UNIVERSITY OF GHANA

DEPARTMENT OF INFORMATION STUDIES

USE OF ELECTRONIC INFORMATION RESOURCES FOR RESEARCH AND LEARNING IN PRIVATE UNIVERSITIES IN GHANA

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THIS THESIS IS SUBMITTED TO THE UNIVERSITY OF GHANA, LEGON IN PARTIAL FURFILMENT OF THE REQUIREMENT FOR THE AWARD OF MPHIL INFORMATION STUDIES DEGREE.

JULY 2015
DECLARATION

I do hereby declare that this study **Use of Electronic Information Resources for Research and Learning in Private Universities in Ghana** is my own work which has neither been presented in part nor whole to any institution for any degree, and all the sources I have used or quoted have been acknowledged accordingly.

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DEDICATION

To the Glory of God, this work is dedicated to the child who has suffered as a result of a broken home, the memories of my late mother Rose Efua Ahema who sacrificed her joy to lay a solid foundation for my education and my wonderful children Fiifi, Kuukua and Efe.
My profound gratitude goes to God Almighty for his grace and favour over my life. I am much obliged to my principal supervisor Prof. A. A. Alemna for his professional mentoring, expert supervision, patience and time spent in making this work a reality.

I am equally grateful to my supervisor Dr. Musah Adams and other faculty members of the Department of Information Studies, University of Ghana especially the Head of Department Dr. Perpetual Dadzie and Mr. S. N. B. Tackie for their guidance and valuable contributions throughout this research.

I further wish to express appreciation for the support given to me by my family, my father – in – law Mr. Joseph K. Anati, my brother Dr. John Appah and friends especially Michael Ofori Tenkorang, Benjamin Tenkorang and Frank Afoakwa Boateng. I am also thankful to the management of the Presbyterian University College, Ghana (PUCG). This acknowledgement would not be complete without mentioning the vital and spectacular role played by my only beloved, beautiful and dutiful wife Rosina Budu towards this great academic pursuit and its accomplishment. I say thank you dear!

I am equally grateful to all respondents and authorities of Akrofi Christaller Institute of Theology, Mission and Culture (ACI) and Ghana Technology University College (GTUC) for their support and contribution during the data collection phase of the research process. However, I remain responsible for all weaknesses and shortcomings of this thesis.
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ABSTRACT

Although Electronic Information Resources (EIR) have become an important part of research and learning in Universities, a growing body of literature suggests that its utilisation amongst students in especially developing countries tends to be low. It follows therefore that any evidence-based research that seeks to unravel the factors that drive this unresponsive behaviour towards EIR usage especially in private universities is of high demand. The main objective of this study was to find out the level of use of electronic information resources by students of Akrofi - Christaller Institute of Theology, Missions and Culture (ACI) and the Ghana Technology University College (GTUC). The study applied the Technology Acceptance Model (TAM) in addition to other measures to investigate students’ usage of e-resources in their studies. The study adopted a survey method with questionnaire serving as the main instrument to collect data from students of ACI and GTUC through accidental and convenience sampling techniques. The empirical data was analysed mainly through descriptive statistics such as frequency and percentage distributions. A Pearson’s product-moment correlation analysis was also run to ascertain the relationship between actual usage, perceived usefulness and perceived ease of use of EIR. Among other things, the study revealed that there was high awareness of EIR amongst students. Further, perceived usefulness and perceived ease of use were found to influence the extent to which students actually utilised EIR in a significant and positive manner. To improve the utilisation of e-journals for optimum academic output in universities in Ghana especially private ones, the study recommended enhancement of infrastructural provision and regular information literacy training for students.

Key words: Correlation, Electronic Information Resources (EIR), Technology Acceptance Model (TAM)
CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Information and Communication Technology applications in recent years have brought tremendous changes in every aspect of human life. Today, the application of ICT in knowledge generation and communication has brought library users and knowledge more closer. The way information is gathered, stored, organized, accessed, retrieved and consumed are really productive and more user friendly. The use of computers in information processing has brought several products and services to users, making libraries more competitive to meet the complex and divergent needs of its clientele more effectively and economically.

Universities are considered highest learning institutions and intellectual hubs of every nation. University libraries play a pivotal role in all the intellectual activities of the university. Good libraries are a critical part of any university’s research, teaching and learning, whether in physical or digital form. One of the basic goals of a university library is to provide an enabling environment for the conduct of research and learning, as well as dissemination of knowledge for societal development. Access to information is imperative to successful conduct of research in universities. Moon et. al. (2012) in discussing the role of access to information in research stated
that access to relevant information is necessary for academic staff to take efficient decision in their research. This view is affirmed by Adeloye (2000) that access and use of information is needed “for problem solving and decision making” in the research process. Hoq (2012) also viewed access and use of information as being vital in efficient research process. Aina (2012) in his discourse argued that access to information is critical especially in research in Africa. However, as numerous accounts have documented, many African libraries have struggled to maintain good collections in the face of falling budgets, rising purchasing costs, and expanding student numbers.

The introduction of computers in the mid 1950 gave rise to the development of electronic information resources. In the view of Meadows (1989), the first database for searching relevant information came into being in the early 1960s. Electronic Information Resources (EIR), electronic resources and e-resources were used interchangeably throughout this study.

Electronic information resources represent an increasingly important component of the collection building activities of libraries. Electronic information resources refer to those materials that require computer access, whether through a personal computer, mainframe, or handheld mobile device. They may either be accessed remotely via the internet or locally. Electronic information resources come in various types and forms including E-journals; E-books; Full-text (aggregated) databases; Indexing and abstracting databases; Reference databases (biographies, dictionaries, directories, encyclopaedias, etc.); Numeric and statistical databases; E-images; E-audio/visual resources and many more (Johnson and Tahan, 2002).
University libraries are today moving towards having access to more and more Electronic Information Resources (EIR) to support teaching, learning and research activities of the academic community. According to Dadzie (2005) electronic resources are extremely useful resources that complement traditional print based materials. In the view of Sharma (2009) electronic resources are essential in ensuring efficient retrieval and dissemination of information which is of prime importance to any university library. In Ghana, the Consortium of Academic and Research Libraries in Ghana (CARLIGH) subscribes to various electronic resources on behalf of member institutions be it public or private, since 2004 (Asamoah-Hassan, 2008).

According to Research Information Network (2011), Kyrilldon (2001), Borgman (2000), and Carswell et al. (1999) various academic institutions invest substantially in order to ensure user access to scholarly electronic resources and its maintenance. One would quickly make the assertion that students would make the fullest utilisation of available e-resources but the story ends up to be different. Various studies have established that there are a number of issues that pose challenges to access of electronic resources and its effective use, with budgetary constraints being the key issue. For instance, in a study conducted by Kwafoa, Imoro and Afful-Arthur (2014), on the average the University of Cape Coast (UCC) pays as much as ten thousand dollars (US$ 10,000.00) to CARLIGH as annual subscription fee to electronic resources. However, general utilization of these electronic resources is considered to be very low (Adika, 2003; Bentil, 2011). If this is a concern to larger public Universities like the University of Cape Coast, then that of private Universities should be of greater concern.
1.2 Overview of the Study Settings

To position the study in its rightful context, a brief overview of Akrofi Christaller Institute of Theology, Mission and Culture (ACI), and Ghana Technology University College (GTUC), both private universities in Ghana is presented.

1.2.1 Akrofi Christaller Institute of Theology, Mission and Culture (ACI)

The Akrofi-Christaller Institute of Theology, Mission and Culture is a postgraduate research and training institute fully accredited by the National Accreditation Board of the Ministry of Education as a tertiary institution with a Presidential Charter to award its own degrees. It is a research university promoting African innovation and excellence and dedicated to the study and documentation of Christian history, thought and life in Ghana and in Africa as a whole, in relation to their African setting and to world Christianity. ACI seeks to strengthen Christian witness in modern Africa and world context through Christian scholarship.

The Institute was formally established in 1987 as an independent body, a company limited by guarantee and registered under the Companies Code as a charity. Named after two past great scholars of the Twi language and pioneer figures in the cultural witness of the Church in Ghana, Clement Anderson Akrofi and Johannes Gottlieb Christaller, the Akrofi-Christaller Institute of Theology, Mission and Culture (ACI) (formerly Akrofi-Christaller Memorial Centre for Mission Research and Applied Theology, ACMC) seeks to be at the cutting edge of the church’s mission and encounter with society and culture in Ghana, Africa and the wider
world. The Institute stands in a tradition that combines piety, creativity and academic excellence in the furtherance of the witness to the gospel in Ghana and across Africa.

ACI currently runs and awards only postgraduate degrees. The programme includes Master of Arts (MA) Theology and Mission with options in Historic Mission and Development, Biblical Studies, or Pentecostal Studies; Master of Theology (MTh) with options in African Christianity, or Biblical Translation and Interpretation; and finally a Doctor of Philosophy (PhD) in Theology.

The Institute has a Library facility with a seating capacity of about sixty and five state of the art computers with internet connectivity for students research. The school also operates a separate ICT centre where students can conveniently access various Electronic Information Resources in addition to a wireless internet facility which makes it possible for students to access e-resources on their personal computers, laptops, palmtops and many more.

1.2.2 Ghana Technology University College (GTUC)

The Ghana Technology University College started as a training school in 1948 with the name Ghana Telecom Training College (GTTC) with the sole aim of training Ghana Post and Telecommunication Department staff. In 2006, the institute was upgraded to a University College with the name Ghana Telecom University College with accreditation from the National Accreditations Board (NAB) and affiliated to a number of universities including the Kwame Nkrumah University of Science and Technology (KNUST); Staffordshire University, UK; and CASS Europe Business School, Luxemburg. The name of the University College was later
changed to Ghana Technology University College (GTUC). GTUC awards Diploma, Bachelor, and Postgraduate / Masters and Doctorate degrees with three faculties namely the Faculty of Engineering, Faculty of Informatics, and the Faculty of Information Technology Business.

The University has a graduate school that runs and controls all graduate programmes in the school. Programmes offered at the graduate school include MSc. Supply Chain Management, MBA Finance, MSc. Engineering, MSc. Oil and Gas Management and many more. GTUC has a multimedia centre for graduate students in addition to the Library E-resource centre where graduates can conveniently search for needed electronic resources.

1.3 Statement of the Problem

In many academic institutions worldwide, much effort has been exerted to install e-library infrastructure for the advancement of teaching and learning among staff and students in an efficient manner. In this direction, Dalgeish and Hall (2000) acknowledge that the rate at which electronic materials are produced outstrips that of print-based publications.

In the Western world, the contribution of e-resources as a primary source of information for research and learning in academia is overwhelming (Hiller, 2002). In Africa however, the situation is different as researchers and students find it difficult to access information and even when the information is available it is insufficient.
In order to bridge the gap, in 1996 the Danish Development Agency (DANIDA) provided funds for the International Network for the Availability of Scientific Publications (INASP) to negotiate licences and make available e-journals to five public institutions in Ghana. The journals were provided by INASP through the Programme for Enhancement of Research Information (PERI) (Asamoah-Hassan, 2008). Dadzie (2005) argued that the PERI programme provided more than 7000 online journals for free use in Ghana. In addition, the Consortium of Academic and Research Libraries in Ghana (CARLIGH) subscribes to various e-journals on behalf of member institutions be it public or private, since 2004 (Asamoah-Hassan, 2008). University administrators as well as the libraries need to ensure that students make maximum use of electronic resources in research and studies in general.

Notwithstanding the enormous feat in e-resources, the level of technology utilisation among students in institutions of higher learning especially in developing countries is still low (Ramayah et al., 2005). It is also interesting to note that, most students’ references do not include e-resources (Okello – Obura & Magara, 2008). Further, a large body of literature demonstrates that even when e-resources are available, the target group (for instance students) may either not utilise or underutilise the facilities (Hammond, 1994; Hsieh-Yee, 1996; Thong et al., 2002; Ramayah, 2006; Mallick, 2010).

In addition to the above, informal observation by the researcher revealed that most private universities in Ghana pay substantial amount in subscribing to various EIR for research and learning purposes. This notwithstanding, usage of electronic resources by students is not
encouraging. It is even more troubling that over 50% sampled postgraduate students and lecturers were unaware of the availability of EIR as reported by Bentil (2011) at the Central University College (CUC) which happens to be a private university.

It follows therefore that any evidence-based research that seeks to unravel the factors that drive this unresponsive behaviour towards EIR usage especially in private universities is of high demand. Nevertheless, empirical scholarship in this field is still at its burgeoning stage (Xie, 2006). The present study is therefore timely and valuable as it contributes to filling the identified empirical research gap in order to inform policy on e-resources in academic institutions of higher learning, with particular emphasis on private universities.

1.4 Purpose of the Study

The main purpose of this study was to find out the level of use of electronic information resources by students for research and learning at the Akrofi – Christaller Institute of Theology, Missions and Culture (ACI) and the Ghana Technology University College (GTUC), with the view of making recommendations to ensure optimum utilization of e-resources.
1.5 Objectives

The specific objectives of the study were:

1. To find out the level of awareness of electronic information resources by students.
2. To identify how electronic resources are accessed by students.
3. To examine the main purpose for using electronic information resources.
4. To find out the relationship between perceived usefulness, perceive ease of use and actual use of electronic information resources.
5. To find out the level of satisfaction with current electronic information resources.
6. To find out the challenges associated with use of electronic information resources.
7. To recommend strategies needed for effective use of electronic information resources.

1.5.1 Research Questions

1. What is users’ level of awareness of electronic information resources?
2. How do students access electronic information resources?
3. What is the main reason(s) for using electronic information resources?
4. What is the relationship between perceived usefulness, perceived ease of use and actual usage of e-resources?
5. What is users’ satisfaction with current electronic information resources?
6. What kinds of challenges are associated with electronic information usage?
7. What strategies are required in order to promote the effective use of electronic information resources?
1.6 Scope of the Study

This study focused on use of electronic resources by students of two private Universities in Ghana. The universities are the Akrofi - Christaller Institute of Theology, Missions and Culture (ACI) and the Ghana Technology University College (GTUC). The Akrofi - Christaller Institute of Theology, Missions and Culture (ACI) is located in Akropong Akuapem. Ghana Technology University College on the other hand runs undergraduate and post graduate programmes and situated in Accra.

1.6.1 Limitations

The present study was limited in scope to two private universities in Ghana, ACI and even though there are over sixty private accredited universities in Ghana (NAB, 2014). The study was also focused on electronic journals and databases subscribed by CARLIGH regardless of the numerous electronic resources available including CD-ROMs, institutional repositories and websites.

