AN EVALUATION OF ICT USE IN INSTITUTIONS OF HIGHER LEARNING IN BURUNDI

A CASE STUDY OF BUJUMBURA PROVINCE

BY

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DECLARATION

I **KWIZERA OTTO DALTON** hereby declare that the work contained in this dissertation is my own original work and that it has not been submitted to this or any other university before. It has been presented to the undersigned supervisor and has been duly approved.

Signature: …….

Date: …….

APPROVAL

This project has been submitted with my approval

(Supervisor)

Signed ……..... Date of Approval.....

ACKNOWLEDGEMENT

Thanks are to the Almighty God without Whom I would not have accomplished this task. I recognize the invaluable guidance and timely assistance of my supervisor.

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ABSTRACT

The study evaluates the use of ICT in institutions of higher learning in Burundi. A case study of Bujumbura Province. The study was guided by the following objectives namely; To find out the how the cost of ICT training materials is affecting ICT usage in the Institutions of higher learning in Bujumbura Province, To examine the effect of skills development in ICT on the usage of ICT in institutions of higher learning in Bujumbura Province and To assess the relevance of administrative support on ICT usage in institutions of higher learning in Bujumbura Province. The study found that the cost of purchasing, installing and maintaining ICT training materials is high. It also indicated that the cost of ICT training materials significantly affect the usage of ICT training materials. This study adopted a descriptive survey design. The study considered a total population of 300 participants who included the lecturers and the students and the sample size was 133 respondents. Similarly the study found that the skills development the teaching staff and students kept on improving from ordinary level to advanced level and finally to tertiary level of their education. However, the study indicated that skills development does not significantly affect the usage of ICT training materials. The study made the following recommendations at per the findings. The management of institutions of higher learning should ensure that they get expert employees who will be able to provide them with cheap ICT training materials. In addition, the same ICT experts can help in the installation and maintenance of ICT training materials at cheap rates. There is need for the students and the teaching staff to be encouraged to receive comprehensive training in different areas in ICT so as to be able to successfully use ICT training materials such as the internet, scanners and different web-portals. The administrative body should do their best and support the venture of ICT training materials financially, technically, and managerial. In other words they should finance the buying of more computers, connection to internet, building of computer labs and employment of lab technicians.

ACRYNOMS

IT	:	Information Technology
ICT	:	Information and Communication Technologies
UNDP	:	United Nations Development Programme
ISP	:	Internet Service Provider
ULT	:	University of Lake Tanganyika
ULB	:	Universite' Lumie de Bujumbura
USA	:	Universite' Soyene d'Afriaque
UMLK	:	Universite Montin Luther King
CVI	:	Content Validity Index
SPSS	:	Statistical Package for Social Sciences

CHAPTER ONE
INTRODUCTION

1.0 Introduction

This chapter presents the introduction of the research, it consists of the background of the study, the statement of the problem, the purpose of the study, research questions and objectives, the scope and significance of the study.

1.1 Background to the study

1.1.1 Historical background

In developing country contexts, Information and Communication Technologie (ICT) is one of the approaches through which students acquire the skills needed to join the knowledge society and become competitive in the job market within and outside their countries. Although ICT is viewed as a new paradigm in knowledge acquisition and transfer, its adoption and use in developing countries has been characterized by high incidence of failed and under/unutilized initiatives (Usoro, 2007).

Research into reasons for such occurrences reveals several challenges and constraints such as poor and inadequate ICT infrastructure, lack of funding, inadequate ICT skills, negative attitude towards ICT, absence of policies for ICT development, and poor administrative support. Globally, the education sector are beginning to embrace Information and Communication Technology (ICT) in their curricula. In sub-Sharan Africa, there is need for institutions of higher learning to embrace the use of ICT if they are catch-up with the rest of the World.

In Burundi, in order for the country to be at par with the rest of the world in ICT, the Ministry of ICT incorporated ICT into the education sector in 2006 in partnership with the ministry of education and sports. This was intended to provide ICT literacy at the primary, secondary and tertiary level.

1.1.2 Theoretical background

This study was guided by the Diffusion of Innovation by Rogers (2003). Diffusion is the "process by which an innovation is communicated through certain channels over a period of time among the members of a social system". An innovation is "an idea, practice, or object that is perceived to be new by an individual or other unit of adoption". "Communication is a process in which participants create and share information with one another to reach a mutual understanding" (Rogers, 1995).

Rogers proposes that four main elements influence the spread of a new idea: the innovation itself, communication channels, time, and a social system. This process relies heavily on human capital. The innovation must be widely adopted in order to self-sustain. Within the rate of adoption, there is a point at which an innovation reaches critical mass. The information flows through networks. The nature of networks and the roles opinion leaders play in them determine the likelihood that the innovation will be adopted. Innovation diffusion research has attempted to explain the variables that influence how and why users adopt a new information medium, such as the Internet. Opinion leaders exert influence on audience behavior via their personal contact, but additional intermediaries called change agents and gatekeepers are also included in the process of diffusion.

1.1.3 Conceptual Perspective

ICT stands for: Information and Communication Technologies. ICT can be defined as technologies that provide access to information through telecommunications. It is similar to Information Technology (IT), but focuses primarily on communication technologies.

For the purpose of this study, ICT was used to refer to computers in computer laboratories on campus, which are primarily designated for student use.

1.1.4 Contextual background

Higher education is mainly provided by the University of Burundi. It is largely financed by the State and enjoys administrative and management autonomy. It is administered by a rector appointed by the president of the Republic for four years. Policy-making is the responsibility of a governing board appointed by the president of the Republic and representing the major spheres of activity concerning higher education development. Four private universities have been created

recently. At the higher education level, focus has been on training teachers and developing retention strategies for teachers. The strategy also calls for a balance between training needs and market needs at the university and other colleges of higher leaning.

There is much more use of ICT at the university level, although the facilities are still insufficient. The University of Burundi has a campus network for approximately 500 users, which was funded mainly by the United Nations Development Programme (UNDP). This network is connected to the Internet through one of the local ISPs. Connectivity between its campuses in Bujumbura is achieved through an omni-directional wireless link that is placed at the same campus that has the connection to the ISP.

The university has approximately 120 computers that are mainly used by lecturers and other university employees. A limited number of students have access to the computers and hence few have the privilege to surf the Internet on the campus network. But the university is expecting 500 donated computers for the university laboratories that will provide greater access to the students. The university's main library, which is located at the main campus in Mutanga, is developing an e-library to share resources and publications with other universities abroad (National University of Rwanda, University of Bukavu, and University of Goma in the east of the Democratic Republic of the Congo).10 The Université Lumière de Bujumbura has approximately 55 computers with a wireless Internet connection from CBINET (ISP) on one campus and approximately 45 computers and a direct link to Intelsat with a VSAT dish on the second campus. Other universities have minimal ICT infrastructure, and it is mainly used for administrative purposes. These include University of Ngozi, Université du Lac Tanganyika, Université des Grands lacs, Université de Mwaro, and Université Martin Luther King.

