UNIVERSITY OF CAPE COAST

ICT INTEGRATION IN STUDENT DATA MANAGEMENT IN THE

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GRACE MENSAH

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BY

GRACE MENSAH

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Master of Philosophy Degree in Administration in Higher Education.

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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: Grace Mensah

Supervisors' Declaration

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: Dr. (Mrs.) Rosemary Seiwah Bosu

Co-Supervisor's Signature: …………………………. Date: ………….……

Name: Dr. Alfred Ampah - Mensah

ABSTRACT

The study assessed the extent to which University of Cape Coast administrators integrated ICT into student data management and obstacles militating against this process. Using Dinesh Thakur's Information Management modal, this study focused specifically on ICT utilisation in the collection, analysis, storage, retrieval and dissemination of student data.

The sample size for the study was 234, comprising 39 Senior Members in Administration, 181 Senior Staff Administrators, 1 ICT coordinator and 21 Heads of Departments. The cross-sectional descriptive survey was used in the study. Questionnaires and an observational checklist were designed for data collection from respondents who were randomly selected from both academic and administrative departments. Data analysis was done with the SPSS using descriptive statistical tools such as frequencies and percentages.

Major findings and conclusions are that, though the administrators appreciated the effectives of ICT in the capturing, storing, analysing, retrieval and disseminating student data, some critical ICT resources were still inadequate. Again, the high cost of ICT resources, unstable electricity supply, interrupted internet services, and the frequent breakdown of resources were reported to be hindering the ICT integration process.

Hence for effective student data management, University management need to provide the needed quantities and quality of all ICT resources indicated in its Strategic Plan (2012-2017) in addition to regular staff training to promote usage. Furthermore, the study recommends that an alternative source of electricity should be obtained by all units to guarantee constant supply of power for an efficient ICT use.

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DEDICATION

To my mum, Georgina Donkor, for staying on
her knees so I can stand.

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CHAPTER ONE

INTRODUCTION

This chapter throws light on what the study is all about. It presents the background to the study, statement of the problem and the purpose of this study. It also includes the research questions, the delimitation and limitations of the study as well as how the entire study is organised.

Background to the Study

Globally, institutions and organisational structures are frequently modified in order to handle increased access to huge amounts of information (Barta, 1995). This is to ensure that the institution's communication structures are constantly capable of managing information throughout the information lifecycle regardless of source or format (data, paper documents, electronic documents, audio, video among others) for delivery through multiple channels that may include cell phones and web interfaces.

The ever growing student population in schools make governance and record keeping a very complex task. It is therefore obvious that for student data management to be successful, administrators have a responsibility to use available technology to solve problems and improve performance in the various facilitate. Currently "computers have become a routine tool for helping administrators accomplish their professional work" (Becker, Ravitz & Wong, 1999). The internet alone allows cost-effective information delivery services,

collaborative and distance education, more than has ever been imagined (Clyde, 1995; Mbeki, 1996; Todd, 1997). With proper information management, issues that stems from handling students data can be nibed in the bud. Information management entails organizing, retrieving, acquiring, securing and maintaining information. According to Wikipedia, information management is the collection and organization of information from one or more sources and the distribution of that information to one or more audiences. Hence one can conclude that information management focuses on the ability of organizations to capture, manage, preserve, store and deliver the right information to the right people at the right time. Information management is however only useful if it can supply information to management in timely and accurate manner. It is precisely due to this reason that more and more Information and Communication Technology (ICT) resources are being used in modern information management to ensure that information is supplied efficiently and effectively.

Many people have given various definitions to ICT. Adebayo and Adesope (2007) describe ICT as scientific, technological and engineering disciplines and the management technologies used in the handling of information, processing and applications related to computers. ICT has become an important part of most organisations and businesses these days (Zhang & Aikman, 2007). According to Ho (2007), ICT refers to technologies which facilitate communication, processing and transmission of information electronically. Thus, ICT includes technologies and methods for storing, managing and processing as well as communicating information and it is not limited to only computers, but includes the use of other technological tools such as the internet, pen drives, and mobile phones among others. According to

UNESCO (1998), the broad definition of ICT includes technologies as radio, television, video, DVD, telephone/mobile phone, satellite systems, computer (laptops, Ipads, tablets) and network hardware and software; as well as the equipment and services associated with these technologies, such as video conferencing and electronic mail.

ICT as an extension tool could enhance the flow of information in the application of school administration. ICT plays a vital role in supporting powerful, efficient management and administration in the education sector. It is specified that technology can be used right from student data administration to various resources administration in an educational institution (Maki, 2008). The above discussion clearly shows that the effective application of ICT resources or tools in information management at all levels of human institutions solves all challenges associated with organisational communication. The application of ICT resources to teaching and administration to make it more effective and increase its efficiency is what is termed as ICT integration.

The use of computers and other ICT tools in teaching and administration began in Ghanaian schools in the early 1980s. Several researchers had suggested that ICT will be an important part of education for the next generation (Bransford, Brown & Cocking, 2000; Yelland, 2000). In the late 1990s, Ghana hosted a number of ICT initiatives supported by the government and NGOs. The Ministry of Education, in conjunction with the Ghana Education Service (GES) and its allied partners, undertook a critical situational analysis and review of the utilisation of ICT in education under the auspices of the United Nations Global E-Schools and Community Initiatives (GESCI). Many lapses were identified for

which the stakeholders agreed to work together to eradicate and make education complete with ICT (Nyarko, 2007).

Ghana's national development strategy (Government of Ghana, 1995) emphasised the use of information and communications technology (ICT) to accelerate the socioeconomic development of the country. A National Commission on ICT was set up in 2002 to develop a national ICT policy in order to achieve this national goal. The development of this policy was based on an extensive nation-wide consultation with stakeholders from the public and private sectors, academia, civil society, as well as members of the various political parties and groupings.

The report of this commission is what is now known as the Ghana ICT for Accelerated Development Policy (ICT4AD) (Republic of Ghana, 2003). The ICT4AD policy represents the vision of Ghana in the information era. It takes into consideration the targeted goals of key socio-economic development framework documents such as the Vision 2020. The ICT4AD policy statement therefore sets out the road map for the development of Ghana's information society and economy. It provides a basis for facilitating the socio-economic development of the country in the emerging information, knowledge and technological age. Promoting ICTs in education by deploying and exploiting the potential of ICTs in education is one of the 14 identified pillars of the ICT4AD policy. The national policy on ICT forms the basis of all other ICT policies drawn by all institutions and organisations within the country. Therefore, the University of Cape Coast, which this research would focus on, has such a policy to ensure that the necessary ICT infrastructure is provided and integrated to enhance teaching and administration.

The University of Cape Coast has explicitly expressed in its Corporate Strategic Plan (2012-2017) its resolve to "develop and strengthen integrated ICT infrastructure and facilities that robustly support teaching and learning, research and outreach, administration, and support services." Over the years, the University has continuously tried to integrate ICT in its student data administration. This resulted in the establishment of the Data Processing Unit (DPU) which has now been upgraded into a Students Record and Management Information Section (SRMIS). In pursuance to integrate ICT in student data administration, the University now instructs prospective students to do online application, fees payment, course registration, and online library services among others. Indeed, the Key Thrust 1 seeks to, "create an environment that seeks to improve student life, foster focused learning and to graduate students with strong ethics and commitment to society." With the Vice-Chancellor, ICT Director and Director of Finance, the University seeks to do the following in order to upscale ICT usage:

1. Establish an ICT Directorate that is mandated to manage ICT provision throughout the University.

2. Review the University's ICT strategic plan and policy.

3. Transform the University into an ICT-driven institution in the pursuit of its core functions.

4. Acquire higher capacity bandwidth to facilitate the use of state-of-the art ICT applications.

5. Establish partnerships with public and private sector organisations for the supply of ICT equipment and tools to staff, students, and departments at affordable rates.

6. Project the image and achievements of the University in the areas of teaching, research outreach through effective management of the University websites.

7. Deploy an efficient, reliable, and secure ICT-driven student information management system (UCC Strategic Plan, 2012, pp. 30-32).

The integration of ICT into this process enhances the overall admission activities of higher education institutions by making it more accessible to many (Obeng, 2004). Information administration consists of three main components, namely; student, staff and general administration, with communication as an integral part of these three components (Krishnaveni & Meenakumari, 2010).

Consequently, many Colleges of Education in Ghana have managed to acquire computers that are intended to enable them provide their student-teachers with basic knowledge and skills in the processing of information via computers. Mugenda (2006) postulates that 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. Despite huge investments that institutions of higher learning made in building up strong ICT infrastructure to ensure effective students and personnel information management, they still encounter challenges in communication and general administration that impedes their performance. Could it be that the institutions lack skilled personnel who can select the appropriate ICT resources to maximise the performance of teaching and administrative staff?

As pointed out by Ajayi (2008), the use of computers and internet involves various methods which include systematised feedback system, computer-based operation/network, video conferencing, audio conferencing, internet/ worldwide websites and computer assisted instruction. Yet the effective use of the various method of the ICT in teaching learning depends on the availability of these facilities and the teachers' competence in using them. Could this account for why Institutions of Higher Leaning still encounter challenges in their student data management?

Statement of the Problem

Information and communication technology (ICT) has a tremendous potential to revolutionise the way information, knowledge and new technology is managed, developed and delivered (Purnomo & Lee, 2010). It plays a vital role in supporting powerful and efficient student data management and administration in the education sector, especially at the tertiary level, when integrated properly. A study by Kumar, Rose and D'Silva (2008) reveals that the integration of ICT in the education sector will help to reduce the complexity and enhance the overall administration of higher education. Computers and other ICT tools can be used extensively for student data administration. It is specified that technology can be used right from student data administration to various resources administration in an educational institution (Maki, 2008).

The above research findings certify ICT integration in student data management as the key to curbing challenges university administrators encounter in the performance of their duties. University of Cape Coast, a technologically enlightened institution, ideally employs only computer literate

graduates with a minimum of Higher National Diploma as administrators to ensure that student and staff data is transferred, stored, retrieved, and processed effectively and efficiently, yet it appears the institution still battles with miscommunication, delayed information and difficulty in retrieving information which indicates a gap between knowledge and practice. University of Cape Coast administrators are mainly tasked with the responsibility of performing day-to-day administrative duties including student data management under the supervision of Faculty Officers, Assistant Registrars or Coordinators. The effective performance of their work depends to a large extent on their level of computer literacy, hence the university religiously adheres to the requirement of employing computer literates as administrators although recruiting these professionals without the needed ICT infrastructure will amount to naught. Could it then be that the lapses in the university's information management can be attribute to inadequate ICT infrastructure?

Whereas several researches (Afari-Kumah & Tanye, 2009; Guglielmo, 1998) have been conducted on the utilisation of ICT in promoting teaching, learning and research in higher education institutions all over the world, it seems little has been done on assessing the extent of ICT integration in student data management particularly in higher educational institutions in Ghana like the University of Cape Coast. This study, therefore, seeks to fill this research gap by chronologically examining the process of integrating ICT into student data management, assessing ICT facilities available for student data administration in the University and the factors militating against ICT integration in student data administration.

Purpose of the Study

The purpose of this study is to examine ICT integration in student data administration by administrators of the University of Cape Coast. It specifically seeks to do the following:

1. Identify the process of ICT integration in student data management in the University of Cape Coast.

2. Examine the condition of ICT facilities available for student data management in the University of Cape Coast.

3. Examine the ICT resources used in student's data retrieval and dissemination by administrators at the University of Cape Coast.

4. Identify factors militating against ICT integration in student data management at the University of Cape Coast.

Research Questions

The study seeks to address the following research questions:

1. In what way is ICT used in student data management by administrators at the University of Cape Coast?

2. What is the condition of ICT resources available for student data management in the University of Cape Coast?

3. Which ICT resources are used in student data retrieval and dissemination by administrators at the University of Cape Coast?

4. What factors militate against ICT integration in student data management at the University of Cape Coast?

Significance of the Study

The findings of the study will unearth the true state of ICT facilities and how well or otherwise administrators in the University of Cape Coast utilise such facilities in their work. This will enable the University management to take an informed action in providing robust ICT-based student data management platform for its users. Specifically, a deficit in ICT infrastructure will prompt management on the need to invest in it to enhance administration. Again, the results will encourage senior staff in the administrative sections to apply best practices in the collection, storage, retrieval and dissemination of student data at the University of Cape Coast.

The study will point out the factors that impede the application of ICT to administrative work by senior staff of University of Cape Coast for stakeholders to take immediate steps to mitigate these challenges for the rapid advancement of the University. The research findings will also encourage other analogous institutions of higher learning to invest in ICT to enhance administrative performance. Lastly, findings of this study are expected to add to existing knowledge on the impact of ICT on student data management and promote new ways of using ICT to optimise administrative performance. This will also serve as an inspiration for similar work to be conducted in other universities in the country.

Delimitation of the Study

This study was confined to student data management by those directly involved in ICT service provision and student data handlers like administrative

staff, faculty officers and Coordinators of the Computer Centre and Student Record and Management Information Section (SRMIS) of the University of Cape Coast. The study is based on J. Anderson's theoretical model of information management which presents five core aspects of information management which can be enhanced through ICT integration. Hence this study focuses solely on ICT integration in the collection, storage, analysis, retrieval and dissemination of student data at the University of Cape Coast by administrators. Finally, ICT facilities in this study is limited to desktop computers, laptops, internet (wireless, broadband), printers, telephone, mobile phones, fax machines, storage drives and scanners.