1.7 Theoretical framework

The factors influencing the acceptance and rejection of new technologies have been of interest to scholars for decades. One of the most popular models that attempt to capture the acceptance or rejection of technologies in the workplace is Davis’s Technology Acceptance Model. The
Technology Acceptance Model (TAM) was used to guide the study. According to Bertrand and Bouchard (2008) the theory is aimed firstly at “identifying the determinants involved in computer acceptance in general; secondly, to examine a variety of information technology usage behaviours; and thirdly, to provide a parsimonious theoretical explanatory model.”

Fred D. Davis proposed the Technology Acceptance Model in his doctoral dissertation in 1985 that, “system use is a response that can be explained or predicted by user motivation, which, in turn is directly influenced by an external stimulus consisting of the actual system’s features and capabilities” as shown in Figure 1.1 below (Chuttur, 2009).

With this modification, Davis explained that users’ motivation could be elucidated based on three factors: perceived ease of use, perceived usefulness, and attitude towards using the system (Chuttur, 2009).

Figure 1.1: TAM and how it influences User motivation to use a Technology. Source: Adapted after Chutter (2009).
In the view of Davis (1989) as explained by Lederer et al. (2000);

i. Perceived usefulness is the degree to which a person believes that a particular information system would enhance his or her job performance; that is, by reducing the time to accomplish a task or providing timely information;

ii. Perceived ease of use on the other hand is, the degree to which a person believes that using a particular system would be free of effort; and

iii. Attitude towards use is the user’s evaluation of the desirability of employing a particular information systems application.

With the promotion of electronic journals in many universities around the world in both developed and developing countries, the issue now is how students at Private Universities are adapting to this technology in their pursuit of information need for research and learning purposes. The study was therefore used to ascertain the level of awareness and use of these technologies (Electronic Information Resources) by students of ACI and GTUC.

1.8 Significance of the Study

According to Woodwall (2012), the significance of a study concerns the usefulness of research and its added value to the existing body of knowledge or state of the art in the respective field of investigation.
The present study is very significant in that it is expected to divulge useful evidence-based findings that may be employed to raise the level of awareness of students on the need to utilise electronic information resources for research and learning.

Again, the findings of this research provide information on the state of ICT equipment in private universities. The study helps provide solutions to non-utilisation of certain electronic resources.

A key significance of the study is that it helps librarians justify why private university management should continue financing the subscription of electronic information resources out of their limited resources. Hence, the study is of benefit to managers of private universities especially ACI and GTUC management in adopting relevant policies and strategies toward access and effective utilization of electronic information resources.

Lastly, the findings of this research adds to the overall development of librarianship and serve as reference literature for the production of future scholarships in the field of Information Science.

1.9 Definitions of Key Terms

**Electronic information resource:** Haridasan & Khan (2009) defined electronic information resources as “resources in which information is stored electronically and which are accessible through electronic systems and networks”. These include for example, e-journal and electronic databases that can be accessed on the Internet, computer, CD-ROM, or related computer or electronic networks (Watts & Ibegbulam, 2006).
Research: It is the systematic process of finding out new fact or knowledge (Ochai & Nedosa, 1998). Thus, by research, the process employed by scientists to facilitate the discovery of new knowledge is referred.

Use: Ability to utilise electronic information resource in the conduct of research (Borgman, 2000). Utilisation expresses the ease of use of e-resources through ICTs.

Learning: According to Coley, Allan & Webber (2010) learning refers to the life long process of a person to acquire some level of unique characteristics (attitude, values, skills and knowledge) from daily experience and the educative influences and resources in his or her environment from the information centre (library) and other Information Communication Technologies (ICTs).

University: The new international Webster’s comprehensive dictionary of English language (2004) defines a University as an educational institution for higher instruction or for the examination of students already instructed.

1.10 Organization of study

The study is structured into six chapters.

Chapter one serves as an introductory chapter. It provides an outline of the research and gives an overview on the value of electronic information resources to research and learning. It covers areas such as background of the study, statement of the problem, purpose of the study, objectives
and research questions, theoretical framework, significance of study, and organization of the study.

**Chapter two** reviews the relevant literature that provides information on the context of the research. It considers the world review literature, the African review literature and the Ghanaian review literature on electronic information resources. It also covers specific literature relevant to the subject matter.

**Chapter three** deals with the method used to operationalize the research objectives and questions of the present study. It consists of the research design, selection of case, selection of subjects for the study (that is population, sample size and the sampling technique), and the instrumentation for data collection.

**Chapter four** focuses on data analysis and findings. It gives a detailed analysis on data collected, presenting information about demographic, level of computer skills, awareness and use of EIR and utilisation, the relationship between perceived usefulness, ease of use and actual usage of EIR, as well as the level of satisfaction and challenges associated with EIR.

**Chapter five** presents detailed discussions on findings.

**Chapter six** provides a summary of key findings, conclusion and recommendations for the study.
1.11 Summary

A research is considered a ‘central pillar’ for continuous existence and effective running of every university. The availability, access and effective utilisation of EIR are imperative parameters that enhance the achievement of such goal especially in private universities in Ghana.

The chapter thus introduces the background to the study, the statement of the problem and research questions, purpose and objectives of the study, scope and limitations of the study, significance of the study and definition of key terms as well as the organization of the study.
References


CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

A literature review is both a summary and explanation of the complete and current state of knowledge on a limited topic as found in academic books and journal articles. It looks at works that have been done and synthesizes or pulls together those elements that are similar or most pertinent to the theme of a particular study.

The aim of the literature review is “to use ideas in the literature to justify the particular approach to the topic and to reveal what has been written on the subject that is being researched” (Hart, 2000). Basically, a literature review makes a researcher to be familiar with earlier work or research of interest to his or her study, for the researcher to gain knowledge on how to find, analyse, evaluate and adopt information from available research (Gastel, 2012). Thus, literature review serves as the foundation or framework upon which new studies are developed.

This section will be treated under the themes, the world view of electronic information resources, the African view, and the Ghanaian view of electronic information resources. Literature will also be reviewed on specific themes including, the concept of electronic information resources, types
of electronic resources, benefits of electronic information resources, evaluation criteria of electronic resources, and the contribution of electronic resources to research and learning.

2.2 Development of Electronic Information Resources

The introduction of computer and its associated technologies in the early 1950s has brought a radical change in information science and its management from creation, storage and its final access. According to Meadows (1989), the first searching database was developed in 1960. Since then the library profession has recognized the potential of computer technology (Hawthorne, 2008). EIR were used in libraries in the form of Machine - Readable Cataloguing (MARC) in the mid-1960s. Hawthorne, further states that the introduction of Electronic Information in libraries came into being in the early 1970s and later in the 1980s developed software for the access of information from diskettes and CD-ROMs.

Appleton (2006) asserted that the development of the World Wide Web (www) by Tim-Barners Lee in 1990 has contributed immensely to the development of EIR. Now there are e-journals, e-books and e-maps, electronic databases of all kinds and forms, e-newspapers and many others.

2.3 Sources of Electronic Information Resources

A key change in the development in libraries and information services in the last 20 years has been the introduction and spread of electronic information resources (EIR). The advancement in
information technology has offered today’s information seekers and researchers different opportunities to access information resources in an increasing array and format. EIR are replacing non e-resources, and are appearing as new types of discovery tool. Generally, two types of EIR are identified: Direct Access Resources and Living e-documents.

**Direct Access Resources:** They are basic types of EIR and can be used at any time. There are two sub-types of direct access resources:

i. **Static e-resources:** They contain fixed information and never change form e.g. databases available in CD form.

ii. **Dynamic e-resources:** Such documents also contain fixed information, but this information can change its outward form (multimedia CD-ROM).

**Living e-documents:** Such e-resources can change their outward appearance and their embedded information (e.g. information on the web). These are the server and client based information resources. These are also called remote access resources or online resources because the location of the server is somewhere else.

In most information centres, EIR usually come in the form of CD-ROMs, online databases, OPACs, the Internet, and other networked information sources, which are competing with, and in some instances replacing, the print-based information sources as the primary means of information access and use.
Baruchson-Arbib and Shor (2002) carried out a study on the use of electronic information resources by college students in Israel. A questionnaire was administered randomly to 270 college students and all of them responded. The results of the survey disclosed that almost 90(33.3%) of the respondents did not use EIR, and only a small number 38(14.8%) used EIR several times per week. The main EIR used were the Internet, Aleph catalogue and CD-ROM databases, and only 16(5.9%) of the respondents used all the EIR together. The survey also disclosed that prior knowledge in computer use, library instruction, faculty encouragement, and field of academic study were significant factors which increased or decreased the use of EIR among college students. The authors concluded that despite various types of EIR available in the library, not all of these sources were being properly exploited. This suggests that although modern technology has resulted in new resources and services, but it does not equip users with the required skills.

According to Vasishta and Jyoti (2007) EIR are commonly available under two major categories:

i. **Subscribed Electronic Information Resources (SEIR):** To access this category of EIR, some subscription amount/fee has to be paid to the publisher/owner.

ii. **Free Electronic Information Resources (FEIR):** Such resources are freely available on the Internet and can be divided into sub-categories like Open Access journals/Free journals; Information available at Institutional Repositories; Organizational or Individual’s websites; Individual Blogs/Professional Discussion Forums.

This distinction shows that different options are available for EIR based learning.
2.4 Electronic Information Environment in Universities

In view of the digital revolution in academic environments, researchers have expressed varying degrees of interest to investigate the state of electronic information environment in universities around the world within the past two decades. Rolinson, Meadows and Smith (1995) emphasized the need for the use of computer-based information in research, and thus carried out a survey to investigate the state of electronic information environment that is providing support to biological research in academic and research institutions in the United Kingdom (UK). It was found that majority of the academic staff in the survey were reported to have computers in their offices and at homes, although the percentage of those with access to computers at homes was lower than those with access in the offices. There was a wider access to electronic networks by the academic staff but this varied from one institution to another. De Vicente, Crawford and Clink (2004) in a survey of electronic information environment at Glasgow Caledonian University, reported that 56% of academic staff had access to the Internet in their offices, 34% at home, 9% at the library and 1% for other access points. This is a reflection that majority of the academic staff had enabling information environment to access and use e-resources in their research.

Al-Shanbari and Meadows (1995) did a survey of electronic information environment in four universities in Saudi Arabia. Highlights of the findings of the study showed that about 38% of the academic staff had access to computers in their offices with 81% of these computers being stand-alone; while 86% of the respondents had access to computers within the departments. It
was found that networking was new and in rapid progress in the surveyed universities, with increasing impact on research activities of the academic staff.

Kaminer (1997) studied the prevailing electronic information environment in the U.S. through a questionnaire survey. The study indicated that over 90% of academic staff in the surveyed university was found to have computers in their offices and at homes. Access to the Internet was also high at the two access points – offices and homes.

Parameshwar and Patil (2009) explored the electronic information environment at the Gulbarga University, India in respect to access to the Internet. The findings of the study showed that major access points to the Internet by the academic staff in the survey were the university library (63.55%), department (37.24%), Internet cybercafé (35.51%), and home (18.22%). This revealed that the Internet connectivity in the offices of the academic staff was apparently low, and this confirmed a poor state of electronic information environment at the university.

Chifwepa (2003) carried out a survey to determine the state of electronic information environment in the University of Zambia. The findings of the study revealed that, the University of Zambia “had a well-developed network for both Intranet and Internet that was established to foster communication and access to both internal and external information” (Chifwepa, 2003). In order to access the Intranet and the Internet, all the departments/units including the library in the university were networked and varying numbers of computers were provided to each department/unit depending on the strength of the staff (academic staff) through CAMAS
(Computers for Academic, Management and Administrative Support) Project. Besides, the CAMAS initiative, Chifwepa (2003) found that the University of Zambia Library provided access to electronic networks (the Intranet and the Internet) through the support of International Network for the Availability of Scientific Publications (INASP). The goal of the INASP project was to assist the university library to provide access to electronic resources (e-journals and databases) through Programme for the Enhancement of Research Information (PERI) to academic staff for research purposes. However, and in spite of these initiatives, it was reported that most academic staff did not have access to computers in their offices to use the networks; access was either at “the head of department’s office or the computer laboratories” (Chifwepa, 2003). The paper concluded that lack of access to computers in personal offices needs to be redressed towards promotion of enabling electronic information environment in aid of efficient access and use of e-resources by academic staff in the university.

The situation at the University of Zambia where academic staff lack access to computers in their offices seems to confirm the poor state of electronic information environment in African universities as reported by Watts and Ibegbulam (2005). According to Watts and Ibegbulam (2005) although there is continuing evidence for increased access to ICTs and online facilities in developing world physical access to suitable ICTs and reliable connections remains challenging and costly for many. However, in contrast to the assessment of electronic information environment by Watts and Ibegbulam (2005), a study by Ojedokun and Owolabi (2003) had revealed a relatively well developed electronic information environment at the University of
According to Ojedokun and Owolabi (2003), the Internet was reportedly introduced at the University of Botswana in 1997 to transform the information environment in the university.

In view of this, they conducted a survey to investigate the state of electronic information environment at the University of Botswana due to its potential impact of the Internet on research. Academic staff were used as respondents, with 216 academic staff as the sample size. It was found that 100.0% of the respondents were reported to have access to computers in their offices, computers at homes (62.5%), Internet access in offices (94.4%), and Internet access at homes (15.28%). The findings of the study provided a relative better electronic information environment at the University of Botswana than obtained at the University of Zambia (Chifwepa, 2003; Ojedokun & Owolabi, 2003). The comparative enabling electronic information environment at the University of Botswana was further confirmed when the respondents were asked to indicate the constraints that affect effective use of the Internet, lack of computer with Internet access (6.9%) and lack of Personal Computer (8.3%) were in the least of the factors (Ojedokun & Owolabi, 2003). The high electronic information environment in the University of Botswana as reported by Ojedokun and Owolabi (2003) is consistent with the proposition by Subair and Kgankenna (2002) that academic staff should have computers and Internet access or connectivity in their offices in order to be integrated into global research community.

Manda (2005) investigated the state of electronic information environment in ten research and academic institutions (seven universities and three research institutes) in Tanzania in order to assess how e-resources (PERI resources) are accessed and utilised in research by academic staff.
in these institutions. The results indicated variations in electronic information environment between the surveyed institutions as earlier observed by Rolinson, Meadows and Smith (1995). It was found that academic staff could access e-resources at the libraries, computer centres, faculties/departments or offices depending on the institutions. Five university libraries reportedly have Library LANs. It was further observed that “although the availability of PCs within the institutions is fairly good, the numbers of computers available to users in the libraries are, on the whole, were not satisfactory” (Manda, 2005). In respect of computers in personal offices, most of the academic staff was reported to have computers with Internet access in their offices in the survey, except in two institutions. Manda (2005) indicates that the ratio is almost 1:1 and the PCs are often located in the offices of individual staff members so that they are conveniently available for use.

