FACTORS HINDERING ADOPTION AND UTILIZATION OF INFORMATION COMMUNICATION TECHNOLOGY IN SELECTED DISTRICT EDUCATION BOARD SECRETARIES (DEBS) OFFICES IN LUAPULA PROVINCE, ZAMBIA

Submitted to the University of Zambia in collaboration with Zimbabwe Open University in partial fulfillment of the requirements for the award of a degree of Master of Education in Education Management.

BY MWIYA SUBULWA

AUGUST, 2017

TABLE OF CONTENTS

List of Tables

List of Figures

DECLARATION

I Mwiya Subulwa do solemnly declare that this dissertation represents my own work and that it has never been previously submitted for the award of a degree at this or any other university

Signed: ……

Date. : ……

DEDICATION

To my wife Malikana Solami for being my constant source of support and encouragement as I pursed this degree programme, to my Children Masiliso, Mwiya, Carol, Chiku and Joyce so that they may be inspired to aspire to higher heights in their academic and professional endevours, and to my granny Joshua for escorting me to school.

APPROVAL

This research report by Mwiya Subulwa is approved as a partial fulfillment of the requirement for the award of the degree of Master of Education in Education Management.

Signed: …….

Signed: ……

Signed: ……..

COPYRIGHT

ACKNOWLEDGEMENTS

I acknowledge with thanks the combined and tireless efforts of all the University of Zambia/ Zimbabwe Open University (UNZA/ZOU) academicians and support staff under the Institute of Distance Education (IDE) at the Directorate of Research and Postgraduate Studies, for facilitating my acquisition of the knowledge and skills leading to the award of a Master's degree in Educational Management. Among these, there are those that deserve special mention and acknowledgement in this piece of work: Dr P.C. Manchishi my research supervisor, and Dr G. Masaiti, coordinator of the programme. The successful completion of this thesis would not have been possible without their overwhelming guidance and support. I also sincerely thank Mr Chris Kukano, the co-supervisor, for offering inspiration and constructive suggestions that have helped to shape this report.

Thanks to the Provincial Education Officer, Luapula Province for granting me permission to collect data in the selected District Education Board offices. In the same vein, i wish to express my sincere gratitude to the District Education Board Secretaries and their subordinates for willingly participating in this study as respondents, providing the data that I so much needed for this reports authenticity. As it had been said, 'Without data, you are just another person with an opinion' Ripley (2011).

My family also occupies a special place in this work and therefore, deserves special acknowledgements for their continued support in my academic and professional advancement.

May the Almighty God richly reward all of you!

ABBREVIATIONS

ABO - Assistant Buildings Officer
ASO - Assistant Statistical Officer
COMESA - Common Market for Eastern and Southern Africa
CS0 - Central Statistical Office
DAO - District Accounts Officer
DEBS - District Education Board Secretary
DESO - District Education Standards Officer
DPO - District Planning Officer
DRCC - District Resource Centre Coordinator
EMIS - Education Management Information System
ESO - Education Standards Officer
ESO GI - Education Standards Officer – General Inspection
ESO SP - Education Standards Officer – Special Education
ESO ODL - Education Standards Officer – Open and Distance Learning
ICT - Information and Communication Technology
MCT - Ministry of Communication and Transport
MOE - Ministry of Education
NEPAD - New Partnership for African Development
TAM - Technology Acceptance Model
ZICTA - Zambia Information Communication Technology Authority

ABSTRACT

This study investigated the factors that hinder the adoption and utilization of ICT in selected District Education Board Secretaries (DEBS) offices in Luapula Province, Zambia. The factors were identified through a survey that was conducted at DEBS offices in three selected districts of Luapula Province. Before data was collected from the field, the researcher had a review of related literature on the studies that have already been undertaken in line with the adoption of ICT in education management in Zambia and elsewhere. Indications from the review were that the generic focus of previous studies was either on the integration of ICT in teaching and learning or the adoption of ICT in education management in schools and not at district management level. Hence, Investigations on the adoption of ICT by district education managers still remained an empty space. This is what this study sort to fulfill. In this study, data was collected through interviews with the District Education Board Secretaries while a questionnaire was administered on other education managers like the District Education Standards Officers, Education Standards Officers, Human Resource Management Officers, District Planning Officers, and District Accounts Officers in the selected districts. The finding of this study revealed lack of familiarity of ICT resources and lack of ICT skills as the two greatest challenges to ICT adoption at DEBS offices. The study recommended that major ideas, promoting utilization of ICT resources and development of sustainable ICT programs.

CHAPTER ONE

INTRODUCTION

1.0 Overview.

This chapter presents the Background to the Study; Statement of the Problem; Objectives of the Study; Research Questions; Significance of the Study, and the Scope of the study. Also contained in this chapter are sections on the Theoretical framework, Conceptual frameworks, Delimitation and Limitations of the study. Definitions of key terms completes the first chapter

1.2 Background

This study was aimed at evaluating the extent to which District Education Board Secretaries (DEBS) offices have adopted and made use of Information Communication Technology (ICT) in the management of education in their districts, in line with the objectives of the National ICT policy (MCT, 2006) and the Draft ICT policy for Education (MOE, 2006) formulated to promote and facilitate the integration of ICTs in the management of the education system. Accordingly, the study aimed to establish the challenges that the DEBSs may have been facing in the adoption of ICT at the workplace. Rogers (2003) defined adoption as the decision of an individual to make use of an innovation as the best course of action available. Rogers (2003) argued that the process of adoption starts with initial hearing about an innovation to final adoption. This study therefore uses Rogers' definition of adoption.

The researcher undertook this study in selected DEBS offices in Luapula Province in Zambia. Luapula Province is one of the ten provinces of Zambia, and according to CSO (2010), the province is one of the poorest in Zambia with 80.5 per cent of the population living below the poverty line. Luapula Province also represents the typical rural regions in the country according to Saasa (2002). Thus, the province is expected to have been one of the priority areas in Government's quest to promote ICT access in rural areas in line with its National ICT Policy (MCT 2006). This policy states that "efforts shall be directed at promoting the use of ICTs in rural, urban and underserved communities and ensuring that the net effect of the developmental gains resulting from ICTs does have a widespread impact at all levels in both rural and urban areas" (MCT 2006:29).

ICT is a valuable resource that has potential to contribute substantially to the improvement in the administration and management of a country's educational system, especially in Management Information System (Laudon and Laudon 2014:45). Similar views are shared by Moursund (2005:3) who observed that, "ICT has the potential to contribute to substantial improvements in the educational system. Hence, one of the most relevant outcomes of ICT in Zambia has been the adoption of the national ICT policy, as well as the development of an ICT policy for education and its associated implementation framework. The guiding principle of the National Policy on Education is to provide an enabling environment for the promotion of far greater access and use of ICTs at all levels of Zambia's education system. This includes systems for the enhancement of teaching and learning as well as the administration and management of education in the country. In spite of such policy pronouncements, however, relatively little of ICT's potential has been achieved. Moreover, the pace of change of the ICT field currently exceeds the pace of progress in making effective use of ICT in education."

District Education Board Secretaries as administrative heads should not only have basic skills of using ICT in their daily administrative and management functions but should also act as transformational leaders to encourage creativity, open –mindedness and facilitate conditions and events that create a positive environment for technology adoption (Afshari et al, 2012)

With reference to the administration and management of education at district level, it is apparent that in most District Education Board Secretaries offices in rural Zambia, a number of ICT tools that are important to create, collect, consolidate and communicate information are not adequately accessed or utilized thereby posing considerable challenges in the adoption and utilization of ICT. It is against this background that this study has been prompted.

1.3 Statement of the Problem

In most District Education Board offices in Zambia, it is common to find that a great deal of routine administrative work is still done manually with the education managers showing little or no interest in embracing ICT. For instance, the bulk of information communication and even tasks such as planning, budgeting, accounting, procurement, human resource management, and even monitoring and evaluation of standards are still done manually while their records are still being kept in filling cabinets or on shelves. This is not efficient and it is quite time consuming

and erroneous. Given the advancement in technology administration can be efficient. The huge man-hours spend performing routine administrative and management tasks manually; and the associated risk of missing records kept on shelves or even just the cost of travels to and from the Provincial and National headquarters to either submit or collect text documents constitute a problem which can be drastically reduced with ICT.

1.4 Purpose of the Study

This study sort to establish the challenges faced by District Education Board Secretaries (DEBSs) in the quest to responded to, and integrated Information Communication Technology in the management of education in their districts in line the government policy that seeks to promote and facilitate the integration of ICTs in the education system (MCT, 2006). In so doing, the study aimed at establishing the factors that impede the adoption and utilization of ICT by DEBS offices in the selected districts of Luapula Province.

1.4 Objectives of the Study

The following were the objectives of the study

1.4.1 General Objective

To identify the factors that pose as challenges to the adoption and utilization of ICT at the DEBS offices so as to recommend appropriate steps to overcome such challenges.

1.4.2 Specific Objectives

i. To ascertain computer literacy among staff at DEBS offices so as to establish their baseline for possible capacity building.
ii. To ascertain the availability of ICT resources at DEBS offices so as to identify resource constraints.
iii. To establish the challenges being faced by District Education Board Secretaries in embracing ICT so as to recommend to the policy makers and implementers on possible ways to improve access and adoption of ICT in the management of education.

1.5 Research Questions

The Study was guided by the following questions

i. To what extend are staff at DEBS offices computer literate?
ii. Which ICT resources are available at DEBS offices?
iii. What challenges are DEBS offices facing in adopting ICT?

1.6 Significance of the Study

This study is of great significant as it would arouse stakeholder awareness of the present challenges being faced by staff at DEBS offices in terms of access and utilization of ICTs in their administrative and management functions and as such, solutions to the identified challenges may be found. Such awareness would also prompt education managers at all level of the education system to include ICT in there planning and budget processes. It is anticipated that once there is full access and utilization of ICT including proper networking by education managers, education service delivery in the country would be more efficient and cost-effective. Additionally, the study would also contribute significantly to the existing literature on integration of ICT in education in Zambia

1.7 Scope of Study

This study represents a field research to ascertain the computer literacy of education managers at DEBS offices in Luapula Province, the availability of ICT resource as well as determining the level of access to such resources. The study sampled three districts. In the context of such parameters, the challenges being faced by the District Education Board Secretaries in adopting ICTs at the place of work were then established. Before undertaking this study, the researcher first took a critical analysis of ICT policy environment in Zambia and what others have written regarding ICT adoption in education. Field data was collected through questionnaires and interviews. The findings provided the basis for making recommendations and suggestions on the way forward for this country

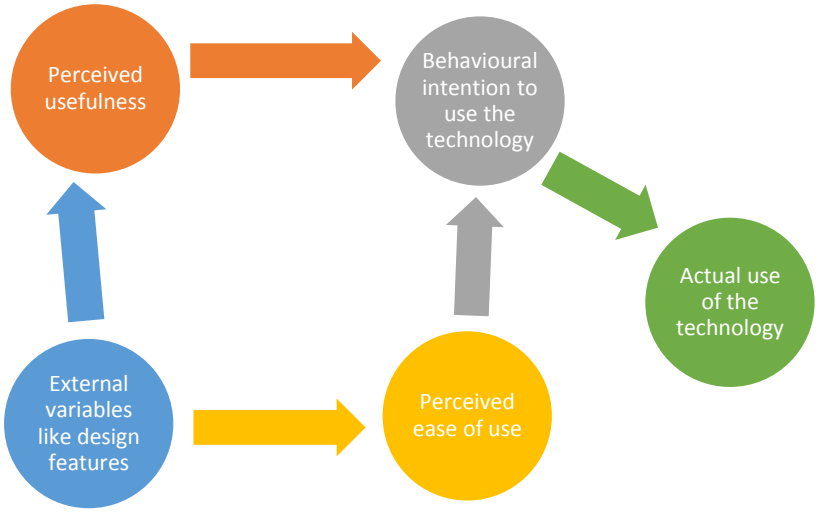
1.8 Theoretical Framework.

