Tools for Analysing the Data for Each of the Research Questions**

| Research Question | Type of data gathered | Statistical tools |
|---|---|---|
| RQ 1 | Quantitative | Percentages, frequencies, mean & standard deviation. |
| RQ 2 | Quantitative | Percentages, frequencies, mean & standard deviation. |
| RQ 3 | Quantitative | Percentages, frequencies, mean and standard deviation |
| Hypothesis 1 | Quantitative | Chi square |

**Summary of the Research Methods**

The descriptive research design was used for the study. The main advantage of this type of design is that, it enables the researchers to assess the situation within the study area at the time of the study. The study also looked at colleges of education administrators as the population, Self-developed

questionnaire, and an observation check list were the main research instruments for the study. The instruments for the study were pretested at Jasikan College of Education to ensured clarity of the final instrument used for the actual data collection. As research intention was discussed, after an introductory letter was issued to the management to help get the needed assistance and cooperation from the participants, data was collected from all the research areas. The Statistical Package for Social Sciences (SPSS) version 21.0 was used for the coding and analysis of the completed questionnaire, percentages, frequency, mean and standard deviation were the statistical tools used to analyse the data.

# CHAPTER FOUR

# RESULT AND DISCUSSION

## Introduction

This chapter deals with the analysis and discussions of the data collected from the field. The purpose of the study was to determine the use of ICT for administrative purposes by administrators in the colleges of education in the Volta Region. The chapter is divided into two sections. The first section deals with discussion of the data in response to the research questions. The second section focuses on the background information of the respondents.

As indicated in the previous chapter, a questionnaire was deployed to gather data from the respondents who comprised administrators of colleges of education in the Volta Region. A total of 109 respondents completed the questionnaire out of 122 questionnaires that were distributed representing 89.3% percent retrieval rate. The results of data analysed are presented by research questions.

## Main Discussions

This section focuses on the discussion of the data from the field to address the research questions that were formulated to guide the study. Frequencies and percentages were used in analysing research question one. Mean of means and standard deviation were employed in analysing the other research questions. The four-point Likert type scale questionnaire that was administered was analysed using mean of means and standard deviations. From the analysis, a mean value of 3.50 - 4.0 showed that the respondent strongly agreed to the statement, a mean value of 2.5 - 3.49 showed that the respondents agreed with the statement, a mean value of 1.5 - 2.49 showed that

the respondents disagreed with the statement and a mean value of 1.0 - 1.49 showed that the respondents strongly disagreed with the statement.

**Table 4: Decision Rule for Data Analysis**

| Range | Decision |
|---|---|
| **1.0≤ x ≤ 1.49** | Strongly Disagree |
| **1.5≤ x ≤ 2.49** | Disagree |
| **2.5≤ x ≤ 3.49** | Agree |
| **3.5≤ x ≤ 4.0** | Strongly Agree |

NB: x means ”mean score”

**Research Question One**

**What are the available ICT tools used for administrative purposes in Colleges of Education?**

Research question one sought to find out the available ICT tools for administrative purposes by administrators in Colleges of Education and whether or not these facilities are functional and being used is also considered under this research question. Percentages are used to analyse the responses. The results are presented in Table 5.

**Table 5: Available ICT Tools in Colleges of Education in Ghana**

| Available ICT Tools | Available | | Not Available | |
|---|---|---|---|---|
| | N | % | N | % |
| Personal computer/laptop | 98 | 89.9 | 11 | 10.1 |
| Internet facility | 89 | 81.7 | 20 | 18.3 |
| Mobile phones | 91 | 83.5 | 18 | 16.5 |
| Digital projector | 68 | 62.4 | 41 | 37.6 |
| External storage device (eg, pen drive) | 95 | 87.2 | 14 | 12.8 |
| Printer | 103 | 94.5 | 6 | 5.5 |
| Scanner | 61 | 56.0 | 48 | 44.0 |

**Table 5 continued**

| | | | | |
|---|---|---|---|---|
| Photocopy machine | 97 | 89.0 | 12 | 11.0 |
| CCTV camera | 1 | 0.9 | 108 | 99.1 |
| Interacting teaching box | 10 | 9.2 | 99 | 90.8 |
| Router | 50 | 45.9 | 59 | 54.1 |
| Intercom | 3 | 2.8 | 106 | 97.2 |
| Fax machine | 4 | 3.7 | 105 | 96.3 |

Source: Field survey, Duvor (2018).

Table 5 shows the results of the responses of the administrators on the availability of ICT tools for administrative duties in Colleges of Education in the Volta region. The results show that, the ICT tools that most respondents indicated to be available for administrative duties in the colleges of education were personal computers/laptop 98(89.9%), internet facilities 89(81.7%), digital projector 68(62.4%), printers 103(94.5%) and photocopy machines 97(89.0%). The results from Table 5 on ICT tools availability for administrative duties by the administrators in the colleges of education in the Volta region confirmed the statement that, "Each year, upgraded systems and numerous information and communication technology machines are developed" (Singh & Muniandi, 2012); these new systems and ICT machines provide new opportunities specifically in the administration and management of education in order to ensure that management processes operate in an easier, faster and cheaper way. By this, it is clear that there are some ICT applications that have supported numerous institutional administrative and management activities, for example, computers, projectors, scanners, multimedia projectors and filming, digital cameras, photocopiers, radio and TVs, laptops and others (Kawade, 2012). It is also in line with the conclusion

drawn from the study of Matovu (2009), who studied on the levels of availability of ICT for examination management in Makerere University and found out that, ICT facilities such as computers, Management Information Systems and internet were the most commonly used for examination management.

However, it can be seen from the Table 5 that, majority of the respondents stated that CCTV camera 108(99.1%), Intercom 106(97.2%) and Fax machines 105(96.3%) are in little quantity for their administrative duties in the colleges of education. Also, with 59(54.1%) more than half the respondents from the Table 5 have indicated that, routers which serve as wireless connectivity for internet access were not available for use in the colleges whilst almost half the respondents agreed that scanners were not available with 48(44.0%).

From the responses of the administrators on the availability of ICT tools in Colleges of Education in the Volta region, it can be concluded that ICT tools such as; personal computer/laptop, internet facility, mobile phones, digital projector, external storage device, printer, scanner and photocopy machines were available for administrative duties in the Colleges of Education. But the respondents also said indicated that, CCTV camera, router, intercom and fax machine were available although in a very minimal quantity. According to technology acceptance model (TAM), the external variable (access to ICT tools) and performance expectancy in unified theory of acceptance and use of technology (UTAUT) feed into behavioural intention and subsequently the use behaviour/actual use.

In order to further crosscheck and to confirm the responses of the respondents on the availability of ICT tools in the all the Colleges of Education in the Volta region under study, an observation checklist was employed for triangulation. The results are presented in Table 6 to Table 10.