Although access to the Internet was rife in most of the institutions, it was comparatively high at the University of Dar es Salam and Sokoine University of Agriculture as 92% and 100% of academic staff respectively in these universities reportedly had access to the Internet in their personal offices. However, the major problem associated with Internet access in most of the surveyed institutions was that of low bandwidth except at the University of Dar es Salaam and Mzumbe University. It is therefore pertinent to conclude that there exist robust electronic information environments in Tanzanian universities to support modern day research by academic staff. A number of researchers have carried out surveys to explore the state of electronic information environment in Nigerian universities (Ani & Esin, 2003; Ehikhamenor, 2003; Watts & Ibegbulam, 2005; Emajorho and Adomi, 2006; Nwokedi, 2007; Nwezeh, 2010; Ani, Edem &
Ottong, 2010). Ani and Esin (2003) studied the electronic information environment in five federal universities in Nigeria. Although it was found that academic staff in the survey had a relatively good access to computers, access to networking and the Internet was apparently poor. The paper concluded that access to IT facilities – computers, electronic networks, and the Internet was a recent development in the surveyed universities and recommended adequate provision of computers and the Internet for academic staff to aid them in their research. A study by Ehikhamenor (2003) exploring the electronic information environment in 10 universities in Nigeria revealed that 64.4% and 50.4% of the academic staff in the survey had computers and the Internet in their offices respectively, while the prevalence of electronic networks was reportedly poor in these universities.

Watts and Ibegbulam (2005) reported on a study that investigated the state of electronic information environment at the University of Nigeria, Nsukka. The results of the study indicated that the Medical Library, College of Medicine, University of Nigeria was characterized by poor electronic information environment as it lacked access to adequate ICT infrastructure and affordable access to online databases, as Internet connectivity was reportedly poor. However, the study revealed that the university management was making tremendous efforts to improve access to ICT infrastructure not only at the Medical Library, but at the entire university in order to promote accessibility and utilisation of e-resources by academic staff in research activities.

Emojorho and Adomi (2006) surveyed the electronic information environment in Delta State University, Nigeria. The findings of the study showed that 72.5% of the academic staff
reportedly had ICT facilities including Internet access at their offices, 19.6% had computers at home. Low level of access to networking was also reported in the survey. A similar study by Nwokedi (2007) at the University of Jos, Nigeria indicated that 95.52% of the academic staff surveyed in the medical sciences had computers in their offices, 69.40% had computers at home, and 67.16% had Internet access in their offices.

A recent study by Nwezeh (2010) showed a high state of electronic information environment in Obafemi Awolowo University, Nigeria. The findings of the survey indicated that 95.7% of the academic staff had computers in their offices, 56.5% had computers at home, 69.6% had Internet access in their offices, and only 8.7% had Internet access at home. However, Ani, Edem and Ottong (2010) have reported a very low electronic information environment at the University of Calabar, Calabar, Nigeria as only 3.08% of the respondents had Internet access in their offices. Nonetheless, it can be concluded in the review that there is improving trend in electronic information environment in Nigerian universities, (although with some fluctuations) which is in tandem with global trend.

2.5 Technology Acceptance Model and Use of Electronic Information Resources

According to Davis (1993), human attitude towards the use of information and communication technology, is a major factor that determines whether an expected user (students) would actually use Electronic Information Resources or not. Hence our attitudes towards Electronic Information Resources usage affect its actual usage, with perceived usefulness and perceived ease of use as
the determinants of attitude (Koufaris, 2002). This is consistent with the postulation by Davis (1993) that “attitude toward using is in turn a function of two beliefs: perceived usefulness and perceived ease of use”. Thus, perceived usefulness and perceived ease of use have helped in application of the TAM to explain and predict acceptance of the use of information and communication technology by different people (students) in universities.

Perceived usefulness is defined as “the degree to which a person believes that using a particular system would enhance his or her job performance” (Davis, 1989). Perceived usefulness is a concept that explains the expected overall effect of use of information and communication technology on job performance or productivity (Davis, 1993). Davis (1989) therefore theorized that “a system high in perceived usefulness, in turn, is one for which the user believes in the existence of a positive use-performance relationship”. In other words, if a system (ICT) has a high degree of usefulness (productivity), it would be used by the potential user (academic staff).

Thus, in line with the work of Saade, Nebebe and Mak (2009), perceived usefulness is defined in the present study as the degree to which a student believes that accessibility and utilisation of electronic information resources will enhance or increase his/her productivity.

Consequently, from the concept of perceived usefulness, it is therefore postulated that a student would readily access and use variety of electronic information resources in his/her research, if he/she believes that, this would definitely increase his/her productivity. This leads to the hypothesis that, electronic information resources are research tools for productive academic staff.
in African universities. In other words, accessibility and utilisation of e-resources would have a positive effect on productivity of academic staff and students in African universities.

Perceived ease of use is “the degree to which a person believes that using a particular system would be free from effort” (Davis, 1989). Perceived ease of use deals with the situation in which little mental/physical effort is required in ICT usage in organization/institution (university) by potential users (academic staff and students). In the present study, perceived ease of use is defined as the degree to which a student believes that accessibility and utilization of electronic information resources will be free from effort.

However, researchers have observed that perceived usefulness has a more significant influence on use of EIR than perceived ease of use (Tibendera & Ogao, 2009). Tibendera and Ogao (2009) observed that “usefulness was more significantly affected by usage than ease of use” and that “perceived usefulness had a stronger correlation with user acceptance of technology”. Thus, to guide the study, using TAM, it is proposed that students who access and use electronic information resources frequently are expected to be more productive than those who do not.

Davis, Bagozzi and Warsaw (1992) used the TAM to show that “people’s intentions to use computers are influenced mainly by their perceptions of how useful the computers are for improving their job performance”. Application of the TAM by Koufaris (2002) on online consumer behaviour has also confirmed that “perceived usefulness (or increase in productivity) was more an important predictor of intended system usage”. Klopping and McKinney (2004)
affirmed that the TAM is one of the most effective tools to study user acceptance and use of information and communication technology among other competitive theories/models. They used the TAM, to predict and explain the impact of the Internet on e-commerce. A review by Johnson (2005) revealed extensive application of the TAM to study users’ acceptance of microcomputers, World Wide Web, Software, and decision support system in different organizations/institutions across diverse cultures.

In their study, Saade, Nebede and Tan (2007) used TAM to test students’ behaviour in a multimedia learning environment, specifically, the use of internet-based technologies by the students. The TAM was found to be a solid theoretical model that “provides better understanding of user behaviour on the system and a multimedia acceptance model” (Saade, Nebede & Tan, 2007). In another study, Saade, Nebebe and Mak (2009) applied the TAM to investigate cultural variation of the use of Web-based Learning System between the Chinese and Canadian students, with the finding that the use of ICT differs across cultural background. Recently, Sheikhshoaei and Oloymi (2011) applied TAM to establish its validity on librarians in engineering faculties of public universities in Iran. The findings confirmed that perceived usefulness have considerable influence on use of ICT by the librarians and therefore validated the model. Thus, the present study would apply the TAM as a guide to explore and explain if there is any possible correlation between perceived usefulness and perceived ease of use of actual usage by students in two private universities in Ghana (ACI and GTUC).
Although, the TAM has been reported as the most widely used and robust theoretical model in Information Science in the study of acceptance and use of information and communication technology, observably it has some limitations (Koufaris, 2002; Lee, Kozar & Larsen, 2003, Al-Shafi & Weerakkody, 2009; Sheikhshoaei & Oloumi, 2011). According to Al-Shafi and Weerakkody (2009), the basic strength of TAM is derived from its power and capability to predict the use of information and communication technology in variety of organizations/institutions globally. Additionally, the TAM is said to provide “factors which lead to IS acceptance, provides room for extensions and elaborations better than other competing models”, while its weaknesses “are its failure to determine barriers that hinder technology adoption” and use (Tibenderana & Ogao, 2009). However, in spite of its numerous applications, validations and robustness, and high prediction capability on the use of ICTs, TAM has been found to exclude some important sources of variance and does not consider challenges such as time or money constraints as factors that would prevent an individual from using an IS (Al-Shafi & Weerakkody, 2009).

2.6 Global Patronage of Electronic Information resources

Several studies on use of electronic information resources (EIR) have been carried out by students, research scholars, and teachers of various institutions all over the world. Maunissamy and Swaroop (2005) identified the usage and usability of e-journals by the users of the NIT, Tiruchirapall. Appleton (2006) expressed personal experiences on the use of e-resources and their impact on teaching and learning activity.
According to Bar-Ilan, Peritz, and Wolman (2003) the most active users of electronic journals are the younger members of the teaching and research staff. In a related study, Gastel (2012) showed that age was not an influential factor in whether the respondents read articles on paper or in electronic format. The study by Brennan et al. (2002) revealed that academics make fewer visits to the library and read more e-journals than the print era.

McCreadie and Rice (cited in Kebede, 2002) point out that to utilise effectively the EIR in meeting the information needs, users should meet some requirements. These requirements, from the users’ point of view basically comprise availability and accessibility of appropriate computer hardware and other related equipment, availability and accessibility of software which include quality and ease of use of interface and retrieval or search engines, and adequate user knowledge and skills in order for users to identify and define their needs in an electronic environment.

2.7 Use of Electronic Information in Africa

In Nigeria, Ehikhamenor (2003) conducted a study to investigate the use and non-use of the internet facilities by Academic Scientists in Ten Nigerian Universities. The findings of the study indicated that, “the scientists are still heavily dependent on printed sources”, although about 50.4% of them “have access to, and are using, the internet” in their teaching/research. The study attributed non-use of the internet “to the problems of accessibility, ease of use, analysis of internet use by academic staff and cost.” In furtherance of research on impact of internet resources, Ehikhamenor (2003) conducted a study on the impact of the internet on scientific
communication process and productivity of the scientists in Nigerian Universities. He observed that very few of the scientists agreed that the use of the internet had greatly facilitated their research work.

In a related study, Azubogu and Madu (2007) did a survey “on the use of computer and internet technology among the teaching staff of Imo State University”, Nigeria and reported a high level of use of information technology by the respondents. They gave reasons for the use of internet by teaching staff to include: ease of use, convenience, free access to the internet and access to free information on the internet among others. In another study, Ojedokun and Owolabi (2003) explored and “assessed the impact of internet competence on the use of the internet for teaching/research activities among academic staff of the University of Botswana.” The findings of the survey had shown that most academic staff in the University of Botswana are using the internet in their research/teaching activities.

Herring (2002) studied the use of electronic information resources in 12 scholarly peer-reviewed electronic journals. The journals represented areas of active interdisciplinary research available through the Web without subscription or registration. A total of 175 articles published from 1999 to 2000 were examined. The 175 articles had a total of 4289 unique references. Over 55% of the articles (97) cited electronic resources. In addition 658 citations, or 16% of the total, were to electronic resources. The 97 articles that referenced electronic information resources had a total of 2584 unique citations, 26.5% of which were to electronic information resources.
2.8 The Ghanaian context of the Use of Electronic Information Resources

Ghanaian Universities have not been excluded in the development and use of EIR. The adoption and use of electronic resources in Ghana have been acknowledged by several researchers including Asamoah-Hassan (2003); Martey (2004); Dadzie (2005) and Bentil (2011).

According to Alemna and Adanu (2005) the introduction of EIR in Ghana had not been too long ago as compared to the developed world. They added that the fullest utilisation of EIR to a large extent is yet to be realised in Ghanaian Universities. For instance, the premier University in Ghana (University of Ghana) main library acquired its first microcomputer in 1988 as a gift from the Ministry of Education under a World Bank project (Badu, 1993).

Martey (2004) observed that the development of ICTs in Ghana from 1996 to 2004 as very slow. He further stated that the slow pace of ICT development in libraries is as a result of the high cost of ICT and its associated accessories.

In Ghana presently, most academic and research institutions have access to a number of EIR (e-journals) through the coordinating efforts of the Consortium of Academic and Research Libraries in Ghana (GARLIGH). Member institutions can have more than 90,000 journals in various fields of study (Asamoah-Hassan, 2008).

There has been various studies on EIR usage in Ghana for example Dadzie (2005) examined the use of EIR by students and faculty members at Ashesi University College, Ghana. The findings
of her study revealed that close to 85% of respondents used search engines to access information rather than the subscribed e-journals. She also indicated that access and utilization of EIR in Ghanaian private Universities is expensive coupled with recurrent power outages and poor EIR environment.

Similar studies by Adika (2003); Kwafoa, Imoro and Afful-Arthur (2014) and Bentil (2011) identified slow internet speed, poor advertisement and user orientation, poor searching skills and recurrent power outages as well as high cost of internet bandwidth as some of the major challenges associated with EIR usage in Ghana.

Bayugo and Agbeko (2007) reported on a survey of convenient access to, and use of, electronic databases (CDROM and online) with full-text journals and their effect on information seeking behaviour of health sciences academics at the College of Health Sciences of the University of Ghana. The survey documented academics preferences of print and electronic resource, and the specific databases and full-text journals. The results showed that academics were unaware of the two full-text journal databases (HINARI and PERI) available at the Library. They concluded that most academics now prefer using electronic access to information (CD-ROM/online) to traditional print indexes and abstracts.
2.9 Advantages of Electronic Information Resources

Information explosion via Internet connectivity has greatly increased the amount of electronic information resources available on the web. E-information resources have enhanced accessibility, increased usability, effectiveness and established new ways for information users in using information for more productivity in their endeavours. The value and use of information resources, particularly e-resources, have increased with the time.