1.2 Statement of the problem

Just as technology is influencing and supporting what is being learned in schools and universities, so is it supporting changes to the way students are learning. Moves from content-centred curricula to competency-based curricula are associated with moves away from teacher-centred forms of delivery to student-centred forms (World Bank, 2017). Through technology-facilitated approaches, contemporary learning settings now encourage students to take responsibility for their own learning. However, ICT is still elitist in Burundi, making it too costly for most people. The lack of competition in most of the services also adds to suppliers

maintaining high prices. Furthermore, like in many other African countries, Burundi is struggling to provide reliable electricity to its citizens. Currently, however, only the major urban areas have grid electricity thereby inhibiting the use of ICTs in rural areas. In addition, a lot of resources in the education sector are aligned with the sector development programme which is a bigger project dealing with basic fundamental challenges such as construction of classrooms and availability of textbooks. ICT is not a priority area. Similarly, lack of trained teachers with ICT knowledge contributes to the lack of interest or seeming lethargy in adopting ICT in the classroom (World Bank, 2017).

1.3 Main Objective

To evaluate the problems associated with ICT integration in Institutions of Higher Learning in Bujumbura Province.

1.4 Specific Objective

i. To find out the how the cost of ICT training materials is affecting ICT usage in the Institutions of higher learning in Bujumbura Province.

ii. To examine the effect of skills development in ICT on the usage of ICT in institutions of higher learning in Bujumbura Province.

iii. To assess the relevance of administrative support on ICT usage in institutions of higher learning in Bujumbura Province.

1.5 Research questions

i. How does the cost of ICT training material affect ICT usage in the Institutions of higher learning in Bujumbura Province?

ii. What is the effect of skills development in ICT on the usage of ICT in institutions of higher learning in Bujumbura Province?

iii. What is the relevance of administrative support on ICT usage in institutions of higher learning in Bujumbura Province?

1.6 Scope of the study

The study was carried out in four Institutions of higher education in Bujumbura Province ; the schools are among the major higher institutes in Bujumbura Province in Burundi that offers higher studies curriculum with award of degrees, diplomas, among others. Namely, Lake Tanganyika University (ULT), Université Lumière de Bujumbura (ULB), Université Sagesse d' Afrique (USA) and Université Martin Luther King (UMLK) all located in Bujumbura, capital of Burundi .

This study was limited to the challenges affecting ICT usage in the Institutions of higher learning in Bujumbura Province; the effect of ICT training materials on ICT usage in institutions of higher learning in Bujumbura Province; the effect of skills development in ICT on the usage of ICT in institutions of higher learning in Bujumbura Province; and the relevance of administrative support on ICT usage in institutions of higher learning in Bujumbura Province.

1.7 Significance of the study

The study will be of great relevance to the policy makers since it will give them the information regarding ICT implementation in institutions of higher learning thus they will be able to come up with better policies that address ICT challenges at higher level of learning.

Furthermore, the results of this study will be helpful to the students and the teaching staff because it will make management to invest and provide administrative support to ICT infrastructure within the institution of higher learning.

In addition, the researcher will also gain resourceful knowledge during the course of this work. Specifically this study will be helpful to the researcher since it will help him to develop communication skills, writing skills, data analysis skills and general research skills.

CHAPTER TWO
LITERATURE REVIEW

2.0 Introduction

This chapter reviews literature from different authors and in accordance to the objectives of the study. However, the chapter is organized in terms of theoretical framework, conceptual framework and empirical review.

2.1 Theoretical review

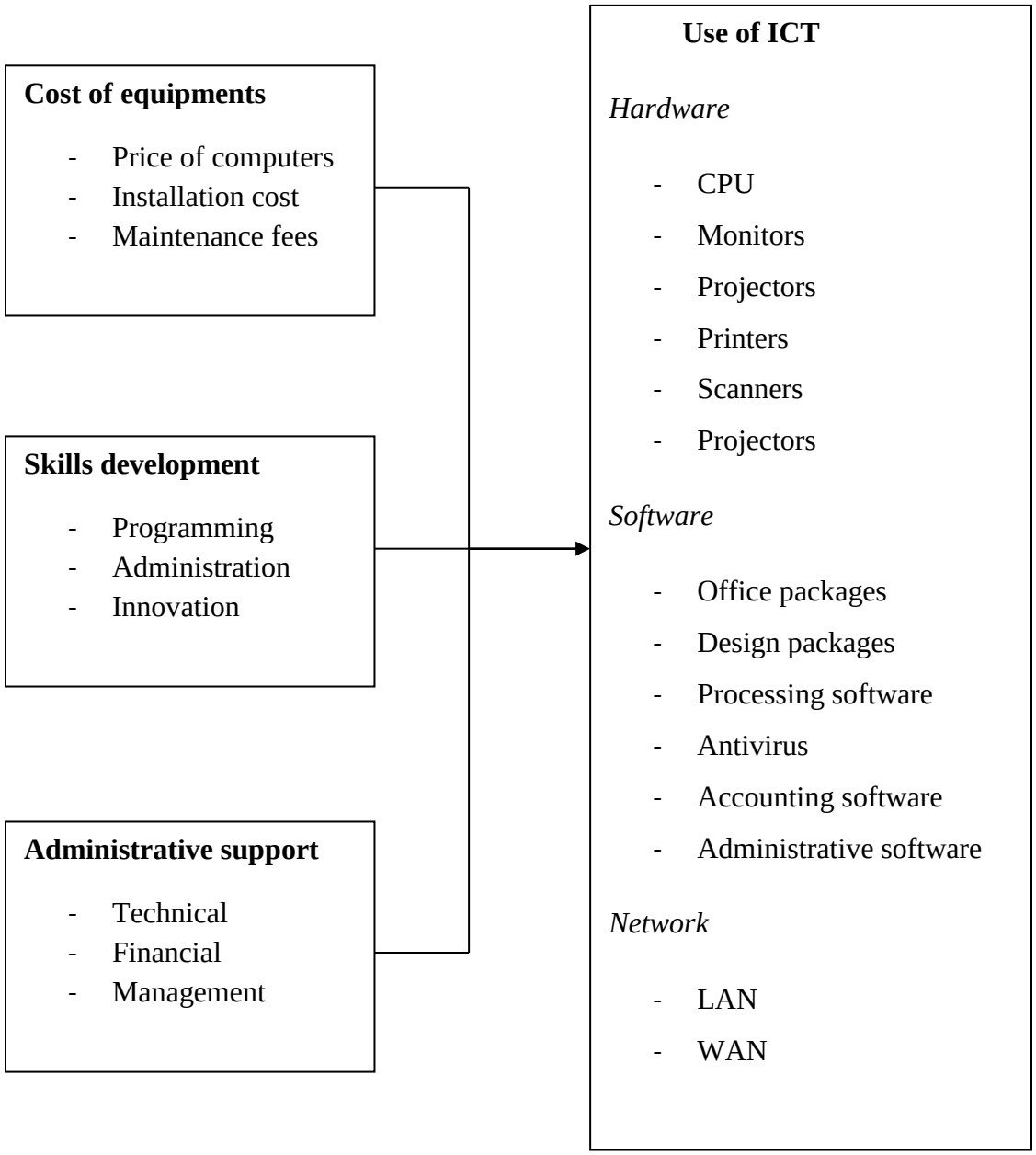
Diffusion of Innovation (DOI) Theory, developed by E.M. Rogers in 1962, is one of the oldest social science theories. It originated in communication to explain how, over time, an idea or product gains momentum and diffuses (or spreads) through a specific population or social system. The end result of this diffusion is that people, as part of a social system, adopt a new idea, behavior, or product. Adoption means that a person does something differently than what they had previously (i.e., purchase or use a new product, acquire and perform a new behavior, etc.). The key to adoption is that the person must perceive the idea, behavior, or product as new or innovative. It is through this that diffusion is possible.