Limitations of the Study

In undertaking the study, some limitations were encountered. The instrument used is a questionnaire which had a number of closed-ended items. This in some cases might not allow respondents to express their opinions extensively to questions so the researcher created room for respondents to provide answers that were not part of available options.

Organisation of the Study

This study is organised into five main chapters. The second chapter reviews some literature relevant to the topic under the following subheadings: information management modelling, migration from manual to ICT platforms in school administration, integration of ICT in student data management in

HEIs, ICT integration in University of Cape Coast and challenges militating against the integration of ICT in student data management in HEIs.

Chapter three outlines the methodology of the study. It deals with the research design used for the study, population as well as the sampling procedures. It also presents the instrument used for data collection as well as data analysis procedures. The forth chapter follows with the results of the study, discussions of the findings, summary of the key findings as well as the conclusions drawn from the study based on the findings. The recommendations and suggestions for further studies are also presented in this chapter.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

This chapter reviews related literature and deals with related issues and concepts that are relevant to the study. The review will be done under the following subheadings:

1. Information and communication technology in HEIs;

2. Information management in HEIs;

3. ICT integration in data management;

4. Integration of ICT in Student Data Management in HEIs;

5. Government of Ghana's Policy on ICT Integration in Education;

6. Challenges hindering the Integration of ICT in Student Data Management in HEIs

7. Summary.

Theoretical Framework

Information and Communication Technology in HEIs

Information and communications technology (ICT) is often used as an extended synonym for information technology (IT), but ICT is a more specific term that stresses the role of unified communications and the integration of telecommunications (telephone lines and wireless signals), computers as well as necessary enterprise software, middleware, storage, and audio-visual systems, which enable users to access, store, transmit, and manipulate information. Information and Communication Technology is a combination of two previously unrelated concepts.

While Information Technology (IT) is used to describe the equipment and software elements that allow users to access, retrieve, store, organise, manipulate and present information by electronic means, Communication

technology (CT) describes the equipment, infrastructure and software through which information can be received and accessed. For example, phones, faxes, modems, digital networks. ICT is, therefore, made up of computer hardware, their associated peripherals and software; in-building network infrastructure; backbone infrastructure; external internet connectivity; and other communication devices.

Information and communication technology (ICT) defies a single definition. Herselman and Hay (2003) define ICT as involving the electronic means of capturing, processing, storing and communicating information. As indicated in a report of the United Nations Conference on Trade and Development (2003), it states that in keeping up with their complex nature and multiple applications, ICT may be viewed in different ways. The World Bank defines ICT as "the set of activities which are facilitated by electronic means, the processing, transmission and display of information". Empirica (2006), a private, internationally active research and consulting firm, also saw ICT in almost the same way as the World Bank. To them, ICT is a complex and varied set of goods, applications and services used for producing, distributing, processing and transforming information including telecoms, TV and Radio broadcasting, hardware and soft ware, computer services and electronic media (Marcelle, 2000). This means that ICT is integrated in nature, a set of technology and its applications that aid information storage and flow. It represents a cluster of associated technologies defined by their functional usage in information access and communication, of which one embodiment is the internet – an aspect which Hargittai (1999) saw as technically and functionally

worldwide network of computers, but sociologically as network of people using computers that make vast amounts of information available.

In a lead paper presented by Professor Jonathan Anderson of the Flinders University of South Australia on the role of ICT in teaching and learning; past present and future perfect, he emphasised that the very air we breathe literally buzzes with all kinds of information signals. ICT encompass the technologies by means of which we can detect these signals, interpret them and exchange them with others. ICT is a plural term that refers to many technologies. He saw ICT as an all-encompassing term that includes the full gamut of electronic tools by means of which we gather, record, and store information, and by means of which we exchange and distribute it to others. UNESCO (2005) in a report towards knowledge societies described ICT as "A third industrial revolution."

The Modified Information Administration in HEIs Model created by Maki (2008) and Krishnaveni and Meenakumari (2010) talks about five aspects of information administration which needs ICT integration for optimum output. They are: Resources Administration, Student Administration, Library System, Staff Administration and General Administration. This research would only select one of the areas listed above and assess how ICT is integrated into student data administration by administrators of University of Cape Coast. Using the processes outlined in Dinesh Thakur's theoretical model of information management this study seeks to bring to light how ICT is integrated in the student data collection, storage, analyses, retrieval and dissemination at the University of Cape Coast as shown in Figure 1.
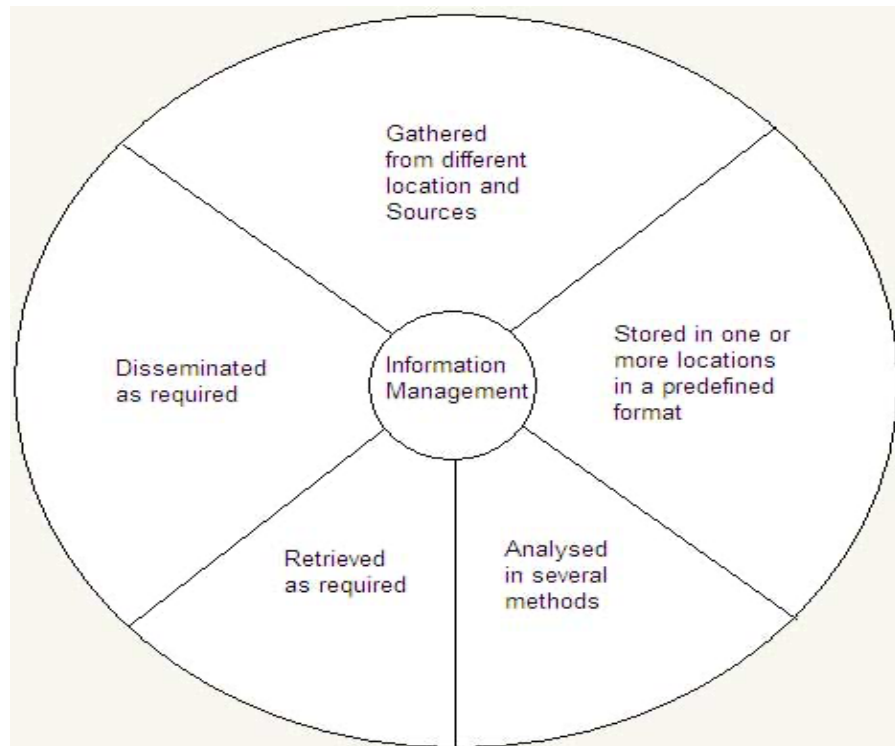
Figure 1: Dinesh Thakur's information management model

The above model simply categorises the entire information management into five unique processes which can be optimised through ICT integration. The application of ICT resources in student data management begins right from the collection and storage stage through to the analysis and retrieval stage and ends at the dissemination stage. This model is therefore the framework within which the entire study is organised. This study will focus solely on the five main information management processes listed above.

Information Management in HEIs

According to Yuduf (2005), ICTs are the modern tools for effective educational management. He further posited that, in this rapid changing world, the informational needs of many universities are increasing. ICT becomes an indispensable part of higher educational management. Okorie's (2005) research on the application of ICT in the management of public and private universities

observed that private universities provided and applied ICT facilities more than government university counterparts both state and federal levels. Similarly, Bassey, Umoren, Akuegwu, Udida, and Akpama, (2007) conducted a study on the impact of technological infrastructure on the academic staff work performance in southern Nigerian universities, and discovered that federal university academic staff faired better than their state university counterparts in their work performance, owing to the provision of more technological facilities. While Aginam (2006) agreed that ICT could help schools to be more efficient and productive, his study revealed that the level of ICT application in Nigerian universities is less than five per cent. He further argued that most universities have little or no infrastructure for cyber-centres, computer-equipped classrooms or high speed internet and may not have the funds to implement such infrastructure.

Condie and Munro (2007) revealed that a key strand in the initiatives designed to embed ICT in schools has been, and continues to be, that of networking within schools, across the education sector and to the external world through intranets and the internet. This has largely been achieved, with most schools networked internally and connected to the outside world, albeit with limited connectivity in many instances. Within schools, networking has a number of potential benefits, including: easier and more effective communication; central record keeping and monitoring; access to shared resources and information; and standardisation across administration processes.

Many schools are developing centralised, computer-supported systems for record-keeping, assessment data and reporting to parents, although this feature applies more to secondary schools than primaries (Condie et al., 2005).

Broadly speaking, schools recognise that centralised systems can improve effectiveness and reduce costs. For example, Granville et al. (2005) found that teachers believed that better connectivity improved access to the curriculum, offered secure means of storing confidential information, improved communications, made collaborative work easier and enabled access for people outside the school. In particular, they agreed that administration was easier with regard to accounts, attendance data and the sharing of confidential information. There were better staff local authority communications and it was easier to develop collaborative work between schools. Unsurprisingly, where broadband was available, school staff were most enthusiastic.

Information management per the above discussions is a key ingredient in ensuring every organisations progresses in performance and efficiency. In addition, integrating ICT in the information management is endorsed as the surest way of multiplying the benefits associated with effective information management. The 21st Century is acclaimed as the digital revolution era and any institution which will not be aware of this new era and will not know how to clear for themselves a road during the transition will be vulnerable and quickly old-fashioned (Tapscott and Caston (1994). Some of the aspects of information management where ICT can be integrated are stated as data collection, storage, analysis, retrieval and dissemination. The benefits of networking is also touch on; effective communication, central record keeping and monitoring, easier access to shared resources and information. The above shows that an integration of ICT into information management will definitely bring significant improvement to the information management process. Again it is revealed that despite awareness of the importance of ICT integration in information, some

institutions still have little or no infrastructure for cyber-centres, computer-equipped classrooms or high speed internet and may not have the funds to implement this infrastructure.

ICT Integration in Student Data Management

The introduction of ICT in organisations and occupational communities has produced profound changes in terms of work patterns and communication structure. Literature on information systems widely recognises that ICT allows for adding intellectual content to work and synergistic goal achievement when used and aligned properly with the task at hand (Sproull & Kiesler, 1991). The social influence model of technology use explains ICT use as a function of social presence, cues and relationships more than the rational choice model (Fulk, Schmitz & Steinfield, 1990). To this end, most literature on ICT use are task-level studies of associations between ICT use and productivity (Drury & Farhoomand, 1999). However, the mechanisms by which ICT affects performance in these studies remains poorly modelled and understood (Aral, Brynjolfsson & Alstyne, 2006). Furthermore, these studies tend to undermine the significance of ICT in enabling new forms of communication and work organisation that overcome synchronous-asynchronous, temporal and spatial barriers (Hinds & Kiesler, 1995).

The recent usage of ICT has caused dramatic changes in task-level processes, workflow and communication structures of individuals and groups (Chung & Hossain, 2006). While organisations and knowledge workers recognise the value of ICT use for work, appreciation for the influence of social contexts and networks that underpin the use of ICT and its impact on

performance remains unclear. Information systems (IS) research has shown that ICT use influences task performance and social networks studies have associated ICT use with communication structure. However, literature on the interaction effects and joint effects of these concepts are relatively few. For instance, Kraemer and Danziger (as cited in Chung & Hossain, 2006) assessed the impact of information technologies use on decision making, productivity, and job enhancement. Pickering and King (1995), on the other hand, examined the use of information and communication technologies (ICT) in organisations and highlight the role of ICT in maintaining weak ties, especially between dispersed occupational communities. Research findings indicate a positive relationship between ICT and productivity, and that structure and size of communication networks of individuals are highly correlated with performance (Aral et al., 2006).

Generally, the term ICT use connotes technology acceptance and is a primary variable which affects individual performance. The technology acceptance model postulated by Davis, Bagozzi and Warshaw (as cited in Chung & Hossain, 2006) argues that the degree of user acceptance of technology positively affects the usage of technology, which in turn affects performance. Users therefore do not use the technology if it constrains them or does not satisfy the accomplishment of their task or communication purpose. Conversely, the patterns and frequency of usage of certain ICT by an individual for certain tasks indicates one's willingness, comfort and ease of use, and therefore, acceptance of the technology.

According to DeLone and McLean (1992), patterns and frequency of usage of ICT are influential factors of individual impact such as quality,

productivity and performance. In Igbaria and Tan's (1997) study of 625 employees in a large organisation, it was found that user satisfaction on individual performance was actually mediated by ICT use, therefore, suggesting the ICT use variable as an indicator of performance.

ICT use has been primarily ascertained by measuring the attitudes of individual users in terms of tasks for which it is used, the frequency of use, and perceived ease and comfort of use. Such attitudes of individual users towards ICT are quite important, mainly because a positive attitude is usually indicative of technology acceptance (Mahmood, Burn, Gemoets & Jacquez, 2000), which in turn allows the user to believe that using the ICT would enhance his or her performance (Davis et al., 1989). The premise of measuring attitudes stems from the theory of reasoned action which describes attitude as a "predisposition to respond favourably or unfavourably to an object, person, event, institution, or another discriminable aspect of the individual's world" (Ajzen, 1988). Therefore, this study argues that attitude towards behaviour is a direct determinant of the behavioural intention to perform the behaviour.

As indicated earlier, the use of ICT does not impact individuals at the task level only but has also revolutionalised ways in which individuals communicate, acquire, share and utilise information. New developments in ICTs and the Internet have allowed individuals to seek advice, information, collaborate and communicate overcoming temporal and spatial barriers as well as offer new modes of communication (synchronous and asynchronous). The extent to which information or advice is accessed in terms of usefulness, quality and speed are critical to performance of individuals in knowledge-intensive work. Many studies have reported on how communication technologies have

extended information reach and enabled acquisition of useful information for individuals (Constant, Sproull, & Kiesler, 1994) and occupational communities (Pickering & King, 1995) through weak ties, despite lack of personal connections with others (Constant et al., 1996).