Vasishta and Jyoti (2007) pointed out in their work (harnessing electronic information resources through prospective consortia approach: a national necessity) that “EIR are having an edge over its print counterparts because of the browsing, searching, multi-access capability, 24x7 access, remote accessibility, etc.” They further outlined some major advantages of EIR as listed below:

i. **Maintenance of Updated information:** Data can maintain aptitude so that user will have access to latest version of information. It is very easy to retrieve, manipulate and merge data.

ii. **Rapid and accurate information retrieval:** EIR provide aids for connectivity, audio visualization, customizability, creation and revision of document, interactivity and rapid retrieval of information.

iii. **Distribution:** The major advantages of EIR are their global distribution, their hyperlinks and the ability to access from different sites and ability to reach distant places.
iv. **Compatibility with search engines:** There is a good number of search engines available to access and retrieve the appropriate information from the EIR. Most of EIR are providing access to information on the basis of keywords, author search etc.

v. **Cost Factor:** Whole world is moving towards electronic publishing and the cost of the e-publishing is much cheaper than that of the print version. Access to EIR is now considered most important element of collection building.

vi. **Multiple user access:** Most of EIR are providing multiple user access which enables many users to access EIR concurrently. Many users can use the same EIR at the same time at any place.

vii. **Manageability:** EIR can easily be managed by adding bookmarks and personal notes to the sites or by downloading it to private files or databases for coping and editing.

viii. **Availability:** Libraries managing collections of IER can support patrons from all over the world via the Internet. As far as electronic resources are concerned, the library is "open" twenty-four hours a day, seven days a week.

ix. **Technology Savvy:** Best suited for the users, who are more technology savvy and are demanding and expecting to meet their all information needs not only on demand, but also in anticipation of demand.

x. **Convenient:** Patrons can access EIR at their own convenience. “We are here for you” is the motto of these easy-to-use resources. Such notions generate satisfaction among users.

xi. **Space saving:** EIR are less bulky than paper, thus saving incredible amount of space storing documents.
Hawthorne (2008) also identified some advantages of networking in helping users to fulfil their information needs. In his view, information can be delivered easily and directly to the users, and the users may re-specify their need until they get the right information. The information is available anytime, whenever needed, and users can select the best information they require and store it as they wish.

Compared to traditional print-based sources, EIR provide a number of advantages. They are faster than accessing printed materials, especially for retrospective searching. EIR are straightforward when users use a combination of keywords to search for information. Further, more than one file can be searched at one time, which enables researchers to find more updated information. In addition, electronic information resources can be printed and searches saved to be repeated later. For those library users with limited time or distance learners, EIR provide ability to access the library resources from outside the library. These advantages contribute to the effective use of library material and facilities (Ray and Day, 1998).

2.10 Barriers in the Use of Electronic Information Resources

A study by Oduwole and Akpati (2003) identified lack of ICT and power supply outage as constraints to use of electronic resources. In the same vein, Watts and Ibegbulam (2006) surveyed some of the barriers to the use of electronic information resources available at the Medical Library of College of Medicine, University of Nigeria, Nsukka. Their findings showed that lack of an adequate ICT (information and communication technology) infrastructure and
affordable online access, absence of in-depth ICT skills and information searching skills among library staff, and cost of using the cybercafé are barriers to the use of electronic resources.

Banwell et al. (2004) disclosed some of the negative features of using EIR, which were reported by students. These included difficulty in finding relevant information, information overload, training needs, time constraints and slowness of the networks.

2.11 Summary

The purpose of the literature review in this chapter was to identify related works that are relevant to the present study. The chapter reviewed literature taking into account the World view, African view and the Ghanaian view on EIR as well as specific themes relevant to the study.
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CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter describes the methods and procedures used in carrying out the study. According to Kumekpor (2002), a method implies a way or a procedure of getting specific things done. It is the idea of a laid down or accepted or normally adopted way of getting specific procedures, techniques, ideas and thought followed in getting specific things done and or in achieving particular ends or objectives. This simply implies that the research methodology is the systematic step followed to solve an identified research problem (Kothari, 2004). The methodology for this study was placed under various sub-themes including: research design, selection of cases, selection of subject (that is population, sample size and sampling technique), and instrumentation.

3.2 Research Design

According to Trumbull (2000), a research design is a blueprint that helps the researcher “to seek, explore, and discover answers to research questions.” Similarly, Welman, Kruger and Mitchell (2005) describe a research design as “the plan according to which we obtain research participants (subjects) and collect information from them…with a view to reaching conclusions about the research problem.” The research design outlines the way the research is to be conducted. Ndunguru (2007) posits that “a research design is an assemblage of conditions for: specifying
relationships among variables in a study, operationalizing these variables in a study, and controlling effects of extraneous variables, and a plan for selecting the sources and types of information to be used in answering research questions”. In other words, the research design depicts the way the research is planned for effective data gathering in order to achieve its objectives.

A number of research strategies can be adopted in undertaking social science research. Leedy (1993) asserted that the choice of a strategy is mostly influenced by reflecting on certain key questions which include;

- What are the data needed?
- Where are the data located?
- How will the data be collected?
- How will the data be interpreted?

For the purpose of this study, the researcher adopted the survey method. It is believed that the survey approaches are best suited for explanatory research (Mwanje, 2001; Kothari, 2004; Fakhredaei, 2007). In addition, Leedy (2001) asserts that the use of survey allows data to be collected on a large population within relatively short period of time. He further states that “a survey research captures a fleeting moment in time, much as a camera takes a single frame photograph of an on-going activity. By drawing conclusions from one transitory collection of data, we may extrapolate about the state of affairs over a longer period”. Again, to have a comprehensive comparative study for which effective conclusions can be made it is appropriate to adopt the survey method (Creswell, 2009).
3.3 Selection of cases

The Akrofi-Christaller Institute of Theology, Missions and Culture (ACI) and the Ghana Technology University College (GTUC) were considered as study settings investigated for this study. Both Universities are privately owned. The justification for selecting ACI is that it is one of the few privately owned Universities in Ghana that has received Presidential Charter and for that matter can award its own degrees and the first privately owned University that runs and awards doctorate degrees in Ghana. On the other hand the decision to select GTUC is based on the fact that, it runs more post graduate programmes than any private university in Ghana. Again, as the name GTUC implies, it is one of the few universities in Ghana that places much premium on technology. For this reason and many other more, it is believed students of ACI and GTUC even though privately owned will have access to various e-resources and its associated technologies. To add to the above, the selected areas are accessible and convenient to the researcher and data collection was feasible.

3.4 Selection of subjects

Selection of subjects entailed the population for the study, the sample size and the sampling technique.

3.4.1 Population

According to Gray (2004) a population represents the total number of likely units or elements that can be involved in the study. The population of this study was made up of postgraduate students from ACI and GTUC.
### 3.4.1.1 Student Population for Both Universities

Post graduate students were the main target population for this study. The choice of post graduate students by the researcher was based on the fact that post graduate students depend largely on e-journals for their study and cannot easily complete their thesis without using e-journals (Okello-Obura & Ikoja-Odongo, 2010). For this reason electronic resources are more relevant to post graduate students than undergraduates.

A total number of One thousand, one hundred and ninety post graduate students were considered as the population for the study.

<table>
<thead>
<tr>
<th>No.</th>
<th>Institution</th>
<th>Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>ACI</td>
<td>165</td>
</tr>
<tr>
<td>2.</td>
<td>GTUC</td>
<td>1025</td>
</tr>
<tr>
<td></td>
<td><strong>Total:</strong></td>
<td><strong>1190</strong></td>
</tr>
</tbody>
</table>

Source: Field survey, 2014

### 3.4.2 Sample size

A sample size explains the specific number of elements that will be selected from the population or universe for the study (Kothari, 2004). Kothari stated that a sample should not be too large or
too small but fairly representative of the population. According to Neuman (2006) a researcher will be motivated by three issues for his or her sample size. That is:

- The degree of accuracy required;
- Diversity of population; and
- The number of different variables to be examined at the same time.

Neuman states further that for equal accuracy a researcher can select 10% of population above 1000 as compared to 30% of numbers below 1000.

In reference to this study, 10% of the population was considered as the sample size as stated by Neuman (2006). Thus, a sample size is calculated by dividing ten by one hundred and multiplying the result by the population.

\[
\text{Sample size (SP)} = \frac{10}{100} \times 1190 = 119
\]

### 3.4.2.1 Sample size for Both Universities

In order to have a fair representation of students from both Universities the researcher used proportionate means to calculate the specific sample size from each University.

\[
\text{Student Population from each University} \times 119
\]

Where PS = Proportionate Sample Size.
The results are as shown in the table 3.2 below.

Table 3.2: Proportionate Sample Size for both Universities

<table>
<thead>
<tr>
<th>University</th>
<th>Population</th>
<th>Proportionate Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACI</td>
<td>165</td>
<td>17 (approximately)</td>
</tr>
<tr>
<td>GTUC</td>
<td>1025</td>
<td>103 (approximately)</td>
</tr>
<tr>
<td>Total</td>
<td>1190</td>
<td>120</td>
</tr>
</tbody>
</table>

Source: Field survey, 2014

3.4.3 Sampling Technique

There are quite a number of sampling techniques that are used in social science research and these are broadly classified into probability sampling and non-probability sampling (Babbie et al., 2001; Frankfort-Nachmias & Nachmias, 1996; Welman, Kruger, & Mitchell, 2005).

In a probability sampling the probability of any member of the population to be selected and included in the sample can be determined (Welman, Kruger, & Mitchell, 2005). Examples of probability sampling techniques are simple random sampling, stratified random sampling, systematic sampling, and cluster sampling. In non-probability sampling, the probability for the selection of any member of the population for possible inclusion in the sample cannot be predicted or determined. Non-probability sampling techniques include quota sampling, purposive sampling and convenience sampling.
Even though simple random sampling is considered as the ideal sampling method since it ensures equal chances of each student to be selected, simple random sampling could not be adopted because it requires the use of a sample frame which will in turn require the names of each single student and this was an uphill task since it was very difficult for the universities to hand over names of all students to the researcher. Again, even in cases where the names can be accessed, identifying the individual students selected is just not practicable. The researcher thus after using proportionate sampling method to identify the sample size used accidental and convenient sampling in both Universities for data collection from post graduate students.

Aina (2004) contends that accidental sampling depends on convenience in getting into contact with the sampled population. He therefore asserts that it is the least expensive way of selecting a sample since it does not require the use of a sample frame. According to Sekaran (2003) convenience sampling connotes the gathering of data from members of a population who are readily available to give information. The convenient sampling method used in the present study is commonly utilised in studies of this nature and it follows previous research such as Yussof et al. (2009) and Raman (2011).

For the study, the first 17 ACI postgraduate students who were accidentally met at the Library and ready for the researcher were administered with questionnaire. With regard to GTUC the first 103 postgraduate students who were willing were also given questionnaires.
3.5 Instrumentation

The main instrument used for the study was the questionnaire.

3.5.1 Questionnaire

Questionnaires are simply put a set of questions administered to a defined number of persons for data gathering. According to Kumar (2005) questionnaires can be explained as a written list of questions for which answers from respondents are recorded. For this reason, he further states that questionnaires should be clear and easy for it to be understood by respondents. In the view of Kumekpor (2002) questionnaires have a special advantage over other research instruments.

The questionnaire used for this study made use of both structured and unstructured questionnaire design. The structured questionnaires are closed ended by providing possible answers where respondents selected an option by usually ticking. On the other hand unstructured questionnaires are open ended in nature, allowing respondents to state possible answers usually by writing.

The questionnaire was categorized under seven sections (namely A, B, C, D, E, F, and G) with nineteen (19) itemised questions. The questions were categorized and developed taking into account the core objectives of the study. Section A focused with the socio-demographic characteristics of respondents, section B dealt with access and awareness of e-journals, section C was appraisal of perceived usefulness of e-journals, section D handled appraisal of perceived ease of use of e-journals, section E collected information on actual usage of electronic journals,
section F also solicited information on challenges in using e-journals, and finally section G opened the option for available recommendation to the use of e-journals.

### 3.6 Mode of Data collection

The study deployed survey questionnaire for data collection from respondents.

#### 3.6.1 Questionnaire administration and Collection

Survey questionnaires can be administered in many ways. For the purposes of this research the researcher deployed the self-administered questionnaires especially because the target population were mainly students. The rate of non-response is relatively high with respect to the mail, e-mail and web-based questionnaires when dealing with students. Self-administered questionnaire survey can be explained as the process whereby the researcher gives out the questionnaires personally or with the help of assistants.

The researcher took an introductory letter from the Department of Information Studies, University of Ghana. This was used to seek permission from both Universities. When permission was granted by University authorities, the researcher administered the questionnaires personally to students at vantage points until the required sample size was achieved. Few questionnaires administered where received from respondents after they have completed filling them the same day. In most instances completed questionnaires were collected from respondents in two days after its distribution. Respondents were asked to drop the completed questionnaires at the Library which was later collected by the researcher.
3.7 Method of Data Analysis and Presentation of Results

After checking completed questionnaire received from respondents in order to ensure consistency, a coding manual was generated manually. The data was analysed using the Statistical Package for Social Sciences (SPSS) and STATA. Thus, descriptive statistics such as frequency distribution, percentages, means, graphs, Cronbach’s alpha reliability coefficients, Pearson’s correlation coefficients, p-values and other related statistics were computed and generated electronically.

3.8 Ethical Consideration

According to Aina (2002), “ethics are norms that are expected to be followed, and may also be referred to as principles of good behaviour”. As far as research is concerned, ethics refer to a code of conduct or expected societal norm of behaviour while conducting research (Kripanont, 2007).

In view of the above, Pilot and Hungler (1999) state that in social research the following ethical issues should be of great concern to the researcher:

**Informed consent:** it is important that the researcher explains the nature and purpose of the research to the respondents before the actual research takes place. It is important that the respondents agree to the terms and conditions and are willing to participate in the research process.

**Right to privacy:** it is the duty of the researcher to keep the identity of the respondent anonymous. In most cases where the respondents are concerned that the exchange of information will affect their status, will refrain from providing true facts. Therefore, the researcher will not force the respondents to be obliged to give their identities.
Right of protection from any harm: it is the duty of the researcher to ensure that the exchange of true information by the respondent will not harm the respondent in any form. This might include the harm of threats by others along with the physical harm to the respondents.

Overt nature of research: it is completely unethical for the researcher to indulge in the secret recording of the data in any form. These might include secret recording, taking unannounced notes and many more.

All the above ethical issues were adhered to by the researcher in each step of the research.

In addition to the above ethical issues, all sources cited were acknowledged accordingly as the University of Ghana’s code of conduct was observed throughout the research. Again, data was not manipulated in any way to the convenience of the researcher.

This means that a good field researcher requires a combination of skills. In addition to a strong sense of self, by possessing an incredible ability to listen and absorb details, tremendous patience, sensitivity and empathy for others, superb social skills, a talent to think very quickly and a superior ability to express oneself in verbal and writing.
References


London: SAGE Publications.