Adoption of a new idea, behavior, or product does not happen concurrently in a social system; rather it is a process whereby some people are more apt to adopt the innovation than others. Researchers have found that people who adopt an innovation early have different characteristics than people who adopt an innovation later. When promoting an innovation to a target population, it is important to understand the characteristics of the target population that will help or hinder adoption of the innovation.

There are several limitations of Diffusion of Innovation Theory, which include the following: It does not foster a participatory approach to adoption of an education sector program; it works better with adoption of behaviors rather than cessation or prevention of behaviors; and it does not take into account an individual's resources or social support to adopt the new behaviour.

2.2 Conceptual Review

Independent variables **Dependent variable**



2.3 Empirical Review

2.3.1 Cost of ICT equipments and ICT implementation

Empirical studies on the relationship between cost of ICT materials and ICT implementation are many. According to Twinomujuni et al., (2011), financial resources form a key factor to the successful implementation and integration of ICT in higher education in Uganda. It is indicated that limited resources within schools as a great impediment to the take up of ICT and lack of computers and software in the classroom can limit what teachers are able to do with ICT.

Sub Saharan nations have a significantly lower rate of diffusion and use of ICT than first world countries. Nakaznyi et al., (2015) in their study found out that ICT in communication technology in selected Nigerian universities indicated one biggest challenge as the price of ICT materials. However, Molnár and Benedek 2013) found that the major problem in the growth of e-learning in Iran is not the high price of computers, but rather the lack of government budgets for equipping universities, schools and public places with new computers and suitable hardware infrastructure. Getting computers into universities and institutions is relatively easy but keeping them up and running is a greater challenge. The research further showed that in most developing countries laboratory coordinators in some institutions of higher learning are not skilled enough in resolving technical problems.

According to Reading and Doyle (2013), several of the African economies are so poor and where ICT is introduced the competency to handle it is very low since the capacity to train staff is limited because of lack of enough resources. It is believed that successful use of ICT in institutions of higher learning is hampered by high cost of ICT tools. The price of computer hardware and software continues to drop in most developed countries, but in developing countries such as Burundi, the cost of computers is several times more expensive due to high levels of poverty and inadequate funding (Kajuna, 2009). In support of this statement, it was reported that while a desk top computer may cost less than a month's wage in the USA, the average worker in developing countries may require more than six months' wage to buy one. The study further revealed that, apart from the basic computers themselves, other costs associated with peripherals such as printers, monitors, projectors, modem, and extra disk drives could be beyond the reach of some institutions of higher learning in most developing countries.

This indicates that when the cost of ICT training materials is high, ICT implementation in institutions of higher learning tend to be minimal and vice versa. High cost of ICT training materials could be assumed a barrier to teaching using computers in institutions of higher learning in Bujumbura Province. However, this assumption remains a theoretical one until it is proved and thus the need for this study to establish the extent to which cost of ICT training materials influences ICT implementation in institutions of higher learning in Bujumbura.

While Mofarreh and Ibrahim (2016) found that the cost of ICT training materials pose a threat to the adoption of ICT, Alfelaij (2016) seem to be taking a different position of considering cost of computer as a less important factor. Indeed cost of ICT training materials was not taken as a major inhibitor of ICT implementation in institutions of higher learning in Uganda. They considered lecturers‟ awareness and positive attitude towards ICT as necessary conditions for effective ICT implementation. They urged that institutions of higher learning could adopt freeware and open software for teaching and learning activities.

2.2.2 Skills development in ICT and ICT Usage

In today's digital economy, the importance of information and communication technology (ICT) infrastructure, applications and services is growing at an alarming rate. Disruptive technologies such as artificial intelligence, self-driving cars, and robotics are increasingly being introduced. As a result, there is need for new knowledge and skills. Support to countries and industry in their efforts to match current skills with the new jobs created, as a result of the rapid technological developments, has become a priority.

Furthermore, least developed countries (LDCs), landlocked developing countries, and small island developing states continue to be faced with connectivity constraints that hinder the delivery of the much-needed ICT training in the desired quality as and when it is needed.

These connectivity constraints also result from limited or lack of human and financial resources, and the absence of a conducive policy environment to support digital skills development.

Hornby (2006) defines skill as the ability to do something well. Skills development in this study will refer to special ability (or expertise) enabling one to perform an activity by using a computer efficiently and its related peripherals in either teaching or learning. Dalton (1998) asserts that training is directed at changing people‟s knowledge, experience, skills and attitudes. The scarcity of adequately trained and experienced analysts, software engineers, systems and network managers, restrains ICT development in Burundi.

Several studies have attempted to relate adoption of skills development in ICT. For example, Bates (1997) reported lack of training and skills as obstacle to ICT use in institutions of higher learning in Tanzania, while Agaba (2003) found lack of skills as one of the problems explaining underutilization of Makerere University Library electronic information resources by academic staff. Hawkins (2002) established that most teachers in the developing world are intimidated by technology and are thus comfortable with their own old teaching styles.

Technology competency allows teachers to turn into most efficient individuals in dealing with daily tasks such as to communicate with the student's parents; to keep records; to do research in their option domain; and to prepare presentations (Priscilla et al, 2008). Computer competence, therefore, can be observed in terms of teachers‟ beliefs concerning their knowledge, basic skill, and capability of performing essential functions using the computer. According to Albirini (2006), computer competence refers to educators‟ beliefs about their computer knowledge and skills. Computers are an essential part of many work places and employers need both men and women with computers skills. Although some come to the job with computer related education, many workers need training or retraining to keep up with new computer hard ware or software (Busch, 1996).

Teachers lack the necessary skills and thus need to be given opportunities to practice using information communication technology during their teacher training programs so that they can see ways in which technology can be used to augment their classroom activities (Afshari et al, 2009). Teachers are more likely to adopt and integrate ICT in their courses, when professional training in the use of ICT provides them time to practice with the technology and to learn, share and collaborate with colleagues. The statement suggests that training teachers to update their ICT skills may aid the integration of computers into the classroom setting. To promote ICT

integration in schools, school leaders should adopt strategies that make ICT part of the daily routine or tasks of the teachers. These strategies may include using e-mail as the mode of communication among staff, accessing the intranet to download data and using a word-processor to complete lesson plans for submission. Much as training in ICT is emphasized, ICT implementation in institutions of higher learning was reported to be minimal and one wonders what could be the logic behind this.

According to a UNESCO (2005) survey, about 35% of the already trained teachers in secondary schools in Europe, Asia and Africa have basic skills in ICT, which leaves 65% of the teaching workforce on the three continents still in need of computer skills (Auerswald and Magambo, 2007). UNESCO (2005) reported that teachers, professors, technical and administrative staff must be given training that enables them to integrate new information and communication technologies into their teaching programs. The lack of technical skills of maintaining the functionality of computers confused teachers to integrate ICT in the classroom (Priscilla et al, 2008). Numerous problems related to ICT infusion occur among the teachers due to the "lack of technical skills and knowledge of maintaining the functionality of the computers".