Furthermore, individuals tap into online communities and portals where benefits of social support, influence and information advantages are plenty (Butler, 2001). However, such online communities and other artifacts within the online space also serve as a non-relational source of information. For instance, most Internet-based discussion groups provide summaries of communications to its members via email digests, irrespective of whether members participate or lurk. Furthermore, professional associations, company newsletters, online databases, journal repositories and online search engines such as Google provide readily available information matching almost the same credibility and quality as from a relational source (Zimmer & Henry, 2007).

Compared to some past studies which have only examined impacts on performance using either constructs of network structure or ICT use (without examining in detail their relationships), there have been relatively few efforts designed to increase our understanding of how network structure and patterns and use of ICT influence individual performance. In Papa's (1990) study of the relationship between employee performance with new technology and employee communication network variables (activity, size, diversity and integrativeness) in two corporate offices consisting of 301 employees, it was found that network structure was a significant predictor of speed with which employees increased their productivity ratings. Network diversity, network integrativeness and size were also significant predictors of how quickly

employees implemented an innovation in ICT use. Aral et al.'s (2006) more recent study of the detailed relationship between information worker output, information flow, information technology, multitasking and project duration (as performance measures) showed that network structure was highly correlated with performance. The domain of the study was a mid-sized recruitment firm with team-level and individual-level data available.

Two significant contributions from the study were:

1. demonstration of detailed task-level evidence of information worker output, and

2. objective measures of information flows through social networks, thereby allowing a higher resolution microscopic view to study organizational phenomena.

The above section highlights the advantages of ICT integration in student data management. Existing literature on this subject mostly agrees with …. Provide capabilities for registering students on courses, documenting grading transcripts and results of student test and assessment scores, build students schedules, track student attendance, manage other student related issues …. Handling enquires from prospective students, handling the admission process, enrolling new students and enabling online scheduling, students account and financial aid process, automatically creating class and teacher schedules, handling records of examinations, assessment, marks, grades and academic progression, housing, dorma nad facilities details, assignments and tasks, (https://en.m.wikipedia.org/../Student_

Integration of ICT in Student Data Management in HEIs

Obeng (2004) discussed the importance of ICT in education particularly administration. He said that ICT could as well be used to reduce administrative cost. Telephone is expensive in developing countries and many filing and records' keeping is done manually. The use of Internet, intranet and extranet could reduce administrative cost because the same information on the Internet can be sent to all departments without having to do it individually. Instead of sending notices of meeting to lecturers or those concerned this can be done online with less cost. Communication both within departments and outside the departments can enhance greatly by the use of intranet and extranet.

Administrators' participation in professional development is crucial for any meaningful change to occur as they have a vital role to play. Data use in school administration currently ranges over multiple areas, informing administrators about demographics, school processes, student learning, as well as perceptions and projections (Bernhardt, 2000 cited in Makewa, Meremo, Role, 2013). The above examples are included to encourage teachers and administrators to get started on data analysis and database work, wherever they are, for school improvement.

Higher education institutions (HEIs) in Africa which should be in the forefront of ensuring Africa's participation in the ICT revolution, but they are severely under-resourced in comparison to their counterparts in the developed world (Tusubira & Mulira, 2007). Furthermore, the information infrastructure of African Higher Education is poorly developed and unevenly distributed. Despite these difficulties, a number of higher education institutions in Africa have made significant progress in building an ICT infrastructure, and developing computer science and other ICT disciplines. The extent to which

technology is being currently used in the various functional areas of e-administration in higher education institutions was the concern of Krishnaveni and Meenakumari (2010). They found that the usage of technology for knowledge administration activities was found to be higher than that of information administration activities. This implies that most the ICT resources available at institutions were mostly used to promote teaching and learning and not administrative purposes within institutions.

According to Asante (2007), pertaining to administration and management in the University of Cape Coast, it was found that ICT penetration was satisfactory at the operational level of management where transaction processing systems and office automation systems were very applicable. The management of the students' records probably stood out to be the most automated area with regard to the administration and management of the University. The finance office also had computerised payroll systems in place which however fell short of what could be called a complete integrated accounting package because it was limited to payroll functions.

The usage of ICT in higher education institutions starts from the early stages of receiving e-notifications regarding admission, course schedules, and billing procedures and continues till the end of the course including online publication of results (Kaul, 2006). The Action Plan for reforms in the field of higher education revealed that "the potential of information communication technology (ICT) should be fully utilised" (UNESCO, 1998, p. 2).

The main functional areas of e-administration, namely, Knowledge administration and Information administration was identified based on the fact that both instructional and managerial are the two main perspectives of

administrative tasks in any higher education institutions. Some studies have empirically considered only the knowledge administration that is activities relating to teaching-learning process and hence studies pertaining to Information administration were lacking. Consequently, the model was formed by linking both the functional areas so as to represent a whole model that could be implemented in higher education institutions.

The functional areas that contribute towards e-administration are discussed below along with the constructs that contribute to these functional areas. The study done by Ho (2007) and many others revealed that knowledge cycle consists of knowledge acquisition, assimilation and development, and evaluation. Based on research studies and literature reviews, it can be concluded that knowledge administration is a cyclic process comprising knowledge acquisition/knowledge enhancement, knowledge delivery and knowledge evaluation. These include e-learning, e-library, on-line examination, and evaluation and feedback systems as an integral part. Scanning the school environment against the backdrop of the information revolution, Guruvadoo (2013) reaped a body of practices and refined them into a set of best practices in teaching, learning, educational administration, school restructure, teacher training, infrastructure, contents, research and evaluation, school linkages with parents, community, business, and other stakeholders, strategic compact, leadership, funding, and sustainability.

Moreover many studies 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):

1. Sending e-mail notices and agendas to staff, rather than printing and distributing them.

2. Submission of lesson plans through e-mail.

3. Foster technology growth by asking parents to write e-mail addresses on medical forms.

4. Insist that all teachers create a class web page.

5. 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.

6. Admissions through web-enabled services.

7. All day-to-day activities of the institution (General Administration).

8. Staff administration.

Management and administrative task are nowadays being done increasingly by computers. Newhouse (2002) posits that database are maintained to include a large amount of information about each student in the school which could easily be retrieved and analysed when the need arise. Computers have the potential of improving the efficiency of many tasks done in the school. They could be used as a tool by the classroom teacher for the preparation of his lessons and management of his teaching resources. The networked systems provide opportunity for a range of people (parent, staff, administrators and students) to have access to information where necessary. In the secondary school particularly, the use of ICT software to support time tabling has become important. Newhouse (2002) claims the allocation of student and staff rooms done in the schools remains very complex and time consuming hence increase in the usage of computers in the management and

administration of schools can remedy this situation. The computers are user friendly and powerful tools yet their impact cannot be felt until one has access to use them (Oslagbemin, 1988).

According to Adebayo (2012) who studied the impact of application of information and communications technology (ICT) in the administration of polytechnics in Ogun State in Nigeria, revealed that students administrative services using information technology application packages are too numerous to mention in this area of ICT dispensation. Its application into both applied and physical science is evident in the wealth of literature on ICT. Information and communications technology simplify the administrative support levels of their academic in various levels of their academic pursuit. Students' services like records, admission/recruitment, student evaluation of lecturers, class schedules, attendance, registration, time-tabling and accessing result can be realised via network of computers and other communication avenues called student portal.

Chinien (2003) tried to breakdown the possible areas of the application of ICT in the administration and management of higher education institutions with specific functions.

Table 1: Administrative uses of ICT in HEIs

Uses	Specific functions
Accounting	Budgeting, purchasing, grants administration, cash flow, account receivable, account payable, audits.
Uses	**Specific functions**

Staff administrative services	Human resources management – assessing staffing needs, recruiting staff, monitoring staff performance, keeping records, communicating with staff. Human resources development – conducting needs assessments, needs analyses and training needs analyses, delivering and assessing employee training.
Student administrative activities	Recruiting and selecting students, advising students, supporting prior learning assessment and recognition, registration, recording attendance, record, and fee payment.
Support services	Providing programme information - calendar featuring programme and course description; pre-requisites and other requirements; keeping records to comply with freedom of access to information; maintaining web site giving access to administrative units, faculties and departments; managing computer and e-mail accounts for faculties and students.

Source: Chinien (2003).

As part the requirements by Adubufa (2001), every institution must constantly assess itself in terms of its ICT maturity. He suggested that the

following variables could be used in accessing an institution's capacity at each of the afore-mentioned stages:

1. Planning and monitoring tools such as the availability of University strategic plan.

2. Application of ICT in teaching and learning.

3. Application of ICT in research.

4. Application of academic information services (library).

5. Application of ICT in administration and management.

6. ICT infrastructure: Type as well as accessibility and usage patterns.

7. ICT organisational (support) infrastructure.

8. ICT financing.

9. Training, research and development in ICT.

The above variables when measured can assist in accessing an institution's rank in ICT integration. This implies the higher an institution scores in above-mentioned areas the higher its advancement as regards ICT usage.

ICT Integration in University of Cape Coast

The University of has explicitly stated in its Corporate Strategic Plan (2012-2017) its resolve to "develop and strengthen integrated ICT infrastructure and facilities that robustly support teaching and learning, research and outreach, administration, and support services." As part of its 21st technology challenges, the University seeks to ensure that ICT permeates all academic activities and management decisions. Indeed, the Key Thrust 1 seeks to, "create an environment that seeks to improve student life, foster focused learning and graduate students with strong ethics and commitment to society." With the

Vice-Chancellor, ICT Director and Director of Finance, the University seeks to do the following in order to upscale ICT usage:

1. Establish an ICT Directorate that is mandated to manage ICT provision throughout the University.

2. Review the University ICT strategic plan and policy.

3. Transform the University into an ICT-driven institution in the pursuit of its core functions.

4. Acquire higher capacity bandwidth to facilitate the use of state-of-the art ICT applications.

5. Establish partnerships with public and private sector organisations for the supply of ICT equipment and tools to staff, students, and departments at affordable rates.

6. Project the image and achievements of the University in the areas of teaching, research outreach through effective management of the University websites.

7. Deploy an efficient, reliable, and secure ICT-driven student information management system (UCC, 2012, pp. 30-32).

In a study conducted by Larbi (2008), he found that majority of non-academic senior members had the greatest access, followed by the academic senior members and the non-technical senior staff. He concluded that the University had done well in the provision of computers and their accessories and other ICT gadgets for the use by the staff in spite of the fact that some respondents stated they did not have access to these facilities. This clearly showed an improvement since Asante (2007) findings were rather negative. Asante (2007), who also conducted his study in the University of Cape Coast

said that the degree of availability and adequacy of ICT facilities and services to lecturers, senior administrators and students varies. He posited that whilst lecturers and senior administrators access to ICT facilities could be said to be satisfactory, although in some cases the location of the ICT facilities were outside one's office, the same however, could not be said about the students as they did not have easy access to ICT facilities. Asante (2007) also revealed that in some instances students even had to pay for use of ICT facilities and services. He again revealed that the University had a few computers in the University had been connected to the intranet and internet, because some sections, units and departments had not been networked and therefore could not be connected to the system. So people who needed the services of the intranet or internet had to access them from other points in the University.

According to Larbi (2008), most popular software applications used by university staff are MS Word, Intranet or Internet access with e-mail being the most frequently used facility. The internet and PowerPoint were the most popular ones used, while the least used was Desktop publishing. What accounted for this was that the staff used Ms Word for typing of letters, reports, questions for examinations and quizzes and other related tasks, the e-mail for communication between colleagues on campus and others outside. He further said that PowerPoint was being used for teaching and presentation of issues by the staff workshops, seminars and fora. His findings also showed the staff have all ICT gadgets in their offices and in some cases from the head's office or the department or faculty computer laboratories. It was established that the speed of UCC intranet and internet connectivity was very slow, unreliable and unstable during most part of the day. This, Larbi (2008) said was due to

problems in networking, unreliable internet providers and occasional interruptions in power supply. However, in years 2012 and 2013, Edumadze (2013) averted that internet connectivity in the University has witnessed massive improvement with its website ranked 3rd among all universities in Ghana, 54th in Africa and 3,480th worldwide according to webometrics (2013) from a previous positions of 4th nationally, 90th in Africa and 5,099th worldwide in 2012.

Larbi (2008) agreed with Asante (2007) that majority of the staff involved in the study had had training in the use of ICT. Therefore, they had an appreciable level of knowledge in the use of ICT facilities at their disposal. Asante (2007) also revealed that staff of the University of Cape Coast who participated in the study had embraced the use of ICT in their work on campus. However, it was gathered that even though the staff had accepted the use of ICT facilities in their work and other related tasks, in general, usage was low in respect to ICT for research, collecting academic and collaborating research worldwide on the part of the senior members (teaching). In the case of the senior members (non-teaching), low usages were recorded for the daily use of ICT in their work at the office and researching into new concepts, issues and theories in management. The same trend of low usage was recorded by the non-technical senior staff.

Government of Ghana's Policy on ICT Integration in Education

It is acknowledged that for Ghana to make any appreciable progress in its socio-economic development efforts, substantial resources will need to be directed at reducing the percentage of the population without any educational

attainment, widening access to education to the vast majority of the population and increasing the percentage of the population with tertiary level education. The key role that ICTs can play in widening access to education to a wider section of the population; and in literacy education and for facilitating educational delivery and training at all levels has been recognised. The Government has then acknowledged the need for ICT training and education in the schools, colleges and universities, and to improve the educational system as a whole (Republic of Ghana, 2003).