There are many theories about technology adoption. Notable among these theories are the Technology acceptance model (Davis et al. 1989), Theory of planned behaviour (Ajzen 1991),

Unified theory of acceptance and use of technology (Venkatesh et al. 2003) and the Diffusion of Innovations theory (Rogers 1995). Given all these theories, this study was guided by the Technology acceptance model (TAM)

Technology Acceptance Model (TAM) was developed by Fred Davis and Richard Bagozzi in 1989 (Davis et al, 1989). TAM holds that the acceptance and use of Information Communication Technologies (ICT) by individuals within the organization is essential for its institutionalization (Zucker, 1987). According to Davis et al (1989) TAM is one of the most widely used theoretical models to explain user acceptance and usage behavior of information and communication technologies, that is, perceived usefulness, perceived ease of use, and actual user behavior. Venkatesh (2000) explained that perceived ease of use is the extent to which the decision to adopt the technology is predicated on minimal effort required in leaning and using such technology. Davis (1989) has argued that the perceived ease of use is one of the determinants of an individual's intention to use the technology and the resulting user behavior. Mathieson (1991) sees the other TAM construct, perceived usefulness as the extent to which individuals within the organization believe that the new innovation would enhance their productivity, thereby triggering the intention to use the technology and the subsequent user behavior. These two TAM constructs are however dependent on external variables like technological factors (design feature) and Management beliefs (Venkatesh, 2000). It is in this light that this study used TAM as a model in investigating the challenges being faced by DEBS offices their adoption and usage of ICT in order to rule out possible individual perceptual handicaps embodied in knowledge and skills deficits in ICT. Figure 3 illustrates the Technology Acceptance Model

Figure 1 Technology Acceptance Model

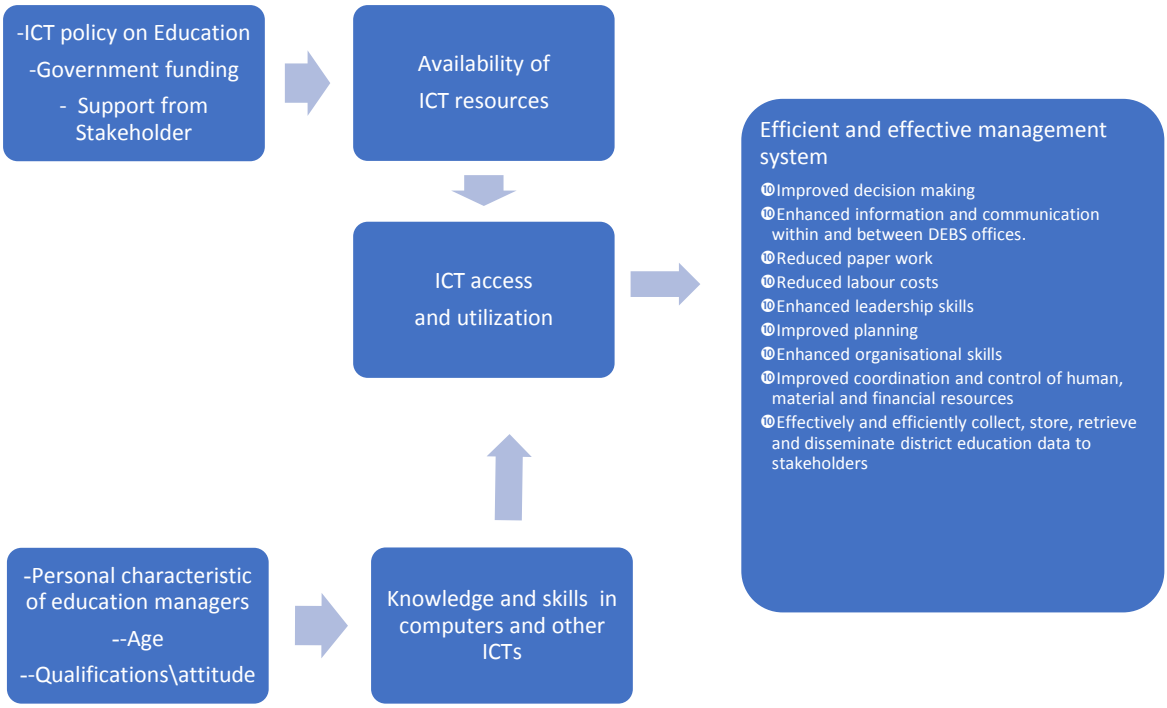


Source: Adapted from Venkatesh and Davis (1996).

1.9 Conceptual Framework

Education Managers at all levels of the education system should use ICT because it provides many benefits ranging from operational to strategic management functions, (Love and Irani, 2004). In this case, usage of ICT in Education management at DEBS offices could improve management functions in activities such as decision making, information communication, reduction in paper work, planning and budgeting as well as financial and human resource management as illustrated in figure 2. By adopting and utilizing ICT, it would not only allow DEBS offices to be more effective and efficient in decision making but also allow them to easily collects, stores, processes, analyzes and exchange information with other stakeholders.

Figure 2 Conceptual Frame work



Source: Primary Source

1.9 Delimitation and Limitations of the Study

Delimitation is taken to mean the parameters of the study. This refers to the population of the study, the sample, and the setting while limitations refer to some circumstances that where beyond the control of the researcher.

1.9.1 Delimitation

The focus of this study was to investigate the challenges in faced by education managers at DEBS offices in Luapula Province in the adoption and utilization of ICT in the management of the education system in the districts. The population of the study was all education managers in the eleven (11) districts of Luapula Province that is, DEBSs, DESOs, ESOs, Human Resource Officers, District Planning Officers, and District Accounts Officers. These officers were targeted because these are the people who mostly require the use of a computer and online resources for their job. The sample population was obtained from three (3)

districts namely Mansa, Nchelenge and Samfya. The research sites were the District Education Board offices where the sample population was found.

1.9.2 Limitation of the Study

The limitations of a study are usually associated with the research methods employed (Leedy and Ormrod, 2010). Accordingly, this inquiry is limited to a survey designed to explore the availability, access and usage of basic computer hardware, application software and the associated ICT facilities like the internet in selected DEBS offices in Luapula Province with intent to ascertain the challenges that they are facing in adopting ICT at the workplace. The inquiry does not delve into details of any specific computer Information Systems that may be in use to support operation, management and decision making.

1.10 Operational Definitions

Access to ICT: having a network-connected machine in one's home or workplace.
Adoption: the decision of an individual to make use of an innovation as the best course of action available.

Challenges: These are constraints or hindrances that prevent sufficient access and utilization of the technology
Digital divide: inequalities in access to and utilization of information and communication technologies (Jones, 2003)

Education managers: Education officials who coordinate education activities at district as well as provincial levels. In this study, this term will be used to refer to the DEBS, the DESO, ESOs, Human Resource Officers, District Planning Officers, and District Accounts Officers These official are also referred to in this study as the **Management team**

Education Management Information System: This is an organized group of information and documentation services that collects, stores processes analyzes and disseminates information for educational planning and management

Hindering: to obstruct or frustrate the process.

Information Communication Technology (ICT) : This is the technology that enable society to create, collect, consolidate, communicate manage and process information in multimedia and various digital formats for different purposes, i.e., computing and telecommunications, technologies like the personal computer, CD-ROM, cable TV, cellular phones and the Internet (David, 2001).

Management Information System: an integrated user-machine system for providing information to support the operations, management analysis, and decision making functions in an organization (Laudon and Laudon, 2014).

Skill: the ability to efficiently and effectively use the technology.

Stakeholders: persons,, organizations or systems that affects or can be affected by an organization's actions. In this study, stakeholders included the Ministry of Education officials, teaching and non-teaching staff, parents, learners, donor agencies, Non Governmental Organisations and business houses that support the education system in Zambia

Utilization: refers to people's actual use of ICT instead of merely having access to it

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.0 Overview

A review of related literature is conducted for the purpose getting what others have written regarding the specific field of study. It also helps the researcher to have an insight into the tested methods, procedures and interpretations of similar studies conducted elsewhere. This chapter begins by looking at the ICT policy environment in Zambia before proceeding with a review of related literature on ICT in education from a global perspective as well as from the Zambian context**.** Succinctly, this chapter presents a review of related literature under the following sub-headings: Evolution of the ICT policy in Zambia; the Digital Divide; Studies on ICT in education- Global perspectives; Studies on ICT in education- the Zambian context; Education Management Information System as an ICT platform; overview of education sector in Zambia; Innovations trends in ICT; Conclusion.

2.1 Evolution of the ICT policy in Zambia.

In order to appreciate the evolution of the ICT policy in Zambia we need to identify that the field of Information and Communication Technology is a recent innovation. ICT combines science and technology and includes the full range of computer hardware and software, telecommunication and cell phones, the Internet and Web, wired and wireless networks, digital still and video cameras, robotics, and so on. It includes the field of Computer and Information Science and a huge and rapidly growing knowledge base that is being developed by practitioners and researchers. ICT has proven to be a valuable aid to solving problems and accomplishing tasks in business, industry, government, education, and many other human endeavors (Moursund, 2005)

The present ICT policy in Zambia dates back to 2001, when the Government, with assistance from the Japanese International Cooperation Agency (JICA) through the United Nations Development Programme (UNDP), embarked on the formulation of a National Information and Communications Technology (ICT) policy. The policy formulation process, which, started in 2001 and completed in 2005, involved broad stakeholder consultations and participation from

both the public and private sectors.(Habenzu, 2010:2). Hence, government officials, at both national and local levels, civil society, the business community, professional associations and academicians took part in the policy formulation process. According to Munsaka (2009), the ICT Policy was approved by the Government in 2005, on the eve of the World Summit on Information Society (WSIS) meetings in Tunis, and was officially launched in 2006 and adopted in 2007, having had a prolonged policy formulation process that was among other things meant to raise general public awareness of the role of ICTs in fostering socio-economic development.

The national ICT Policy is aligned to the following vision statement. "A Zambia transformed into an information and knowledge-based society and economy supported by consistent development of, and pervasive access to ICTs by all citizens by 2030." (ICT Policy 2007:28)

This ICT policy therefore sees ICT is an enabler to build an information centered society where everyone can create, access, utilize and share information and knowledge leading to greater productivity, greater competitiveness and sustainable economic growth, a precondition for poverty reduction. ICTs can also be used as an effective tool in enhancing good governance.

In order to enforce the principles and objectives of the National ICT Policy, the Government of the Republic of Zambian also went farther to enact the Information and Communication Technologies (ICT) Act in November 2009 as an institutional, legal and regulatory framework (ICT Act, 2009).To begin with, the Information and Communication Technologies (ICT) Act of 2009 effectively renamed the then Communications Authority of Zambia to the Zambia Information and Communications Technology Authority (ZICTA). The ICT Act of 2009 provided for the economic and technical regulation of information and communication technology and sort to facilitate access to ICTs for all Zambians. It also sort to protects the rights and interests of service providers and consumers and also aimed to regulate and manage the electronic media, that is, radio and television stations (GRZ, 2009)

Arising from policy adoption and backing it with a legal framework, Zambia has made some strides in policy implementation and has participated in a number of global and regional events that are focusing on ICTs as a tool for sustainable growth and development. Among the notable ones being the Declaration of Principles and Plan of Action from the World Summit on the Information Society and the NEPAD E-Africa Commission. Further the country committed

itself to the Millennium Development Goals and it envisaged that ICTs could be harnessed to the achievement of these goals.(ICT Policy,2007). At the sub-regional level Zambia has been an active player in ICT initiatives under COMESA and SADC.