According to Pelgrum (2001, cited in Afshari et al, 2009), the success of educational innovations depends largely on the skills and knowledge of teachers. The study reported that teachers‟ lack of knowledge and skills is among the most inhibiting obstacles to the use of computers in schools. Similarly, in the United States, Knezek and Christensen (2000) reported that educators with higher levels of skill, knowledge, and tools would exhibit higher levels of technology integration in the classroom. Berner (2003, cited in Afshari et al, 2008) in a case study on the relationship between computer use in the classroom and two independent variables: beliefs about computer competence; and administrative support, found that the faculty‟s belief not computer competence was the greatest predictor of their use of computers in the classroom. Therefore, teachers should develop their competence in ICT skills through training based on the educational goals they want to accomplish in order to use computers in teaching.

2.3.3 Administrative support and ICT implementation

Soanes (2006) defines administrative support as an act of giving out or applying something in an organisation. Administrative support in the context ICT refers to the presence of encouraging ICT-using role models, such as the principal, and the presence of incentives for teachers to use technology (Priscilla et al, 2008). In this study, administrative support refers to the help and guidelines given out by administrators in institutions of higher learning to aid in computer training and integration of ICT into the curriculum. Sife et al (2007) reported that administrative support is critical to the successful integration of ICTs into teaching and learning processes. It can be argued that administrators can provide the conditions that are needed, such as putting in place an ICT policy, incentives and resources.

Several past studies had tried to relate administrative support and ICT implementation. For example, Cameron and Ulrich (1986) found lack of administrative support as a barrier to adoption of innovation in the Nigerian education system. Mumtaz (2000) and Sife et al (2007) established lack of administrative, technical and financial support as problems that prevent teachers from using computers in their teaching. Hawkins (2002) reported that school administrators offer very little structural support and incentives to teachers to effectively use ICT in the classroom. Though lecturers enthusiastically engage in collaborative projects and constructivist pedagogy, administrative support given in reference to ICT is not adequate.

Teachers use computers more often for their teaching-learning process if they perceived an adequate support from the school administration. Teachers who receive adequate ICT support from the administrators are more likely to use ICTs in their teaching practice while those who don't receive ICT support from the higher authorities in school are less enthusiastic in using computer or do not integrate technology at all. Administrators in school, such as the principal acts as a mediator to integrate ICT into the educational system by playing a key role in encouraging, supporting, and helping the teachers to use computers in their teaching-learning process. The support of the school principal or administrator can encourage and promote teachers‟ willingness to use the computer as a medium to deliver instruction. Thus, the role of the school administrator is crucial in providing the force, support and conditions to enhanc the use of computer in the teaching profession.

Technical support has been viewed as one of the facilitating conditions that can influence computer usage. Yang (2008) reported that lack of technical support as one of the major barriers that resulted in computers being underutilized in the classes. Teachers do not use computers in teaching when they are not sure where to turn for help in case something goes wrong. On the other hand Afshari et al (2009) stated that schools should work to convince ICT staff on how ICT integration in classrooms is very important. Ministry of Education and Sports should encourage Schools to purchase highly reliable technologies; improve systems for checking and maintaining ICTs in the classroom. This could be done by creating new approaches (including staff training) to guarantee that extremely rapid responses are made to breakdowns.

In a study of small firm computing, Teo and Lim (1998) found that lack of technical support often discourages ICT growth. Technical support may be provided to teachers by equipping them with technical skills on how to handle computer hardware and software. Afshari et al (2009), indicated that with information technology support, teachers are able to access school network, internet and computer accessories (printer, digital camera, data projector, large TV screen, scanner and video camera). They also reported that as beginners of computer use, teachers need technical and training support to assist them in teaching-learning process when they face constraints whereas for competent teachers, they are eager to share their expertise and provide technology support to their colleagues. Thus, lack of technical knowledge of maintaining the functionality of computers confused teachers to integrate ICT in the classroom. Numerous problems related to ICT infusion occur among the teachers due to the lack of technical knowledge of maintaining the functionality of the computers.

Lack of training support by administrators could be identified as a significant barrier towards implementation of computers in classrooms. Krysa (1998) reported that successful implementation of computers can only occur if administrators offer teachers support and leadership. In addition to administrators developing a philosophy to guide the implementation of computer technology, they can support the technological professional development of teachers by: establishing flexible schedules so that teachers can practice what they have learned (or to continue their learning); encouraging and facilitating team teaching and peer coaching allowing teachers to visit each other's classrooms to observe computer technology integration; and scheduling regular meetings among teachers using technology to plan and evaluate instruction.

Peansupap and Walker (2005) indicated that the failure of ICT change derives from the traditional beliefs of managers and ICT experts that technology is a magic bullet and so neglect role of people in any change management task. However, solving technical issues can minimise users‟ resistance to technological innovation and thus, ICT implementation success is often realised by managers who understand the management of technological change. Thus, if teachers perceive ICT as a beneficial tool, compatible with their current activities, easy to use and have observable outcomes, they could demonstrate positive attitude towards ICT. This can positively influence ICT Implementation in institutions of higher learning.

The Ministry in charge should put in place appropriate strategies to ensure that integration of ICTs in teaching and learning process goes together with the recruitment, training and retention of staff. Much as administrative support is an important factor in positively influencing ICT integration, ICT implementation in institutions of higher learning in Burundi was still minimal and thus, need for this study to investigate the influence of administrative support towards ICT implementation.

CHAPTER THREE
METHODOLOGY

3.0 Introduction

This chapter focuses on the design, population, sampling strategies, data collection methods and instruments, data quality control, procedure and data analysis to be used in the study.

3.1 Research design

This study adopted a descriptive survey design. This was preferred because it is helpful in providing information from a particular group of respondents who are more informed at a particular period of time. Only quantitative approach was used in this study to provide statistical element of the study regarding ICT usage in institutions of higher learning in Bujumbura.

3.2 Study Population

The study population involved a total population of 300 participants who included the lecturers and the students. However, the target population will be 200 participants due to academic nature of the research.

3.3 Sample Size

The study used Slovene's formula to determine the sample size of the respondents.

Slovene's formula:

$$n = \frac{N}{1 + N(\alpha)^2}$$

$$n = \frac{200}{1 + 200(0.05)^2}$$

$$n = \frac{200}{1.5}$$

$$n = 133$$

Therefore, the sample size was 133 participants. Table 3.1 give the summary of the findings.

Table 3.1: Sample Size

Category of Respondents	**Target population**	**Sample size**	**Sampling technique**
Lecturers	34	23	Purposive sampling
Students	166	110	Simple random
Total	**200**	**133**	

3.4 Sample techniques/Procedures

This study used simple random sampling to select the students due to its non-bias nature. This method helps in ensuring that all students have equal opportunity to participate in the study. In addition, the study used purposive sampling to select the lecturers due to their level of knowledge regarding ICT implementation at the institutions of higher learning. The study mostly preferred ICT teachers.

3.5 Data Sources

The study used only primary source of data collection. This was preferred because it provides the researcher with first-hand information that can provide substantive conclusion.

3.6 Data Collection Instrument

The study used closed ended questionnaire as the main data collection instrument. Questionnaire was preferred because it is easy to use, collects data within a short time from a large sample size. Furthermore, questionnaire results are quantifiable. In addition, a four Liker scale was used to assess the opinions and the responses of the respondents.