As part of the mission to: transform the educational system to provide the requisite educational, and training services and environment capable of producing the right types of skills and human resources required for developing and driving Ghana's information and knowledge-based economy and society, the Government is committed to a comprehensive programme of rapid deployment, utilisation and exploitation of ICTs within the educational system from primary school upwards.

Policy efforts have been directed at using ICTs to facilitate education and learning within the educational system and to promote e-learning and education as well as life-long learning within the population at large. As part of this policy commitment the Government has put in place policy measures to strengthen science education at all levels of the educational system and as well as promote technical and vocational training with emphasis on the use of ICTs to facilitate the training and learning process. In addition, this policy commitment contributes to addressing some of the other identified developmental challenges facing Ghana like; the challenges of the social and economic pressures of a youthful population; the challenges of turning the

youthful population into an asset for development as well as the challenges limited human resource capacity characterised by low professional, technical and managerial manpower base of the country.

On the policy objectives and strategies, the Government of Ghana has set the following objectives and strategies for technology education and the deployment of ICT in schools:

The objectives

1. To facilitate the deployment, utilisation and exploitation of ICTs within the educational system to improve on educational access and delivery and to support teaching and learning from primary school upwards.

2. To modernise the educational system to improve the quality of education and training at all levels of the educational system and expanding access to educational, training and research resources and facilities.

3. To orientate all levels of the country's educational system to the teaching and learning of science and technology in order to accelerate the acculturation of science and technology in society and produce a critical mass of requisite human resource and a well informed citizenry.

4. To achieve universal basic education and improve the level of basic and computer literacy in the country.

5. To ensure a population in which all citizens are at least functionally literate and productive.

6. To expand and increase access to secondary and tertiary education.

7. To strengthen science education at all levels and in all aspects of the educational system, especially at the basic and secondary levels.

8. To promote technical and vocational education and training to enhance middle level management in science and technology levels (Republic of Ghana, 2003).

The strategies

1. Modernise Ghana's educational system using ICTs to improve and expand access to educational, training and research resources and facilities.

2. Improve the quality of education and training and make the educational system responsive to the needs and requirements of the economy and society with specific reference to the development of the information and knowledge-based economy and society.

3. Transform Ghana into an information and knowledge-driven ICT literate nation.

4. Introduce computers into all primary, secondary, vocational and technical schools.

5. Promote electronic distance education and training and virtual learning systems to complement and supplement face-to-face campus based education and training systems.

6. Mainstream ICTs throughout the entire educational system to promote life-long learning.

7. Transform the educational system to ensure that there is uninterrupted quality education for all Ghanaians from pre-school to age 17 to reduce poverty and create the opportunity for human development.

8. Promote ICT awareness computer literacy within the public at large

9. Develop and restructure the relevant ICT curricula for all levels of the educational system.

10. Encourage collaboration between local and international educational institutions to facilitate educational exchange and the promotion of ICT education and training.

11. Put in place special schemes to enable students, teachers and educational institutions to purchase computers through attractive financial packages.

12. Develop an educational intranet to provide educational materials and tools at all levels of the educational system.

13. Leverage the use of electronic distance learning networks to enhance the delivery of ICT education and training.

14. Develop re-training and re-skilling ICT programmes for the management staff of Ministry of Education and educational institutions at all levels.

15. Develop educational management and information systems to improve the quality of management of educational institutions.

16. Promote Internet access to all educational institutions including the schools, universities and colleges.

17. Promote e-learning in the schools and universities.

18. Strengthen science education at all levels and in all aspects of the educational system, especially at the basic and secondary levels.

19. Promote technical and vocational education and training to enhance middle level management in science and technology delivery to all sectors

20. Facilitate collaboration between the Ministry of Education and various accreditation agencies and examination bodies for ICT education and training.

21. Ensure that all universities and colleges take steps to progressively offer their programmes and courses online to broaden access to higher education to a large section of the population and to maximise the quality and efficiency of learning processes, systems and activities (Republic of Ghana, 2003).

Policy measures, instruments and initiatives

To achieve the policy objective to develop the educational sector, and improve education access through the deployment and exploitation of ICTs within the educational system, the Government is committed to implementing a number of policy initiatives and measures including those targeted at:

1. transforming Ghana into an ICT literate nation and promoting basic literacy and ICT literacy of the population at large through the implementation of special initiatives targeting both the formal and informal educational system from basic level to higher education level.

2. modernising the educational system using ICTs to improve and expand access to educational, training and research resources and facilities;

3. promoting and encouraging distance education, including electronic distance education and virtual learning focusing on tertiary level education and training in all fields and disciplines to broaden access to educational and training resource and services to a larger section of the society (Republic of Ghana, 2003).

Some Demographic Variables that Affect ICT Usage

There is a long held perception that a person's gender and age have direct associations with his/her interest (Larbi, 2008). This study, therefore, considers this perception important and seeks to either confirm or deny it in the field of information technology. Gender roles are affected by an innovation. Male and females students of different age groups are affected in one way or the other by the use of ICT. They are important variables because they make the ICT system work. The issue of gender and age has been an important topic within the research on ICT. This is because ICT and ICT professions are often held to be repelling to women in particular but are associated with their male counterparts. This perception may have prompted Venkatesh and Morris (2000) to investigate about age and gender differences in the overlooked context of individual adoption and sustained usage of technology in the workplace using the Theory of Planned Behaviour (TPB). They studied on user reactions and technology usage behaviour over a 5-month period among 355 workers being introduced to a new software technology application. The results showed that the decisions of men and younger worker were more strongly influenced by their attitude toward using the new technology. In contrast, women and older worker were more strongly influenced by subjective norm and perceived behavioural control. Then, these groups of people adopt very different decision processes in evaluating new technologies. On the other hand, Albirini (2006) found that age was not a significant factor in relation to teachers' attitudes towards ICT.

Age groups are affected by an innovation. Age is said to be a major factor in deciding to change or adopt a new technology or even a new way of doing things in the society. George and Jones (as cited in Larbi, 2008) talked about how older workers will tend to resist changes because of the difficulty of breaking old habits and adopting new styles of behaviour. This is manifested in the sense that the old jobs and habits have been learnt well over the years and does not need any more attention but in the case of a new job or use of a new approach, new skills and knowledge have to be learnt again and enough time and efforts are needed to master the task or duty. With the elderly in the society, they tend to fall asleep when watching television programmes alone or with the members of the family. This clearly implies that these aged members in the society would reject any innovation, which involves the use of machines in their workplace being aware of their weakness in interactions with machines. Haq and Kirder (1988) opined that there are profound distortions and imbalances between generations. But this is not the case when it comes to multimedia interface. Multimedia interfaces are user friendly and reduce the effort that one would have to use in achieving previous targets. Studies have shown that elderly people do have negative attitudes towards the use of the internet and rather depend on family, friends and an established source like teachers for information. The older persons prefer interpersonal interactions when teaching, accessing information or being given information about products, services or personal information. Melenhourst (2002) stated that this may be a result of aging which introduces the old into field of tension between their wishes, desire or ambition to achieve something and the assessment of their own future capabilities. Even though the older are classified as "Technophobes", they are

now steadily growing age group when it comes to the use of online technology. This trend is emerging simply because the aged has recognised the computers can help improve upon their social well-being and also give them greater autonomy.

According to Baltes and Baltes (as cited in Larbi, 2008), older persons are taking the opportunity as it presents itself to adapt to ICT and as such there is a strong demand among them for training in how to use computers and the Internet at basic and advanced levels so as to gain from it. According to Baltes and Lang (1997), an individual grows older, his or her body loses strength and energy and has low mental stimulations and as a result, older persons aspire to use their mental and physical resources more economically than younger people. This is why the aged would prefer to use the computer in order to economise in the use of their mental and physical resources. Their thinking in terms of calculating drawing tables, designing and drawing objects and even drawing engineering products will reduce by simply clicking a button on the computer keyboard. The aged is motivated to go online by friends and family, their own fears of being left behind and the challenge they face by the potential of a new technology. The aged has recognised the internet and computer technologies as an avenue for empowering them and offering them greater autonomy. However, Larbi (2008) found that ages of the staff who participated in the study had no association with their level of ICT use. Similarly, Krishnaveni and Meenakumari (2010) who profiled the demographical factors and their impact on e-administration found that demographic factors do not have a major impact on e-administration in higher education institutions. However, the work of Afshari, Abu Bakar, Su Luan, Afshari, Say Fooi and Abu Samah

(2009) has revealed that age correlated negatively with the Jordanian EFL teachers' attitudes towards ICT in Jordan (r = -0.13, p <0.01). This result demonstrated that as the age of the teachers decreased, their attitudes towards ICT increased. This finding they claimed confirms the results of Roberts, Hutchinson and Little's study (2003) that the probability that teachers would use ICT in the classroom was limited by the reality that teachers who were educated 20 years ago were trained by people who themselves were trained before the arrival of computers in schools.

Challenges Militating against the Integration of ICT in Student Data Management in HEIs

Mwalongo (2010) indicated that factors such as access and cost may be some of the factors that may limit ICT integration in schools. Starr (2001) also pointed out a number of factors impeding the wholesale uptake of ICT in education across all sectors. These include lack of funding to support the purchase of the technology, a lack of training among established teaching practitioners, a lack of motivation and need among teachers to adopt ICT as teaching tools.

Cost of bandwidth is very high (especially in Africa) according to Tusubira and Mulira (2007), is one of the main challenges facing ICT revolution in educational institutions. They said that bandwidth literally defines the size of the pipe connecting to the internet: the bigger the size, the faster the rate of transfer of data (containing information) either up or down. The fundamental challenge for Africa is the cost of such piping that, due to policy, regulation, and technology challenges, is typically (in monetary terms) fifty times as expensive as bandwidth in economically developed countries. This

means African institutions have to use limited capacity pipes due to cost constraints, leading to high inefficiencies in all operations that need access to the internet – learning, research, communications, and regional as well as global market reach. This challenge can be mitigated through large volume procurements (consortia); good procurement practice, and efficient management and utilisation (human resource capacity); improvement of policy and regulatory environments (lobbying); addressing physical access constraints (technology); and targeted financial support (development partners). Asante (2007) and Larbi (2008) also said that low bandwidth was the cause of poor use of internet and other ICT applications in the University of Cape Coast. Similarly, a study by Bosu (2000) on the availability and utilisation of educational technology in the University of Cape Coast among lecturers and heads of audio-visual centres, she revealed that there was an inadequate equipment to cater for the needs of the lecturer population, low level usage due to the physical attributes, limited access, inadequate equipment and the unavailability of the media at the time that they are needed.

Other challenges identified by Asante (2007) included poor telecommunication and other relevant infrastructure, unreliable and stable electricity supply, inadequate ICT human resource personnel, enabling environment, unreliable ISP, telecommunication or ICT policy matters, and lack of awareness about the ICT in the University. He also found funding and cost of equipment as militating factors.

Citing Kennedy and McNaught (1997), and Oliver and Short (1996) were, however, of the hope that in recent times, factors have emerged which have strengthened and encouraged moves to adopts ICTs into classrooms and

learning settings. They saw this in term of a growing need to explore efficiencies of programme delivery, the opportunities for flexible delivery provided by ICTs, the capacity of technology to provide support for customised educational programmes to meet the need of individual learners and the growing use of the internet and WWW as tools for information access and communication. They anticipated that as we move into the 21st Century, these factors and many others are bringing strong forces to bear on the adoption of ICTs in education and contemporary trends suggest we will soon see large scale changes in the way education is planned and delivered as a consequence of the opportunities and affordances of ICT. Larbi (2008) said that the major challenges confronting the staff in the use of the ICT facilities were unreliable services being provided by the internet service providers and inadequate ICT infrastructure. Similarly, in the case of Asante (2007), he found that no one vouched that the reliability and speed of the internet services were excellent in the University of Cape, indicating that it was due to the inadequate bandwidth size. This, they said, sends signals that the University should double its efforts in the provision of ICT facilities.

Tusubira and Mulira (2007) also have identified other several factors that are militating against the smooth integration of ICT in higher education institutions examining the challenges and best practices in the Makerere University and other organisations in Uganda. Their paper looks at the common challenges based on their experience in working primarily with deploying ICT in Makerere University as well as with various organisations. The challenges are as follows: lack of awareness and mindset, lack of top-level commitment, defining the role of ICT as one of the tools rather than the panacea for

organisational transformation, making ICT responsive to the organisational vision and mission, and developing a systemic method of implementation.

Lack of awareness and mindset was identified as by far the greatest barrier, and it is the first one that must be dealt with before an organisation can start moving forward (Tusubira, Mulira & Ndwalana, 2010). There tends to be some vague knowledge about ICT, interpreted as simply an advanced technology that requires a lot of expertise, a lot of money, and very advanced skills. It is not appreciated as a means of creating efficiency and cost-effectiveness. Lack of awareness goes along with mindset: "As it was, it is now, and evermore will be." This is used lightly, but it cannot be put better. People tend to be stuck to the old ways of doing things. It is not uncommon to find an office where there is the standard secretary with a computer, and the "boss" with an even better computer – this later largely for show. The boss still calls in the secretary for dictation.