Despite all efforts, Zambia is still facing a shortfall in critical ICT skills required for developing its information and knowledge economy at managerial, professional and technician levels in the public sector as well as deficits in the development, deployment and application of ICTs in the private sector.

According to MCT (1995) the design of the ICT Policy in Zambia is anchored on three core thematic areas. These are: capacity building, a competitive and efficient ICT sector and an effective legal and regulatory framework. The policy is also aimed at promoting universal access to ICT in the country.

The ICT policy implementation strategies are backed by the ICT Act of 2009 which gives ZICTA clear functions and responsibilities in the design, implementation and financing of universal access and service programmes. Consequently, the Universal Access and Service Fund, administered by ZICTA were set up to help finance this universal access and service programme. ZICTA having commissioned the Universal Access Programme (UAP) was mandated to ensure that ICTs are deployed to rural and un-served areas of the country using public funds (Munsaka, 2009)

Munsaka (2009) however observed that implementation of the policy has lagged significantly behind market expectations and developments. He attributed this to factors such as lack of institutional leadership and capacity in the Ministry of Communications and Transport; lack of skilled human resources to spearhead the implementation process; and lack of coordination in the planning and budgeting process as well as funding challenges.

With reference to the education sector, there is no evidence to show that Zambia has a fully-fledged ICT Policy for Education. What passes for a policy guiding the education sector is still in its draft form, and it has taken about ten years in its current form. This is perhaps the reason why, according Kalila et al (2011:7), “the Ministry of Education has not been the major player behind

initiatives to facilitate provision, access to and use of ICTs in the educational system but NGOs and the private sector."

The draft ICT policy for education was developed with the support of the International Institute for Communication and Development (IICD), the Commonwealth of Learning (COL), and the United States Agency for International Development (USAID) in 2006 (MOE,2006). By January, 2007, an implementation strategy was also put in place to support the draft ICT policy (MOE, 2007). This represents an extension of Zambia's national education and national ICT policies.

In a Country Report, Shafika (2007) highlighted the following guiding principles of the draft ICT policy for education in Zambia: 1. It must fit into national policies on education and ICTs. 2. Commitment to establishing strategic partnership with stakeholders.3. A combined effort with government, the private sector, and NGOs. 4. The policy reflects general standards in the Ministry of Education., 5. Adopting an integrated approach that integrates all aspects of the value chain.

The draft ICT policy on Educations guiding principle focus on three main areas: ICT as an administrative tool (e-Government), ICT as a tool for teaching and learning, and ICT for Educational Information Management System (EMIS). For instance in EMIS its adoption is intended to improve the quality of managing educational delivery activities, operations and monitoring (MOE, 2006).

The implementation framework was developed to provide the implementation objectives, activities, time frames, and budgets for each of these programme areas. The ministry's commitments to the promotion of collaboration between the private sector and education institutions are outlined in the implementation framework as well as establishment of appropriate structures to facilitate the integration of ICTs in the education system (MOE, 2007)

2.2 The Digital divide

According to Norris (2001), the concept of the digital divide can be taken to mean either the disparities in ICT use between people living in different parts of the world (global digital divide) or the unequal opportunities for ICT use within a country. The dividing line in global digital

divide is between the developed and developing countries. In case of unequal opportunities for ICT use within a country, the causes include an individual's socio-economicposition, level of education and place of residence.

The lower the income and educational levels are and the further away from the capital and centre of activity a person is, the more likely he or she is to be excluded from information flows and network (ibid).The foregoing observations have been supported by Gulati, (2008) who argued that developing countries do face challenges in ICT adoption and integration and these make the 'digital divide' continue not only between countries but also within countries. The hurdles are mainly divided into four categories; a lack of financial resources, poor access to the internet, limited trained staff, and lack of policy (ibid)

2.3 Studies on ICT in education: Global perspectives

Extensive literature is now available worldwide regarding ICT and considerable studies have been done in various sectors where ICT is applied including the education sector. However, apart from studies on the integration of ICT in teaching and learning, it is not known whether extensive studies have been done regarding the integration of ICT in educational management locally. From a global perspective however, a lot has been published in books, journals, articles, and theses on ICT integration in the education system and a significant amount of research findings support the benefits of ICT in education (Moursund, 2005). The following are some of them.

In a study on the adoption of ICT in education management in schools in Kenya, Kipsoi et al (2012) reported on the benefits of Introducing ICTs in Educational Management. Naidu and Jasen(2002) were cited as having observed that education management and development is an intricate process that requires reliable, timely, user friendly data. Reference was made to Campbell and Sellbum (2002) who postulated that ICTs can be valuable for storing and analysing data on education indicators; students' assessments; educational, physical and human infrastructure; and cost and finance. Kipsoi et al (2012) also alluded to the use of computer related technology as particularly helpful in this field and explained that administrators and policy makers can construct virtual scenarios around different policy options to determine needs and analyse potential consequences. Each scenario can be analyzed and evaluated systematically,

not only in terms of educational desirability, but also in terms of financial affordability, feasibility and sustainability over a sufficient period of time to show results (ibid).

Hassan et al (2012) investigated the barriers to the introduction of ICT into education in developing countries with reference to Bangladesh. In case of Bangladesh, Hassan et al (2012), observed that although the Government of Bangladesh is committed to implementing ICT in education the process is being hindered by a number of barriers that were categorized in Snoeyink and Ertmer(2001) as first order (external) and second order (internal). According to Snoeyink and Ertmer (2001), first order barriers include inadequate infrastructure, lack of equipment, lack of technical support and other resource-related issues. Second order barriers include organisational culture, beliefs about technology and openness to change.

Cano and Garcia (2013) did carry out a study to evaluate ICT tools and strategies in education supervision in Spanish schools. However, while the study was looking at ICTs in the education system its focus was on educational supervision and therefore leaves a gap in education management that this thesis sought to investigate.

What comes closer to the current study was done by Jeevan and Saji (2004). In a survey conducted on selected libraries in Kerala, India, Jeevan and Saji (2004) sought to assess ICT adoption in those libraries. A questionnaire and interview schedule was used to elicit information regarding the various ICT resources that are essential for effective and efficient organization and management of libraries. Eighteen scientific, technical and research libraries (both state run and those managed by the central government) participated in the survey. The findings from all the eighteen libraries indicated that ICT had a positive impact on the daily activities of the library and that ICT played a pivotal role in enhancing library services, much to the satisfaction of the users. In that study, the observed challenges faced by libraries in ICT adoption included inadequate funding, shortage of skilled ICT personnel, lack of periodic up-grading of infrastructural facilities, constant changes in technology, high cost of hardware and software, insufficient training of professionals and absence of hands-on training.

2.4 Studies on ICT in education: the Zambian context.

In Zambia, a substantial number of studies have been reported but again these studies mainly centre on the ICT in teaching and learning, leaving a gap on usage of ICT in education

management. For example, Mulima (2011) undertook a study to establish the perceptions of teachers and learners on the role of ICTs in the teaching and learning of RE in three selected secondary schools in Kabwe District. The findings show that teachers do understand the benefits of ICTs usage in RE and other school subjects and those teachers do realize that technology is more relevant to learners now than ever before. The study revealed that teachers' positive attitudes towards the use of ICTs do not necessarily lead to its adoption in daily practice as observed at the three selected schools.

Lufungulo (2015) study is also about ICT in teaching and learning as it sought to investigate the primary school teachers' attitudes towards ICT integration in Social Studies; a case study of Lusaka and Katete districts. Findings were that primary school teachers in targeted districts held positive views towards the integration of ICT in the teaching and learning of Social Studies. The study attributed the positive attitudes of the teachers to the training they had undergone with iSchool and Impact Network on the usage of ICTs.

Phiri (2016) investigated the challenges in implementation of ICT in selected Secondary Schools in Chipata, Eastern Province. The findings were that implementation of ICT in schools has been affected negatively due to lack of ICT teachers, computers, ICT books, and prior preparation by the government. This study was solely on implementation of ICT in school and therefore left a gap as it did not investigate the challenges regarding the ICT in management.

2.5 Education Management Information System (EMIS) as an ICT platform.

An information system is a set of interrelated components that collect (or retrieve), process, store, and distribute information to support decision making and control in an organization (Laudon and Laudon, 2014:45). Education Management Information System as postulated by Cassidy (2006:27) is "a system of people, technology, models, method, processes, procedures, rules, and regulations that function together to provide education leaders, decision makers, and managers at all levels with a comprehensive, integrated set of relevant reliable, unambiguous, and timely data and information to support them in completion of their responsibilities"

As early as 2002 before even the ICT policy on education was drafted, Hebert et al (2002) undertook a sector review and analysis of Zambia's education sector for the purpose of recommending strategic options to consider during the design of Support to Education in the

USAID/Zambia next Country Strategy. One of recommendations from this review was that USAID/Zambia needed to assist the Ministry of Education (MOE) in the Decentralisation of education delivery in Zambia by training the members of the District Education Board in educational management as well as the improvement in information systems for decision making. One such key area for training was the Education Management Information System (EMIS). Hebert et al (2002) observed that EMIS activity has been helping MOE to build capacity to collect timely education data and use it in planning and decision making at all levels. The review reported that EMIS platform at MOE headquarters had developed manuals and training plans to teach district education personnel how to access and use EMIS data as well as planning and purchasing of computers and other resources for EMIS.

The main purpose of an EMIS is to integrate information related to the management of educational activities, and to make it available in comprehensive yet succinct ways to a variety of users. These include teachers, principals, curriculum planners, inspectorate officials, financial controllers, planners, policy advisers and political leaders, as well as parents and students. In this way, the combined information resources of the EMIS are at the service of the entire community(Villanueva, 2003)

According to Villanueva (2003:8) EMIS network is built around the concept of the "EMIS centre". An EMIS comprises one or more EMIS "centres" that are information services located mainly at the national, regional and local levels. It is therefore not known whether there are still some existing gaps in EMIS activity in education management in Zambia at district level.

2.6 Overview of the Zambian education sector

The education sector in Zambia is governed by the Education Act of 2011, and the main policy document is the 1996 National Policy on Education (Educating our Future) (MOE, 1996). The existing structure of Zambia's education system comprises four main levels of learning namely: - (a) Pre-school -2years, (b) Basic Education - 9 years, (c) high school -3years, and (d) Higher education offering various training programmes including vocational courses at certificate, diploma or degree levels. This structure is however, under review with the aim of reverting to the previous system of primary and secondary school in line with the Patriotic front Government's nomenclature of the Education system as follows: Early Education (pre-primary), Primary

education (Grade 1 to 7), and Secondary education (Grade 8 to 12). The other tertiary levels remain the same.