3.7 Validity and Reliability

3.7.1 Validity

The study used content validity index (CVI) to determine the extent to which the instruments are valid. This was done by using the help of two experts (researcher's supervisors) to assess and make expert judgement regarding the correctness and applicability of the instrument. The

supervisor's expert opinions were used to adjust the questionnaire questions accordingly. The following formula was used to determine the validity of the instrument.

$$CVI = \frac{Items\ declared\ relevant\ by\ experts}{total\ number\ of\ items}$$

$$CVI = \frac{22}{25}$$

$$\boldsymbol{CVI = 0.88}$$

Amin (2005) explains that if the CVI is less or equal to 0.70, then the items are considered valid; thus, the result of 0.88 for this study implies that the instrument was valid.

3.7.2 Reliability

The study used Cronbach's alpha to determine the reliability of the instrument. The Cronbach's alpha was used to determine the level of internal consistency. The higher the internal consistency, the higher the level of reliability. However, Field (2009) points out that when the Cronbach's alpha value is more than 0.70, it implies that the instruments are reliable. As for this study, Cronbach's alpha value have been summarised in the table below:

Table 3.2: Cronbach's Alpha Value

Variables tested	No. of items	Cronbach's alpha
Cost of equipment	4	0.769
Skill development	5	0.704
Administrative support	4	0.753
ICT Implementation	12	0.892

3.8 Data Collection Procedure

The researcher collected the transmittal letter from the school of computing and information technology to allow him collect data from the sampled schools in Burundi. The oriented the respondents on the purpose of the study and their involvement in the study. The researcher further distributed the questionnaires and retrieved them after a period of five working days.

3.9 Data Analysis

The researcher used statistical package for social sciences (SPSS) as a data editor tool. The retrieved questionnaires were coded, edited and entered onto SPSS for further analysis. The profiles of the respondents were analysed using frequency and percentage tables. The mean and standard deviations were used to determine the objectives of the study. Linear regression analysis was used to determine the effect of the independent variable on the dependent variable.

3.10 Ethical Considerations

The researcher will ensure that respondents are informed of the purpose of the study and why they are being part of the study. They will be requested to sign the informed consent form. In addition, the researcher will observe voluntary participation. Any participant who would like to withdraw from the study will be voluntarily allowed to do so. Similarly, the researcher will observe confidentiality. None name of the respondents will be published in the final output of the study.

CHAPTER FOUR
ANALYSIS AND PRESENTATION

4.0 Introduction

This chapter presents the findings of the study in accordance to their respective objectives. However, the study starts with presenting the demographic characteristics of the respondents.

4.1 Demographic Characteristics of the Respondents

The demographic characteristics of this study included the faculty of the respondents, gender, age, and designation. The following tables give the summary of the findings.

Table 4.1: Faculty

Faculty	Frequency	Percent (%)
Vocational	23	17.3
Arts	55	41.4
Education	37	27.8
Science	18	13.5
Total	**133**	**100.0**

Source: primary data (2017)

Table 4.1 revealed that majority, 41.4 per cent of the respondents were from the faculty of arts, followed by 27.7 per cent in Education, while those within the faculty of vocational and Science were represented by 17.3 per cent and 13.5 per cent respectively.

Table 4.2: Gender of the Respondents

Gender	Frequency	Percent (%)
Male	89	66.9
Female	44	33.1
Total	**133**	**100.0**

Source: primary data (2017)

Table 4.2 revealed that majority, 66.9 per cent of the respondents were male while the female counterparts were 33.1 per cent.

Table 4.3: Age of the Respondents

Age	Frequency	Percent (%)
20-30	29	21.8
31-40	47	35.3
41-50	34	25.6
51 and Above	23	17.3
Total	**133**	**100.0**

Source: primary data (2017)

Table 4.3 revealed that majority, 35.3 per cent of the respondents were within the age group of 31-40 years, followed by 25.6 per cent respondents within the age group of 41-50 years, while respondents within the age group of 20-30 years and 51 and above were represented by 21.8 per cent and 17.3 per cent respectively.

Table 4.4: Designation

Designation	Frequency	Percent (%)
professor	2	1.5
Ass. Prof	5	3.8
Principle lecturer	4	3.0
senior lecturer	8	6.0
lecturer	82	61.7
Assistant lecturer	32	24.1
Total	**133**	**100.0**

Source: primary data (2017)

Table 4.4 revealed that majority, 61.7 per cent of the respondents were lecturers, followed by 24.1 per cent who were assistant lecturers, while those who were senior lecturers and associate professors where represented by 6 percent and 3.8 percent respectively.

4.2 The Cost of ICT Training Materials and the Usage of ICT in the Institutions of Higher Learning in Bujumbura Province

The first objective of this study was to find out how the cost of ICT train materials is affecting ICT usage in the Institutions of higher learning in Bujumbura Province. Table 4.5 and 4.6 give the summary of the findings.

Table 4.5: The Cost of ICT Training Materials in the Institutions of Higher Learning in Bujumbura Province

Purchase price is high	**Frequency**	**Percent (%)**	**Mean**	**Std. Deviation**
strongly disagree	12	9.1	3.11	0.959
disagree	18	13.6		
agree	46	34.8		
strongly agree	56	42.4		
Total	**132**	**100.0**		
Installation cost is high				
strongly disagree	11	8.3	2.77	0.837
disagree	32	24.2		
agree	66	50.0		
strongly agree	23	17.4		
Total	**132**	**100.0**		
Maintenance fee is high				
strongly disagree	6	4.5	2.58	0.762
disagree	59	44.7		
agree	51	38.6		
strongly agree	16	12.1		
Total	**132**	**100.0**		

Source: primary data (2017)

Table 4.5 revealed that majority, 42.4 per cent of the respondents strongly agreed that the purchase price of ICT training materials is high (mean=3.11, Std=0.959).

Furthermore, majority, 50 per cent of the respondents agreed that the installation cost of ICT training materials is high (mean=2.77, Std=0.837).

However, majority, 44.7 per cent of the respondents disagreed that the maintenance fee of the ICT training materials is high (mean=2.58, Std=0.762).

Table 4.6: The Effect of the Cost of ICT Training Materials on the Usage of ICT in the Institutions of Higher Learning in Bujumbura Province

Cost of ICT Training Material	Standardized Coefficients Beta	Significance
Adjusted R^2=0.140	0.383	0.000
F=22.296, p=0.000		

a. Dependent Variable: ICT Usage

Table 4.6 revealed that the cost of ICT training material significant affect ICT usage by 14% (Adjusted R Square=0.140, p=0.000). Therefore, a single unit change in the cost of ICT material is capable of significantly affecting 38.3% variance in ICT usage among the students and lecturers.

4.3 The Effect of Skills Development in ICT on the Usage of ICT in Institutions of Higher Learning in Bujumbura Province

The second objective of this study was to examine the effect of skills development in ICT on the usage of ICT in institutions of higher learning in Bujumbura Province. Table 4.7 and 4.8 gives the summary of the findings.