Tusubira and Mulira (2007) have found that the middle level and junior employees are not empowered to take decisions, even if they now have access to all the information and indeed have the capacity to take the decisions. The person at the top takes all decisions – all other employees are there to simply push paper with recommendations up the decision pyramid. A long line of people is always to be found at the office of the boss – after all that is where decisions are taken. The pending paper work takes even longer because the boss is engaged with people all the time. It is a sign of importance and a demonstration of how busy one is to have long lines of people waiting and huge piles of files on the desk. This, unfortunately, does typify many organisations, especially government, in developing countries.

According to Omollo (2011) who explored ICT infrastructure in the Kwame Nkrumah University of Science and Technology (KNUST) and University of Ghana postulates that both universities offer a rich assortment of ICT services. There, however, seems to be little awareness among students and especially among teaching staff of the breadth of technology services available to them. For example, a couple instructors at KNUST commented that they were under the impression that Moodle was a service available only to the School of Medical Sciences when in fact it is available campus-wide. None of KNUST instructors or teaching staff interviewed, for example, associated the multimedia studio from the Indian government with a telemedicine initiative.

A study conducted by Uchendu (2012) in Nigeria to among other things compare the provision of ICT facilities in federal and state universities. He found that the provision of these ICT facilities has a significant relationship with staff work performance although the provision is higher in the federal university due to lack of fund. Similarly, Spodark (2003) reveals that lack of or ineffective technological leadership in schools, lack of clear vision, lack of incentives for teachers, lack of teachers' participation in planning for ICT integration. In an article written by Obeng (2004), he blamed the seemingly poor integration and usage of ICT in Ghanaian universities on the lack of full managerial commitment and support; proposing that this initiative should emanate from the administrators.

Similarly, Pelgrum (2001) studying on the topic: "Obstacles to the integration of ICT in education" results from a worldwide educational assessment, revealed that 17% of the respondents mentioned lack of support of their heads of school as an obstacle to the integration process.

UNESCO (2002) provides the framework for establishing ICT into education, but this is a slow process filled with many barriers. Pan (2000) states five of the obstacles Faculties of Education over the world have had in infusing technology into their programmes. These include lack of financial resources to support ICT, faculty being out of touch with the reality of the school, inadequate faculty development and time allocation to support ICT. Omollo (2011) also identified that one of the key challenges of the integration of ICT in KNUST and University of Ghana was that each website was designed by different developers and has different designs and does not cross-reference the others.

Summary

Information Communication Technology (ICT) is a combination of two previously unrelated concepts: Communication Technology and Information Technology. Information Technology (IT) describes the equipment and software elements that allow users to access, retrieve, store, organize, manipulate and present information by electronic means whilst Communication Technology (CT) describes the equipment, infrastructure and software through which information can be received or access. The merger of these concepts is ICT which is simply a set of technology and its applications that aid information storage and flow. It represents a cluster of associated technologies defined by their functional usage in information access and communication, of which one embodiment is the internet – an aspect which Hargittai (1999) saw as technically and functionally worldwide network of computers, but sociologically as network of people using computers that make vast amounts of information available.

Within schools, networking has several potential benefits including: easier and more effective communication; central record keeping and monitoring; access to shared resources and information; and standardisation across administration processes. As Granville et al. (2005) agreed, teachers believed that better connectivity improved access to the curriculum, offered secure means of storing confidential information, improved communications, made collaborative work easier and enabled access for people outside the school. Unsurprisingly, where broadband was available, school staff were most enthusiastic.

The Dinesh Thakur's information management model is the framework within which the entire study is organised. This model breaks the entire information management into five unique processes; gathering, storage, analyses, retrieval and dissemination. This research therefore seeks to find out how administrators in the University of Cape Coast integrate ICT into student data management to enhance effectiveness and efficiency. ICT becomes an indispensable part of higher educational management especially in student data management.

Most literature on ICT use are task-level studies of associations between ICT use and productivity (Drury & Farhoomand, 1999) (Sproull & Kiesler, 1991) (Fulk, Schmitz & Steinfield, 1990). However, the mechanisms by which ICT affect performance in these studies remains poorly modelled and understood (Aral, Brynjolfsson & Alstyne, 2006). Asante 2007, study it was found that ICT penetration was satisfactory at the operational level of management where transaction processing systems and office automation systems were very applicable. The management of the students' records probably stood out to be

the most automated area with regard to the administration and management of the University.

University of Cape Coast has a clause in its strategic plan that comprehensively outlines its commitment towards developing and strengthening ICT infrastructure to support teaching, learning, and research. Asante (2007) revealed several challenges the University battles with regarding ICT integration in teaching and learning. He posits that whilst lecturers and senior administrators' access to ICT facilities were satisfactory though it could be outside one's office students however did not have easy access to ICT facilities. On connectivity, he commented that some sections and units had not been network and could not connect to the system. Some people who had to access intranet or internet had to do it from other points of the university. Larbi (2008), did a similar research in the same institution at a later date and his findings clearly showed improvement access and availability of ICT infrastructure.

Again, the review looked theoretically at ICT in HEIs, ICT integration in student data administration in higher education institutions, the government's policy on ICT integration in education. After review of several related literature on ICT integration in the administration of higher educational institutions, it is observed that not much research has being done specifically on ICT integration into student data management at the University of Cape Coast. Hence this research would focus on studying how ICT is integrated into student data management at the University of Cape Coast.

CHAPTER THREE

METHODOLOGY

This chapter describes the research design, the population, the sample and sampling procedures, the instrument and the pre-test that will be adopted for the study. Also, the procedures that the study will follow for data collection and data analyses will be discussed.

Research Design

The study will employ cross-sectional descriptive survey. This is because the study seeks to solicit responses from administrators in the University of Cape Coast in order to understand the real situation concerning their utilisation of information and communication technology (ICT) in handling students data. According to Fraenkel and Wallen (2000), the descriptive survey is often directed towards determining the nature of a situation as it exists at the time of the study. Cresswell (2008) added that the descriptive survey design is used to determine individual opinion about a policy issue or programme. The cross-sectional survey design, according to Creswell (2003), provides useful information for decision-makers since it has the advantage of measuring current attitudes or practices. According to Pilot and Hungler (2003), descriptive survey has an advantage of producing a good amount of responses from a wide range of people. Descriptive survey is appropriate when a researcher attempts to describe some population or aspect of population by selecting unbiased samples of individuals who are asked to complete questionnaire, interviews or test (Fraenkel & Wallen, 2002). The researcher, therefore, finds appropriate the descriptive survey for this study because this study is about collecting views of individuals whose daily activities demand the use of ICT facilities and applications so as to facilitate their works.

Questionnaires and an observational checklist will be used for the data collection. The use of this method enables the researcher expand on the findings of one method with another method. In the end, the use of both approaches produces more in-depth and comprehensive information.

According to Sarantakos (2005), researchers believe that the integration of multiple data sources, theories and methods in the present study would better enable the researcher to forge valid propositions that consider relevant rival causal factors. This informs the use of in-depth interviews with management officials directly in-charge of ICT in the University. However, other authors also argue that generalisations in triangulation are unfounded because merely expanding the spectrum of methods employed to collect data which does not necessarily guarantee better results; and suggest that one should also test the validity and reliability of all methods separately.

Population

The key study population is administrators of the University of Cape Coast. This includes Administrative Assistants, Senior Administrative Assistants, Principal Administrative Assistants and Chief Administrative Assistants from all academic departments across the entire University. Others will be the Deputy Registrars for Academic Affairs and Administration, Faculty Officers, Coordinators of the SRMIS and Computer Centre, and Heads of Department. The breakdown of the key population is presented in Table 2.

Table 2: Breakdown of Population

Category	Frequency
Deputy Registrars	2

Heads of Department	42
Coordinators	2
Faculty Officers	8
Administrative Assistants	100
Senior Administrative Assistants	177
Principal Administrative Assistants Chief	50
Administrative Assistants	20
Total	**401**

Source: SRMIS (2013).

Sample and Sampling Procedure

According to Wiersma (1991), with a small number, results are much faster than a whole population. It also produces high quality of work since accuracy can be provided by a sample more than a whole population. The table for determining the sample size from a given population by Krejcie and Morgan (as cited in Cohen, Manion & Morrison, 2005) was used. They noted, "as the population increases the sample size increases at a diminishing rate and remains constant" (p. 608). From the table, the population size of 401 attracted a representative sample size of 196. The researcher will therefore target 210 respondents to make up for possible loses during data collection. The reason for employing a relatively larger sample size is to collect as much diverse views as possible and also to ensure that the sample was a true mirror of the population. The distribution of the sampled administrators among the various designations using probability proportional to size (PPS) is contained in Table 3.

Table 3: Allocation of Sample by Category

Category	Population	Sample
Deputy Registrars	2	2
Heads of Department	42	20
Coordinators	2	2
Faculty Officers	8	4
Administrative Assistants (AAs)	100	49
Senior Administrative Assistants (SAAs)	177	85
Principal Administrative Assistants (PAAs)	50	24
Chief Administrative Assistants (CAAs)	20	10
Total	**401**	**196**

On how the samples will be selected, the researcher will employ both the probabilistic and non-probabilistic sampling techniques. Specifically, a probability sampling technique (simple random sampling, i.e., table of random numbers) will be adopted in selecting administrators. Here, the registers containing the names of staff of the various groups will be compiled and fed into the SPSS. Then the Random Number Generator function in the software will be commanded to select names per the allocated proportion of the sample size. The selected respondents will then form part of the samples to be administered questionnaires/interview guides. For example, in selecting the 49 AAs, the names of all 100 will be fed into the software and it will be commanded to randomly choose 49 of them. The selected names will be a part of the respondents. However, senior members including the Deputy Registrars of

Academic Affairs and Administration, Coordinators of the Computer Centre and SRMIS, Faculty Officers and Heads of Department will be purposively selected.

Research Instruments

The instrument to be used in the study is the questionnaire and observational checklist. According to Fink (1995), the questionnaire as a tool is preferred because of the following advantages:

1. It is less expensive than other methods such as interviews and observation.

2. The use of questionnaire promises a wider coverage since the researcher can approach respondents more easily than other methods.

3. It is stable, consisted and uniform, without variation.

4. It can be completed at a faster rate as compared to the others.

All items were generated from the research questions. The items in the questionnaire consisted of both open and closed-ended questions. The open-ended items were to allow respondents to freely express their views on some key issues. The questionnaire consisted of mainly closed-ended items which demanded respondents to tick responses that best applied to them. The closed-ended items were also aimed at ensuring uniformity in the responses and thereby preventing subjectivity of any kind. The 14 and 15 Likert-type scales were used to gauge how respondents rate the effectiveness the five processes of student data administration and the condition of ICT resources available in the University respectively. Also, it enabled the respondents to indicate the degree of their beliefs in a given statement.

According to Sarantakos (2005), closed-ended items require less effort to respond to, easy scoring and promotes objectivity on the part of the respondent. However, they are limited to only the areas indicated in the questionnaires, and do not give room for self-expression. Notwithstanding the lapse of close-ended items in restricting the responses of respondents, its adoption ensures effective editing and analysis of data.

The questionnaire for respondents in Appendix A has six sections. Section A will solicit information on the background of the respondents. Sections B and C seek to gather information on the use of ICT in the process of student data management and the condition of available ICT resources in the University, respectively. The process of ICT integration in student data retrieval and dissemination and challenges associated with ICT integration into student data management is respectively captured under Section D and Section E. Finally, Section F seeks to obtain suggestions from the respondents on how ICT integration in student data administration can be improved.

In addition to the questionnaire, the researcher makes use of an observational checklist to validate respondent's response in Section C which examines the condition of ICT resources available to respondents' use for student data management. The advantage of an observational checklist provides the researcher the opportunity to directly observe the state of affairs at any given time and this removes one of the major causes of error in research - memory loss, poor recall, and perceptions affected by experiences after the original experience. The use of the observational checklist also increases the accuracy of findings in view of the fact that what is said is very often different from what is actually done.

The observational checklist as the name suggests is to enable the researcher keep accurate records of the various ICT resources seen during visits to various departments and sections within the University. The researcher will therefore be ticking and commenting based on the observational checklist during the hand delivery of questionnaires to selected departments and centres.

Pre-Testing of Instruments

The purpose of a pre-testing is to measure the level of validity and reliability of the data collection instrument. One of the advantages of conducting a pilot-testing is that it might give advance warning about where the main research project could fail, where research protocols may not be followed or whether proposed methods or instrument are inappropriate or too complicated.

The instruments will be pre-tested in the University of Education, Winneba in the Central Region. The choice of this institution was based on the fact that it shares similar characteristics in terms of student population, staff strength and their job description, facilities, number of faculties, schools and departments, with the University of Cape Coast. Also, UEW was chosen because of its proximity.

A sample size of 40 staff including 15 Administrative Assistants, 10 Senior Administrative Assistants, five Principal Administrative Assistants, five Chief Administrative Assistants, two HODs and three Faculty Officers will be administered the research instruments across the entire school. Whiles the administrative staff will be randomly selected, the HODs and Faculty Officers will be purposively chosen.

To establish the reliability level of the questionnaire, Cronbach's Alpha reliability test will conducted and measured against the acceptable range of .60 or above as stated by Cohen (as cited in Leech, Barrett & Morgan, 2005). Validity, according to Fraenkel and Wallen (2000), revolves around the defensibility of the inferences researchers make from data collection through the use of an instrument. The issue about validity, therefore, has to do with the instruments used to collect data and whether the instruments permit the researchers to draw valid conclusions about the characteristics of the individuals about whom they collected the data. The validity of the instruments for this study will, therefore, be established by making the instruments available to my supervisors and colleagues from the Institute for Educational Planning and Administration (IEPA) of the Faculty of Education, University of Cape Coast.