**Table 6: Observation of Availability and Location of ICT Tools in St Francis College of Education.**

| ICT Tools | Location of ICT Tools in St Francis | | | | | |
|---|---|---|---|---|---|---|
| | GO No. | SCR No | ICT Lab No | PO No | OTSch No | Total No |
| Personal Computer/Lab Top | 2 | 0 | 1 | 1 | 4 | 8 |
| Telephone | 1 | 0 | 0 | 1 | 0 | 2 |
| Digital Projector | 1 | 1 | 1 | 0 | 0 | 3 |
| External Storage Device | 2 | 0 | 1 | 1 | 0 | 4 |
| Printer | 2 | 0 | 1 | 1 | 0 | 4 |
| Scanner | 1 | 0 | 1 | 1 | 0 | 3 |
| Photocopy Machine | 1 | 0 | 0 | 1 | 0 | 2 |
| Intercom | 2 | 0 | 1 | 1 | 0 | 4 |

Source: Field Data, Duvor (2018).
Key: GO-General Office, SCR-Staff Common Room, ICT Lab- ICT Laboratory, PO-Principal's Office, OTSch-Out of School.

From the observation checklist in Table 6, it is shown that two (2) and one (1) each of the personal computers/laptops were available to the administrators in the college and these could be found in the general office and ICT Lab and the Principal office respectively. It is worthy to note however from the observation that, four of the personal computers/laptops used for administrative duties are owned by some of the administrators themselves which is denoted out of school. The researcher enquired to know why they use their personal properties for official duties, and was told by the respondents who owned these ICT tool themselves that, "they (respondents) always work on their school assigned duties outside of school hours so the preference for personal laptops to enable them work anywhere". Another reason was that, some of these administrators do not have personal offices assigned them so the

general office becomes the only office space to be accessed for these facilities. But according to them, they do not like the idea of going to the general office to do every bit of assignment hence their own laptops.

Again, with regard to printers and photocopy machines, it was observed that, these ICT tools are available for use by the college administrators where one (1) each was located in the general office since it becomes the office space available and accessible to all kind of administrators. This observation confirmed the situation shown in Table 5 where indeed 94% and 89% of the respondents indicated that, printers and photocopy machines respectively are available for use for administrative purposes in the colleges. But the researcher observed that, internet facilities were available to administrators for use but can only be accessed within some radius around the main college administration block.

**Table 7: Observation of Availability and Location of ICT Tools in St Teresa's College of Education**

| ICT Tools | Location of ICT Tools in St Teresa's | | | | | |
|---|---|---|---|---|---|---|
| | GO No | SCR No | ICT Lab No | PO No | OTSch No | Total No |
| Personal Computer/Lab Top | 2 | 0 | 1 | 1 | 5 | 9 |
| Telephone | 1 | 0 | 0 | 1 | 0 | 2 |
| Digital Projector | 1 | 0 | 1 | 0 | 0 | 2 |
| External Storage Device | 1 | 0 | 2 | 1 | 0 | 4 |
| Printer | 2 | 0 | 1 | 1 | 0 | 4 |
| Scanner | 1 | 0 | 1 | 1 | 0 | 3 |
| Photocopy Machine | 1 | 0 | 0 | 1 | 0 | 3 |
| Intercom | 1 | 0 | 1 | 1 | 0 | 3 |

Source: Field Data, Duvor (2018).

Key: GO-General Office, SCR-Staff Common Room, ICT Lab- ICT Laboratory, PO-Principal's Office, OTSch-Out of School.

From the observation checklist as depicted in Table 7, it is clear that two (2) out of nine (9) personal computers/laptops and could be these could be found in the general office and one (1) each were available to the

administrators in the college and it could be found in the ICT Lab and the Principal office respectively. It is worthy to note however from the observation that, five (5) out of nine (9) personal computers/laptops used for administrative duties are owned by some of the administrators themselves which is denoted out of school. The researcher enquired to know why that arrangement and was told by the respondents who owned these ICT tool themselves that, they (respondents) always work on their school assigned duties outside of school hours so the preference for personal laptops to enable them work anywhere.

Another reason was that, some of these administrators do not have personal offices assigned them so the general office becomes the only office space to be accessed for these facilities. But according to them, they do not like the idea of going to the general office to do every bit of assignment hence their own laptops. This observation corroborates the finding in Table 5 where 89% of the respondents indicate that, personal computers/laptops were available for use in the college.

**Table 8: Observation of Availability and Location of ICT Tools in Peki College of Education.**

| ICT Tools | Location of ICT Tools | | | | | |
|---|---|---|---|---|---|---|
| | GO No | SCR No | ICT Lab No | PO No. | OTSch No. | Total No |
| Personal Computer/Lab Top | 2 | 0 | 1 | 1 | 5 | 9 |
| Telephone | 1 | 0 | 0 | 1 | 1 | 2 |
| Digital Projector | 1 | 1 | 1 | 0 | 0 | 3 |
| External Storage Device | 2 | 0 | 1 | 1 | 0 | 4 |
| Printer | 2 | 0 | 1 | 1 | 0 | 4 |
| Scanner | 1 | 0 | 1 | 1 | 0 | 3 |
| Photocopy Machine | 2 | 0 | 0 | 1 | 0 | 3 |
| Intercom | 1 | 0 | 1 | 1 | 0 | 3 |

Source: Field Data, Duvor (2018).
Key: GO-General Office, SCR-Staff Common Room, ICT Lab- ICT Laboratory, PO-Principal's Office, OTSch-Out of School.

The observation checklist as shown in Table 8 indicates that, nine (9) personal computers/laptops are available for use by the administrators for administrative purposes. However, five (5) of these tools are owned by the specific administrators themselves which is denoted out of school (OTSch). This category of administrators who owned these tools by themselves said it is so because they want to avoid the inconvenience of going to the general office where all other ICT tools could be located for their administrative duties to undertake every bit of their work. Another reason adduced was also the quest and the desire to work on school matters even out of school hours hence the need to get a portable tool like the laptops to work with anywhere they are. Also, two (2) and one (1) each could be found in the general office and the ICT Lab and Principal's office respectively. Intercom and photocopy machine are also available.

**Table 9: Observation of Availability and Location of ICT Tools in Holy Spirit College of Education.**

| ICT Tools | Location of ICT Tools | | | | | |
|---|---|---|---|---|---|---|
| | GO No | SCR No | ICT Lab No | PO No | OTSch No | Total No |
| Personal Computer/Lab Top | 1 | 0 | 1 | 1 | 2 | 5 |
| Telephone | 1 | 0 | 0 | 1 | 0 | 1 |
| Digital Projector | 1 | 0 | 0 | 0 | 0 | 1 |
| External Storage Device | 1 | 0 | 0 | 0 | 0 | 1 |
| Printer | 1 | 0 | 0 | 1 | 0 | 2 |
| Scanner | 0 | 0 | 0 | 0 | 0 | 0 |
| Photocopy Machine | 1 | 0 | 0 | 0 | 0 | 1 |
| Intercom | 1 | 0 | 0 | 1 | 0 | 2 |

Source: Field Data, Duvor (2018).