Table 4.7: Skill Development in ICT on the Usage of ICT in Institutions of Higher Learning in Bujumbura Province

Skill Development	Frequency	Percent (%)	Mean	Std. Deviation
Ordinary level				
Very Bad	37	28.0	3.23	0.737
Bad	54	40.9		
Good	31	23.5		
Very Good	10	7.6		
Total	**132**	**100.0**		
Advanced level				
Very Bad	6	4.5	2.87	0.842
Bad	38	28.8		
Good	55	41.7		
Very Good	33	25.0		
Total	**132**	**100.0**		
Tertiary level				
Very Bad	4	3.0	2.11	0.902
Bad	12	9.1		
Good	66	50.0		
Very Good	50	37.9		
Total	**132**	**100.0**		

Source: primary data (2017)

Table 4.7 revealed that majority, 40.9 per cent of the respondents indicated that at the time they were at ordinary level (senior one-senior four), their ICT skills development was bad (mean=3.23, Std=0.737).

However, majority, 41.7 per cent of the respondents indicated that at the time they were at their advanced level of education (i.e senior five and six), their ICT skills development had improved and it was good (mean=2.87, Std=0.842).

Similarly, majority, 50 per cent of the respondents indicated that by the time they were at tertiary institution, their ICT skills development had improved tremendously and it was good (mean=2.11, Std=0.902).

Table 4.8: The Effect of Skills Development in ICT on the Usage of ICT in Institutions of Higher Learning in Bujumbura Province

Skills Development	Standardized Coefficients Beta	Significance
Adjusted R^2=0.001	0.093	0.290
F=1.130, p=0.290		

a. Dependent Variable: ICT Usage

Table 4.8 revealed that skills development does not significantly affect ICT usage. In other words, it implies that there are other factors other than skills development that significantly affect ICT development.

4.4 The Relevance of Administrative Support on ICT Usage in Institutions of Higher Learning in Bujumbura Province

The third objective of this study was to assess the relevance of administrative support on ICT usage in institutions of higher learning in Bujumbura Province. Tables 4.9 and 4.10 give the summary of the findings.

Table 4.9: Administrative support

Financial support	**Frequency**	**Percent (%)**	**Mean**	**Std. Deviation**
strongly disagree	25	18.9	3.82	0.536
disagree	30	22.7		
agree	12	9.1		
strongly agree	65	49.2		
Total	**132**	**100.0**		
Technical support				
strongly disagree	6	4.5	3.50	0.843
disagree	12	9.1		
agree	24	18.2		
strongly agree	90	68.2		
Total	**132**	**100.0**		
Managerial support				
strongly disagree	1	0.8	2.89	1.215
disagree	6	4.5		
agree	9	6.8		
strongly agree	116	87.9		
Total	**132**	**100.0**		

Source: primary data (2017)

Table 4.9 revealed that majority, 49.2 per cent of the respondents strongly agreed that their institution receive financial support for ICT training materials (mean=3.82, Std=0.536).

Furthermore, majority, 68.2 per cent of the respondents strongly agreed that their institution receives technical support for their ICT training materials (mean=3.50, Sttd=0.843).

In addition, majority, 87.9 per cent strongly agreed that their institution receive managerial support for their ICT training materials (mean=2.89, Std=1.215).

Table 4.10: The Relevance of Administrative Support on ICT Usage in Institutions of Higher Learning in Bujumbura Province

Administrative support	Standardized Coefficients Beta	Significance
Adjusted R^2=0.007	0.085	0.330
F=0.954, p=0.330		

a. Dependent Variable: ICT Usage

Table 4.10 revealed that the administrative support does not significantly affect the usage of ICT training materials. This implies that financial, technical and managerial support do not significantly contribute to the usage of ICT training materials.

4.5 ICT Implementation in Institutions of Higher Learning in Bujumbura Province

This section looks at the extent of ICT implementation in the institutions of higher learning in Bujumbura province. The following tables give the summary of the findings.

Table 4.11: Computer hardware and peripherals

How often do you use the following ICT facilities?	Frequency	Percent (%)	Mean	Std. Deviation
Desktop computers				
very rarely	10	7.6	3.34	0.476
rarely	13	9.8		
regularly	76	57.6		
very regularly	33	25.0		
Total	**132**	**100.0**		
Projectors				
very rarely	6	4.5	3.12	0.782
rarely	15	11.4		
regularly	68	51.5		
very regularly	43	32.6		
Total	132	100.0		
Printers				
very rarely	11	8.3	3.05	0.964
rarely	25	18.9		
regularly	43	32.6		
very regularly	53	40.2		
Total	**132**	**100.0**		
Scanners				
very rarely	61	46.2	3.00	0.810
rarely	42	31.8		
regularly	18	13.6		
very regularly	11	8.3		
Total	**132**	**100.0**		
White boards				
regularly	87	65.9	1.84	0.956
very regularly	45	34.1		
Rarely	0	0.0		
Very rarely	0	0.0		
Total	**132**	**100.0**		

Source: primary data (2017)

Table 4.11 revealed that majority, 57.6 per cent of the respondents indicated that they regularly use desktop computers; 51.5 percent indicated that they regularly use projectors; 40.2 per cent indicated that they very regularly use printers; and 65.9 per cent indicated that they regularly use white boards. However, 46.2 per cent indicated that they very rarely use scanners.

Table 4.12: Computer Software

How often do you use the following ICT facilities?	Frequency	Percent (%)	Mean	Std. Deviation
Word processing				
very rarely	6	4.5	3.33	0.758
rarely	5	3.8		
regularly	60	45.5		
very regularly	61	46.2		
Total	**132**	**100.0**		
Spread sheets (e.g. Excel, Lotus)				
very rarely	11	8.3	2.99	0.833
rarely	13	9.8		
regularly	74	56.1		
very regularly	34	25.8		
Total	**132**	**100.0**		
Data base management (e.g. Ms-access, dbase)				
very rarely	49	37.1	2.79	0.891
rarely	60	45.5		
regularly	18	13.6		
very regularly	5	3.8		
Total	**132**	**100.0**		
Power Point				
very rarely	15	11.4	2.08	0.825
rarely	24	18.2		
regularly	67	50.8		
very regularly	26	19.7		
Total	**132**	**100.0**		
Accounting software (e.g. Pastel, Tally, Quick books)				
very rarely	34	25.8	1.84	0.799
rarely	60	45.5		
regularly	32	24.2		
very regularly	6	4.5		
Total	**132**	**100.0**		

Source: primary data (2017)

Table 4.12 revealed that majority, 46.2 per cent very regularly use word processing software; 56.1 per cent indicated that they regularly use spreadsheet; and 50.8 per cent indicated that they regularly use PowerPoint software.

However, 45.5 per cent of the respondents indicated that they rarely use database management; 45.5 per cent of the respondents also indicated that they rarely use accounting software.

Table 4.13: Internet

How often do you use the following ICT facilities?	**Frequency**	**Percent (%)**	**Mean**	**Std. Deviation**
E-mail (sending and receiving messages)				
very rarely	8	6.1	2.86	0.836
rarely	32	24.2		
regularly	62	47.0		
very regularly	30	22.7		
Total	**132**	**100.0**		
Electronic learning				
very rarely	30	22.7	2.26	0.970
rarely	66	50.0		
regularly	24	18.2		
very regularly	12	9.1		
Total	**132**	**100.0**		
Electronic journals (in library)				
very rarely	30	22.7	2.14	0.872
rarely	57	43.2		
regularly	26	19.7		
very regularly	19	14.4		
Total	**132**	**100.0**		

Source: primary data (2017)

Table 4.13 revealed that majority, 47 per cent of the respondents regularly use email for sending and receiving messages.