Data Collection Procedure

Before going to the field to collect the data, an introductory letter will be requested from the Director of the Institute for Educational Planning and Administration (IEPA), University of Cape Coast that will introduce me the heads of department of the various samples. Date collection will cover a three week period. Specifically, questionnaire administration (including establishing rapport with respondents, educating them on the importance of the study and how to complete the instrument) and retrieval are envisaged to span three weeks.

Data Analysis

To Ary, Jacobs and Razavieh (1990), data analysis is the ordering and breaking down of data into constituent parts and performing of statistical calculations with the raw data to provide answers to the research questions

which guided the research. First, the retrieved questionnaires will be serially numbered, coded and scored. The Statistical Product and Service Solutions (SPSS version 20.0) will be used to analyse the data. Basically, data gathered in this research will be analysed both descriptively (thus, using tables, graphs, frequencies and percentages) and inferentially using the Chi-square test (to test for significant association between their use of ICT in student data management and the demographic variables).

Specifically, whiles Research Question 1 will be qualitatively analysed, research questions 2, 3, 4 and 5 will be both quantitatively and qualitatively analysed giving data from both the questionnaire and the observational checklist. The detailed data analysis plans are summarised in Table 4.

Table 4: Analysis of Data

Section/ RQs	Source(s) of Data	Statistical tool(s)
Background data	Questionnaire	Frequencies, percentages and cross-tabulations
Research Question 1	Questionnaire	Frequencies, percentages, cross-tabulations and Chi-square test.
Research Question 2	Questionnaire	Frequencies and percentages
	Checklist	Frequencies and percentages
Research Question 3	Questionnaire	Frequencies and percentages

CHAPTER FOUR

RESULTS AND DISCUSSION

This chapter presents the results from the analysis performed on the data gathered from respondents and the discussion of same. The study examined the integration of ICT integration in the management and administration of student data by administrators at the University of Cape Coast. Issues looked at included the condition of available ICT facilities, ICT resources used in retrieving and disseminating student data, and challenges facing ICT integration in student data management. To this end, the following research questions were set to be addressed:

5. In what ways is ICT used in student data management by administrators at the University of Cape Coast?

6. What is the condition of ICT resources available for student data management in the University of Cape Coast?

7. Which ICT resources are used in student data retrieval and dissemination by administrators at the University of Cape Coast?

8. What factors militate against ICT integration in student data management at the University of Cape Coast?

The study gathered data from 194 of the 196 respondents for analysis and discussion. This represented approximately 99% retrieval rate. Simple statistical tools including frequencies and percentages were used to analyse the data.

Background Information of Respondents

The study requested the respondents to indicate their background characteristics since these characteristics and attributes could influence their responses. These included gender, age, educational qualification, department of work, designation, and duration of service in UCC. Figure 2 presents the distribution of respondents by gender.

Females, 101, 52%

Males, 93, 48%
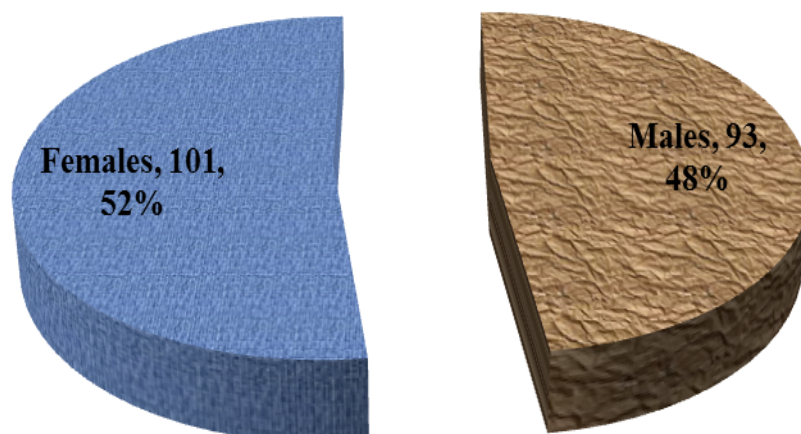
Figure 2. Gender distribution of respondents

As shown in Figure 2, the respondents were made of 101 (52%) females and 93 (48%) males. This means that there were more females compared to the males in this study. It also gives signals about the dominance of female administrators in the University.

The study also requested the respondents to provide data on their ages. The data provided were analysed based on gender and the results are presented in Table 5.

Table 5: Age Distribution of Respondents

	Males		Females		Total	
Age (in years)	Freq.	%	Freq.	%	Freq.	%
30 or less	45	48.4	15	14.9	60	30.9
31 – 40	29	31.2	62	61.3	91	46.9
41 – 50	19	20.4	24	23.8	43	22.2
51 – 60	0	0.0	0	0.0	0	0.0
Total	**93**	**100.0**	**101**	**100.0**	**194**	**100.0**

The results indicated that the respondents were generally young with none within the 51-60 years. About 67% of them were aged 31-40 years, whiles 42 (22.2%) were within 41-50 years. In addition, 60 (30.9%) were 30 years or less. With regard to gender, a substantial proportion of the males (48.4%) were 30 years or less, whiles majority of the females (61.3%) were

between 31-40 years. the modal age group was 31-40 years. Similarly, the educational qualifications of the respondents are summarised in Table 6.

Table 6: Educational Qualifications of Respondents

	Males		Females		Total	
Qualification	Freq.	%	Freq.	%	Freq.	%
HND/Diploma	24	25.8	15	14.9	39	20.1
Bachelor's Degree	45	48.4	47	46.5	92	47.4
Master's Degree	20	21.5	39	38.6	59	30.4
Others	4	4.3	0	0.0	4	2.1
Total	**93**	**100.0**	**101**	**100.0**	**194**	**100.0**

Administrators with bachelors were found to be more than those with other qualifications. They constituted 47.4% of the entire respondents. Master's degree holders were 59 representing 30.4%, whiles diploma/HND holders were 39 (20.1%). Among the males and females, bachelor's degree holders were comparatively more. It is believed that the respondents were well-qualified to provide the needed data on the subject matter under study.

The respondents were further requested to indicate their place of work in the University. This was to help to better appreciate their use of and need for ICT in student data management. Therefore, Table 7 presents their responses analysed using frequencies and simple percentages.

Table 7: Distribution of Respondents by Department

	Males		Females		Total	
Department/Section	Freq.	%	Freq.	%	Freq.	%
Administration	28	30.1	33	32.7	61	31.4

Halls	10	10.7	15	14.8	25	12.9
COHLS	18	19.4	23	22.8	41	21.1
CoHAS	5	5.4	5	5.0	10	5.2
CoES	20	21.5	25	24.7	45	23.2
DUHS	7	7.5	0	0.0	7	3.6
ICT Centre	5	5.4	0	0.0	5	2.6
Total	**93**	**100.0**	**101**	**100.0**	**194**	**100.0**

The results in Table 7 revealed that the respondents were representative selected from across the University including both academic and auxiliary units. A good number of them were from the Administration (from offices like DAPQA, Admissions, School of Graduate studies, Documentation and Information Section, Registry). About 31% were taking from Administration. Forty-five representing 23.2% were taking from the College of Education Studies (CoES), 41 (21.1%) from the College of Humanity and Legal Studies (CoHLS), and 10 (5.2%) from the College of Health and Allied Sciences (CoHAS). Others were from the residential halls, and the Directorate of University Health Services. The including of respondents from across several units, sections, departments, faculties, directorates and colleges meant that varied and representative information were obtained for valid conclusions on issues under investigation.

Table 8 presents the gender-based analysis of the designations of the respondents. Out the various categories of respondents sampled, only coordinators did not respond as shown in Table 8.

Table 8: Designation of Respondents

Designation	Males		Females		Total	
	Freq.	%	Freq.	%	Freq.	%
Deputy Registrars	1	0.9	1	0.9	2	1.0
HODs	11	11.8	6	6.4	20	10.3
Faculty Officers	3	2.7	1	0.9	4	2.1
Admin. Assistant	17	18.2	14	13.7	49	25.3
Snr. Admin. Asst.	42	45.5	61	60.0	85	43.8
Prin. Admin. Asst.	12	12.7	14	13.6	24	12.4
Chief Admin. Asst.	8	8.2	5	4.5	10	5.1
Total	93	100.0	101	100.0	194	100.0

As seen in Table 8, the Senior Administrative Assistants made up 43.8% of the respondents. There were representatives of administrative, principal and chief administrative assistants. About 10% of the respondents were heads of department, whiles 2 (1%) were deputy registrars. The heads of department, faculty officers, administrative and chief administrative assistants were mainly males, the females were more among other categories of respondents.

On the duration of service of the respondents in the University, the respondents provided data and they were analysed. The results are summarised in Table 9.

Table 9: Duration of Service at UCC

Duration (in years)	Males		Females		Total	
	Freq.	%	Freq.	%	Freq.	%

Less than 5	25	26.9	11	10.9	36	18.6
5 – 10	49	52.6	56	55.4	105	54.1
11 – 15	14	15.1	24	23.7	38	19.5
16 and above	5	5.4	10	10.0	15	7.8
Total	**93**	**100.0**	**101**	**100.0**	**194**	**100.0**

Among the respondents, 15 (7.8%) of them had served the University for at least 16 years. In addition, more than half of the respondents (54.1%) had also been working in the University for 5-10, while 38 (19.5%) had worked in the University for 11-15 years. About 17% of them had spent less than 5 years. It can be deduced that a larger majority of the respondents (81.4%) had spent at least five years in the University and it is believed that they had had long working experience in the University in order to provide personal experiences with the use of ICT in management and administration of student data.

Research Question 1: In what ways is ICT used in student data management by administrators at the University of Cape Coast?

The aim of this research question was to identify the ways by which ICT was used to manage student data in the University of Cape Coast. These included the sources of such data, software packages used, the users of student information and their general perception about the importance of ICT in student data management. According to Larbi (2008), staff in institutions or organisations should have easy access to the all the equipment needed for the execution of their duties. He posited that in some organisations, such resources are regulated by the system administrators to ensure judicious and efficient use

of the organszation's time and other resources. Using frequencies and percentages, Table 10 presents the summary of the sources of student data.

Table 10: Sources of Student Data

Sources	Frequency	Percentage
Admission Form	87	44.8
Student portal	53	27.3
Student Record and Management Information Section (SRMIS)	34	17.5
Course Registration Form	12	6.2
Social Media	4	2.1
Others	4	2.1
Total	**194**	**100.0**

Table 10 showed that the main sources of student data in the University included admission forms and student portals as indicated by 87 (44.3%) and 53 (27.3%) of the respondents, respectively. The respondents (17.5%) also identified the Student Record and Management Information System (SRMIS) and course registration forms were also mentioned. Not many of the respondents used the social media platforms such as the Facebook, Whatsup, Tweeter, among others.

To this end, the study solicited from the respondents the types of software packages they used to capture such student data from the above-mentioned sources. The details of their responses are summarised in Table 11.

Table 11: Software for Capturing Student Data

Software	Frequency	Percentage

	Frequency	Percentage
MS Word	82	42.3
MS Excel	67	34.5
SPSS	23	11.8
MS Access	18	9.3
Others	4	2.1
Total	**194**	**100.0**

The results in Table 11 showed that Microsoft Office Suites especially Word and Excel. The result of this study corroborates that of Larbi (2008) who mentioned that the most popular software applications used by university staff were MS Word; explaining that this was because of the fact that staff used MS Word, for example, for typing of letters, reports, questions for examinations and quizzes and other related tasks. The use of the Statistical Product and Service Solutions (formally known as the Statistical Package for the Social Sciences) was not so common, but was frequently used than the Microsoft Access. Similarly, on the ways by which respondents kept student data, Table 12 is the summary of their responses.

Table 12: Ways of Storing Student Data

Storing means	Frequency	Percentage
Data Management Software	96	49.5
External drive	67	34.5
Email	16	8.3
Dropbox	10	5.1
Others	5	2.6
Total	**194**	**100.0**

Almost half of the respondents indicated in they used data management software packages mentioned they mentioned in Table 11. These included the Microsoft Office suites and SPSS. Another commonly used means was the external drive. Sixty-seven of them indicated that they used external drives like pen and hard drives to keep student data. A number of them also used emails, dropboxes, among others.

The respondents were also asked to indicate those who analysed such student data gathered. Table 13 presents the details.

Table 13: Persons Responsible for Data Analysis of Student Data

Response	Frequency	Percentage
Administrators	104	53.6
Researchers	57	29.4
Technicians	29	14.9
Others	4	2.1
Total	**194**	**100.0**

The results showed that the administrators usually analysed the data on the students. They also mentioned that researchers both within and outside the University used to analyse the student data. About 15% of them reported of technicians analysing the student data gathered. On the types of analyses performed on student data, Table 14 gives the details of the respondents' responses.