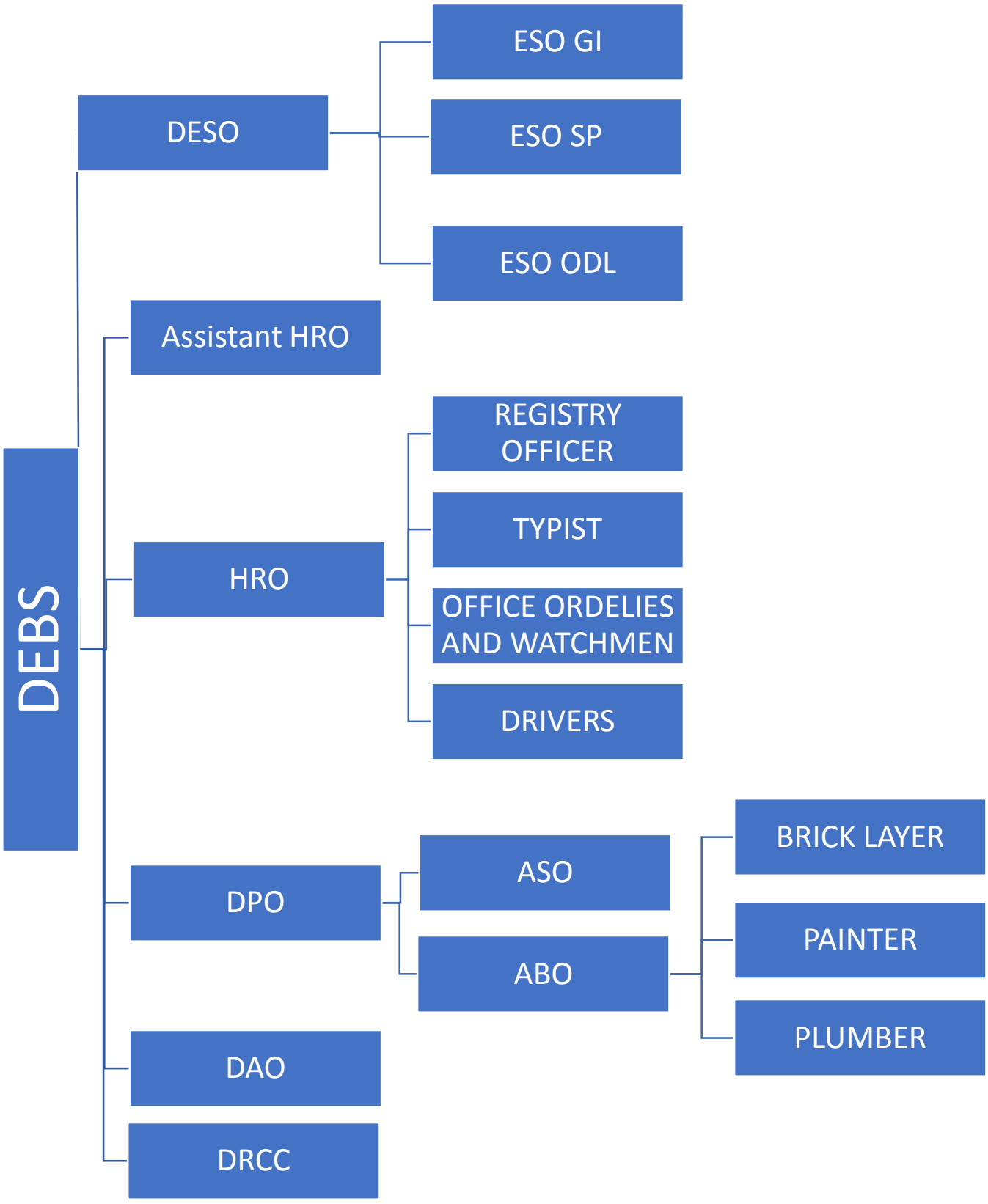
Zambia's education system as outlined in the 1996 National Policy document was highly centralized with hierarchical decision-making procedures running from the national headquarters to provincial, district and institutional levels. Since 1997, however, the process began of decentralising the education system into provincial, district, college and secondary school education boards (GRZ, 2001).

The education sector at district level is managed by District Education Boards. The structure of a District Education Board is such that it has a governance body (whose members appointed by the Minister), the managementteam (the administration), the support staff, and then the clients comprising the management, staff and pupils in schools in the district (MOE, 2005). According to MOE (2005) the administrative body of the District Education Board comprises the following officials: The District Education Board Secretary (DEBS), the District Education Standards Officer (DESO), three Education Standards Officers (ESOs), the Human Resource officer (HRO), the District Planning Officer (DPO), and the District Accounts Officer (DAO). This management team is augment by support staff as illustrated in figure 2. The DEBS is the chief executive and officer in charge of education in the district. The DEBS, whose title has been changed to District Director of Education through the Education Act number 23 of 2011, has the following functions: (a) administer, manage and control the district education office; (b) co-ordinate, monitor and supervise the provision of education in the district; (c) consolidate and submit workplans and budgets to the regional director of education;(d) prepare and submit workplans and reports of the district office to the regional director of education; and (h) perform any other functions as may be provided for under this Act or any other law (GRZ, 2011).

The District Director of Education (District Education Board Secretary) is assisted in managing the districts education system by a team of education standards officers. This team is led by the District Education Standards officer (DESO) as head of the Standards and Evaluations section of the District Education Board. The rest of education standards officers in this section are: the Education Standards Officer- General Inspection (ESO GI), the Education Standards Officer-

Special Education (ESO Special), and the Education Standards Officer-Open and Distance Learning (ESO ODL)In terms of functions the Education Act, 2011 states that "An education standards officer shall monitor, evaluate and enforce adherence to set standards of quality in the provision of education by educational institutions in accordance with the provisions of this Act.

Figure 3 Administrative structure of a District Education Board (Adapted from MOE, 2002: 84 -85)


DEBS
DESO
ESO GI
ESO SP
ESO ODL
Assistant HRO
HRO
REGISTRY OFFICER
TYPIST
OFFICE ORDELIES AND WATCHMEN
DRIVERS
DPO
ASO
ABO
BRICK LAYER
PAINTER
PLUMBER
DAO
DRCC

2.7 Innovations trends in ICT

Moursund (2005:37) reported that when microcomputers (desktops and laptops) first started to become popular in the late 1970s, most computer users viewed them with disdain. They perceived microcomputers as "toys" best suited for playing games or solving minor problems. This attitude toward microcomputers was forever changed with the 1979 development of the first spreadsheet software. Spreadsheets become a powerful aid to doing bookkeeping and accounting tasks since its software made it relatively easy to incorporate formulas to help solve a particular problem. Hence, the spreadsheet software could handle many of the types of real-world problems faced by businesspeople including particular aspect of a business such as payroll management systems and inventories. As Laudon and Laudon (2014) referring the innovation of Information technology aptly put it, "Managers on the move are now in direct, continuous contact with their employees. The growth of enterprise-wide information systems with extraordinarily rich data means that managers no longer operate in a fog of confusion, but instead have online, nearly instant, access to the really important information they need for accurate and timely decisions"

Common ICT resources include personal computers, notepads, smart phones, printers, scanners, and modems while the common computer application software used in offices include are: word processing, spreadsheet, Database Management System, desktop publication systems, PowerPoint presentations, multimedia and interactive non-linear hypermedia systems, calculators, internet connectivity and networking, email and Web browsing (Lubbe and Benson, 2012)

2.8 Conclusion

In conclusion, this chapter presented a review of the literature on ICT in education in Zambia and elsewhere in the world. The review was also meant to traces the genesis of the ICT policy in Zambia, how it has evolved and its bearing on education. In so doing, the review sought to unfold the identified gaps in in terms of access, integration and utilization of ICT in education as reflected in policy documents, some recently published books, journals, articles, and theses. The next chapter looks at the methodology to be used in the study.

CHAPTER THREE

METHODOLOGY OF STUDY

3.0 Overview

This chapter presents the design and methodology that was used in collecting, processing and analyzing data for this study. After explaining the research design for this study and the reason for adopting it, this chapter proceeds with the study population, the sample and sampling method. The methodology of data analysis is preceded by a section on the instruments of data collection. Ethical considerations as a section complete the chapter.

3.1 Research Design

Welman et al (2005:46) described a research design as the overall plan, according to which the respondents of a proposed study are selected, as well as the means of data collection or generation, while Babbie and Mouton (2010) describe research design as a plan or blueprint for conducting the research. A research design should therefore provide the researcher with a clear research framework to guide the methods for data collection, data analysis and interpretation. In the proposed study, which is, to investigate the challenges being faced by District Education Board Secretary's (DEBS) Offices in adopting ICT innovations, a Descriptive Survey design within a mixed methods approach was used to conduct this research.

Mixed methods research (also called mixed research or mixed methodology) is the type of research in which a researcher mixes or combines qualitative and quantitative research philosophies/paradigms, methodologies, methods, techniques, approaches, concepts, or language into a single research study or a set of related studies (Johnnson, 2014).Greene, Caracelli, and Graham (1989) identified five purposes for mixing quantitative and qualitative data, that is, triangulation, complementarity, development purposes; initiation, and expansion purposes. The five identified purposes are explained by Greene et al (1989) as follow: Triangulation is where quantitative findings are compared to the qualitative results in order to ascertain the validity of the findings. Complementarity is where results from one analysis type (e.g., qualitative) are interpreted to enhance, expand, illustrate, or clarify findings derived from the other strand (quantitative). Development is where data are collected sequentially and the findings from one

analysis type are used to inform data collected and analyzed using the other analysis type. Initiation is where contradictions or paradoxes that might reframe the research question are identified. Last but not the least is expansion whereby quantitative and qualitative analyses are used to expand the study's scope and focus.

On the other hand, Creswell (2014) identified three basic research designs in Mixed methods research. These are: Convergent parallel design (qualitative and quantitative data collection and analysis is done concurrently); Explanatory sequential design (quantitative data is collected and analysed first followed by qualitative data) ; Exploratory sequential design (qualitative data is collected and analysed first followed by quantitative). Similar views are held by Antwi and Hamza (2015) postulated that in mixed research, the researcher uses a mixture or combination of quantitative and qualitative methods, approaches, or concepts in a single research study or in a set of related studies. The qualitative and quantitative parts of a research study might be conducted concurrently (conducting both parts at roughly the same time) or sequentially (conducting one part first and the other second) to address a research question or a set of related questions. This research has opted for a sequential mixed method.

According to Kombo and Tromp (2006) a qualitative research is a form of research that involves description; it seeks to describe and analyze the culture and behavior of humans and their groups from the point of view of those being studied. It is often used as a means to collecting verbatim statements from respondents in view of the fact that open-ended surveys allow respondents to offer responses within their unique context, and the value of the information provided can be exceptionally high. As for quantitative research, Creswell (2009) has defined it as a type of research that is explaining phenomena by collecting numerical data that are analyzed using mathematically based methods, in particular statistics.

Mixed researchers therefore see positive value in both the quantitative and the qualitative views of human behavior and that is why they advocate for a Mixed Method research. They view the use of only quantitative research or only qualitative research as limiting and incomplete for many research problems.

It is for this reason that in this study, a mixed methods research design was chosen, hoping that it will increase the scope and range of the research and ultimately address the research problem and

the related research questions. Consequently, the qualitative segment of the research employs some aspects of phenomenological study grounded in post-positivism. Leedy and Ormrod (2010:141) postulated that a phenomenological study is one that attempts to understand people's perceptions, perspectives and views on a particular situation. In analysing the multiple perspectives of respondents on the same situation, the researcher would be able to make some kind of generalisation on what the situation is like from an insider's perspective.

To appreciate the choice of post-positivism as an approach, we need to first recognize what positivism is. Gratton and Jones (2010:25) indicates that positivist research is based quantifiable observations for statistical analysis. The researcher is independent of and neither affects nor is affected by the subject of the research. However, Gratton and Jones (2010:26-27) is of the view that in reality, it is not possible to gain understanding merely through quantitative measurement. Hence post-positivism is the alternative approaches since it shows a much greater openness to different methodological approaches, and often include qualitative, as well as quantitative methods. In case of this research, the qualitative and quantitative parts of the study will be conducted sequentially.