CHAPTER FOUR

ANALYSIS AND FINDINGS

4.1 Introduction

This chapter presents and describes the empirical findings of the study based on the methodological framework of data enquiry discussed in the previous chapter. The findings are presented under the following themes:

- Socio-demographic analysis
- Findings on the level of computer skills, awareness and utilisation of e-journals
- Analysis of the relationship between perceived usefulness and perceived ease of use of e-journals and actual usage
- Challenges and the level of satisfaction associated with the use of e-journals

The first theme, socio-demographic analysis deals with the empirical findings such as the distribution of gender and age of respondents differentiated by their institutions. Further, findings on the programs studied by the respondents and their level of study are presented. The second theme of this chapter explores respondents’ computer skills in both Akrofi-Christaller Institute and Ghana Technology University College. Again, findings on the awareness of e-journals, the
means of retrieving or accessing them and the purpose for utilizing such electronic materials are presented. Two basic components (*perceived usefulness* and *perceived ease of use*) of the Technology Acceptance Model (TAM) were deployed in an attempt to achieve objective four of the present study. Subsequently, the third theme of Chapter 3 utilises this theoretical model to present the empirical findings related to the fourth objective of the present study. The final theme of Chapter 4 considers respondents assessment of the challenges encountered through the utilization of e-journals and the rating of their satisfaction. The findings are generally presented in tables and figures by utilizing descriptive statistics parameters such as frequency distribution, percentage and mean. Additionally, Cronbach’s alpha reliability test and Pearson’s correlation analysis are applied to the TAM variables. Chapter 4 ends with some concluding remarks.

4.2 Socio-demographic analysis

The demographics of respondents in the study include gender and age.

4.2.1 Gender and age distribution by institution

The gender and age variables of the investigated respondents represent important aspect of the study. As such, the frequency and percentage distribution of both gender and age of the respondents are illustrated in Tables 4.1 and 4.2 respectively. Table 4.1 compares the gender distribution of respondents by the institution of study. According to Table 4.1, the total sample size is 120. The sample size of the Akrofi-Christaller Institute (ACI) is 17 whereas that of Ghana Technology University College (GTUC) is 103. Out of the 17 respondents of ACI, 15 were males which represent 88.2% whereas 2 were females accounting for 11.8% of the sample.
Concerning GTUC, 55(53.4%) of respondents were males compared to females who were 48(46.6%). It is therefore evident from the findings that a larger part of the responses was drawn from male respondents 70(58.3%) with fewer cases of females 50(41.7%).

Table 4.1: Gender distribution of respondents by institution

<table>
<thead>
<tr>
<th>Gender</th>
<th>whole sample</th>
<th>Akrofi-Christaller</th>
<th>Ghana Technology University College</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percent (%)</td>
<td>Frequency</td>
</tr>
<tr>
<td>Male</td>
<td>70</td>
<td>58.3</td>
<td>15</td>
</tr>
<tr>
<td>Female</td>
<td>50</td>
<td>41.7</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>100</td>
<td>17</td>
</tr>
</tbody>
</table>


The age distribution of the respondents in the whole or total sample as well as ACI and GTUC subsamples are captured in Table 4.2. According to Table 4.2, the respondents belong to four main age classes: 20 - 30 years, 31 - 40 years, 41 - 50 years and 51 - 60 years. On the basis of the total or whole sample, the highest proportion of respondents is found to be within a relatively younger age group. Thus, 52(43.3%) constituting the majority of respondents are between 20 - 30 years old. On the contrary, the least number of respondents accounting for 9(7.5%) of the total sample belonged to the 51 - 60 year age group. The second highest proportion 40(33.3%) was from the 31 - 40 year group. The remaining 19(15.8%) of respondents belonged to the 41 - 50 year age group.
As evidenced in Table 4.2, by discriminating the whole sample into ACI and GTUC subsamples, the comparative analysis shows varying patterns in the age distribution of respondents. It is imperative to note that for the ACI sample, the majority of respondents 9(52.9%) were between 31 - 40 years while for GTUC, the highest proportion of respondents 50(48.5%) belong to the 20 - 30 years age group. Further, the findings point out that for ACI, the lowest proportion of respondents was between 20 - 30 years old (2 respondents representing 11.8%). For GTUC, however, the lowest proportion of respondents occurred within the 51 - 60 years age group. Table 4.2 also shows that, for ACI, the 41 - 50 years and 51 - 60 years age classes had 3(17.7%) respondents each. Similar to the whole sample, the number of GTUC respondents distributed within the 31 – 40 years and 41 – 50 years age groups correspond to the second and third highest proportion respectively.

Table 4.2: Age distribution of respondents by institution

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>whole sample</th>
<th>Akrofi-Christaller</th>
<th>Ghana Technology University College</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percent (%)</td>
<td>Frequency</td>
</tr>
<tr>
<td>20 - 30</td>
<td>52</td>
<td>43.3</td>
<td>2</td>
</tr>
<tr>
<td>31 - 40</td>
<td>40</td>
<td>33.3</td>
<td>9</td>
</tr>
<tr>
<td>41 - 50</td>
<td>19</td>
<td>15.8</td>
<td>3</td>
</tr>
<tr>
<td>51 - 60</td>
<td>9</td>
<td>7.5</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>120</td>
<td>100</td>
<td>17</td>
</tr>
</tbody>
</table>

4.2.2 Programme of study by level of study

This section of the results looked at the programme and level of study of respondents in both Akrofi-Christaller Institute and Ghana Technology University College. Table 4.3 compares the programme and level of study of students investigated in the Akrofi-Christaller Institute. As depicted in Table 4.3, three main programmes were studied by the respondents surveyed in the Akrofi-Christaller Institute. These programmes were MA (Theology and Mission), MTH (African Christian) and MTH (Bible Translation).

It can be observed from Table 4.3 that, the majority of the respondents studied MA Theology and Mission. Specifically, out of 17 students, 14 (82.4%) studied MA Theology and Mission of which 6 and 8 were at level 500 (representing first year of study) and level 600 (representing second year of study) respectively. A total of 2 respondents representing 11.8% of the ACI sample studied MTH African Christian with 1 student each at level 500 and level 600. Table 5 also shows that among the ACI respondents, MTH Bible Translation was studied by only 1 student at level 500 accounting for 5.9%. It is also clear that for ACI sample, there was a marginally larger number of students at level 600 (9) compared with level 500 (8).
Table 4.3: Programme of study and level of respondents in Akrofi-Christaller Institute

<table>
<thead>
<tr>
<th>Programme of study</th>
<th>Level of study</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>level 500</td>
<td>level 600</td>
</tr>
<tr>
<td>MA Theology and Mission</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>MTH African Christian</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>MTH Bible Translation</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>8</strong></td>
<td><strong>9</strong></td>
</tr>
</tbody>
</table>


The list of programmes respondents studied and the distribution of their level of study for the GTUC sample are illustrated in Table 4.4. According to Table 4.4, eight main programmes were studied by the investigated students enrolled in GTUC. These programmes were MSc. (Supply Chain Management), MBA (Finance), MSc. (Engineering and Management), MBA (Oil and Gas), MSc. (Management Information Studies), MBA (Marketing), MBA (Oil and Gas) and MSc. (Telecommunication Engineering).

As indicated in Table 4.4, a total number of 25(24.3%) respondents studied MBA Finance. Thus, the majority of respondents in GTUC were studying MBA Finance. Of those studying MBA Finance, 14 were at level 500 and 15 at level 600. The programmes with the lowest distribution of respondents were MBA Oil and Gas and MSc. Telecommunication Engineering 2(1.9%) respondents each. For the 2 respondents studying MSc. Oil and Gas, 1 of them is at level 500 and the other level 600. All the 2 respondents studying MSc. Telecommunication Engineering, however, are at level 500. It can be seen from Table 4.4 that, five programmes are between the highest and lowest distribution of respondents with respect to the programme of study described.
earlier. The findings indicate that 18 respondents representing 17.5% (second highest proportion) study MSc. Management Information Studies of which 14 were at level 600 while 4 were at level 500. This is followed by MSc. Oil and Gas with 17 respondents of which 4 and 13 of them were at level 500 and level 600 respectively. For each of the following programmes: MSc. Supply Chain Management, MSc. Engineering and Management and MBA Marketing, 13(12.6%) students were studying it in the GTUC sample. Overall, for GTUC, a comparatively higher proportion of students were at level 600 (64 respondents) whereas 39 are at level 500.

Table 4.4: Programme of study and level of respondents in Ghana Technology University College

<table>
<thead>
<tr>
<th>Programme of study</th>
<th>Level of study</th>
<th>Total</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>level 500</td>
<td>level 600</td>
<td></td>
</tr>
<tr>
<td>MSc. Supply Chain Management</td>
<td>5</td>
<td>8</td>
<td>13</td>
</tr>
<tr>
<td>MBA Finance</td>
<td>14</td>
<td>11</td>
<td>25</td>
</tr>
<tr>
<td>MSc. Engineering and Management</td>
<td>3</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td>MSc. Oil and Gas</td>
<td>4</td>
<td>13</td>
<td>17</td>
</tr>
<tr>
<td>MSc. Management Information Studies</td>
<td>4</td>
<td>14</td>
<td>18</td>
</tr>
<tr>
<td>MBA Marketing</td>
<td>6</td>
<td>7</td>
<td>13</td>
</tr>
<tr>
<td>MBA Oil and Gas</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>MSc. Telecommunication Engineering</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>39</strong></td>
<td><strong>64</strong></td>
<td><strong>103</strong></td>
</tr>
</tbody>
</table>


The analysis was conducted further to establish the relationship between students’ programme of study or discipline and the usage of e-journals. In this regard, the result is presented in Table 4.5.
According to Table 4.5, the Pearson correlation coefficient of the association between the programme of study and actual usage of e-journals is 0.05. Thus, there is a positive correlation with a magnitude of 0.05 between programme of study or discipline and actual usage. The result also shows that the positive relationship between programme of study and actual usage is not statistically significant at 10% level ($p$-value $> 0.1$). Further, the coefficient of determination ($r^2$) is equal to 0.0025, which means that the programme of study or discipline explains only as little as 0.25% of the variation in actual usage of e-journals. It can therefore be concluded that the relationship between discipline and actual usage of e-journals is found to be positive, weak and statistically insignificant.

Table 4.5: Relationship between programme of study and usage of e-journals

<table>
<thead>
<tr>
<th>Programme of study/Discipline [Pearson correlation coefficient ($r$)]</th>
<th>Actual usage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>0.05</strong></td>
</tr>
<tr>
<td></td>
<td>$r^2 = 0.0025$</td>
</tr>
<tr>
<td></td>
<td>$p$-value $= 0.616$</td>
</tr>
</tbody>
</table>

Note: The relationship between actual usage and programme of study is statistically insignificant at 5% level ($p$-value $> 0.05$).
4.3 Findings on the level of computer skills, awareness and utilization of e-journals

Findings on the level of computer skills, awareness and utilization of EIR are analysed below.

4.3.1 Level of computer skills of respondents in ACI and GTUC

The study elicited data on the level of computer skills of respondents in ACI and GTUC. The level of computer aptitude of the respondents was analysed by means of histograms. The graph in Figure 4.1 illustrates a comparative distribution of the level of computer skills in ACI and GTUC samples.

According to Figure 4.1, out of a total of 17 respondents for ACI, 4(23.5%) had advanced computer proficiency skills while 13(76.5%) could be characterized as having intermediate skills. Figure 4.1 also indicates that the majority of GTUC respondents (54 out of 103) had intermediate computer skills. This is followed by 35 respondents whose level of computer skills was advanced. Lastly, 14 respondents were at the beginner level and they may be described as neophytes in computer applications. It can be concluded from the findings that a higher proportion of students had advanced level of computer skills in GTUC as compared with ACI. The proportion of students with intermediate computer skills, however, was higher in ACI than GTUC.
4.3.2 Awareness and access of e-journals

The findings on the students’ awareness of e-journals and the means by which e-journals are accessed are presented in Table 4.6 and Figure 4.2 respectively. As highlighted in Table 4.6, 104 students (86.7%) of the composite sample were aware of the availability of e-journals that may
facilitate their studies. On the contrary, 16 respondents of the whole sample indicated their lack of awareness or ignorance of e-journal resources.

Table 4.6: Distribution of the awareness of e-journals availability by institution

<table>
<thead>
<tr>
<th>Institution</th>
<th>Are you aware of the availability of e-journals?</th>
<th></th>
<th></th>
<th></th>
<th>Sample size</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>Frequency</td>
<td>Percent (%)</td>
<td>No</td>
<td>Frequency</td>
</tr>
<tr>
<td>Whole sample</td>
<td></td>
<td>104</td>
<td>86.7</td>
<td>16</td>
<td>13.3</td>
</tr>
<tr>
<td>Akrofi-Christaller</td>
<td></td>
<td>17</td>
<td>100</td>
<td>0</td>
<td>0.00</td>
</tr>
<tr>
<td>Ghana Technology University College</td>
<td></td>
<td>87</td>
<td>84.5</td>
<td>16</td>
<td>15.5</td>
</tr>
</tbody>
</table>


Beyond the whole sample, Table 4.6 also reveals that there was 100% awareness among the respondents of ACI compared with 84.6% of GTUC. In GTUC, however, a small proportion of the students 16(15.5%) were not aware of the availability of e-journals.

The modes by which the students in both ACI and GTUC accessed electronic resources are illustrated in Figure 4.2. According to Figure 4.2, in ACI, e-journals were accessed through library database 6(35.3%), search engines 9(52.9%) and subscription 2(11.8%). Regarding GTUC, 36(35%) of the respondents accessed e-journals from the University’s library database, 41(39.8%) accessed through search engines, 11(10.7%) by subscription and 15(14.6%) indicated “not applicable” (that is those with no access to e-journals).
4.3.3 Purpose of using e-journals

This section presents the findings related to the third objective of the current study. Objective three sought to examine the main purpose for which students employed e-journals in their
studies. The respondents were therefore asked to rate their level of agreement or disagreement on five main purposes of using e-journals. In this regard, the data gathered was analysed through descriptive statistics such as frequency and percentage distributions. Subsequently, the findings from the combined sample of ACI and GTUC are summarised in Tables 4.7, 4.8, 4.9, 4.10 and 4.11. Glancing through all the results presented in Tables 4.7, 4.8, 4.9, 4.10 and 4.11, it is evident that majority of the students used e-journals because it made their studies effective, enabled the undertaking of assignments, helped prepare for examinations, helped improve academic performance and generally useful for studies. This general finding is based on the nature of the distribution of responses indicating the agreement or disagreement with the five statements related to the purpose of using e-journals.