However, 50 per cent of the respondents indicated that they rarely use electronic learning; 43.2 per cent also indicated that they rarely use electronic journals.

CHAPTER FIVE
DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This section provides the findings of the study, their discussions with cross-references from the literature, conclusions and recommendations according to the study objectives.

5.1 Discussion

5.1.1 The Cost of ICT Training Materials

The results revealed that both the teaching staff and the students indicated that the cost of ICT training materials was high. This was attributed to the high cost of purchasing ICT training materials such as desktop computers, laptops, projectors, printers, photocopiers, installation of internet infrastructure. Averagely in the Burundian market, purchase of laptop costs about $300-$400, while desktop computer goes for about $300-$500 and a projector goes for $400-$800. In Burundi, the price of ICT training materials such as internet is the most expensive in the region because the government has not invested in it. It is only the private entities like Vodafone that have hugely invested in this infrastructure therefore making it costly to receive an installation due to the excessive prices that are charged.

5.1.2 ICT Skills Development

The study revealed that the ICT skills of both the lecturers and the students kept on refining progressively as they kept on progressing in their studies. That is to say, while they were at senior one to four, most of the lecturers and the students displayed poor ICT skills, however, in their senior five and six, their ICT skills became good and when they reached tertiary level, their ICT skills had improved significantly. This suggests that with good ICT skills, both the lecturers and the students of Burundi are able to make better use of ICT training materials.

This study is in line with the studies of Mishra and Koehler (2006); Andersen (2007); Kelly (2008); Orehovacki and Bubas (2009) who found that ICT skills helps lecturers to generally apply new technologies with their regular teaching style and employ online collaborative technologies in their teaching practices. For example, Mishra and Koehler (2006) explain that while the technology is changing dramatically, lecturers are required to learn how to use it, in

addition to learn their subject content and pedagogical knowledge. Technologies often have their own limitations which determine their potential to be employed as educational applications.

However, this study disagrees with that of Soong et al., (2001); Chiu and Wang (2008); Liao and Lu (2008); Selim (2007); and Sun et al. (2008) who found that anxiety because of lack of knowledge and skills in ICT is a major negative outcome for students since it affects how they evaluate the usefulness of the ICT learning tool. In addition, proponents such as Chiu and Wang (2008) found that computer knowledge and previous experiences of students are significant factors that influence adoption and acceptance of an ICT learning system. Similarly Soong et al., (2001) found that students' self-efficiency and experiences in using the technology significantly impact on their attitude toward the ICT learning system.

5.1.3 Administrative Support

The study revealed a high level of administrative support towards ICT training material terms of financial support, technical support and managerial support. This implies that the institutions of higher learning in Bujumbura are committed towards supporting ICT by purchasing the necessary ICT training materials, recruiting the technical staff to maintain the acquired ICT training materials, and employing of ICT personnel who can manage the ICT departments and provide timely reports to the university administration in that regard.

Indeed proponents such as Mehlenbacher et al., (2005); Ellis (2009) agree with this study that ICT training materials facilitate and encourage learning, support equity of access, and are efficient and financially justifiable in terms of sharing resources. This is because they can potentially link communities of learners together, provide considerable shared resources to accomplish research-based tasks, and support students' learning through discussion and inquiry that helps them to achieve in-depth understanding of the subject. Therefore, for the administration of institutions of higher learning Bujumbura to support this venture financially, technically and managerially, is a step in the right direction.

However, differing to the findings of this study is that of Kirkwood (2009) who found that the fact that information technology is being used by many students for their studies does not necessarily show that administrators of institutions of higher learning were able to effectively adopt or support ICT for teaching and learning purposes. This is because in his survey in the

institutions of higher learning in the United Kingdom, Collins (2009) found that only 53 per cent of the participants believed that using ICT tools could improve their learning, and 60 per cent indicated that the teaching staff could use these tools effectively.

5.1.3 ICT Implementation

The study indicated that the ICT training materials that are readily available and functional in institutions of higher learning in Bujumbura comprise desktop computers, projectors, laptops, internet connection, printers, and whiteboards. However, there was limited number of scanners. This implies that the availability of desktop computers, projectors, and whiteboards within the institutions of higher learning helps the lecturers and the students to use such ICT training materials on a daily basis.

This study concurs with the findings of Loveless (2003); Cramer et al., (2007); Evans (2008); Stephenson et al., (2008); and Kirkwood (2009) when they found that ICT tools can contribute to enabling learners to extend their thinking abilities and provide an interactive environment that challenges students. For example, Kirkwood (2009) found that the capacity of ICT training materials to provide communication and interactive facilities, store large amounts of data, and support the manipulation and presentation of information in different forms, shows its potential to create active and empirical learning environments where students are engaged in challenging and open-ended activities to develop their cognitive abilities. Thus Evans (2008) concluded that ICT training materials can facilitate increasing access of students to the higher education sector by enhancing the flexibility of teaching and learning approaches and covering a more diverse range of students from different places.

5.2 Conclusion

The study found that the cost of purchasing, installing and maintaining ICT training materials is high. It also indicated that the cost of ICT training materials significantly affect the usage of ICT training materials.

Similarly the study found that the skills development the teaching staff and students kept on improving from ordinary level to advanced level and finally to tertiary level of their education. However, the study indicated that skills development does not significantly affect the usage of ICT training materials.

In addition, the study indicated that administrative support was evident in the area of technical support, managerial support and financial support. However, the study indicated that administrative support does not significantly affect the usage of ICT in institutions of higher learning in Bujumbura.

5.3 Recommendations

The study made the following recommendations at per the findings:

The management of institutions of higher learning should ensure that they get expert employees who will be able to provide them with cheap ICT training materials. In addition, the same ICT experts can help in the installation and maintenance of ICT training materials at cheap rates.

Similarly, there is need for the students and the teaching staff to be encouraged to receive comprehensive training in different areas in ICT so as to be able to successfully use ICT training materials such as the internet, scanners and different web-portals.

Likewise, the administrative body should do their best and support the venture of ICT training materials financially, technically, and managerial. In other words they should finance the buying of more computers, connection to internet, building of computer labs and employment of lab technicians.

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APPENDIX A

QUESTIONNAIRES

Section A BACKGROUND VARIABLES

Please help us classify your responses by supplying facts;

A1	Your Faculty …… … (Where applicable)	
A2	Your Department……	
A3	Your gender.	1 = Male 2 = Female
A4	Your age group (Years) 1 = 20-30; 2 = 31-40;3 = 41-50;4 = 51 and above	
A5	Your designation	1.Professor; 2.Assoc.Prof; 3.Principal lecturer; 4.Senior Lecturer;
	5.Lecturer; 6.Assist. Lecturer	

Section B: INDEPENDENT VARIABLE: PROBLEMS

Training in ICT helps lecturers to use computers in their teaching; however the cost of ICT training materials may be a hindrance to computer use. Please rate how costly you find the following aspects of computers using a scale where 1= Strongly disagree; 2 = Disagree; 3 =Not sure; 4 =Agree; 5 = Strongly agree.