3.2 Target Population

The target population for this study comprises all DEBSs, DESOs, ESOs, District Human Resource Officers, District Planning Officers, and District Accounts Officers in Luapula Province. Sidhu (2003) states that a target population is an aggregate or totality of objects or individuals regarding which inferences during the study are made. It can also be referred to as an entire group of persons or elements that have at least one thing in common

3.3 Sampling procedure and Sample Size

This research used a purposive sampling technique. Specifically the research employed the homogeneous purposive sampling and typical sampling. The reason for using purposive sampling is because it targets people believed to be reliable for the study. This is in keeping with Patton (1990) who contended that purposively sampled informants are preferred in cases where they are likely to be more conversant about the phenomenon being investigated than randomly sampled respondents who may not even be well-informed about the phenomenon being investigated

There are eleven districts equivalent to eleven DEBS offices in Luapula Province. These are Mansa, Samfya, Nchelenge, Kawambwa, Mwense, Chienge, Milenge, Lunga, Chembe, Chipili, and Mwansabombwe. The last four districts were created in 2011 by the Patriotic Front government led by the late president Michael Sata. Out of the eleven DEBS offices, three DEBS offices namely; Mansa, Samfya, and Nchelenge were purposively selected in this study as research sites. This represents 27.3% of all the DEBS offices in Luapula Province. The purposive sampling of the DEBS offices was done on the premises of the population of the host districts as captured from the 2010 Census ranking of all the districts in the province in order of population size. Mansa's population was 228,392, Samfya's population was 198,911, and Nchelenge's population was 152,807 (CSO, 2010). See Table 1. Population of the district was used as a proxy for the size of work the District education board does. The size of the population is positively correlated with the number of schools and the number of teachers deployed in the districts. Therefore, larger districts by population are expected to be larger in terms of work load by the DEBS.

The respondents at DEBS office were also purposively sampled. The respondents comprised three (3) DEBS, three (3) DESO, six (6) ESOs, three (3) HROs, three (3) District Accounting Officer, and three (3) District Planning officers. These officers at DEBS offices were selected because in this era of technology they are expected use computers and the associated ICTs in the execution of their management duties. The sample size for this study was actually eight (8) officers from each of the three districts resulting in a sample of twenty-four (24) respondents. Sandelowski (1995) points out that determining adequate sample size in research is ultimately a matter of judgment and experience on the part of the researcher, and researchers need to evaluate the quality of the information collected in light of the uses to which it will be put.

Table 1 Population Trend for Luapula Province by Year and District, 1990 - 2016

District	*1990*	*2000*	*2010*	*2016**
Chiengi (Chienge)	47290 (8.4)	83824 (10.8)	114225 (11.5)	137692 (11.9)
Kawambwa	85307 (15.1)	102503 (13.2)	134414 (13.6)	158532 (13.7)
Mansa	132500 (23.5)	179749 (23.2)	228392 (23)	263584 (22.8)
Milenge	20045 (3.6)	28790 (3.7)	43337 (4.4)	56618 (4.9)
Mwense	86326 (15.3)	105759 (13.6)	119841 (12.1)	129922 (11.2)
Nchelenge	72761 (12.9)	111119 (14.3)	152807 (15.4)	185146 (16)
Samfya	120264 (21.3)	163609 (21.1)	198911 (20.1)	224666 (19.4)
Total	564493	775353	991927	1156160

****projected population***

Source: Central Statistical Office Zambia (2017)

3.3 Data Collection Instruments

The researcher employed in-depth interviews and questionnaires to collect qualitative and quantitative data respectively. Questionnaires were administered on the DESO, ESOs, the Human Resource Officers, the Planning Officers and the Accounting Officers. The interview with the DEBS supplemented data from the questionnaire so as to help provide deeper insight and understanding of the challenges faced the DEBS in the adoption of ICT.

3.4 Data Analysis

The first stage in data analysis was to profile the settings and the individuals selected for the study as a requirement under case study analysis (Creswell, 2009). This was then being followed by a sequential analysis of data sets, starting with quantitative data.

The interview data was analyzed on the basis of a systematic coding, following the approach suggested by Saldaña (2012). This type of analysis consists of a systematic breaking down of data according to a code list or code system, in such a way as to identify relevant patterns. The coded segments are then grouped and synthesized into more general categories, which in turn get linked to more general themes and theoretical concepts.

The code system (and the categories and themes that were developed on the basis of the coding process) was developed gradually and collaboratively. Data collected using questionnaires were analyzed quantitatively using SPSS Version 16 and Microsoft Excel to generate tables of frequencies and percentages.

Antwi and Humza (2015) observed that quantitative research generally reduces measurement to numbers. They contend that in survey research, for example, attitudes are usually measured by using rating scales. The interviewer or questionnaire provides a statement, and the respondents reply with one of the five allowable response categories. After all respondents have provided their answers, the researcher typically calculates and reports an average for the group of respondents Finally, conclusions from qualitatively analysed data were compared and contrasted with results from the quantitative analysed data resulting in a mixed analysis.

3.5 Ethical Considerations

Gratton and Johns (2010: 121) indicate that all researchers regardless of research design, sampling techniques, and choice of methods are subject to ethical considerations. Ethical considerations mainly have to do with permission to carry out the research, obtaining informed consent from the participants and assuring confidentiality of the information they give. Since the study will be conducted in DEBS offices, it will be necessary to seek permission from relevant offices before the commencement of research. The first office to ask permission from will be the Provincial Education Office. In conducting this research, care will be taken to avoid any form of harm to the participants in the light of sensitivity to the research theme as regards the responses about management competencies on ICT by DEBSs or their subordinates.

3.6 Validity and Reliability of Instruments

Validity of measuring instruments implies measuring what the instrument was intended to measure. Reliability is the precision of the measuring instruments. To ascertain the validity, the researcher submitted the instruments to the supervisor and his assistant for approval who helped in improving them. As regards the reliability of the research instruments used in this study, the instruments were pretested in at the DEBS office in Chienge district whereby the participants had the same characteristics as those in the actual study. The pretesting of the instruction afforded the

researcher an opportunity to rephrase certain question statements that were deemed to be ambiguous. In the same vein, certain question found to be irrelevant were left out.

CHAPTER FOUR

PRESENTATION OF FINDINGS

4.0 Overview

This chapter presents the findings of the study. The presentation is done under two sections: The first section focuses on background information regarding the participants and the research sites while the second section captures the themes emerging from the study. Succinctly, the background information mirrors the personal characteristics of the respondents who participated in the study and the distinct research sites. This background information is meant to facilitate full understanding of the environment in which the study took place. The emerging themes on the other hand refer to the topical issues emanating from the objectives of the study and the research questions.

4.1 Background Information on the participant and the research sites

4.1.1 Participants

The respondents who actually participated in the study comprised three District Education Board Secretaries (DEBSs), three District Education Standards Officers (DESOs), six Education Standards officers (ESOs), that is, two Education Standards Officers for General Inspection (ESO-GIs), two Education Standards Officers- Special Education (ESO-Special), and two Education Standards Officers- Open and Distance Learning (ESO-ODL). Others in the study were, three (3) Human Resource Officers (HROs), three (3) District Planning Officers (DPOs), and three (3) Accounts Assistants. The total number of participants in the study was thus twenty out of the expected twenty-four respondents. This therefore represents 83.3% of the number that was earmarked for the study.With regard to their credentials, all of them were found to be computer literate and suitably qualified for their jobs,

4.1.1.1. DEBS

District Education Board Secretaries are district heads of departments in the Ministry of General Education. The three DEBSs that participated in the study were: DEBS-Mansa, DEBS- Nchelenge, and DEBS-Samfya. Unlike the rest of the participants who had to respondent to a questionnaire, the DEBSs participated through a face to face interview.

Responses from, all the three DEBS indicate that they are computer literate and did expressed sufficient knowledge and skills in ICT. It was evident that all of them have access to ICT at the place of work. All of them indicated that they do appreciate the role of ICT in the administration and management of education in their respective districts.

4.1.1.2 DESOs

The DESOs who participated in the study were DESO- Nchelenge and DESO- Samfya. DESO- Mansa did not participate in the study as he was reported to have been transferred to another district on promotion. Indications from their responses are that the officers are computer literate and have useful knowledge and skills

4.1.1.3. ESOs

Two ESOs from each DEBS office in the sample took part in the study as they responded to the questionnaire. At the time of data collection, one ESO from Mansa and one ESO from Samfya were not available at their stations and as such they were ruled out of the study. This is the reason why only six ESOs participated in the study. Indications are that they are all computer literate and have useful levels of knowledge and skill in common computer applications such as word processing, spreadsheets and PowerPoint presentations

4.1.1.4 Human Resource Officers

One Human Resource Officer (HRO) from each DEBS office in the sample took part in the study as they responded to the questionnaire. Indications are that they are all computer literate and have useful levels of knowledge and skill in common computer applications such as word processing, spreadsheets and PowerPoint presentations. They also have knowledge of database management system

4.1.1.5 District Planning Officers

Three District Planning Officers took part in the study as they responded to the questionnaire. Aged between 25 and 35 years, all the three officers are relatively new in the education sector. They also indicated useful levels of knowledge and skill in common computer

applications such as word processing, spreadsheets and PowerPoint presentations. They were also knowledgeable in database management systems.

4.1.1.6 Accounts Assistants

An Accounts assistant from each DEBS office in the sample took part in the study as they responded to the questionnaire. All of them are computer literate and indicate medium levels of proficiency in computers and have more than ten years work experience in the same position

An analysis of the personal characteristics of the participants such as, gender,age,educational level and experience resulted in the plotting of a table of frequencies and percentages as shown in table 2 and table 3 below. Schiller (2003) is of the view that such personal characteristics together with experience with, and attitude towards computers do influence the adoption of a technology, Schiller (2003).

Figure 4 Personal Characteristics for the District Education Board Secretaries who were interviewed in this study