According to Table 4.7, on the one hand, 58(48.3%) of the respondents agreed, 35(29.2%) strongly agreed and 13(10.8%) somewhat agreed that they used e-journals to make their study effective. On the other hand, 5(4.2%) of the respondents somewhat disagreed, 5(4.2%) disagreed and 2(1.7%) strongly disagreed that e-journals make their study effective. However, 2(1.7%) of the respondents neither agreed nor disagreed with the statement.
Table 4.7: Distribution of responses on the use of e-journals to make studies effective

<table>
<thead>
<tr>
<th>Responses</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly disagree</td>
<td>2</td>
<td>1.7</td>
</tr>
<tr>
<td>Disagree</td>
<td>5</td>
<td>4.2</td>
</tr>
<tr>
<td>Somewhat disagree</td>
<td>5</td>
<td>4.2</td>
</tr>
<tr>
<td>Neither agree nor disagree</td>
<td>2</td>
<td>1.7</td>
</tr>
<tr>
<td>Somewhat agree</td>
<td>13</td>
<td>10.8</td>
</tr>
<tr>
<td>Agree</td>
<td>58</td>
<td>48.3</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>35</td>
<td>29.2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>120</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>


Table 4.8 indicates the distribution of respondents’ responses to the use of e-journals to undertake assignments. The results as captured in Table 4.8 shows that 47(39.2%) of respondents agreed, 30(25%) strongly agreed and 26(21.7%) somewhat agreed that using e-journals in their studies enable them to undertake assignments. Divergently, 6(5%) of the students reported to somewhat disagreed, 5(4.2%) disagreed and 2(1.7%) strongly disagreed to the statement that e-journals enable respondents to undertake assignments. Again, 4(3.3%) of the respondents were indifferent to the fact that e-journals facilitate the undertaking of assignments.
Table 4.8: Distribution of responses on the use of e-journals to undertake assignments

<table>
<thead>
<tr>
<th>Responses</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly disagree</td>
<td>2</td>
<td>1.7</td>
</tr>
<tr>
<td>Disagree</td>
<td>5</td>
<td>4.2</td>
</tr>
<tr>
<td>Somewhat disagree</td>
<td>6</td>
<td>5.0</td>
</tr>
<tr>
<td>Neither agree nor disagree</td>
<td>4</td>
<td>3.3</td>
</tr>
<tr>
<td>Somewhat agree</td>
<td>26</td>
<td>21.7</td>
</tr>
<tr>
<td>Agree</td>
<td>47</td>
<td>39.2</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>30</td>
<td>25.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>120</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>


According to Table 4.9, 45(37.5%) of the respondents agreed, 31(25.8%) somewhat agreed and 19(15.8%) strongly agreed to using e-journals to prepare for examination.

Table 4.9: Distribution of responses on the use of e-journals to prepare for examination

<table>
<thead>
<tr>
<th>Responses</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly disagree</td>
<td>4</td>
<td>3.3</td>
</tr>
<tr>
<td>Disagree</td>
<td>5</td>
<td>4.2</td>
</tr>
<tr>
<td>Somewhat disagree</td>
<td>6</td>
<td>5.0</td>
</tr>
<tr>
<td>Neither agree nor disagree</td>
<td>10</td>
<td>8.3</td>
</tr>
<tr>
<td>Somewhat agree</td>
<td>31</td>
<td>25.8</td>
</tr>
<tr>
<td>Agree</td>
<td>45</td>
<td>37.5</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>19</td>
<td>15.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>120</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

This notwithstanding, 6(5%) of the sampled students indicated that they somewhat disagreed, 5(4.2%) agreed and 4(3.3%) strongly disagreed to the assertion that e-journals were used to prepare for examination. In addition, 10(8.3%) of the respondents showed neither agreement nor disagreement for using e-journals to prepare for examination.

Another purpose of using e-journals according to the majority of the students investigated was to improve academic performance. As illustrated in Table 4.10, 48(40%) of the respondents agreed, 37(30.8%) strongly agreed and 11(9.2%) to a varying degree somewhat agreed that they use e-journals to improve their academic performance.

Table 4.10: Distribution of responses on the use of e-journals to improve academic performance

<table>
<thead>
<tr>
<th>Responses</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly disagree</td>
<td>1</td>
<td>0.8</td>
</tr>
<tr>
<td>Disagree</td>
<td>6</td>
<td>5.0</td>
</tr>
<tr>
<td>Somewhat disagree</td>
<td>6</td>
<td>5.0</td>
</tr>
<tr>
<td>Neither agree nor disagree</td>
<td>11</td>
<td>9.2</td>
</tr>
<tr>
<td>Somewhat agree</td>
<td>11</td>
<td>9.2</td>
</tr>
<tr>
<td>Agree</td>
<td>48</td>
<td>40.0</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>37</td>
<td>30.8</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>120</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>


Conversely, 6(5%) somewhat disagreed, 6(5%) disagreed and 1(0.8%) strongly disagreed that they use e-journals to improve their academic performance. Of all the respondents, however,
11(9.2%) neither agreed nor disagreed with the use of e-journals to improve their academic performance.

Table 4.11 discloses that the majority of respondents use e-journals because they find them generally useful for studies. Regarding the general usefulness of e-journals in postgraduate studies, 50(41.7%) of the students investigated agreed, 40(33.3%) strongly agreed and 12(10%) somewhat agreed while 6(5%) disagreed, 5(4.2%) somewhat disagreed and 3(2.5%) strongly disagreed. The current research established that 4(3.3%) of the students neither agreed nor disagreed that e-journals are generally useful to their studies.

Table 4.11: Distribution of responses on the general usefulness of e-journals for studies

<table>
<thead>
<tr>
<th>I find the e-journals useful in my studies</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly disagree</td>
<td>3</td>
<td>2.5</td>
</tr>
<tr>
<td>Disagree</td>
<td>6</td>
<td>5.0</td>
</tr>
<tr>
<td>Somewhat disagree</td>
<td>5</td>
<td>4.2</td>
</tr>
<tr>
<td>Neither agree nor disagree</td>
<td>4</td>
<td>3.3</td>
</tr>
<tr>
<td>Somewhat agree</td>
<td>12</td>
<td>10.0</td>
</tr>
<tr>
<td>Agree</td>
<td>50</td>
<td>41.7</td>
</tr>
<tr>
<td>Strongly agree</td>
<td>40</td>
<td>33.3</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>120</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

4.4 Analysis of the relationship between perceived usefulness and perceived ease of use of e-journals and actual usage

This section presents the findings on how the perceived usefulness and perceived ease of use of e-journals by students relate to the propensity to actually use them in their studies. Through Cronbach’s alpha reliability analysis and Pearson’s correlation analysis, this section reveals the pattern in the respective data gathered. Table 4.12 shows that perceived usefulness and perceived ease of use of e-journals was measured with 5 items or statements on a 7-point likert scale (anchored at 1 = “strongly disagree” to 7 = “strongly agree”).

Table 4.12: Reliability analysis of factors explaining e-journal usage

<table>
<thead>
<tr>
<th>Measurements</th>
<th>Type of scale</th>
<th>Number of items</th>
<th>Mean score</th>
<th>Cronbach’s alpha (α)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived usefulness</td>
<td>7-point likert scale</td>
<td>5</td>
<td>5.6</td>
<td>0.895</td>
</tr>
<tr>
<td>Perceived ease of use</td>
<td>7-point likert scale</td>
<td>5</td>
<td>5.4</td>
<td>0.940</td>
</tr>
</tbody>
</table>


The respondents’ mean score to the questions is 5.6 and 5.4 for perceived usefulness and perceived ease of use respectively. As indicated in Table 4.12, the two TAM measurements have relatively high Cronbach’s alpha reliability coefficients. Specifically, the Cronbach’s alpha coefficient for perceived usefulness is 0.895 as compared with perceived ease of use which has a value of 0.940. Thus, both Cronbach’s alpha coefficients for perceived usefulness and perceived ease of use are nearer to 1. This is a good indicator of the fact that the internal consistency of the
items in the scale is acceptable. In other words, the Cronbach alpha internal consistency reliability test suggests that all the TAM constructs are reliable and suitable in measuring the concepts employed in the present study.

In order to assess the relationship between actual usage of e-journals and the way students perceive the usefulness and ease of use of e-journals, a Pearson’s product-moment correlation was run on responses from 120 students accidentally selected from ACI and GTUC. The Pearson correlation coefficient \((r)\) was used to establish the strength and direction of the association between the indicated variables. To this effect, the empirical findings are summarised in Table 4.13. According to Table 4.13, the Pearson correlation coefficient of the association between actual usage and perceived usefulness is 0.633. Thus, there is a positive correlation with a magnitude of 0.633 between actual usage of e-journals and perceived usefulness. The findings also show that the positive relationship between actual usage and perceived usefulness is statistically significant at 1% level \((p\text{-value} < 0.01)\). Further, the coefficient of determination \((r^2)\) is equal to 0.40, which indicates that perceived usefulness explains 40% of the variation in actual usage of e-journals.
Table 4.13: Correlation analysis of actual usage of e-journals and perceived usefulness and perceived ease of use

<table>
<thead>
<tr>
<th>Actual usage</th>
<th>Perceived usefulness [Pearson correlation coefficient (r)]</th>
<th>Perceived ease of use [Pearson correlation coefficient (r)]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.633***</td>
<td>0.734***</td>
</tr>
<tr>
<td></td>
<td>$r^2 = 0.40$</td>
<td>$r^2 = 0.54$</td>
</tr>
</tbody>
</table>

Note: Same size (N) = 120. *** Correlation is statistically significant at 1% level (2-tailed).

As indicated in Table 4.13, the correlation coefficient is 0.734 for the relationship between actual usage and perceived ease of use. This positive relationship between actual usage and perceived ease of use is statistically significant at 1% level ($p$-value < 0.01). The coefficient of determination is 0.54 which indicates that 54% of the variation in actual usage is explained by perceived ease of use.

4.5 Challenges and the level of satisfaction associated with the use of e-journals

This section outlines the findings concerning the challenges and satisfaction with the utilisation of e-journals among students sampled in ACI and GTUC. The challenges encountered through the use of e-journals as asserted by the respondents are illustrated in Figure 4.3. According to the findings in Figure 4.3, the proportion of the ACI respondents with respect to the challenges
experienced with the use of e-journals are: slow internet speed 5(29.4%), recurrent power outages 3(17.6%), inadequate searching skills 2(11.8%), limited access to computers 1(5.9%), high internet cost 1(5.9%), difficulty in narrowing in on a subject area 1(5.9%) and no problem at all 4(23.5%). For the GTUC respondents, approximately, 40(33%) reported slow internet speed as the main challenge to the usage of e-journals. Further, 22(22.3%) indicated recurrent power outages, high internet cost 18(18.4%), inadequate searching skills 15(14.6%), limited access to computers 8(8.7%), difficulty in narrowing in on a subject area 2(1.9%) and only 1(1%) reported to have no problem at all.

Figure 4.3: Challenges with the use of e-journals. Source: Field Survey, 2015.
The extent to which the respondents feel either satisfied or dissatisfied with e-journals in ACI and GTUC is presented in Table 4.14. As captured in Table 4.14, there appears to be some marginal variation in the level of satisfaction with e-journal infrastructure and usage among ACI and GTUC respondents. As far as ACI was concerned, on the one hand, the majority of respondents were mostly satisfied 6(35.3%) and somewhat satisfied 6(35.3%). Further, 2(11.8%) of the respondents indicated that they were completely satisfied. On the other hand, some of the respondents were somewhat dissatisfied 1(5.9%) and mostly dissatisfied 1(5.9%). Those who responded to be neither satisfied nor dissatisfied accounted for 1(5.9%) of the respondents.

Regarding GTUC, the majority of the respondents reported to be somewhat satisfied 49(47.6%). Further, 17(16.5%) asserted to be mostly satisfied and 1(1%) completely satisfied. On the contrary, some respondents pointed out that they were somewhat dissatisfied 15(14.6%), mostly dissatisfied 6(5.8%) and completely dissatisfied 3(2.9%). Between the two extremes of satisfaction and dissatisfaction, 12(11.7%) of the respondents were indifferent as they reported to be neither satisfied nor dissatisfied with the usage of e-journals. The findings on the level of satisfaction reported by respondents in ACI and GTUC compared to a larger extent with that of the whole sample.
Table 4.14: Level of satisfaction with the use of e-journals

<table>
<thead>
<tr>
<th>Level of satisfaction with e-journal usage</th>
<th>whole sample</th>
<th>Akrofi-Christaller</th>
<th>Ghana Technology University College</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Frequency</td>
<td>Percent (%)</td>
<td>Frequency</td>
</tr>
<tr>
<td>Completely dissatisfied</td>
<td>3</td>
<td>2.5</td>
<td>0</td>
</tr>
<tr>
<td>Mostly dissatisfied</td>
<td>7</td>
<td>5.8</td>
<td>1</td>
</tr>
<tr>
<td>Somewhat dissatisfied</td>
<td>16</td>
<td>13.3</td>
<td>1</td>
</tr>
<tr>
<td>Neither satisfied nor dissatisfied</td>
<td>13</td>
<td>10.8</td>
<td>1</td>
</tr>
<tr>
<td>Somewhat satisfied</td>
<td>55</td>
<td>45.8</td>
<td>6</td>
</tr>
<tr>
<td>Mostly satisfied</td>
<td>23</td>
<td>19.2</td>
<td>6</td>
</tr>
<tr>
<td>Completely satisfied</td>
<td>3</td>
<td>2.5</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>120</strong></td>
<td><strong>100</strong></td>
<td><strong>17</strong></td>
</tr>
</tbody>
</table>


On the backdrop of the challenges enumerated by the respondents, the study subsequently solicited some recommendations from them. Table 4.15 illustrates some arrangements needed to improve and ensure the effectiveness of access and utilisation of e-resources as suggested by the respondents. As highlighted in Table 4.15, the majority of respondents 40(33.3%) were of the view that e-resources should be freely provided to students. Further, the respondents recommended training for students 24(20%), faster internet speed 19(15.8%), regular update of e-journals 14(11.7%), stabilising electricity supply 12(10%) and accessing all subjects of e-journal platform 11(9.2%). These points demonstrate that the students acknowledged the need for improvement of the current infrastructure and operational status of e-resources as imperative for success.
Table 4.15: Recommendations regarding the use of e-journals

<table>
<thead>
<tr>
<th>Recommendation</th>
<th>Frequency</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-Resources should be freely provided to students to facilitate studies by educational institutions</td>
<td>40</td>
<td>33.3</td>
</tr>
<tr>
<td>Students should be properly trained in the use of e-learning resources</td>
<td>24</td>
<td>20.0</td>
</tr>
<tr>
<td>The computers used for this services should be faster in operation and internet speed</td>
<td>19</td>
<td>15.8</td>
</tr>
<tr>
<td>All subject areas should be accessed on the e-journal platform</td>
<td>11</td>
<td>9.2</td>
</tr>
<tr>
<td>E-journal resources should be updated regularly</td>
<td>14</td>
<td>11.7</td>
</tr>
<tr>
<td>Electricity provision should be stable so the services can be accessed all time</td>
<td>12</td>
<td>10.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>120</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>


4.6 Summary

The results of data collected on the field were analysed and presented in this chapter. The results were presented at two levels (the composite analysis of the two universities and individual institutional analysis as and when necessary).
5.1 Introduction

This chapter dealt with discussions on the results of findings. According to Perris and Bellamy (2012) discussion of the results of a study allows for the determination of “whether the data analysis supports the general conclusions drawn from the research to answer research questions”. Hence, this chapter provides meanings to the data obtained from the study in line with previous studies in the field. The chapter is presented under the following sub-headings: demographics, level of computer skills, awareness of EIR, purpose for using EIR, relationship between discipline and usage of e-journals, relationship between PU, PEOU and actual usage, and challenges and the level of satisfaction associated with the use of EIR.