Key: GO-General Office, SCR-Staff Common Room, ICT Lab- ICT Laboratory, PO-Principal's Office, OTSch-Out of School.

From Table 9, it is indicated that, administrators have moderate number of personal computers/laptops and the printers located both in the

general and the principal's offices to work with. Unfortunately, however the Holy Spirit College of Education cannot boost of a scanner for its administrative duties. The researcher also observed that, Holy Spirit College of Education is a relatively young college which could not boost of many facilities as do others have.

**Table 10: Observation of Availability and Location of ICT Tools in Akatsi College of Education**

| ICT Tools | Location of ICT Tools | | | | | |
|---|---|---|---|---|---|---|
| | GO No | SCR No | ICT Lab No. | PO No | OTSch No. | Total No |
| Personal Computer/Lab Top | 2 | 0 | 1 | 1 | 6 | 10 |
| Telephone | 1 | 0 | 1 | 1 | 0 | 3 |
| Digital Projector | 1 | 0 | 1 | 0 | 0 | 2 |
| External Storage Device | 1 | 0 | 2 | 1 | 0 | 4 |
| Printer | 2 | 0 | 1 | 1 | 0 | 4 |
| Scanner | 1 | 0 | 0 | 1 | 0 | 2 |
| Photocopy Machine | 1 | 0 | 0 | 1 | 0 | 2 |
| Intercom | 1 | 0 | 1 | 1 | 0 | 3 |

Source: Field Data, Duvor (2018).

Key: GO-General Office, SCR-Staff Common Room, ICT Lab- ICT Laboratory, PO-Principal's Office, OTSch-Out of School.

From Table 10, it is shown that there are ten (10) personal computers/laptops of which six are owned by the administrators themselves denoted as out of school (OTSch) are available and accessible to the administrators in the college and could be found in the general office. From the Table 10, Akatsi College of Education could also boast of photocopy machine, printers and intercom of which two, four and three respectively are available for use by the college administrators. These of course are found and located in the general and the principal's offices. This observation confirmed the situation shown in the Table 5 where indeed 94% and 89% of the respondents indicated that, printers and photocopy machines respectively are available for use for administrative purposes in the college. Although Table 5

showed that 81.7% of the respondents indicated that, internet facilities are available to be used by the administrators for administrative duties but only limited to a certain radius at the administration block.

From the analysis based on the availability and locations, it can also be concluded therefore that, although ICTs are available in the colleges of education in the Volta Region for administrative duties, some of these facilities like personal laptops and external storage devices are owned by the administrators themselves. Most of those that are available to the college administrators are found in the general office and ICT laboratories since these office spaces are accessible to all categories of administrators in the colleges.

**Research Question Two**

**In what ways do administrators use ICT tools in rendering administrative duties in the Colleges of Education?**

Research question two sought to find out the ways in which administrators use ICT tools in rendering administrative duties in the Colleges of Education. It also sought to investigate the particular manner in which the available ICT tools are being used for the administration of the colleges. Means and standard deviations are used to analyse the responses. The results of Table 11 show how the administrators perform their administrative tasks with the use of ICT tools.

*As indicated earlier, the decision Rule for the data analysis/Mean ranking is*

4.0 – 3.50=strongly agreed to the statement

3.49 – 2.50 =agreed with the statement

2.49 – 1.50=disagreed with the statement

1.49 - 1.0=strongly disagreed with the statement

**Table 11: Ways in Which Administrators Use ICT Tools in Rendering Administrative Duties**

| Statements: Uses of ICT tools; | Mean | SD |
|---|---|---|
| For sending SMS messages to communicate with staff | 3.19 | 0.76 |
| To keep personal data on students and staff | 3.11 | 0.83 |
| For student registrations/enrolment. | 2.86 | 1.02 |
| To send email messages to other stakeholders for official works | 2.79 | 0.96 |
| To communicate academic details to students | 2.63 | 0.88 |
| For admission of students | 2.62 | 1.04 |
| To take inventory on behalf of the college | 2.55 | 1.02 |
| For staff performance appraisal | 2.52 | 0.96 |
| To prepare electronic form of timetable/class schedule | 2.47 | 1.03 |
| To prepare annual budget for the college | 2.45 | 1.04 |
| For dissemination of official matters in the institution (e-circular) | 2.41 | 0.77 |
| To make/design things on the computer (like posters, invites, etc) | 2.32 | 0.99 |
| For scheduling/allocation of halls for examination | 2.18 | 0.88 |
| For the processing and dissemination of students' results through e-media | 2.15 | 0.80 |
| For automation of attendance and leave management of staff members in the college | 2.12 | 0.83 |
| To advertise vacant positions | 1.82 | 0.80 |
| To design website | 1.78 | 0.94 |
| For purchase of food items for the college on the Internet | 1.76 | 0.82 |
| Mean of Means/Average Standard Deviation | 2.43 | 0.54 |

Source: Field survey, Duvor (2018).

It can be seen from Table 11 that, majority of the respondents agreed that, they use ICT tools available in the colleges for sending SMS messages to communicate with staff (M=3.19; SD=0.76), to keep personal data on students and staff (M=3.11; SD=0.83), for student registrations and enrolment (M=2.86; SD=1.02), to send email messages to other stakeholders for official

works (M=2.79; SD=0.96), and for staff performance appraisal (M=2.52; SD=0.96). In accordance to the findings made from Table11, Mutagahywa (2012) in her paper "The Role of ICT in University Governance in Tanzania" studied about the governance activities using ICT in universities of Tanzania. She revealed in her paper that the Universities are using ICT for student admission and records, tests/examination results and transcripts, human and financial resources and management of various assets. From the conceptual framework in Figure 3, p.82 it is realised that, all the categories of administrators in the colleges of education use ICT tools for communication, admission and registration of students, keeping of staff and students records and other ways which translate into effective use of ICT tools for administrative activities. From the conceptual framework shown in Figure 3, one could see that ICT tools were used for administrative purposes such as communication, admission/registration and staff/students' records. Also in unified theory of acceptance and use of technology (UTAUT), one's actual use of ICT systems is determined by the performance expectancy and effort expectancy.

Maki (2008) stipulates that ICT plays a vital role in supporting powerful, efficient management and administration in the education sector: technology can be used from student administration (i.e., students' record) to various resource administrations in an education institution. Significantly the findings of Krishnaveni and Meenakumari, (2010) on the topic "Usage of ICT for Information Administration in Higher education Institutions" where they have identified a comprehensive set of functional areas of Information administration where ICT could be used for higher educational administration

also buttress the findings made from Table 11 that computers can be used extensively for General Administration, Pay Roll and Financial Accounting; Administration of Student Data, Inventory Management; Personnel Records Maintenance, Library System.