Table 14: Types of Data Analysis on Student Data

Response	Frequency	Percentage
Within-department/ faculty comparative analysis	43	22.0

Trend analysis	27	13.8
Inter-departments/ faculties comparative analysis	25	13.1
Gender-based analysis	25	13.1
Referral analysis	22	11.3
Student-lecturer ratio	21	11.1
Lecture theatre allocation analysis	11	5.8
Dropout rate	9	4.5
Hall allocation analysis	9	4.5
Others	2	0.9
Total	**194**	**100.0**

Forty-three representing 22.0% respondents revealed that most student data were analysed by doing within-departmental or faculty comparative analysis. This may include enrolment into different academic programmes in a given department/faculty and student academic performance analyses, among others. They also indicated that student data were sometimes assessed to observe trends in enrolment. About 13% of the respondents also said that inter-departmental analyses were done on the student data. Issue of gender-based analyses was reported by a substantial proportion of the respondents. This means that there are times that the enrolment of students is compared on gender basis as well as academic performance of male students is compared to that of the females. Other analyses performed on the student data were referral analyses, student-lecturer ratio, lecture theater allocation analyses among

others. These analyses are part of the requirements by both national and international educational agencies. In a related development, the respondents were asked to indicate the users of information on student data.

This confirms the suggestions of Bernhardt (cited in Makewa et al., 2013) that data used in school administration ranges over multiple areas. He mentioned that such data informed administrators about demographics, school processes, student learning, as well as perceptions and projections; indicating that such data encouraged administrators in particular to get started on data analysis and database work for school improvement. Similarly, According to Kaul (2006), the usage of ICT in higher education institutions starts from the early stages of receiving e-notifications regarding admission, course schedules, and billing procedures and continues till the end of the course including online publication of results.

On the main users of student data/information, Table 15 presents their responses. Frequencies and percentages were used.

Table 15: Users of Student Data

Users	Frequency	Percentage
Division of Academic Affairs	45	23.4
Directorate of Finance	33	16.9
DAPQA	28	14.3
SRMIS	28	14.3
Documentation and Information Section	28	14.3

NAB	15	7.8
SRC	13	6.5
Others	5	2.6
Total	**194**	**100.0**

The Division of Academic Affairs (DAA) was identified by a good number of the administrators as the main users of student data. Forty-five representing 23.4% identified DAA as the main user information on the students. It is expected as they used such data to do time-tabling for lectures and examinations. It also emerged that the Directorate of Finance used student data probably in determining the number of defaulters in school fees and others.

The Directorate of Academic Planning and Quality Assurance (DAPQA) was also identified as a user of students data. This directorate may require for such data to perform certain analyses for both internal and external users including the National Accreditation Board (NAB), National Council for Tertiary Education (NCTE), African Association of Universities (AAU) among others. DAPQA also needed student data for their planning and quality assurance activities including students' appraisal of teaching and learning.

The respondents also mentioned that the Student Record and Management Information Section (SRMIS) regularly required for data on students. This section is seen in the University as the hub of data on both students and staff. It provides ICT resources for student data including their personal information (gender, age, marital status, religion, region, hometown, place of birth, contact persons), programme of study, college, faculty,

department, level, and examination results (grades, referral, grade point average and cumulative grade point average).

The Documentation and Information Section (DIS), according to 28 (14.3%) of the respondents, used student data in their activities. It is this section that annually produces the University Calendar, diaries and also manages the University's website. The NAB and the Students' Representative Council (SRC) were also reported to be users of student data in the University.

Table 16 presents the views of the respondents on the importance of ICT in student data management.

Table 16: Importance of ICT in Student Data Management

Items	Strong Disagree Freq. (%)	Disagree Freq. (%)	Agree Freq. (%)	Strongly Agree Freq. (%)
ICT makes student data gathering effective	10 (5.0)	10 (5.0)	77 (40.0)	97 (50.0)
ICT makes student data storage effective	5 (2.5)	0 (0.0)	82 (42.5)	107 (55.0)
ICT makes student data analysis effective	10 (5.0)	0 (0.0)	102 (52.5)	82 (42.5)
ICT makes student data retrieval effective	5 (2.5)	5 (2.5)	78 (40.0)	107 (55.0)
ICT makes student data dissemination effective	0 (0.0)	19 (10.0)	107 (55.0)	68 (35.0)

From Table 16, the respondents generally agreed that ICT was important in their student data management. According to a very large majority of them (97.5%), the effectiveness of ICT in student data storage had been very effective. Similarly, 189 (95.0%) of them also reported that ICT had been effective in the retrieval of student data in the University. Another reason for touting the importance of ICT in student data was their effectiveness in gathering (90.0%) and analysing (95.0%) such data and disseminating (90.0%) results on same.

Research Question 2: What is the condition of ICT resources available for student data management in the University of Cape Coast?

This research question sought to assess the state of information and communication technology resources across the University of Cape Coast. It analysed the availability and adequacy of such facilities. The data from the questionnaires administered and the check-list used were analysed and the results are presented in Table 17.

Table 17: Availability and Adequacy of ICT Resources in UCC (N=194)

Tools/facilities	Available				Adequate			
	Yes		No		Yes		No	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Desktop computers	194	100.0	0	0.0	134	68.9	59	31.1
Laptops	93	47.9	101	52.1	70	36.1	124	63.9
Internet – broadband	150	77.3	44	22.7	105	54.1	89	45.9
Internet – wireless	158	81.5	36	18.5	129	66.5	65	33.5
Printers	185	95.4	9	4.6	138	71.1	56	28.9
Telephone	168	86.9	26	13.1	156	80.4	38	19.6
Mobile phones	114	59.0	80	41.0	96	49.5	98	50.5
Photocopying machine	160	82.5	34	17.5	153	78.9	41	21.1
Fax machine	49	25.0	145	75.0	39	20.1	155	79.9
Pen drive	123	63.3	71	36.7	118	60.8	76	31.2
Hard drive	157	80.9	37	19.1	63	32.7	131	67.3
Scanners	109	66.0	84	44.0	95	49.0	99	51.0

The results in Table 17 showed that all the respondents said that desktop computers were available in their respective units of work. However, only 134 (68.9%) agreed on their adequacies. This means that there could other staff that were without desktop computers for their daily activities in some of the departments in the University. With regard to the availability and adequacy of laptop computers, less than half of the respondents (47.9%) and 70 (36.1%) reported of their availability and adequacies. This clearly showed that laptops were not available let alone adequate for use in the University.

Meanwhile, 150 (77.3%) and 150 (54.1%) of the respondents said internet (broadband) was available and had adequate coverage in the University, respectively. There was comparatively better rating of both the availability and adequacy of coverage of wireless internet connectivity by the respondents. This is because 158 (81.5%) and 129 (66.5%) of them reported availability and adequacy of wireless internet, respectively. Although Larbi (2008) reported of inadequacy of internet services and low internet connectivity, Edumadze (2013) later revealed that internet connectivity in the University had witnessed massive improvement with its website ranked 3rd among all universities in Ghana, 54th in Africa and 3,480th worldwide according to webometrics (2013) from a previous positions of 4th nationally, 90th in Africa and 5,099th worldwide in 2012.

On the availability of printers, 185 (95.4%) of them responded in the affirmative. In a related perspective, 138 (71.1%) of the respondents confirmed the adequacy of printers for administrative duties. Telephones (fixed) were said to be largely available and adequate by 168 (86.9%) and 156 (80.4%) of the respondents. Meanwhile, less than half of them (49.5%) said mobile phones

were not adequate in the schools. This could mean that the school preferred using fixed telephones compared to mobile phones for its official communication purposes.

About 79% of the respondents agreed that photocopying machines were adequate, whiles only 39 (20.1%) of them reported of the adequacy of fax machines. The data from the checklist also confirmed this result that many offices visited were no longer having and using fax machines, which were commonly used in recent years passed. The availability and adequacy of modern ICT resources such as pen drives were respectively pegged at 123 (63.3%) and 118 (60.8%); meaning that pen drives were relatively common for use by the respondents in their capacities as administrators in the University. However, scanners were not adequate enough as reported by the majority 51% of the respondents.

It can be concluded from the above discussion that the ICT resources that there relatively available and adequate for student data management purposes were desktop computers, internet facilities, printers, telephones (fixed lines), photocopies and pen drives. However, laptops, fax machines and scanners were largely not. After a decade of Bosu's (2000) study on the availability and utilisation of educational technology in the University of Cape Coast in which she reported of the inadequacy of ICT equipment, this study also confirms inadequacies of equipment, with an identification of some of them as laptops, hard drives and scanners being in short supplies. Larbi (2008) and Asante (2007) also arrived at similar conclusions in their respective studies conducted in the University of Cape Coast. Admittedly, comparing the findings of the precious researchers to the current one, it can be concluded that there has

been an appreciable gains in ICT integration across many activities of the University especially in student data management.

Research Question 3: Which ICT resources are used in student data retrieval and dissemination by administrators at the University of Cape Coast?

The aim of this research question was to identify the various information and communication technological resources that administrators in the University of Cape Coast used to retrieve and disseminate data on students. Table 18 is a summary of their responses analysed using frequencies and percentages.

Table 18: ICT Resources Used to Retrieve and Disseminate Student Data

ICT Resources	Yes		No	
	Freq.	%	Freq.	%
Computers	194	100.0	0	0.0
Pen drive	160	82.5	34	17.5
Printers	145	74.7	49	25.3
Hard drive	126	65.0	68	35.0
Emails	97	50.0	97	50.0
Social media	49	25.3	145	74.7
Mobile phones	39	20.1	155	79.9
Dropbox	25	12.8	169	87.2

The main ICT resource sued by the respondent was computers. All the 194 (100.0%) of them said they used the computers to both retrieve and disseminate student data to the relevant users. The use of pen drives for data retrieval and dissertation was high among the respondents as revealed by the majority 160 (82.5%) of them. Similarly, as many as 145 (74.7%) of the respondents used printers in this regard, while 126 (65.0%) said they used hard drives. Half of them reported of using their email accounts to retrieve and disseminate student data. The use of social media platforms such as Facebook, WhatsApp, Tweeter, LinkedIn, among others were not common among the respondents. Similarly, mobile phones and dropbox usage to both retrieve and disseminate data was relatively low as only 39 (20.1%) and 25 (12.8%) of the respondents indicated using these mediums.

Herselman and Hay (2003) mentioned computers, phones, faxes, modems and digital networks as some of the ICT resources used in schools. Little is however know about the effectiveness of social media in administration of student data. It was observed that there a number departmental, level, programme, faculty, school, college, hall and club – based social media platforms created and managed by students instead of administrators in the University.

Research Question 4: What factors militate against ICT integration in student data management at the University of Cape Coast?

This research question sought to find out the factors that were militating the smooth implementation of ICT integration into the management of student data in the University. The identification of these factors or challenges would help address them for the integration of ICT into student data

capturing, collating, analysis, storage, retrieval and dissertation so that the full benefits of ICT could be harnessed by the institution. The factors identified are presented in Table 19.

Table 19: Challenges Facing ICT Integration in Student Data Management

Challenges	Frequency	Percentage
High cost of ICT resources	48	24.8
Unstable electricity supply	31	16.0
Interrupted/ unreliable internet services	29	15.1
Frequent breakdown of ICT facilities	29	15.1
Inadequate ICT know-how	27	14.0
Lack of management commitment	16	8.0
Lack of interest	14	7.0
Total	**194**	**100.0**

From Table 19, the main challenge facing the integration of information and communication technology (ICT) as identified by substantial proportion of the respondents (16.0%) was the lack of funds to buy these ICT resources. It is a common knowledge that the best and durable ICT resources are generally expensive. Mwalongo (2010) and Starr (2001) in their respective studies attested to the fact that cost could limit ICT integration in schools. They

reported that lack of funding to support the purchase of the technology was derailing the progress ICT integration in student data management across the world. Similarly, according to Tusubira and Mulira (2007), the cost of bandwidth is very high (especially in Africa) is one of the main challenges facing ICT revolution in educational institutions. They said that bandwidth literally defines the size of the pipe connecting to the internet: the bigger the size, the faster the rate of transfer of data (containing information) either up or down.

Second, 31 (16.0%) of the respondents attributed the inability to have an ICT integration to the unstable supply of electricity popularly called *Dumsor.* This was one of the key challenges identified by Asante (2007). He said that unreliable and stable electricity supply was partly to blame for the poor usage of ICT in the University of Cape Coast.

Similarly, the frequent fluctuations in internet services were also seen to be having a serious toll on the use of ICT in student data management. As expected, internet services in the University are dependent on power supply, hence a outages in power will definitely disrupt internet services. The finding agrees with Larbi's (2008) that unreliable services being provided by the internet service providers and inadequate ICT infrastructure were frustrating staff their bid to integrating ICT into their activities in the University.

Twenty-nine representing 15.1% of the respondents said that the frequent breakdown of ICT facilities were also militating the successful integration of ICT in student data management across the University. This could be as the results of unannounced power outages, poor maintenance culture and sometimes, negligence.

About 14% of them also reported of the inadequate ICT knowledge among staff as the reason where ICT integration had not been very successful in the University. According to the recruitment requirements of the University, all staff especially administrators should be computer literate. However, the extent of the literacy is not explicitly defined. Therefore, after recruitment, some of them cannot perform relatively complex assignments with respect to student data management using these ICT resources. In a sharp contrast to Larbi's (2008) and Asante's (2007) findings that majority of the staff of UCC had had training in the use of ICT and therefore, had an appreciable level of knowledge in the use of ICT facilities at their disposal, the respondents in this study attributed their inabilities to integrate ICT into their student data management to lack of technical know-how. The above discussion are in agreement with what Tusubira and Mulira (2007) posited that middle level and junior employees are not mostly empowered to take ICT decisions, even if they have access; indicating that the persons at the top take all decisions.