5.2 Influence of Demographics Characteristics on Utilization of EIR

The section discusses the result of the study to ascertain the influence of demographic features on the use of EIR under the following subsections: Gender, Age, and Programme of Study.
5.2.1 Gender

The issue of gender is of great interest in every aspect of human engagement at present. The study revealed that on a whole out of 120 respondents 70(58.3%) were males whereas 50(41.7%) were females. To be specific in terms of individual Universities, out of 17 respondents from ACI, there was an overwhelming male respondent rate of 15(88.2%) as compared with 2(11.8%) females. At GTUC the findings of the present study reveals 55(53.4%) males and 48(46%) of females out of 103 respondents.

The implication here is that the present study is in line with current trends as it has been established that more males are educated at the tertiary level as compared to females especially in developing countries where females are limited to the kitchen (Elnaggar, 2008). It also means that the present study is fair and not biased towards males. There have been a number of studies in the same direction. Bentil (2011) undertook a comparative study at UCC and CUC with the majority of respondents being postgraduate students. The studies revealed that at UCC out of 103 respondents 63(61.2%) of respondents were male with the remaining 37(38.8%) being female whereas at CUC there were 26(55.3%) males to 21(44.7%) females out of 47 respondents. Additionally, studies by Ani, Ngulube and Onyancha (2014); Nunoo (2012); Mulla (2011) all confirmed male dominance in tertiary institutions and their greater probability of being selected as compared to females. Contrary to the above, Okello-Obura and Magara (2008) in their studies on EIR access and utilization revealed more female respondents than male. The results indicated
105(55.3%) female and 85(44.7%) males. It can be concluded that the researcher’s balance of gender is not influenced in anyway by any personal interest and hence the results reflect reality.

5.2.2 Age

The results of the study revealed that most respondents were within the age range of 20-30 years 52(43.3%), followed by those within 31 - 40 years 40(33.4%); the third highest being 41-50 years 19(15.8%) and the least number of respondents were 51 - 60 years 9(7.5%). From these results, majority of the respondents were generally within the youthful age range of 20 - 40 years representing 111(92.4%).

The implication here is that the youthful generation are seriously into postgraduate studies and this is a positive signal for development and advancement of EIR. This is because the youth age group is considered to be very particular about technology and its associated technologies and services. They can also learn relatively faster as compared to the older age group.

The findings of this research are confirmed by Bentil’s (2011) study which revealed that in both private and public universities postgraduate programmes are usually monopolised by the youth (20 - 40 years). Specifically, Bentil (2011) found that more than 105(70%) of respondents in both UCC and CUC were between 20 – 39 years.
5.2.3 Programme of Study

The results from the present study indicates that out of 120 respondents 17(14.2%) came from ACI with the remaining 103(85.8%) coming from GTUC. It further reveals that at ACI 14(82.4%) offered MA (Theology and Mission), 2(11.7%) read MTH (African Christianity) and 1(5.9%) studying MTH (Bible Translation). On the other hand, at GTUC 25(24.3%), 18(17.5%) read MBA (Finance) and Msc. (Management Information Studies) respectively. Msc. (Supply Chain Management), Msc. (Engineering and Management), and MBA (Marketing) recorded 13(12.6%) for each programme accordingly.

It must be concluded here that demographic attributes of respondents to a large extent did not influence the use of EIR as confirmed by Ani (2013). A number of literature show a high degree of variation of use of EIR in general by discipline (Al-Shanbari & Meadows, 1995; Banwell et al., 2004; Elam, 2007; Hartley, 2007; Kaur & Verma, 2009; Park, 2010; and Tahir, Mahmood & Shafique, 2010). A survey by Banwell et al. (2004) revealed that access and use of computer based information varied between and within colleges as indicated in the present study. What this means is that a given discipline will have some level of influence on the use of EIR depending on how technologically the discipline is equipped as explained by Adams and Bonk (1995). To add to the above, Heterick (2002) explained that there is a positive influence of discipline on the use of EIR. He further stated that humanities programmes make less use of EIR than the sciences and social sciences. It is however interesting to note that the humanities are now showing greater interest in the adoption and use of EIR as this view is affirmed by Tahir,
Mahmood and Shafique (2010) who concluded in their study that “increasingly humanities scholars are using digital resources as a means of accelerating their information searching habits”.

5.3 Level of Computer Skills

It can be concluded from the findings that a higher proportion of students have advance level of computer skills in GTUC compared with ACI. The proportion of students with intermediate computer skills, however, was higher in ACI than GTUC. Most respondents one way or the other had some level of computer skills that had influenced their motivation to use e-journals. Moreover, McGuigan (2001) observed that the level of computing and Internet experience with which students enter higher education might influence whether or not they will use the library’s electronic resources. In order to utilise the growing range of electronic resources, students must acquire and practice the skills necessary to exploit them.

A study by Ozoemelen (2009), on use of electronic resources by postgraduate students of the Department of Library and Information Science, Delta State University Abraka, showed that there was low level of skillfulness in the use of ICT among the respondents. Lack of search skills was found to be a major hindrance to the respondents’ use of electronic resources. In a related study, Bashorun et al. (2011) found that there was no ICT use skill among the respondents at the University of Ilorin, Nigeria and this was a barrier to the use of e-resources.
5.4 Awareness of EIR

A research conducted by Egberongbe (2011) on the use and impact of EIR at the University of Legos revealed that out of 112 Lecturers about 32 (representing 28.6%) were not aware of EIR. Again, when 70 research scholars were asked on the awareness of EIR, 15 (21.4%) out of the number answered “NO”.

Similarly, Bentil (2011) in her M.PHIL thesis gave some level of unawareness by postgraduate students and lecturers on EIR at Central University College (CUC) and University of Cape Coast (UCC). The findings revealed that out of 103 and 47 postgraduate students sampled from UCC and CUC respectively, 2 (1.9%) from CUC were not aware of EIR. This gave a very high awareness rate as compared to that of Egberongbe (2011). However, results from CUC is in sharp contrast with the result from UCC indicating a very low awareness rate (42.6%) given that 57.4% of postgraduate students from CUC were not aware of EIR.

The present study however gave an encouraging percentage in terms of students’ awareness of e-journals. At ACI 100% awareness level was realised whereas GTUC gave 84.5% awareness with the remaining 15.5% (16 respondents out of 103) unaware of the availability of e-journals.

The indications here are that there is poor Library orientation and user education on EIR at GTUC. The reason why ACI recorded 100% awareness is that there is regular and comprehensive Library Orientation programme for students every semester. Again, it also implies that most postgraduate students depend largely on the traditional print based materials be it in the form of books, journals, lecture notes or newsletters.
5.5 Purpose for using EIR

In the past twenty (20) years scholars all over the world have reported an increasing number in the use of EIR (Kaminer, 1997; Heterick, 2002; Jankowska, 2004; Renwick, 2005; Al-Ansari, 2006; Vibert et al., 2007; Deng, 2010; Tahir, Mahmood & Shafique, 2010) and especially in Nigeria (Ani & Esin, 2003; Ehikhamenor, 2003; Ekwelem, Okafor & Ukwoma, 2009; Ani, Edem & Ottong, 2010). Researchers have observed with keen interest variations in the extent of accessibility and utilization of e-resources between countries and universities.

It has been reported by much earlier literature that the main purpose for which students and other researchers may use e-journals is for research purposes, for communication, finding relevant materials, teaching purposes and also to gain current and general information on new developments as well as academic, personal or official use (Deng, 2010; Heterick, 2004; Tahir, Mahmood & Shafique, 2010; Renwick, 2005; Vibert et al., 2007; Bentil 1011. Kwafoa, Imoro and Afful-Arthur, 2014).

The present study focused specifically on the academic purpose for which students use e-journals. The composite findings from ACI and GTUC are that most students used EIR for effective studies 106(88.3%) out of 120 respondents). This was followed closely by 103(85.9%) of respondents indicating assignment undertaken as their main purpose for using EIR. To improve academic performance and prepare adequately for examinations purposes also followed with 97(81%) and 95(79.1%) respectively. It has therefore been established clearly that majority of students use EIR mainly for learning and research purposes and this is confirmed by other

5.6 Relationship between discipline and usage of e-journals

The present study compared the discipline or programme of study and e-journals usage based on a composite sample drawn from two private universities (ACI and GTUC) in Ghana. The first part of the analysis showed that majority of the respondents studied MA (Theology and Mission) in ACI as well as MBA (Finance) in GTUC. In effect the disciplines of the respondents spanned across social sciences and humanities.

A growing body of literature suggests a significant disparity in the access and utilisation of e-resources across disciplines or programme of study. For instance, the study conducted by Adam and Bonk (1995) revealed the existence of inequities in access of electronic technologies across disciplines. Furthermore, Banwell et al. (2004) revealed variation in the access to a computer network by academic staff between and within colleges. As suggested by the literature, it was expected that the various disciplines of study will reveal variations in the usage of e-journals among respondents of the present research. The findings of the present research, however, showed an insignificant relationship between discipline or programme of study and the utilisation of e-journals among the composite respondents from ACI and GTUC. Although this finding somehow contradicts a number of previewed studies, it is still plausible as e-resources are becoming increasingly integrated in all disciplines nowadays. This assertion is supported by Heterick (2002) who opines that electronic resources have been found to be an invaluable tool
for research. Further, this finding of the present study is in agreement with Ani (2013) and Bentil (2011). Ani (2013) finds no significant influence of discipline on accessibility and utilisation of e-resources by respondents drawn from two universities in Nigeria. By comparing two universities in Ghana, Bentil (2011) concludes that discipline of respondents is independent on the usage of e-resources.

5.7 Relationship between PU, EOU and actual usage

This section first comments on the Cronbach’s alpha reliability findings and then discusses the results related to the influence of perceived usefulness and perceived ease of use on actual usage of e-journals. As the findings indicate in Chapter 4, the Cronbach’s alpha reliability coefficients are 0.895 and 0.940 for perceived usefulness and perceived ease of use respectively. This indicates that the internal consistency of the items used to measure these variables is more than the minimum acceptable level. This is in support of the range of reliability levels in the literature (Nunnally & Bernstein, 1994). In other words, the Cronbach’s alpha internal consistency reliability test suggests that all the perceived usefulness and perceived ease of use constructs are reliable and suitable in measuring the concepts employed in this study.

The findings of the study shows the existence of a significant and positive relationship between both perceived usefulness and perceived ease of use with actual usage of e-journals. The Pearson’s correlation coefficients reported for both perceived usefulness and perceived ease of use imply the existence of large or strong correlation with actual usage. This commentary is in line with the classification provided by Cohen (1988) that an absolute correlation coefficient
value of $0.1 < |r| < 0.3$ is classified as small, $0.3 < |r| < 0.5$ is characterised as medium and $|r| > 0.5$ is classified as large. However, the magnitude of influence and proportion of the variation in *actual usage* explained by *perceived ease of use* is comparatively higher than that of *perceived usefulness*. This finding is intuitive as even if students find e-journals useful and their level of computer skills and proficiency in e-journals software it may dampen their ability to actually use e-resources.

Regarding the relationship between *perceived usefulness* and *actual usage*, the finding of significant and positive association implies that if students feel that e-journals are useful, it leads to a higher frequency and the time they spend on using e-journals (higher actual usage). This finding is in consonance with a number of previous scholarships that revealed positive relationship between *perceived usefulness* and *actual usage* (Davis, 1989; Davis et al., 1989; Mathieson, 1991; Adams et al., 1992; Segars & Grover, 1993; Subramanian (1994); Igbaria et al., 1995, 1997; Hu, et al., 1999; Ndubisi et al., 2001; Ramayah et al., 2003). The present study also establishes a significant and positive relationship between *perceived ease of use* and *actual usage* of e-journals. This result is consistent with some previous studies (Chau, 1996; Hong et al., 2002; Shim & Viswanathan, 2007; Ramayah & Aafaqi, 2004; Thong et al., 2004; Amin, 2007). The implication is that if students find that the e-library is easy to use, they will be more willing to use it for information retrieval in order to improve the quality of their assignments. Interestingly, whilst the present research finds a significant relationship between *perceived ease of use* and *actual usage*, Subramanian (1994), Hu et al. (1999) and Yussof et al. (2009) revealed that there is a lack of significant association linking these two variables. However, the findings
of the present study indicate that perceived ease of use exerts a higher magnitude of influence on actual usage than perceived usefulness is supported by Chau (1996) and Igbaria et al. (1997).

5.8 Challenges and the level of satisfaction associated with the use of EIR

The findings revealed that in total, majority of respondents were in one way or the other satisfied using EIR as indicated in Table 4.14. It is evident from the findings that in total 55(45.8%) are somewhat satisfied. The implication here is that even though there is some level of satisfaction, it portrays a number of challenges associated in the use of EIR as discussed below.

Findings of the study established that the main challenge associated with the use of EIR is slow internet speed. The issue of recurrent power outages also came up strongly with 21(17.6%) and 27(22.3%) of respondents from ACI and GTUC respectively indicating so. Other challenges include inadequate searching skills, high internet cost, limited access to computers and the difficulty in narrowing on a specific subject, because majority of students use search engines in order to access EIR. They use search engines to get any kind of information. Undoubtedly, these search engines provide huge amount of information which in most instances is considered irrelevant. The main reasons for this given by the respondent are time consuming, more expensive, there a number of complications and it is also difficult to handle. This problem was also confirmed in the present study. When respondents were asked how they access EIR, majority answered through search engines.
Watts and Ibegbulem (2006) examined some of the barriers to the use of electronic resources available at the Medical Library of the College of Medicine, University of Nigeria, Nsukka. Their findings revealed that lack of an adequate ICT infrastructure and affordable online access, absence of in-depth ICT skills and information searching skills among library staff and users are barriers to the use of electronic resources.