However the Table 11 shows that a sizeable number of the respondents disagreed that the ICT tools available are used for processing and dissemination of students' results through e-media (M=2.15; SD=0.80), for automation of attendance and leave management of staff members in the college (M=2.12; SD=0.83), they also disagree that it is used to advertise vacant positions (M=1.82; SD=0.80) and for dissemination of official matters in the institution (e-circular) (M=2.41; SD=0.77). These findings corroborate that of Adebi-Ceasar (2012) where he revealed that a majority of school heads were ill equipped to effectively integrate ICT in school administration. This situation may be possible as shown in Table 11 where many of the respondents disagreed using ICT tools available in the colleges for their administrative duties such as automation of attendance and leave management of staff members in the college, advertise vacant positions and for dissemination of official matters in the institution; it is possible that many of these college administrators may not be well informed on how to manipulate these facilities for full integration into the college administration.

The research question two sought to find out the ways college administrators use ICT facilities available to them for their administrative duties. From the responses of the respondents, it can be concluded that the administrators in most cases use ICT tools available for sending SMS messages to communicate with staff, for student registrations and enrolment.

In other words, the respondents also revealed that, processing and dissemination of students' results through e-media, advertise vacant positions are few administrative functions administrators in the colleges of education in the Volta region disagree using ICT tools to do.

**Research Question Three**

**Which factors inhibit administrators' use of ICT tools in the Colleges of Education?**

Research question three sought to determine the factors that inhibit administrators' use of ICT tools in the Colleges of Education. Means and standards deviation were used to analyse the responses. The results are displayed in Table 12.

**Table 12: Factors That Inhibit Administrators' Use of ICT Tools in the Colleges of Education**

| Statements | Mean | SD |
|---|---|---|
| Insufficient bandwidth or speed | 3.36 | 0.76 |
| Insufficient funds hinder college integration of ICT tools into administrative activities | 3.34 | 0.75 |
| Insufficient number of internet-connected computers | 3.28 | 0.79 |
| Irregular power supply hinders the use of ICT facilities where they are available. | 3.20 | 0.86 |
| Lack of maintenance and repairs of ICT facilities is a constraint to utilization of ICT in the college | 3.06 | 0.87 |
| There are inadequate ICT tools to render administrative work | 3.01 | 0.86 |
| Insufficient computer availability | 2.98 | 0.92 |
| Inappropriate on-the-job ICT training for administrators | 2.92 | 0.76 |
| Inadequacy of on-site technical support for administrators using technology for their works | 2.91 | 0.81 |
| The cost of purchasing computers is high for schools. | 2.61 | 0.71 |
| ICT tools are not accessible for use for administrative duties | 2.49 | 0.99 |

**Table 12 continued**

| Statements | Mean | SD |
|---|---|---|
| Insufficient experience in working with ICT tools | 2.41 | 0.87 |
| My knowledge about the use of ICT tools is inadequate | 2.26 | 0.91 |
| Inadequacy of confidence to use ICT tools | 2.23 | 0.82 |
| There is no motivation and interest in using ICTs for my work | 2.09 | 0.66 |
| Authorities of the college do not have interest in the use of ICT tools in the administrative purpose | 1.93 | 0.60 |
| The use of ICT tools for administrative duties is time consuming | 1.74 | 0.69 |
| Mean of Means/Average Standard Deviation | 2.69 | 0.38 |

Source: Field survey, Duvor (2018).

Table 8 shows the results of the respondents on the factors that inhibit administrators' use of ICT tools for administrative duties in the Colleges of Education. The results show that majority of the administrators agreed that their inability to use the ICT tools available in the Colleges of Education was Insufficient number of internet-connected computers (M= 3.28; SD= 0.79), Lack of maintenance and repairs of ICT facilities is a constraint to utilization of ICT in the college (M= 3.06; SD= 0.87), Inadequacy of on-site technical support for administrators using technology for their works (M= 2.91; SD= 0.81), Irregular power supply hinders the use of ICT facilities where they are available (M=3.20; SD= 0.86), cost of purchasing computers is high for schools (M= 2.61; SD= 0.71) and of course the respondents also said that there are inadequate ICT tools to render administrative work (M=3.01; SD= 0.86). These findings corroborate that of the Association of African Universities [AAU] (2014), where they found out that, the low utilisation of ICT in Africa is attributable, partly to high cost of bandwidth, inadequate expertise in ICT, and the related costs of software and hardware.

These observations are equally in consonance with other findings which revealed the same deficits to the use of ICT tools for administrative duties by school administrators. For instance, studies within the 1990s investigated why educators fail to use computers in teaching and running of school affairs (Rosen & Weil, 1995; Winnans & Brown, 1992; Dupagne & Krendl, 1992; Hadley & Sheingold, 1993). Not surprising these researches found a list of inhibitors which include; lack of computer availability, limited accessibility to ICTs, lack of experience teaching/working with ICT, lack of on-site support for administrators/teachers using technology, lack of ICT specialist teachers to teach staff, teachers and students computers skills, lack of time required to successfully integrate technology into the curriculum, lack of financial support. The findings also agree with that of Rodden (2010) where he found out that inconsistent number of computers to students and educators, a deficit in maintenance and technical assistance and finally, a lack of computers skills and/or knowledge among educators are notable constraints to the use of ICT tools in school administration.

The findings made from Table 12 also buttressed the position of Bosu (2015) where she said that, high cost of equipment, maintenance and replacement and high cost of electricity are challenges institutions face with the integration of ICT. The position of Adeyemi and Olaleye (2010) reinforced the findings further when they concluded in their work that, lack of expertise on the use of ICT, intermittent disruption of electricity and that of funding are major problems inhibiting the usage of ICT equipment and facilities for the effective management of schools. From the conceptual framework in Figure 3, it is realised that, all the categories of administrators in the colleges of

education sometimes find it difficult to use ICT tools because of multiple factors such as power outages, insufficient bandwidth, lack of maintenance, insufficient funds and many others which translate into limited use of ICT tools for administrative activities.

On the contrary however, some of the respondents disagreed with some of the factors inhibiting the use of ICT tools for administrative duties. The respondents disagree that, the mean score of (M= 2.49; SD= 0.99) indicating that ICT tools are not accessible for use for administrative duties. Also the respondents totally disagreed that insufficient experience in working with ICT tools is a factor (M= 2.41; SD= 0.87), inadequate knowledge about the use of ICT tools (M=2.26; SD=0.91), and of course the use of ICT tools for administrative duties is time consuming (M=1.74; SD=0.69), These findings contrast to the position of Singh and Muniandi (2012) when they found out that the mere availability of computers, internet and other ICT equipment does not imply the use of this equipment.