In addition, it was reported that the University management also lacked the needed commitment to pursuing the aim of integrating ICT into student data management. This was said by 16 (8.0%) of the respondents. This is line with what Obeng (2004) found by blaming the seemingly poor integration and usage of ICT in Ghanaian universities on the lack of full managerial commitment and support. Besides, a review of the Corporate Strategic Plan (2012-2017) of the University highlighted the need for the authorities to provide adequate ICT resources across all sections of the University. Indeed, Key Thrust 1(7) of the University's Strategic Plan reads, "*the University seeks to deploy an efficient, reliable, and secure ICT-driven student information management system.*"

However, with two years to the expiration of the strategic plan, not much had been attained in this regard according to an evaluation report prepared by DAPQA (2014).

Surprisingly, another reason that is delaying the integration of ICT in student data management was the lack of interest among staff themselves. This could mean that there are times when the needed ICT resources are provided yet some staff continue to do things manually. This confirms the finding of Asante (2007) that even though the staff had accepted the use of ICT facilities in their work and other related tasks, in general, usage was low in respect to ICT for their ICT activities. Similarly, Starr (2001) also believed that lack of motivation and need among staff could affect ICT integration. The lack of interest to use available ICT facilities to undertake administrative duties was also documented by Tusubira et al. (2010).

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This chapter presents an overview of the entire work. It contains the summary of the entire study, the key findings, the conclusions drawn based on the findings, and the recommendations made. It also presents some suggested topics that could serve as bases for further research.

Summary

Overview of the Study

The integration of information and communication technology (ICT) in school administration particularly student data management has taken a centre stage in many educational institutions across the world. There are several benefits of this initiative as it ensures efficiency and safety of such data/information. The University of Cape Coast has over the years been making efforts to push through this agenda and has made it the first Key Thrust of its Corporate Strategic Plan (2012-2017). Therefore, this study attempted to assess the extent of the integration into its student data management. It set four research questions, which guided the conduct of the study, namely;

1. In what way is ICT used in student data management by administrators at the University of Cape Coast?

2. What is the condition of ICT resources available for student data management in the University of Cape Coast?

3. Which ICT resources are used in student data retrieval and dissemination by administrators at the University of Cape Coast?

4. What factors militate against ICT integration in student data management at the University of Cape Coast?

The study employed the cross-sectional descriptive survey. This is because the study seeks to solicit responses from administrators in the University of Cape Coast in order to understand the real situation concerning their utilisation of information and communication technology (ICT) in handling students data. Accordingly, a questionnaire and a checklist were designed for the study, which were piloted in the University of Education, Winneba among 40 administrators. The instrument (questionnaire) was attained a reliability coefficient of .898, which exceeded the minimum cut-off point of .600 as postulated by Cohen (as cited in Leech, Barrett & Morgan, 2005).

The demographics showed that more than half of the respondents (52%) were females and 158 (81.4%) had served for at least 5 years. It was seen that the lowest educational qualification of the respondents was diploma/ Higher National Diploma. The respondents were representatively and proportionately selected from across almost all academic departments (colleges) and administrative units in the University.

Key Findings

From the analyses, the following key research findings emerged:

1. The main sources of student data in the University included admission forms, student portal, and the Student Records and Management Information Section (SRMIS). The use of social media platforms such as the Facebook, Whatsup, Tweeter and LinkedIn, among others was not common among the respondents.

2. Overwhelming majority of the respondents (94%) confirmed the effectiveness of ICT resources in capturing, storing, analysing and disseminating data/information on students in the University. The

administrators used such data to perform within-department or faculty comparisons, trend analyses, inter-departmental or faculty comparisons, gender-based analyses, referral analyses, student-lecturer ratio comparison, and lecture theatre allocation analyses.

3. The users of student data included both internal and external users. The internal ones were the Division of Academic Affairs (23.4%), Directorate of Finance (16.9%), Directorate of Academic Planning and Quality Assurance (14.3%), Documentation and Information Section (14.3%) and other external bodies like the National Accreditation Board (NAB).

4. Although most ICT resources for student data management were found to available in the school, there were not adequate enough. Particularly, many offices visited with the checklist confirmed the responses of the administrators that laptops, hard drives, mobile phones, fax machines and scanners were not enough.

5. Computers, printers and pen drives were the main ICT resources that the respondents used to store and disseminate data/information pertaining students in the University of Cape Coast.

6. Among the militating factors hindering the smooth ICT integration into student data management, according to the respondents, included the high cost of ICT resources (24.8%), unstable electricity supply (16.0%), interrupted internet services (15.1%), and the frequent breakdown of resources (15.1%).

Conclusions

It is evident from the findings that administrators in the University of Cape Coast have found information and communication technology (ICT) as an important and effective medium by which their activities could be better managed. The usage of ICT resources cut across both administrative and academic departments for student data capturing, storage, analysing, retrieval and dissemination purposes, albeit some limitations.

Student data administration in the school may take a paradigm shift if the University authorities provide the needed ICT resources in their right quantities and qualities. As part of its Corporate Strategic Plan, the automation of the entire school featured prominently however, the commitment of the required amount of funds remained low. The respondents have fingered the high cost of ICT resources, unstable power supply and poor internet services as the main challenges facing their quest to having an automated student data regime in the University. Any conscious efforts to resolving these perennial challenges as reported by earlier researchers including Bosu (2000), Asante (2007) and Larbi (2008), could motivate staff to be interested in the application of ICT in their daily administrative activities including student data management.

Recommendations

Based on the research findings and the conclusions drawn, the following recommendations were made for practice and policy making:

Recommendations for Practice

1. The uses of ICT resources in student data management are enormous and important. Therefore, the Division of Human Resources in collaboration with the Training and Development Section and the Computer Centre should regularly organise training sessions for the administrators. This programme should include touch on the how to capture, store, analyse, retrieve and disseminate data/information on students to both internal and external users.

2. The University management should, as a matter of urgency, procure additional quality information and communication technology (ICT) resources to augment the existing ones. This will resolve the issues of inadequate ICT resources for administrators in the University.

3. ICT resources are expensive therefore the University management could consider establishing a dedicated ICT fund with contributions from the internally generated funds (IGFs), students, alumni, corporate organisation and others to keep achieve its goals and targets in the Strategic Plan.

4. Most ICT applications in these modern times are internet-based. Therefore, the University authorities should consider extending internet facilities throughout the entire University for use by students and administrators.

5. Administrators could obtain data on students using social media platforms such as the Facebook, Whatsup, Tweeter, LinkedIn, etc. These are the most commonly used platform among students nowadays.

6. Alternative sources of electricity/ power should be explored by the University management in order to solve the persistent problem of

unstable power supply to the University. This will also safeguard the ICT resources of the University.

Recommendations for Policy

1. The University's policy of recruiting only computer literate applicants as administrators should be continued without any compromises. This will help its automation agenda.

2. There should be a policy on who uses and how student data are used in the University. This must prohibit the arbitrary dissemination of such data without recourse to confidentiality policy.

3. The University could consider giving incentives (risk allowances) to administrators. This will motivate them to use these ICT equipment/resources, which exposed them to a high risk of eye infections.

4. The University Management should work within the remaining two years left to accomplish the Key Thrust 1 to "create an environment that seeks to improve student life, foster focused learning and to graduate students with strong ethics and commitment to society through ICT."

Suggestions for Further Research

The study covered 194 respondents selected among the administrators the University, therefore, the scope of the study could expanded to include more respondents for a generalised conclusions. Researchers interested in this area of research should consider investigating the following topics:

1. The extent of use of ICT resources among the University staff;

2. The examination of the procurement process and the durability of ICT resources in the University;

3. The extent of implementation of the Key Thrust 1 of the University's Corporate Strategic Plan (2012-2017).

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APPENDICES

APPENDIX A

UNIVERSITY OF CAPE COAST

INSTITUTE FOR EDUCATIONAL PLANNING AND

ADMINISTARTION (IEPA)

QUESTIONNAIRE

This study seeks to collect information from administrators in this University

regarding *"Integration of ICT into Student Data management in the*

University of Cape Coast." I would, therefore, be happy if you would provide frank answers to the questionnaire items. Please, read each question carefully and answer according to your true opinion. You are fully assured of the confidentiality of all information provided.

Please tick [√] or write where applicable.

SECTION A: BACKGROUND INFORMATION

1. Department/section:……......……………………………..

2. Gender: Male [ ]   Female [ ]

3. Age (in years): Less than 30 [ ]   30 – 40 [ ]   41 – 50 [ ]   51 – 60 [ ]

4. Highest educational qualification: Master Degree [ ]   Bachelor Degree [ ]   HND/Diploma   [   ]   Others (specify)…………...…………………………….

5. Designation: Administrative Assistant [ ] Senior Administrative Assistant [ ]   Principal Administrative Assistant [ ]   Chief Administrative Assistant [ ]

   Faculty Officer [ ]   Junior Assistant Registrar [ ]   Assistant Registrar [ ]

6. Duration of service in UCC (in years): Less than 5 [ ] 5 – 10 [ ]   11 – 15 [ ]   16 and above [ ]

SECTION B: USE OF ICT IN STUDENT DATA MANAGEMENT

7. Where does your Department/Centre/Section obtain student data?

Tick as

   many sources as applicable.

   Admission forms [ ]   Pay in Slip [ ]   Social Media [ ]

   Course Registration Forms [ ]   Student Portal [ ]   SRMIS [ ]

Others (Specify) …………………………………..

8. Which software or ICT resources does your outfit use to record student data?

Tick as many resources as applicable.

Microsoft Word [ ]   Microsoft Excel [ ]   Microsoft Access [ ]

BM SPSS [ ]   Others   (Specify) ……………………………..

9. How does your Department/Centre/Section store student data? *Tick as many as*

applicable.

External drive [ ]   Data Management Software (eg: Excel, SPSS, Access) [ ]

Email [ ]   Drop box [ ]   Others (Specify) ………………………………

10. Who does student data analyses at your Department/Centre/Section? *Tick as*

many resources as applicable.

Administrators [ ]   Researchers [ ]   Technicians [ ]

Others (Specify) ……………………………..

11. Which type of analysis does your Department/Centre/Section do with student

data? *Tick as many as applicable.*

Within-department/faculty comparative analysis [   ]

Inter-departments/faculties comparative analysis [ ]

Trend analysis [   ]   Referral analysis [ ]   Dropout rate [   ]

Student-lecturer ratio [   ]   Gender-based analysis [ ]

Hall allocation analysis [   ]   Lecture theatre allocation analysis [   ]

Others (specify)………………………………………………………...

12. Which people request for student data from your Department /Centre

/Section? *Tick as many as applicable.*

Students [ ]   Lecturers [ ]   Administrators [ ]

Parents [ ]   Employers [ ]   Recruitment

Agencies [ ]

13. Who are the users of recorded student data at your outfits? *Tick as*

many as

applicable.

Website [ ]   Examination Unit [ ]   DAPQA   [   ]

NAB [ ]

SRMIS [ ]   SRC [ ]   Documentation and Information Section [ ]

Division of Academic Affairs [ ]   Directorate of Finance [ ]

Others (Specify) ……………………………………………

14. Indicate the extent to which you agree or disagree with the following

statements?

Statement	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
ICT makes student data gathering effective					
ICT makes student data storage effective					

ICT makes student data analysis effective				
ICT makes student data retrieval effective				
ICT makes student data dissemination effective				

SECTION C: CONDITIONS OF ICT RESOURCES IN UCC

14. Which of the following ICT tools/facilities are available and adequate in good your office?

Tools/facilities	Available		Adequate	
	Yes	No	Yes	No
Desktop computers				
Laptops				
Internet – broadband				
Internet – wireless				
Printers				
Telephone				
Mobile phones				
Photocopying machine				
Fax machine				
Hard drive				
Pen drive				
Scanners				

Any others facilities available (please specify)

…………………………………

………………………………………………………………………………

……

SECTION D: ICT RESOURCES FOR RETRIEVAL AND DISSEMINATION

15. Which ICT resources do you use in retrieving student data in your outfit?

ICT resources	Yes	No
Computers		
Mobile phones		
Hard drive		
Pen drive		
Emails		
Social media (e.g., Facebook, WhatsApp, etc.)		
Printers		
Dropbox		

Any other resource available (please specify)…………………………….

………………………………………………………………………………

……

SECTION E: CHALLENGES FACING ICT USE IN UCC

16. In your view, what are the challenges hampering the use of ICT by administrators in the University? *Please as many as applicable.*

   (a) Inadequate ICT knowledge   [   ]

   (b) Lack of interest in ICT   [   ]

   (c) Unstable electricity supply   [   ]

   (d) Lack of funding   [   ]

   (e) Lack of management commitment   [   ]

   (f) Limited bandwidth   [   ]

   (g) Unreliable internet service   [   ]

   (h) High cost of ICT equipment   [   ]

(i) Frequent breakdown of ICT equipment [   ]

Any other challenges (please

specify)…………………………………..

…………………………………………………………………………………

…

SECTION F: SUGGESTIONS

17. In what ways can the use of ICT in student data administration in the

University of Cape Coast be improved?

(a) …………………………………………………………………

………………………………………………………………………

…………

(b) …………………………………………………………………

………………………………………………………………………

…………

(c) …………………………………………………………………

………………………………………………………………………

…………

Thank You.

UNIVERSITY OF CAPE COAST

INSTITUTE FOR EDUCATIONAL PLANNING AND

ADMINISTARTION (IEPA)

VERIFICATION CHECKLIST

Name of Department/Section:

Tools/facilities	Available		Adequate	
	Yes	No	Yes	No
Desktop computers				
Laptops				
Internet – broadband				
Internet – wireless				
Printers				
Telephone				
Mobile phones				
Photocopying machine				
Fax machine				
Hard drive				
Pen drive				
Scanners				