Similar study by Kwafoa, Imoro and Afful-Arthur (2014) at the University of Cape Coast established that high internet charges, poor searching technique, slow nature of internet and lack of proper guidance hinders the use of EIR. This means that there is the need to improve library orientation and user education as well as frequent workshops and seminars on the effective utilization of EIR and for that matter e-journal.

Secondly, it is also crucial to improve the electronic information environment and its associated technologies being it computers, internet bandwidth and speed, and well trained personnel. It is also very necessary for institutions to negotiate for relatively cheaper internet charges for students from internet subscribers to ensure out of campus/library use of EIR.

5.9 Summary

The discussion of the various research findings of the study was treated in this chapter in relation to related literature. From the discussions it was established that there is a positive relationship between perceived usefulness, perceived ease of use and actual usage of EIR for research and
learning in Ghanaian Private Universities. Additionally, it was proven that students use EIR for mainly Research and learning purposes.
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CHAPTER SIX
SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

The chapter presents the summary of findings, conclusion and recommendations. The objectives of the study were:

1. To find out the level of awareness of electronic information resources by students.
2. To identify how electronic resources are accessed by students.
3. To examine the main purpose for using electronic information resources.
4. To find out the relationship between perceived usefulness, perceived ease of use and actual use of electronic information resources.
5. To find out the level of satisfaction with current electronic information resources.
6. To find out the challenges associated with use of electronic information resources.

6.2 Summary of Findings

This section is presented with respect to the objectives of the study as outlined in section 6.1.

6.2.1 Awareness of EIR

The first objective of the study was to find out the level of awareness of EIR by students. The study revealed that ACI recorded (100%) awareness level of all 17 respondents. However, at
GTUC 16 respondents out of 103 representing 15.5% were unaware of the availability of EIR (e-journals) in the University with poor publicity as a major cause.

6.2.2 Access of EIR

The study also sought to identify how EIR are accessed. The result showed that there were basically four means through which EIR are accessed in the two universities. At ACI and GTUC the majority of respondents 9(52.9%) and 41(39.8%) respectively had access to EIR through search engines. This is followed by 6(35.3%) respondents from ACI and 36(35%) from GTUC accessed through the library database. The results also showed that for 2(11.8%) respondents from ACI and 11(10.7%) from GTUC the means of access was mainly through subscription. It is also interesting to note that 15(14.6 %) out of 103 respondents at GTUC do not access EIR through any means because they do not use it. The main reason for the respondents not using it was as a result of their unawareness of EIR in the university.

6.2.3 Purpose for Using EIR

The study also sought to find out the purpose for using EIR by students. It was revealed that in both universities the main purpose for using EIR was for research and learning. Specifically, it was revealed that in order of preference 106(88.3%) use EIR for effective studies, 103(85.9%) also used EIR purposely for undertaking assignments, 97(81%) for improved academic performance and 95(79.1%) used it for examination purposes. In total, 102(85%) that is of all respondents (120) found EIR very useful in their academic research work.
6.2.4 Relationship between perceived usefulness, ease of use and actual use of EIR

Another key objective of the study was to find out the relationship between perceived usefulness, perceived ease of use and actual usage of EIR. The results of the findings established clearly high relationship between perceived usefulness, perceived ease of use and actual usage. The study deployed the Technology Acceptance Model and established Cronbach’s alpha coefficient for perceived usefulness at 0.895 and perceived ease of use at 0.940. The study also revealed coefficient of determination at 0.54 which indicated 54% of variation of actual use. This means that there is a strong relationship between perceived usefulness, perceived ease of use and actual usage.

6.2.5 Level of Satisfaction on EIR usage

The study also aimed at examining the level of satisfaction by students in using EIR. The study used a 7-point likert scale to establish the level of satisfaction of respondents in utilizing EIR. The findings revealed that from the two universities (ACI and GTUC), 3(2.5%) were completely satisfied, 23(19.2%) and 55(45.8%) were also mostly and somewhat satisfied respectively, 13(10.8%) of respondents were neither satisfied nor dissatisfied, 16(13.3%) somewhat dissatisfied and 7(5.8%) mostly dissatisfied as well as 3(2.5%) completely dissatisfied. It is evidently clear that majority of respondents from the surveyed universities were generally satisfied with the current state of EIR in their respective Universities.
6.2.6 Challenges associated with EIR use

The final objective of the study was to find out the challenges associated with the use of EIR by students. The results revealed that from the Universities surveyed, there was a major challenge of slow internet speed. Specifically, the study revealed that 5(29.4%) and 40(33%) of respondents from ACI and GTUC respectively identified slow internet speed as a key challenge. Other challenges outlined by the study include recurrent power outages, inadequate searching skills, difficulty in narrowing on a subject, high internet cost and limited access to computers. The study thus states that in order to ensure effective utilisation of EIR, conscious effort should be deployed by University management to resolve the identified challenges.

6.3 Conclusion

Based on the findings, the following concluding remarks are drawn. High awareness of the availability of EIR amongst students does not necessarily translate into high levels of actual usage. Search engines represent the main platform through which students access EIR. This is not efficient because of information overload where students may have to sift through a myriad of suggested links before they could lay hands on useful materials if any. The other access points of EIR include library databases and subscription. Primarily, the majority of students utilise EIR for the purpose of making their research and learning effective. Both perceived usefulness and ease of use have significant and positive relationship with actual usage of EIR with perceived ease of use showing a stronger level of influence. Thus, by increasing the level of perceived usefulness and perceived ease of use of EIR by students, it leads to a significant increase in the level of actual usage, with perceived ease of use exerting a relatively higher magnitude of
influence. Although the majority of students appear to be largely satisfied with the state of EIR, a number of challenges are associated with its usage. In this regard, the most reported challenge with EIR utilisation is slow internet speed. Additionally, the issue of recurrent power outages, low students’ capacity in EIR, high internet cost and limited access to computers need to be addressed. In effect, it is crucial for university management and for that matter Librarians to make conscious effort to ensure effective library orientation and training on electronic information resources. It is imperative to remark that, these conclusions cannot be generalised to all universities in Ghana but they are still plausible and applicable to at least the sampled students from both the Akrofi-Christaller Institute and Ghana Technology University College.

6.4 Recommendations

Taking into account the findings of the study, the following recommendations were made:

6.4.1 Provision of Infrastructure

The study observes that a state of the art electronic information environment will lead to improved utilisation of EIR by students at the surveyed private universities, and indeed other Ghanaian Universities. In view of this, University managements at ACI and GTUC should increase investments in ICT infrastructural facilities such as computers, the Internet, e-journal subscription charges, virtual/digital libraries to conform to new development of Universities around the world.

Secondly, the library should develop a technology by which students can access e-journals outside the university environment with fewer restrictions.
Again, there should be a conscious effort by university management to ensure reliable and continues electricity supply at all time. This means there should the provision for alternative power supply systems during power outages in order not to disrupt academic activities on campus.

6.4.2 Information Literacy Training

It is also recommended that training of students on EIR will increase its effective utilization and ensure effective academic work. University management and for that matter, librarians should ensure that there are regular training for students especially postgraduate students in addition to an effective library orientation and user education programme. In addition, information literacy should be developed and integrated into university courses. This will inculcate a life-long learning behaviour in students.

Students (postgraduate) should be active in the use of EIR in view of the changing trend in information access from the print to e-resources and its positive impact on research and learning. This should involve continuous acquisition of relevant ICT and information literacy skills to enable them to access and use specific EIR in their various study areas.

6.4.3 Funding

Regular sponsorship for library and other relevant ICT staff to attend national or international seminars, workshops or conferences on EIR and associated ICT applications should be encouraged in Universities.
6.4.4 Match Available EIR with Course Content

The librarian with his/her team of library staff should match available EIR with various programmes of study in order to save the time of students and to reduce or eliminate to the greatest minimum the difficulty narrowing on a subject area.

6.5 Areas for further studies

The present study was limited in scope to two private universities in Ghana (ACI and GTUC). In view of the findings there is the need to investigate the following:

6.5.1 Further studies should be undertaken in other private universities in Ghana.

6.5.2 Furthermore, there is the need to conduct further research in the present study area using different research methods for instance the qualitative and mixed research methods.

6.5.3 To improve user perception on EIR there should be further studies in EIR environment and how it can influence actual usage of EIR.

6.5.4 Last but not the least, it is equally important to investigate into marketing of EIR and how it can improve actual usage of EIR particularly e-journals.
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Questionnaire on the Use of Electronic Information Resources for Research and Learning in Private Universities in Ghana.

Introduction

This questionnaire seeks to solicit information on the use of Electronic Information Resources (e-resources or e-journals) for research and learning in private universities in Ghana.

The researcher is a final year M.PHIL. student of the Department of Information Studies, University of Ghana.

Information given will be strictly used for research purpose only. Your candid response to the following questions will be much appreciated. Thank you in advance, for your cooperation.

Section A: Socio-demographic Characteristics

1. Sex: Male [ ] Female [ ]
2. Age ..................................
3. Programme of study..............................................................
4. Level of study:  i. Level 100 [ ] ii. Level 200 [ ] iii. Level 300 [ ] iv. Level 400 [ ]
    iv. Specify others ..............................................................
5. Section:  i. Regular [ ] ii. Weekend [ ] iii. Sandwich [ ] iv. Specify others..........................
Section B: Access and awareness of e-journals

6. Do you have access to internet?  Yes [  ]  No [  ]
   If YES please, go to question 7, if No then go to question 8.

7. Where do you access internet? (You may tick (√) more than one answer)
   i. Library [  ] ii. Home [  ] iii. Computer Lab iv. [  ] v. Internet Café [  ]
   vi. Specify others………………………………………………………………………………

8. What is the level of your computer skills?  i. Advance [  ] ii. Intermediate [  ]
   iii. Beginner [  ] iv. None [  ]

9. Are you aware of the availability of e-journals?  YES [  ]  NO [  ]
   If YES please, go to question 10, if NO proceed to question 11.

10. How did you get to know of the availability of e-journals?  i. From Colleagues [  ]
    ii. Library Guide [  ] iii. Library Orientation [  ] iv. Library workshop [  ]
    v. Internet browsing [  ] Specify others…………………………………………………………

11. How do you access the e-journals?
    i. Through Library database [  ]
    ii. Through search engines [  ]
    iii. Subscription [  ]
    iv. Specify others…………………………………………………………
Section C: Appraisal of Perceived Usefulness of e-journals

12. Please rate your level of agreement with the following statements by ticking (√).

Please Note: 1= Strongly Disagree; 2= Disagree; 3= Somewhat Disagree; 4= Neither Agree / Disagree; 5= Somewhat Agree; 6= Agree; and 7= Strongly Agree

<table>
<thead>
<tr>
<th>s/n</th>
<th>Statement</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>i.</td>
<td>My study will be more effective if I utilize e-journals</td>
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<tr>
<td>ii.</td>
<td>Using the e-journals enables me to easily undertake my assignments</td>
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<td>iii.</td>
<td>Using the e-journals helps me prepare adequately for my examinations</td>
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<td>iv.</td>
<td>Using the e-resources would improve my academic performance</td>
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<td>v.</td>
<td>I find the e-journals useful in my study</td>
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</table>

Section D: Appraisal of Perceived ease of use of e-journals

13. Please rate your level of agreement with the following statements by ticking (√).

Please Note: 1= Strongly Disagree; 2= Disagree; 3= Somewhat Disagree; 4= Neither Agree / Disagree; 5= Somewhat Agree; 6= Agree; and 7= Strongly Agree

<table>
<thead>
<tr>
<th>s/n</th>
<th>Statement</th>
<th>1</th>
<th>2</th>
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<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<tbody>
<tr>
<td>i.</td>
<td>Learning to use the e-journals would be easy for me</td>
<td></td>
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<td>ii.</td>
<td>My interaction with e-journals is clear and understandable</td>
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<td>iii.</td>
<td>I have easy access to e-journals for my study</td>
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<td>iv.</td>
<td>It would be easy for me to become skillful at using e-journals</td>
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<tr>
<td>v.</td>
<td>I find the e-journals easy to use</td>
<td></td>
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</tbody>
</table>
Section E: Actual usage of e-journals

E.1 Frequency of use

14. On the average, how frequently do you use e-journals in your studies?

<table>
<thead>
<tr>
<th>Numerical scale</th>
<th>Description</th>
<th>Tick (✓)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Never/Almost never</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Once a month</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>A few times a month</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>A few times a week</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Around once a day</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Several times a day</td>
<td></td>
</tr>
</tbody>
</table>

E.2 Actual daily usage

15. On an average day, how much time do you spend on accessing and applying e-journal resources in your studies?

<table>
<thead>
<tr>
<th>Numerical scale</th>
<th>Description</th>
<th>Tick (✓)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Never/Almost never</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Less than half an hour</td>
<td></td>
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<tr>
<td>3</td>
<td>Between 30 minutes and 1 hour</td>
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<td>4</td>
<td>Between 1 and 2 hours</td>
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<td>5</td>
<td>Between 2 and 3 hours</td>
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<tr>
<td>6</td>
<td>In excess of 3 hours</td>
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</table>

16. Why are you not using e-journals? (Tick (✓) as many as applicable)

i. Cannot find any relevant ones in my field of study

ii. Library does not subscribe to the titles I need

iii. Quality is not equal to print

iv. Have to pay

v. Inadequate network facilities (e.g; No. of PCs, No. of Internet connection, Lack of accessibility)

vi. Don’t like reading from screen
Section F: Challenges in using e-journals

17. What problems do you encounter in using e-journals? (You may tick (√) more than one answer)
   i. Limited access to computers [ ]    ii. Recurrent power outages [ ]    iii. Slow internet speed [ ]
   iv. Inadequate searching skills [ ]    v. High Internet cost [ ]    vi. No problem at all [ ]
   vii. Specify others…………………………………………………………………………………………

Section G: Satisfaction

18. Please indicate your level of satisfaction in using e-journals by ticking (√).

<table>
<thead>
<tr>
<th>Completely dissatisfied</th>
<th>Mostly dissatisfied</th>
<th>Somewhat dissatisfied</th>
<th>Neither satisfied / dissatisfied</th>
<th>Somewhat satisfied</th>
<th>Mostly satisfied</th>
<th>Completely satisfied</th>
</tr>
</thead>
<tbody>
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</tr>
</tbody>
</table>

19. Kindly state any recommendations with regard to the use of e-resources or e-journals.

..................................................................................................................................................
..................................................................................................................................................
..................................................................................................................................................

Thank you very much for your help and co-operation.