The overall mean and standard deviation values for responses of the administrators on the factors inhibit their use of ICT tools in the Colleges of Education rated (M=2.69; SD=0.38). This gives the implication that the administrators were faced with challenges in using ICT tools in the colleges of education. By implication, it is being observed that the respondents are of the view; it is not that they could not use the ICT tools to perform these respective administrative functions but because the tools meant to be used are just not sufficient and/or available. Even few that are available were not in good shape and not functioning well.

Research question three sought to ascertain the factors militating against the successful utilisation of ICT tools for administrative duties in the colleges. Results in Table 12 indicate that administrators face a number of challenges. They face challenges like the insufficient number of internet-connected computers and inadequacy of on-site technical support for administrators using technology for their works.

From the conceptual framework in Figure 3, p.82 the inhibiting factors militating against the college administrator's ICT use for administrative duties which are also seen in Table 12 result in limited ICT use. Also facilitating conditions in UTAUT and external variables such as availability of ICT tools, reliable power supply according to TAM would directly or indirectly influence greatly the actual use or non-use of ICT tools for administrative work in the colleges of education as shown in Figure 1 and 2. (pp. 23, 26)

**Hypothesis**

There is no significant difference between male and female administrators' view on the ways ICT tools are used to render administrative duties in the College of Education

To determine the difference between male and female administrators on the ways ICT tools are used to render administrative duties in the College of Education, Chi-Square is used to analyse the responses obtained and Cramer's value to determine the strength difference that exist. Table 13 presents the obtained results of the differences.

**Table 13: Chi-Square Analysis on difference between male and female administrators on the ways ICT tools are used to render administrative duties in the College of Education**

| Gender | N | $\chi^2$ | df | P-value | Cramer's V |
|---|---|---|---|---|---|
| sending SMS messages to communicate with staff | | | | | |
| Male | 74 | 1.335 | 3 | 0.248 | 0.278 |
| Female | 35 | | | | |
| keep personal data on students and staff | | | | | |
| Male | 74 | 0.094 | 3 | 0.759 | 0.161 |
| Female | 35 | | | | |
| use ICT tools for student registrations/enrolment | | | | | |
| Male | 74 | 1.826 | 3 | 0.177 | 0.302 |
| Female | 35 | | | | |
| to send email messages to other stakeholders for official works | | | | | |
| Male | 74 | 0.118 | 3 | 0.731 | 0.057 |
| Female | 35 | | | | |
| to communicate academic details to students | | | | | |
| Male | 74 | 10.731 | 3 | 0.001 | 0.328 |
| Female | 35 | | | | |
| for admission of students | | | | | |
| Male | 74 | 0.162 | 3 | 0.667 | 0.251 |
| Female | 35 | | | | |
| to take inventory on behalf of the college | | | | | |
| Male | 74 | 0.686 | 3 | 0.407 | 0.174 |
| Female | 35 | | | | |
| for staff performance appraisal | | | | | |
| Male | 74 | 3.675 | 3 | 0.50 | 0.196 |
| Female | 35 | | | | |
| tools to prepare electronic form of timetable/class schedule | | | | | |
| Male | 74 | 12.395 | 3 | 0.000 | 0.349 |
| Female | 35 | | | | |
| to prepare annual budget for the college | | | | | |
| Male | 74 | 6.766 | 3 | 0.009 | 0.277 |
| Female | 35 | | | | |
| for dissemination of official matters in the institution (e-circular) | | | | | |
| Male | 74 | 2.787 | 3 | 0.095 | 0.191 |
| Female | 35 | | | | |
| to make/design things on the computer (like posters, invites, etc) | | | | | |
| Male | 74 | 0.994 | 3 | 0.319 | 0.104 |

**Table 13 continued**

| Gender | N | $\chi^2$ | df | P-value | Cramer's V |
|---|---|---|---|---|---|
| Female | 35 | | | | |
| for scheduling/allocation of halls for examination | | | | | |
| Male | 73 | 7.454 | 3 | 0.006 | 0.280 |
| Female | 35 | | | | |
| for the processing and dissemination of students' results through e-media | | | | | |
| Male | 74 | 2.785 | 3 | 0.095 | 0.172 |
| Female | 35 | | | | |
| tools for automation of attendance and leave management of staff members in the college | | | | | |
| Male | 74 | 0.225 | 3 | 0.636 | 0.166 |
| Female | 35 | | | | |
| to advertise vacant positions | | | | | |
| Male | 74 | 0.015 | 3 | 0.903 | 0.246 |
| Female | 35 | | | | |
| to design website | | | | | |
| Male | 74 | 0.454 | 3 | 0.500 | 0.109 |
| Female | 35 | | | | |
| to shop for food items for the college on the internet | | | | | |
| Male | 74 | 0.006 | 3 | 0.936 | 0.238 |
| Female | 35 | | | | |

Source: Field survey, Duvor (2018). Significant level, $p<0.05$

Strength of the significance difference Cramer's V value

Under 0 .1 is Very weak
0.10 - 0.19 is Weak
0.20 - 0.29 is Moderate
0.30 and over is Strong

Adopted from Corbett (2001)

Table 13 shows the results on the difference between male and female administrators on the ways ICT tools are used to render administrative duties in the College of Education. From the results in Table 13, it shows that there were no statistically significant differences between male and female administrators' ways of using ICT tools for sending SMS messages to communicate with staff $\chi^2(3, N=109)=1.335$, $p= 0.248$ which is more than $\alpha=0.05$ significant level. Also one can observe from the Table 13 that, there was no statistically significant differences existing between male and female administrators' ways of using ICT tools for keeping personal data on students

and staff $\chi^2(3, N=109)=0.094$, p= 0.759 and for student registrations/enrolment $\chi^2(3, N=109)=1.826$, p= 0.177. This connotes that the way male and female administrators use ICT tools for sending SMS messages, keeping personal data on students and staffs do not differ from each other. These findings corroborate Ayoade (2015) in a study to determine the gender differences of the institutional administrators in Emmanuel Alayande College of Education, Oyo. It was found out and concluded that the gender of an institutional administrator has no bearing on his/her use of ICT facilities and effective College of Education Administration.

However, there were significant differences between male and female administrators' usage of ICT tools for administrative duties in the colleges of education to communicate academic details to students $\chi^2$ (3, N=109) =10.731, p= 0.001 which is less than $\alpha$=0.05 significant level. The Cramer's V value 0.328 indicates that there is a strong significant difference between male and female administrative use of ICT to communicate academic details to students. To prepare electronic form of timetable/class schedule $\chi^2$ (3, N=109) =12.395, p= 0.000 which is less than $\alpha$=0.05 significant level. The Cramer's V value 0.349 indicates that there is a strong significant difference.