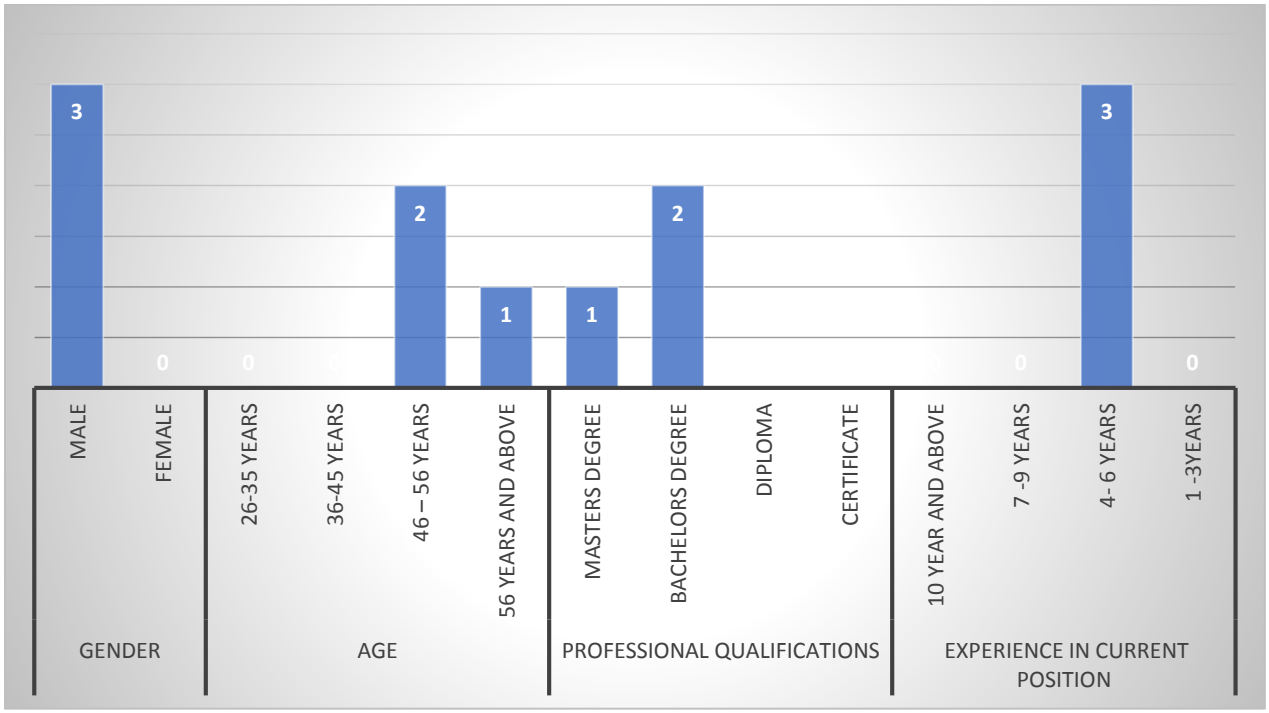
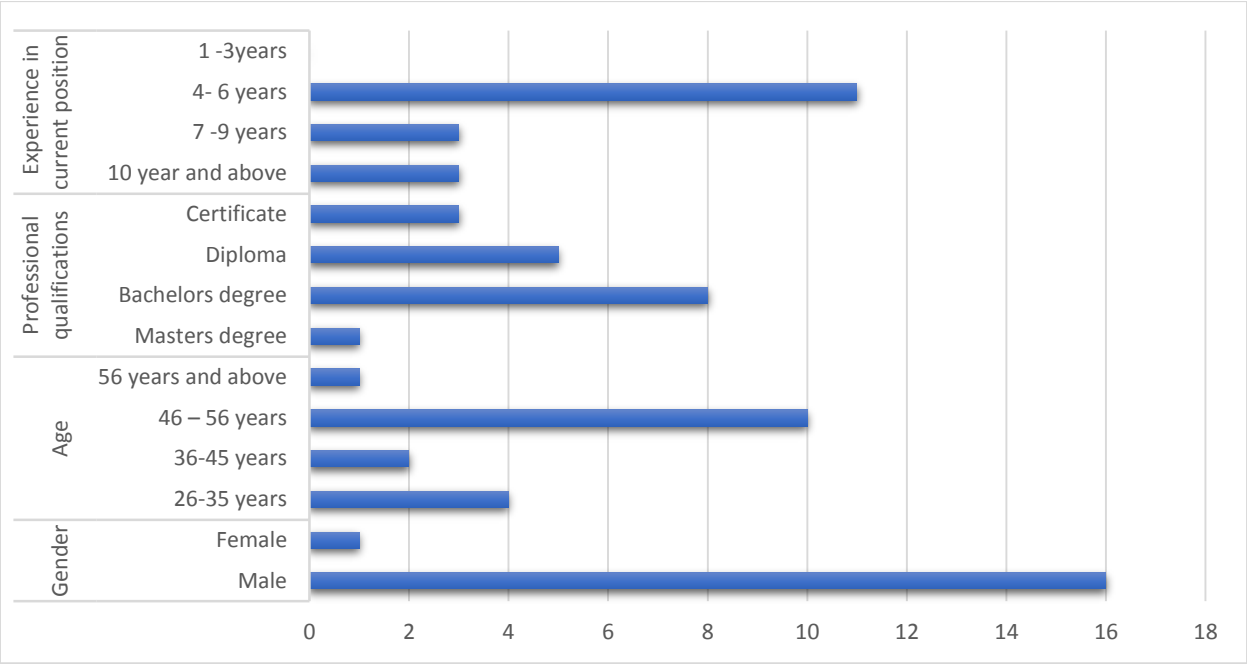


Figure 5 Demographic characteristics of the participants who responded to the questionnaire: DESOs, ESOs, HROs, DPOs, and Accounts Officers. N= 17



A total of 19 participants, that is, 3 participants as shown in Table 2 and 16 participants as shown in Table 3 totaling (95 %) of the 20 participants in the sample were male. This is not a deliberate bias. The ratio between male and female respondents was determined by positions held by participants in the study since sampling was purposively done so as to select only those in management team as they are the ones who were expected to give the required data. At DEBS offices in Luapula and everywhere in the country it is not uncommon to find that management positions are male dominated.

4.1.2 Research Sites

The research sites were Mansa DEBS office, Nchelenge DEBS office and Samfya DEBS office.

4.1.2.1. MANSA

Mansa DEBS office is situated in the Central Business District (CBD) of Mansa district. Being in the provincial headquarters of Luapula Province, Mansa DEBS office is assumed to

have competitive advantage over all other DEBS offices in the province. The DEBS confirmed that the office has an internet facility with ZAMTEL as their Internet Service Provider (ISP).

4.1.2.2. NCHELENGE

Nchelenge DEBS office is located at the boma offices of Nchelenge district in Luapula Province. In terms of geographical location, Nchelenge is a rural district, perched on the shores of Lake Mweru. Its distance from the provincial headquarters is about 240 kilometers north of Mansa and it is well connected by a tarred road. This office has no established internet facility and so they either have to use their personal smart phones to access the internet or purchase internet bundles using their mobile phone to be used on dongos.

4.1.2.3. SAMFYA

Samfya DEBS office is located at boma offices of Samfya district in Luapula Province. In terms of geographical location, Samfya is a rural district, perched on the shores of Lake Bangweulu and is about 75 kilometers east of Mansa, the provincial headquarters. Samfya is also well connected to Mansa by a tarred road. The office has no established internet facility. They also either have to use their personal smart phones to access the internet or purchase internet bundles using their mobile phone to be used on dongos.

4.2 Emerging Themes

This section presents the findings corresponding to the emerging themes from the objectives of the study and research questions.

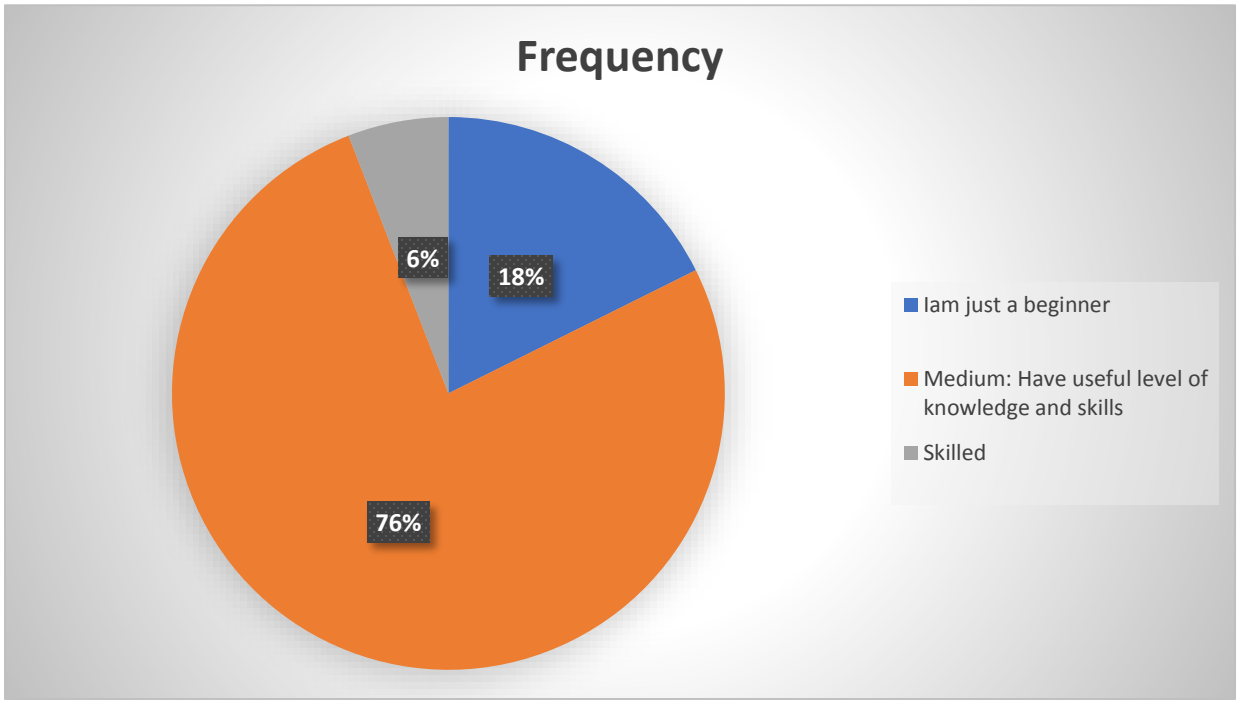
4.2.1. Computer literacy among staff at DEBS offices

1. On a scale of computer proficiency (computer literacy) to indicate the level at which each participant was: 1. whether they had no idea; 2 whether they were just beginners; 3. Whether they were at medium level (having only useful levels of knowledge and skills); or 4. Whether they were actually experts/skilled in computers, the findings indicate that

the majority (76%) of those in the management team at DEBS offices are actually in the medium level of knowledge and skills in computers.

2. Figure 4 summarised the findings: Only 6% of the participants confidently indicated that they were skilled. 16% of the participants indicated that they were beginners while 76% are those whose level of proficiency in computers in medium. Fortunately no one indicated that they had no idea whatsoever in computers. It is however worth noting that all of them indicate to have some knowledge and skills in working with computers, usage of computers and other ICT still remains low due to internet challenges as testified by the District Education Board Secretaries through face to face interviews

Figure 6. Proficiency levels in ICT



3. The above findings are well in tandem with responses from the DEBSs when asked the question, '*Do you or any of your subordinates have difficulties in using any of the*

following computer applications: word processing, spreadsheets, database (e.g. Microsoft Access), presentations, and internet communication /web browsing?'