B1	**Cost of ICT training materials**					
B1.1	Purchase price is high	1	2	3	4	5
B1.2	Installation cost is high	1	2	3	4	5
B1.3	Maintenance fee is high	1	2	3	4	5
B1.4	Briefly, comment on the cost of ICT training materials in your institution.					
	……					

B 2	**Skills development in ICT**					
B 2.1	How do you rate your skills development in ICT at the following levels in you academic					
	career? Use a scale where 1 = Poor;2 = Fair;	3	=Good;	4	=	Very Good;
	5 = Excellent.					
B2.2	Ordinary level	1	2	3	4	5
B2.3	Advanced level	1	2	3	4	5
B2.4	Tertiary Level	1	2	3	4	5
B2.5	How are skills in ICT acquired in your institution?.....					

……

……

B3	**Administrative support**				
	The University/College supports me in ICT training with relevant and enough resources.				
	Please rate how administrators help you in ICT training under the following aspects of				
	support using a scale	1= Strongly disagree; 2 = Disagree; 3 = Agree; 4 = Strongly agree.			
B3.1	Financial support	1	2	3	4
B3.2	Technical support	1	2	3	4
B3.3	Managerial support	1	2	3	4
B3.4	In summary, comment on the administrative support given to you by your institution in				
	ICT training				

……

C: DEPENDENT VARIABLE: ICT IMPLEMENTATION

Please rate how often you use a given ICT facility using a scale where 1 = Very rarely;

	2 = Rarely; 3 = Regularly;	4 = Very regularly.			
C1	**Computer hardware and peripherals:**				
C1.1	Desk top computers	1	2	3	4
C1.2	Projectors	1	2	3	4
C1.3	Printers	1	2	3	4
C1.4	Scanners	1	2	3	4
C1.5	White boards	1	2	3	4

C2	**Computer soft ware:**				
C2.1	Word processing	1	2	3	4
C2.2	Spread sheets (e.g. Excel, Lotus)	1	2	3	4
C2.3	Data base management (e.g. Ms-access, dbase	1	2	3	4
D2.4	Power Point	1	2	3	4
C2.5	Accounting software (e.g. Pastel, Tally, Quick books)	1	2	3	4
C2.6	Specify any other software(s) you are familiar with……				

C3	**Internet:**				
C3.1	E-mail (sending and receiving messages)	1	2	3	4
C3.2	Electronic learning	1	2	3	4
C3.3	Electronic journals (in library)	1	2	3	4
C3.4	Specify any other internet facility(s) you are familiar with……				

SECTION B TO THE FACULTY

BACKGROUND VARIABLES

Please help us classify your responses by supplying facts;

A1 Your Faculty …….. (Where applicable)

A2 Your Department……..

A3 Your age group (years) 1 = 20-30; 2 = 31-40;3 = 41-50;4 = 51 and above

A4 Gender 1= Male 2= Female

Section B:INDEPENDENT VARIABLE: PROBLEMS

Training in ICT helps lecturers to use computers in their teaching; however the cost of ICT training materials may be a hindrance to computer use. Please rate how costly you find the following aspects of computers using a scale where 1= Strongly disagree; 2 = Disagree; 3 =Not sure; 4 =Agree; 5 = Strongly agree.

B1 Cost of ICT training materials

B1.1	Purchase price is high	1	2	3	4	5
B1.2	Installation cost is high	1	2	3	4	5
B1.3	Maintenance fee is high	1	2	3	4	5

B1.4 Briefly, comment on the cost of ICT training materials.

B 2 Skills development in ICT

B 2.1 How do you rate your skills development in ICT at the following levels in you academic career? Use a scale where 1 = Poor; 2 = Fair; 3 =Good; 4 = Very Good; 5 = Excellent

B2.2	Ordinary level	1	2	3	4	5
B2.3	Advanced level	1	2	3	4	5
B2.4	Tertiary Level	1	2	3	4	5

B2.5 How are skills in ICT acquired in your institution?.....

……

……

B3 Administrative support

The University/College supports lecturers in ICT training with relevant and enough resources. Please rate how administrators help lecturers in ICT training under the following aspects of support using a scale where 1= Strongly disagree; 2 = Disagree; 3=Not sure; 4= Agree; 5= Strongly agree.

B3.1	Financial support	1	2	3	4	5
B3.2	Technical support	1	2	3	4	5
B3.3	Managerial support	1	2	3	4	5

B3.4 In summary, comment on the administrative support given to lecturers by your institution in ICT training

Section C: DEPENDENT VARIABLE: ICT IMPLEMENTATION

Please rate how often lecturers use a given ICT facility in teaching using a scale where 1 = Very rarely; 2 = Rarely; 3 = Regularly; 4 = Very regularly.

C1 Computer hardware and peripherals:

C1.1	Desk top computers	1	2	3	4
C1.2	Projectors	1	2	3	4
C1.3	Printers	1	2	3	4

C1.4	Scanners	1	2	3	4
C1.5	White boards	1	2	3	4

C2 Computer software

C2.1	Word processing	1	2	3	4
C2.2	Spread sheets (e.g. Excel, Lotus)	1	2	3	4
C2.3	Data base management (e.g. Ms-access, dbase	1	2	3	4
C2.4	Power Point	1	2	3	4
C2.5	Accounting software (e.g. Pastel, tally, Quick books)	1	2	3	4

C2.6 List any other software which lecturers use at your institution.

.....

.....

C3 Internet:

Please rate how often you use a given internet facility, using a scale where 1 = Very rarely; 2 = Rarely; 3 = Regularly; 4 = Very regularly.

C3.1	E-mail (sending and receiving messages)	1	2	3	4
C3.2	Electronic learning	1	2	3	4
C3.3	Electronic journals (in library)	1	2	3	4

C3.4 Specify any other internet facility(s) you are familiar with……...

APPENDIX B

PROPOSED RESEARCH BUDGET

ACTIVITY	ITEMS REQUERED	COST
Proposal writing	1 Laptop	1,200.000/=
	1 ream of foolscaps	8,000/=
	5 pens	2500/=
	Transport	350,000/=
	Typesetting costs	50,000/=
	Photocopying cost	100,000/=
	Scanning costs	40,000/=
	Contingency	30,000/=
SUB-TOTAL		**1,780,500**
Pre-testing		50,000/=
SUB-TOTAL		50,000/=
Data Collection	Making enough copies of research instruments	200,000/=
	Transport to the field	250,000/=
	Refreshment to respondents	250,000/=
	Contingency	200,000/=
SUB-TOTAL		**900,000**/=
Reporting of finding	Typesetting	200,000/=
	Binding 3 copies of the thesis	225,000/=
	Contingency	50,000/=
SUB-TOTAL		**475,000**/=
Viva	Transport to and from the university	90,000/=
	Accommodation	35,000/=
	Meals	65,000/=
	Contingency	40,000/=
SUB-TOTAL		**230,000**/=
GRAND TOTAL		**3,385,500**/=

APPENDIX C

TIME FRAME

Activity	Jan	Feb	Mar	Apr	Aug	Nov
1. Conceptual Phase						
Chapter 1						
Chapter 2-3						
3. Dissertation Proposal						
Proposal Hearing						
Chapter 4-5						
Dissemination Phase						
Viva Voce						
Revision						
Final Book Bound						
Clearance						
Expected Graduation						