According to UTAUT in Figure 2, p.26 there is reason to expect that the relationship between performance expectancy and intention will be moderated by gender. Research on gender differences indicates that men tend to be highly task-oriented (Minton & Schneider 1980) and, therefore performance expectancies, which focus on task accomplishment, are likely to be especially salient to men. Gender schema theory suggests that such differences stem from gender roles and socialization processes reinforced from

birth rather than biological gender per se (Bem 1981; Bem & Allen 1974; Kirchmeyer 1997; Lubinski et al. 1983; Lynott & McCandless 2000; Motowidlo 1982). Hence effort expectancy will be most salient for women, particularly those who are older and with relatively little experience with the system.

To prepare annual budget $\chi^2$ (3, N=109) =6.766, p= 0.009 which is less than $\alpha$=0.05 significant level and Cramer's V value 0.277. So with these observations as indicated in Table 13, the researcher rejects the null hypothesis that, there is no significant difference between male and female administrators' use of ICT tools for administrative duties in the colleges of education in the Volta Region in relation to preparing of electronic form of timetable/class schedule, preparation of the college annual budget and of course for scheduling/allocation of halls for examination respectively. This finding is in line with the findings of other researchers on the subject under discussion. For instance, Schumacher and Morahan (2001) found that females exhibited negative attitudes towards computers. Also, according to Wajcman (2006) observed that many feminists believe that western technology embodies patriarchal values. She further argued that most women are reluctant to go into technology because of the sex-stereotyped definition of technology as an activity appropriate for men. Mahmood and Bokhari (2012) showed that gender inequity persists both in access to and experience of learning opportunities with ICT.

The hypothesis seeks to ascertain whether or not there exist statistical differences between male and female administrators' use of ICT for administration purposes in the colleges of education in the Volta Region.

Results from the Table 13 discussions revealed that, there are no significant differences that exist between the male and female administrators' use of ICT tools for administrative duties and that the administrators use the ICT tools available for the same administrative purposes. Gender was therefore not a determinant for ICT use as indicated in the Unified Theory of Acceptance and Use of Technology (UTAUT).

**Background Information of the Respondents**

This section deals with background data on the respondents who were involved in the study. These respondents were administrators in Colleges of Education, Volta Region. The background information of the respondents which were considered in this section included the gender, age, highest level of education, any lessons in ICT, number of years of service. The background information is presented in Table 14.

**Table 14: Background Information of the Respondents**

| Variable | Sub-scale | N | % |
|---|---|---|---|
| Gender | Male | 74 | 67.9 |
| | Female | 35 | 32.1 |
| Age | 20–25 years | 3 | 2.8 |
| | 26–30 years | 11 | 10.1 |
| | 31–40 years | 29 | 26.6 |
| | 41 years and above | 66 | 60.6 |
| Highest Qualification | HND | 16 | 14.7 |
| | First Degree | 22 | 20.2 |
| | Master Degree | 67 | 61.5 |
| | Others | 4 | 3.6 |
| Any lessons on ICT | Yes | 79 | 72.5 |
| | No | 30 | 27.5 |
| Number of years in administrative profession | 0–1 years | 18 | 16.5 |
| | 2–5 years | 51 | 46.8 |
| | 6–10 years | 29 | 26.6 |
| | 10 years and Above | 11 | 10.1 |

Source: Field survey, Duvor (2018).

Table 14 shows the background information of the respondents. The Table showed that 74(67.9%) of the administrators were males whilst. This

implies that most of the administrators in the Colleges of Education in the Volta region were males.

With regard to the age distribution of the respondents, Table 14 indicates that a significant proportion of the workforce is nearing retiring age as 60.6% of the respondents are above 41years. This should be a concern to the management. On the highest educational level of the respondents, the Table 10 indicates that all the respondents have received formal education as 67(61.5%) were master's degree holders. It is therefore clear that majority of the employees have the requisite educational qualification to be employed as educational administrators in higher educational institutions. As to whether or not the administrators had any knowledge or training in ICT, the results revealed that majority 79(72.5%) gave positive responses. This follows logically that a greater percentage of the administrators possessed in depth knowledge in ICT.

Finally, the results portrayed that 51(46.8%) of them have been working in the administrative profession for 2-5 years and just 11(10.1%) of the respondents have been working in the administrative profession for 10years and above. This means that majority of the administrators had rich experiences in the profession. This gives the implication that the administrators were in the good position to respond to the questions formulated to guide the study.

# CHAPTER FIVE

# SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

## Introduction

This chapter presents a summary of the research process as well as the key findings that emerged from the research. The chapter also contains the conclusions and recommendations that were made based on the findings of the study. Areas suggested for further research are also presented in this final chapter of the study.

## Summary of the Study

The focus of the study was to find out the use of ICT for administrative purposes by administrators in the Colleges of Education in the Volta region. The study investigated the availability of ICT tools for administrative purposes by administrators in the Colleges of Education, the ways in which ICT tools are used for administrative purposes in the Colleges of Education and the factors inhibiting administrators' use of ICT tools and suggested ways to improve ICT use in the Colleges of Education in the Volta region. In the same direction, the study assessed the significant difference between male and female administrators on the ways ICT tools are used to render administrative duties in the College of Education.

The research design used was the descriptive research design. The study employed the quantitative approach of data collection to determine the use of ICT tools for administrative purposes by administrators in the Colleges of Education. The researcher employed the simple random sampling to select five Colleges of Education out of eight Colleges of Education. The census technique was used to select 122 administrators from the Colleges of

Education in the Volta Region.

Questionnaire and observation checklists were the main instruments employed for the study. Close-ended questions were adopted for the questionnaire. The questionnaire was divided into sections with each section focusing on one research question. The items adopted a four point Likert-type scale. The response choice was; "Strongly agree (SA) =4, "Agree" (A) =3, "Disagree" (D) =2 to "Strongly Disagree" (SD) =1. The observation checklist was used to measure the availability of the ICT tools as well as their location for use in the selected Colleges of Education in the Volta region.

The responses to the questions were coded and entered into the SPSS computer software for analysis and interpretation. Descriptive and inferential statistics were used to analyse the data to show the direction of the responses. The descriptive statistics including frequencies and percentages, mean of means and standard deviations as well as chi square were used to analyse research questions and hypothesis. The data collected was analysed according to the research questions.

**Key Findings**

The summary of the findings of the study are presented according to the research questions. Regarding research Question one, it was found out that the major ICT tools available to administrators in Colleges of Education in the Volta region were; personal computer/laptop, internet facilities, mobile phones, digital projector, internet, printers, photocopy machine and external storage device (e.g., pen drive). Also, their source of access to these ICT facilities was mainly the general office and the computer laboratory.