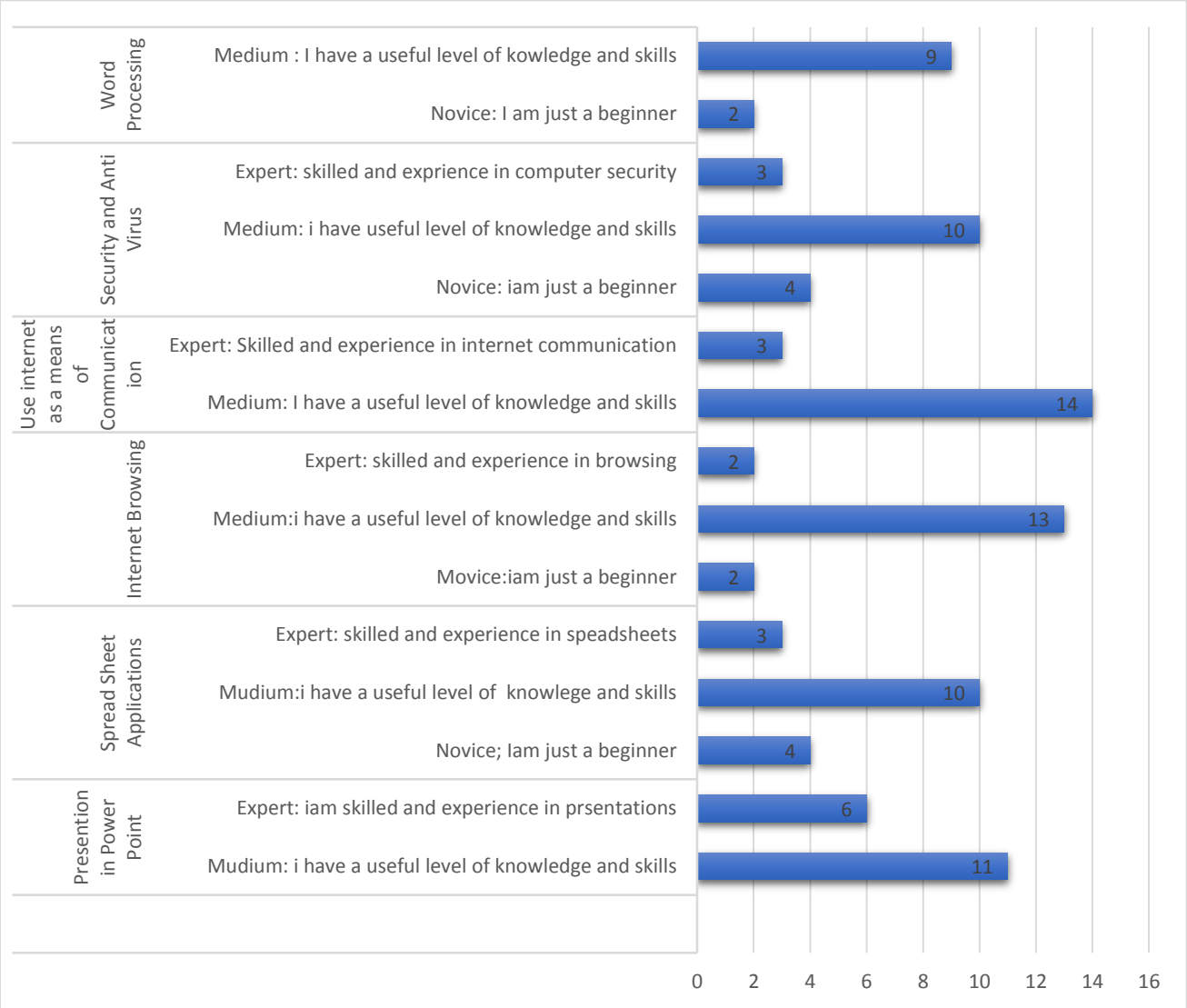
The DEBSs overwhelmingly responsed that non of their staff in the management team have been seen to have challenges in all the common computer applications, However they were quick to mention that usage of computers and other ICT among staff for their management function still remains low partly because of being used to doing things manually and partly due poor access to the internet :

> '*I have not seen any one of my team members straggling to work on the computer for any tasks that have been assigned to them but i see many of them prefering to use handwriting in writing memo Emails as a form of communication around this office is not done because we has no internet facility. Even me i dont have challenges working on my computer in terms of word documents or spredsheets but i have not used Email to communicate to staff around here though i do it when responding to mail from PEOs office' said one DEBS*

Details of the findings on computer proficiency in various applications were analysed and presented using SPSS as shown in **table 5** depicting a gragh showing levels of proficiency in the following areas:

- Knowledge of computer hardware and software components
- Use of word processing applcations suchas Microsft Word
- Use of spreedsheet applications such as Microsft Excel
- Understaning of a Database Management System
- Use of powerpoint
- Ability to communicate using the internet
- Web Browsing
- Knowledge about computer security and ways of protecting them against viruses.

Figure 7 Proficiency Levels in Various Computer Applications



4.2.2 Availability and Access to ICT resources at DEBS offices

Responses from the management team on the question of availability and their access to ICT resources indicate that the offices have inadequate computer, printers and scanners and all of them bemoan the high cost of internet connectivity from Internet Service Provides as among the challenges in the access and utilization of ICTs.

From the interviews with the District Education Board Secretaries questions were asked on resource availability, computer proficiency, internet connectivity, challenges being faced in ICT adoption and utilization and what they thought the government could do to help address their challenges. There response actually validated the responses obtained from the questionnaires

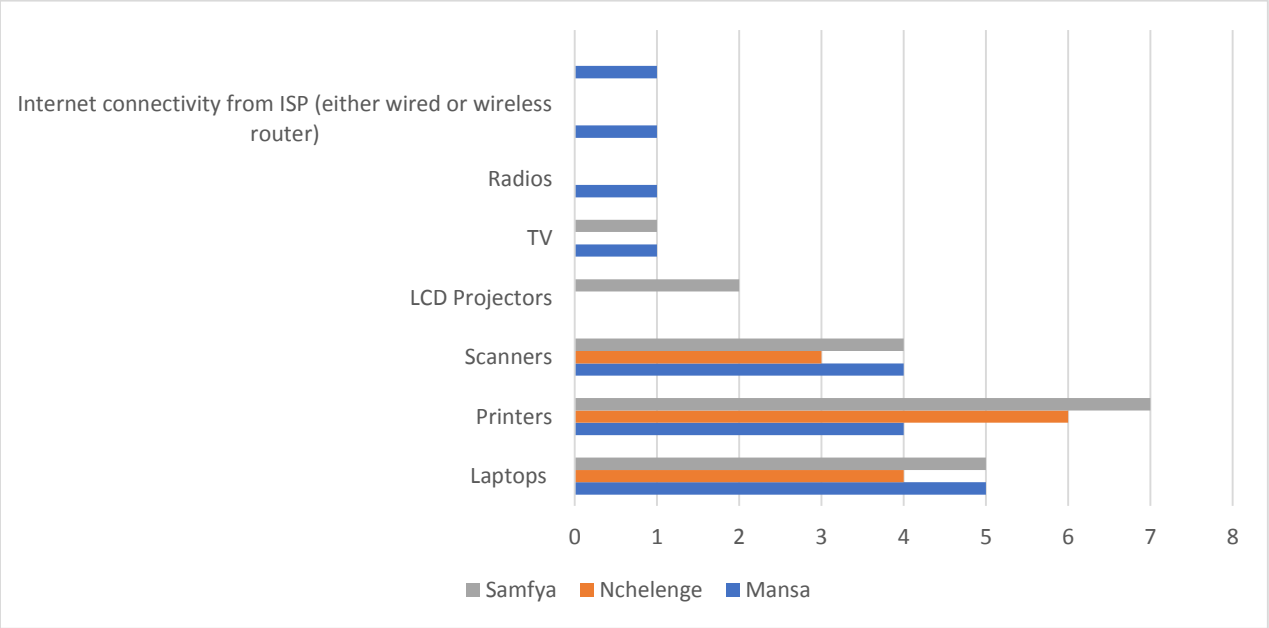
> *'We do not have enough ICT resource here, we have inadequate computers and printers and we have challenges in accessing the internet, even when you buy bundles the internet speed is so slow or at times even no internet at all.' lamented one DEBS.*
>
> Asked on whether he has had access to the ICT policy on Education, the answer was,
>
> *'I have not seen the policy, I don't know what the policy says on ICT in the education sector'*

Data on the availability of ICT resources at the DEBS offices is presented graphically in **figure 8.**:

4.2.2.1 Available ICT resources at DEBS offices

The finding regarding the available ICT resources at DEBS offices in Luapula Province point serious inadequacies and glaring disparites as can be seen from figure 8.

Figure 8 Total number of ICT resources available in each District



Mansa DEBS office is the only one that had internet connections among the three districts sampled. Samfya and Mansa both had a functioning Television set. Further Samfya was the only district with an LCD decoder and it had the most printers. All the districts had Laptops, scanners and printers see figure 3 for quantities per district.

4.2.3 Challenges being faced by District Education Board Secretaries in embracing ICT

This section now looks at the factors that have created challenges in adopting ICT at District Education Board Secretaries offices in Luapula Province as captured from both the face to face interviews with the District Education Board Secretaries and the questionnaire responses from the rest of the members of the management team.

On the questionnaire, respondents were ask to chose on a likert scale of, 'Strongly agree', 'Agree,' 'Neutral' 'Disagree' and 'Strongly disagree' on a list of assumptions about the challenges faced by the DEBS offices in the adoption and utilization of ICTs at the place of work.

The statements that they asked to respond to, as to whether or not they stand to *Strongly agree', 'Agree,'* or they remain *'Neutral'* or alternatively if they stand to *'Disagree' or 'Strongly disagree*' with were as follow:

- Staff have insufficient knowledge and skills in ICT.
- Inadequente ICT resources
- Outdated computer hardware and software
- High cost of procurement and maintenance of ICT facilities
- Lack of an established internet facility
- Insufficient funding to DEBS office
- Unsatisfactory use of internet connectivity
- The high cost of internet usage
- Unclear ICT policy on education
- Electricity load shading
- Any other (specify)

The findings on the factors that have created challenges for DEBS offices in the adoption and utilization of ICT according to the administered likert scale were as follows; On the statement that staff have insufficient knowledge and skills in ICTs 6% of the participants strongly agreed, the majority

(70 %) of the participants agreed, 12% were not sure (remained neutral), 6% disagreed and another 6 % strongly disagreed with the assertion.

On the issue of inadequate ICT resources, 12% strongly ageed, 82% of the participants agreed that DEBS offices have inadequate ICT resources and 6% were not sure and therefor chose to remain neutral. No one disagreed or strongly disagreed with the assertion.

On the issue of outdated computer hardware and software, 12% of the participant strongly disagreed, 70% of the participants agreed that indeed they were operating on outdated computer hardware and software, 12% were not sure and only 6% were in the category of those who disagreed.

On the high cost of procurement and maintenance of ICT, 23% strongly agreed, 53% agreed with the statement.18% decided to remain neutral while only 6% disagreed

When it came to the statement of lack of established internet facility 24 % strongly agreed, 41% agreed there by making a total of 65% of those in agreement. 6 % decided to remain neutral while 29% disagreed with the statement.

The issue of insufficient funding was overwhelmingly supported, 41% of the participants strongly agreed, 47% agreed, 6% remained neutral while 5% strongly disagreed.