Concerning research Question 2 which looked at the ways in which administrators use ICT tools in rendering administrative duties in the Colleges of Education in the Volta region, and as per the conceptual framework, it was revealed that administrators in most cases use ICT tool available; for sending SMS messages to communicate with staff, to keep personal records on students and staff, financial administration, for documents processing, data collection and storage, institutional supervision and attendance, exams grading, for admission of students, student registrations/enrolment and to send email messages to other stakeholders for official works. Also, the administrators use ICT tools to communicate academic details to students, to take inventory on behalf of the college and for staff performance appraisal.

The findings of the research question three which looked at the factors that inhibit administrators' use of ICT tools in the Colleges of Education in the Volta region revealed that the major challenges were; insufficient bandwidth or speed, insufficient funds, insufficient number of internet-connected computers, irregular power supply, inadequate maintenance and repairs of ICT facilities, inadequate ICT tools, inappropriate on-the-job ICT training for administrators and high cost of purchasing computers for the Colleges of Education.

Finally, after testing the hypothesis, the results derived from the chi square shows that there was no statistically significant difference between male and female administrators on the ways ICT tools are used to render administrative duties in the Colleges of Education in the Volta Region thus the null hypothesis is retained. This finding means being a male or female did not influence one's use of ICT for administrative duties.

## Conclusions

The following conclusions could be drawn from the findings of the study.

In relation to research question one it could be concluded that although ICTs are available in the colleges of education for administrative duties, some of these facilities like personal laptops and external storage devices are owned by the administrators themselves. Most of those that are for the colleges are found in the general offices. The locations of the ICT facilities in the colleges affect their level of usage.

On ways in which administrators use ICT tools in rendering administrative duties in the Colleges of Education in the Volta region, generally it is concluded that administrators use the ICT tools for routine administrative duties.

Thirdly, it can be concluded that, the factors that militate against the administrators' use of ICT tools for administrative purposes in the Colleges of Education in the Volta Region have led to the limited use of ICT tools for administrative purposes.

Finally, it can be concluded the gender of the administrators does not have any effect on the ways in which ICT tools are employed to render administrative duties in the College of Education.

## Recommendations

The following recommendations have been made regarding the result of the study. It is envisioned that these recommendations, when taken into consideration would bring about improvement and yield effective results in school administration particularly in the colleges of education in the Volta Region.

1. It is believed that adequate provision of ICT infrastructure in the colleges of education will increase the motivation for administrators to use them for school administrative purposes. This will go a long way to improve the quality of education provision. In that case, principal officers of the colleges should consider investing much of the internal generated fund (IGF) into ICT tools. Also they must appeal to international organisations such as the UNDP, UNESCO, Non-governmental organisations, donor agencies, politicians and philanthropists who are interested in ICT development in education and of course to the government of the republic for grants or funding to purchase adequate computers and other ICT equipment for school administration purposes in the colleges of education.
2. The college authorities must make conscious effort in organising capacity building for administrators and tutors in ICT skills to enable them utilize ICT facilities effectively for school administration. It is also recommended that, ICT training should be intensified at the universities in the country where school administrators are trained. Building the capacity of future school administrators in ICT skills will go a long way to improve school quality.
3. The need for periodic workshops and in-service trainings by seasoned experts in ICTs for college of education administrators on the use of ICT for school administration is highly recommended.

4. In furtherance to the above, the National Council for Tertiary Education (NCTE) and National Accreditation Board (NAB) should make it as one of the baseline requirements for prospective applicants to run tertiary programs especially colleges of education to install massive ICT infrastructure on their premises before such accreditations are awarded. Beyond that, there must be conscious and effective monitoring and evaluation of the ICT in education policy by NCTE and NAB to check on the progress and weaknesses in the implementation of the policy. This will provide policy makers with feedbacks that may inform proper planning towards ICTs use in education and its administration.

**Suggestion for Further Research**

To generalise the findings of this research for all colleges of education nationwide, it is suggested that this same topic should be replicated with a larger population using administrators in colleges of education in other regions to bring to light what pertains there. Considering the weaknesses in using more quantitative inclined approach, it is suggested that more of qualitative inclined approach be done on the same topic. It is envisaged that, if a similar research is conducted considering a larger population, more variables and with qualitative research methodology, the depth of the non-use of ICT in Ghanaian colleges of education administration will be conclusively determined.

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# APPENDICES

## APPENDIX A

### UNIVERSITY OF CAPE COAST
### COLLEGE OF EDUCATIONAL STUDIES
### QUESTIONNAIRE FOR RESPONDENTS

I am Richard Yaw Duvor, from IEPA, UCC studying on the topic "**The Use of Information and Communication Technology for Administrative Purposes by Administrators in Colleges of Education, Volta Region"** as part of my requirements for the award of Master of Philosophy (Administration in Higher Education). Please complete the questionnaire as honestly as possible. All responses will be held in strict confidence and use for academic purpose only. Thanks very much in anticipation of your cooperation.

***General instruction: please tick the appropriate bracket [ ] or write your response in the blank spaces provided where necessary.***

### SECTION A: DEMOGRAPHIC CHARACTERISTICS

1. Gender: Male [ ] Female [ ]
2. Age:
   20 – 25 years (yrs.) [ ] 26 – 30 yrs. [ ] 31 – 40 yrs. [ ]
   41 yrs. & above [ ]
3. Highest level of education
   Master Degree [ ] First Degree [ ] HND [ ]
   SHS [ ]
4. Do you have any lessons on ICT? Yes [ ] No [ ]
5. Job specification
   Principal [ ] Vice principal [ ] Administrators [ ] Service Unit providers [ ]
   Quality assurance [ ] Procurement [ ] Account officers [ ]
   HOD [ ] Secretary [ ] Hall masters/wardens [ ]
   Bursar [ ] Assessment officer [ ]
   **Any other options (Please specify)**…….

6. How long have you been performing the stated administrative role (ref to Q.5) in the school? 0-1yr [ ] 2-5yrs [ ] 6-10yrs [ ] 10yrs & above [ ]

## SECTION B: AVAILABILITY OF ICT TOOLS

Please indicate which of the following ICT tools are available for administrative purpose in the college

| S/N | ITEMS | Available | Not Available |
|---|---|---|---|
| 7. | Personal computer/laptop | | |
| 8. | Internet facility | | |
| 9. | Mobile phones | | |
| 10. | Digital projector | | |
| 11. | External storage device (eg, pen drive) | | |
| 12. | Printer | | |
| 13. | Scanner | | |
| 14. | Photocopy machine | | |
| 15. | CCTV camera | | |
| 16. | Interacting teaching box | | |
| 17. | Router | | |
| 18. | Intercom | | |
| 19. | Fax machine | | |

20. Please list any other ICT tools available to you in the college.

……

……

## SECTION C: WAYS IN WHICH ADMINISTRATORS USE ICT TOOLS IN RENDERING ADMINISTRATIVE DUTIES

Please indicate the extent to which you disagree or agree with the statements with regards to the ways you use ICT tools in rendering administrative duties.

**Note: SA – Strong Agree, A – Agree, D – Disagree, SD – Strong Disagree**

| S/N | STATEMENTS | SA | A | D | SD |
|---|---|---|---|---|---|
| 21. | I use ICT tools for student registrations/enrolment. | | | | |
| 22. | I use ICT tools for sending SMS messages to communicate with staff | | | | |
| 23. | I use ICT tools for staff performance appraisal | | | | |
| 24. | I use ICT tools for scheduling/allocation of halls for examination | | | | |
| 25. | I use ICT tools to communicate academic details to students | | | | |
| 26. | I use ICT tools to prepare electronic form of timetable/class schedule | | | | |
| 27. | I use ICT tools for the processing and dissemination of students' results through e-media | | | | |
| 28. | I use ICT tools for dissemination of official matters in the institution (e-circular) | | | | |
| 29. | I use computer to advertise vacant positions | | | | |
| 30. | I use ICT tools to send email messages to other stakeholders for official works | | | | |
| 31. | I use ICT tools to make/design things on the computer (like posters, invites, etc) | | | | |
| 32. | I use ICT tools to design website | | | | |

| S/N | STATEMENTS | SA | A | D | SD |
|---|---|---|---|---|---|
| 33. | I use ICT to shop for food items for the college on the Internet | | | | |
| 34. | I use ICT tools for admission of students | | | | |
| 35. | I use ICT tools to keep personal data on students and staff | | | | |
| 36. | I use ICT tools for automation of attendance and leave management of staff members in the college | | | | |
| 37. | I use ICT tools to prepare annual budget for the college | | | | |
| 38. | I use ICT tools to take inventory on behalf of the college | | | | |

39. Please indicate any other views you had on the use of ICT tools in rendering administrative duties.

……

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## SECTION D: FACTORS THAT INHIBIT ADMINISTRATORS' USE OF ICT TOOLS IN THE COLLEGES OF EDUCATION

Please indicate the extent to which you disagree or agree with the statements with regards to your views about the use of ICT tools in rendering administrative duties

**Note: SA – Strong Agree, A – Agree, D – Disagree, SD – Strong Disagree**

| S/N | STATEMENTS | SA | A | D | SD |
|---|---|---|---|---|---|
| 40. | My knowledge about the use of ICT tools is inadequate | | | | |
| 41. | Insufficient computer availability | | | | |
| 42. | Insufficient experience in working with ICT tools | | | | |

| | | | | | |
|---|---|---|---|---|---|
| 43. | Inadequacy of on-site technical support for administrators using technology for their works | | | | |
| 44. | Inadequacy of confidence to use ICT tools | | | | |
| 45. | Inappropriate on-the-job ICT training for administrators | | | | |
| 46. | Authorities of the college do not have interest in the use of ICT tools in the administrative purpose | | | | |
| 47. | There are inadequate ICT tools to render administrative work | | | | |
| 48. | Insufficient funds hinder college integration of ICT tools into administrative activities | | | | |
| 49. | The use of ICT tools for administrative duties is time consuming | | | | |
| 50. | There is no motivation and interest in using ICTs for my work | | | | |
| 51. | ICT tools are not accessible for use for administrative duties | | | | |
| 52. | Insufficient number of internet-connected computers | | | | |
| 53. | Insufficient bandwidth or speed | | | | |
| 54. | The cost of purchasing computers is high for schools. | | | | |
| 55. | Irregular power supply hinders the use of ICT facilities where they are available. | | | | |
| 56. | Lack of maintenance and repairs of ICT facilities is a constraint to utilization of ICT in the college | | | | |

57. Please indicate any other factors that inhibit administrators' use of ICT tools in the Colleges of Education

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## APPENDIX B

## OBSEEVATION CHECKLIST

| ITEMS | Availability | | Usage | | Remarks |
|---|---|---|---|---|---|
| | A | NA | IU | NIU | |
| Personal computer/laptop | | | | | |
| Internet facility | | | | | |
| Telephone | | | | | |
| Digital projector | | | | | |
| External storage device (eg, pen drive etc.) | | | | | |
| Printer | | | | | |
| Scanner | | | | | |
| Photocopy machine | | | | | |
| CCTV | | | | | |
| Interacting teaching box | | | | | |
| Router | | | | | |

| ITEMS | LOCATION FOR USE | | | | | |
|---|---|---|---|---|---|---|
| | Office | Staff C. Room | ICT Lab | Principal office | Out of school | Others |
| Personal computer/laptop | | | | | | |
| Internet facility | | | | | | |
| Telephone | | | | | | |
| Digital projector | | | | | | |
| External storage drive (eg, pen drive etc.) | | | | | | |
| Printer | | | | | | |
| Scanner | | | | | | |
| Photocopy machine | | | | | | |
| CCTV | | | | | | |
| Interacting teaching box | | | | | | |
| Router | | | | | | |

## APPENDIX C

## RELIABILITY TEST

| Case Processing Summary | | | |
|---|---|---|---|
| | | N | % |
| Cases | Valid | 26 | 100.0 |
| | Excluded[a] | 0 | .0 |
| | Total | 26 | 100.0 |
| a. Listwise deletion based on all variables in the procedure. | | | |

| Reliability Statistics | |
|---|---|
| Cronbach's Alpha | N of Items |
| .706 | 46 |

# APPENDIX D

## INTRODUCTORY LETTER

UNIVERSITY OF CAPE COAST
COLLEGE OF EDUCATION STUDIES
SCHOOL OF EDUCATIONAL DEVELOPMENT AND OUTREACH
INSTITUTE FOR EDUCATIONAL PLANNING AND ADMINISTRATION

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Cape Coast
Ghana

Our Ref.: EP/90.3/Vol.2

24th May, 2018

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.....
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Dear Sir/Madam,

**LETTER OF INTRODUCTION**

The bearer of this letter **Mr. Richard Yaw Duvor** is an M.Phil student of the Institute for Educational Planning and Administration (IEPA) of the University of Cape Coast. He requires some information from you/your outfit for the purpose of writing his thesis titled: "**The Use of Information and Communication Technology for Administrative Purposes by Administrators in Colleges of Education, Volta Region"** as a requirement for M.Phil. Degree programme.

Kindly give the necessary assistance that **Mr. Duvor** requires to enable him gather the data/information he needs.

While anticipating your co-operation, we thank you for any help that you may be able to give him.

Thank you.

Yours faithfully,

Alberta A.K. Owusu (Mrs.)
ASSISTANT REGISTRAR
**For: DIRECTOR**

INSTITUTE FOR EDUCATIONAL PLANNING & ADMINISTRATION
UNIVERSITY OF CAPE COAST
CAPE COAST