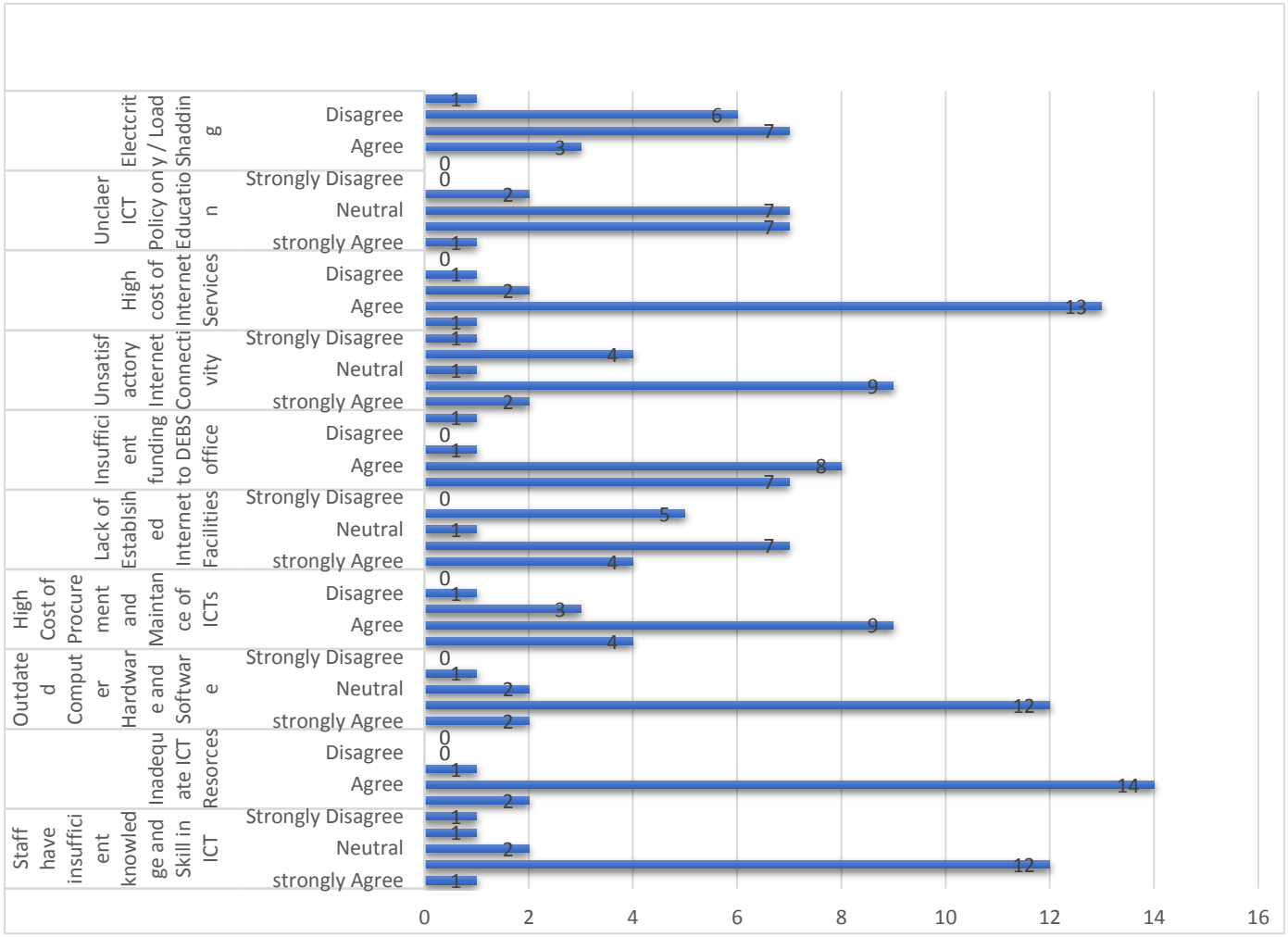
The issue of unsatisfactory internet connectivity received the following responses: 12 % of the participants strongly agreed, 53 % agreed, 6% remained neutral, 23% disagreed and 6% strongly disagreed.

On the high cost of internet the majority of the participants were agreement with the statement. The results were as follows: 6% strongly agreed, 76% agreed, 6% chose to be neutral, while only 6% agreed with the statement

On the issue of unclear ICT policy on education, 6% and 41% of the participants chose strongly *agree* and *agreed* respectively. Another 41% chose to remain neutral while 12% disagreed with the statement.

In as far as the issue of electricity load shading was concerned, the majority of the participants appeared to have the opinion that ZESCO load shading is not among the challenges faced by DEBS offices in the adoption and utilization of ICTs as shown by the following responses: None of participants strongly agreed with the statement, only 18% agreed. Those who decided to remain neutral were 41%. 35% of the participants disagreed with the statement and 6% even strongly disagreed.

Figure 4 Challenges being faced by District Education Board Secretaries in embracing ICT



The questionnaire responses on the challenge in adopting ICT appear to be in tandem with the responses of the District Education Board Secretaries on being interviewed. For instance, On the question, '*What challenges are you facing in adopting ICTS at this office*?' one DEBS responded:

> '*The challenges are many, they range from funding challenges for the procurement of ICT resources to sustainability of internet services. There are cost*

implications on procurement of ICT facilities and their maintenance especially things to do with software and when computers crush due to viruses'

One of the DEBS said:

'Given that there are about eight members in the management team at this office, we were supposed to have at least eight official laptops such that each has their own laptop to use. As you can see, some of them do not have laptops for their offices and we do not have money to buy each one a laptop.'

One of the District Education Board Secretaries indicated that:

"There have been several initiates from the Ministry, the private sector and cooperating partners to introduce ICTs in schools in the country but no significant initiatives have been seen from these stakeholders directed towards the managers of education in districts. DEBS offices have been facing challenges in ICT infrastructure, maintenance and upgrading of computer resources as well as internet connectivity"

There was one DEBS who said:

'Ideally each section was supposed to have its own printer, that is, one printer for my office, one printer for the standards section , one printer for the Human Resource Office, one printer for the planning section, one printer for the accounts section, but this is not the case as at now. We certainly do not have enough printers. They all depend on one printer used by my secretary for all their printing requirements'

Still on the challenges facing the DEBS office in the adoption and utilization of ICTs in education management, one of the District Education Board Secretaries reported that:

"*Our challenges include poor funding from the Ministry, the high cost of computer hardware and software, virus attacks on computers leading to crushes and loss of vital data, unreliable internet connectivity from some service providers and electricity interruptions. Even the ICT policy on education is not very clear on ICT usage by education managers."*

The following lamentations were commonly held by all the District Education Board Secretaries interviewed, which poor is funding from the Ministry such that it cannot support enough ICT procurement and maintenance, insufficient ICT resources, unsatisfactory provision of Internet service by Internet Service Providers, and unclear ICT policy on education to guide them.

ICT has the potential to transform the nature of education delivery and education management in the country provided there is enough funding from the Government and a positive attitude towards ICTs by education managers and teachers

The foregoing means that there is a perceived usefulness of ICT in education management by the District Education Board Secretaries interviewed. All these officers have university degrees in terms of qualifications for their jobs. Education is key variable which facilitate understanding and appreciation of new technologies. This confirms Gyaase et al (2013) observation that highly educated people are more adaptive and there is direct relationship with perceived usefulness and perceived ease of use of information communication technology by people who have higher education.

CHAPTER FIVE

DISCUSSION OF FINDINGS

5.0 Overview

This chapter discusses the study findings based the objectives of the study as outlined in chapter one. The main objective of the study was to establish the challenges being faced by DEBS offices in their quest to embrace ICT so as to recommend appropriate steps to overcome the identified challenges. The specific objectives of the study were: 1. to ascertain computer literacy among staff at DEBS offices; 2. to ascertain the availability of ICT resources at DEBS offices, and 3. to establish the challenges being faced by District Education Board Secretaries in embracing ICT

5.1 Computer literacy among staff at DEBS offices

Findings indicate that all members of the management team at DEBS office are computer literate based on their positive responses to questions on computer proficiency as well as the supportive evidence from the DEBSs. The findings suggest that management staff at DEBS office have some knowledge about computer hardware and software component. They are also able to use word processing applications like Microsoft Word to create, work with or modify text documents and letters. They are able to use a spreadsheet application like Microsoft Excel to create numeric records and reports as well as charts. They do understand what a Database Management System is. The staff is able to present the contents of a topic to an audience using PowerPoint. In terms of internet communication, staff is able to communicate effectively on the internet and is able to use a web browsing application to accomplish web browsing tasks. Above all they are aware about the security of their computers in terms of malicious software such as viruses and Trojans and know how their computers can be protected from such malicious software.

The responses however showed that most of them are at medium level of knowledge and skills regarding ICTs. This is in line with what Moursund (2005 :39) observed that, “although most education personnel are able to use the computer and the internet, the nature and extent of ICT usage by these officers just touches the surface of the current capabilities of ICT in education.”

5.2 Availability of ICT resources at DEBS offices.

Looking at the number of laptops at each DEBS office in the study, they are less than the number of staff that is expected to use computers in performing their functions. All the DEBS offices in the study have an average of four laptops each; this is less than the computer personnel ratio of 1:1 for essential workers at the DEBS. As such this inadequacy has a negative impact on job performance at DEBS offices. There is need for DEBS office to procure more laptops as laptops have become more popular and convenient for personal computing. Desktops are becoming a less preferred method of computing. As such desktops appear to be phasing out as ICT continues to alter itself in the ever-changing globe.

Printer are also inadequate at these DEBS offices and therefore and therefore staff are likely to develop laziness in using computers to produce documents if they are likely to face challenges in accessing a printer to produce printouts/

Some DEBS offices do not have scanners. Scanners are a useful tool for converting printed document into electronic documents for communicating via the internet. This therefore is seriously affecting information and communication between DEBS offices and other stakeholders in the Ministry of Education.

Surprisingly some DEBS offices have neither a television nor radio. DEBS offices supposed to be well informed about current affairs locally and internationally. If officers at DEBS offices will only access latest information on current affairs only when they reach their home, then they are likely to miss out on a number of issues affecting the country. For example, on a declared day of National Mourning, DEBS office may have raised the national flag, much to the chagrin of the passers-by, if they do not have a radio or television at the station and none of the members of staff got wind of the news.

One of the major draw backs in implementing electronic based management system at the DEBS offices in Luapula province is the inadequate availability if ICT resource. Despite having the knowledge and skill to use the given resources, the DEBS offices do not have adequate resources such as hardware and software that support the rolling out of a completely computerized system. None of the stations have reliable internet connectivity. Further, none of the DEBS of have a

position for an IT officer responsible for setting up the ICT infrastructure and advising management on which IT products to purchase.

Despite the government through the e-governance unit availing servers to various government departments, the DEBS have not connected to those servers because of lack of internet connectivity in some of the areas in which they operate in. Though. Though the DEBS office maybe connected to the internet most of the schools they service may have no internet connection, this gives a rise to another challenge. For instance, if the DEBS intend to do away with a paper based management system and implement an electronic management system they will not be as efficient because most the schools on their catchment area are not connected to the internet. Resources like optic fiber come with their own complications in term of connectivity. Most ICT resources are available but not necessarily accessible.

Once the availability of ICT resources at DEBS and in school is sufficient, we should begin to see the members of the management team beginning to request for teachers' files on-line and ultimately issues such as the confirmation of teachers by the Teaching Service Commission could be faster and more efficient.

While funding may be on the list of ICT challenges facing Debs offices, all what is required is strategic and accurate planning, resource mobilization and a resourceful and innovative leadership to steer the ICT agenda in education, striving to overcome not only the funding challenges but also the other antecedent challenges at DEBS offices. The DEBS offices in some case will have to be willing to partner with the private sector in order to funding for some IT infrastructure. The cooperate entities operating in the various districts may be willing to support the implementation of the ICT policy in terms of financing as part of their social cooperate responsibility thus an innovative and creative management would be able to take advantage of this opportunity to lobby for support.

5.3 Challenges being faced by District Education Board Secretaries in embracing ICT

The challenges cited in this report are: insufficient knowledge and skills in ICT among staff; inadequate ICT resources; outdated computer hardware and software; high cost of procurement and maintenance of ICT facilities; poor access to the internet and unclear ICT policy on education. All these challenges negatively impact on the perceived ease of use and perceived

usefulness of ICT by the management team at DEBS offices. For example, the issue of outdated computer hardware and software needs urgent attention. With outdated computer hardware and software, a number of shortcomings can arise were for example some computes cannot run the latest software, such as *Windows 2010*. This can limit the number of administrative tasks that could be performed by the outdated hardware and software. Some of the old computers lack compatibility with the new generation computers and therefore cannot permit exchange of programmes between them. . Consequently the perceived ease of use and perceived usefulness of the computer is lost.

Given the identified challenges being faced by District Education Board Secretaries and other staff in the management team in embracing ICT, the solution partly lies in finalizing the National ICT policy currently in its draft form. A functional National ICT policy on Education is essential for use by all stakeholders. To this effect a set of policy objective tailored to meet the current innovations and best practices need to be developed. We need a well-coordinated implementation framework that will help to tackle many of the identified challenges in the adoption and utilization of ICT in education management. The perceived usefulness of ICT by the education manager should work to the advantage of the Government in its quest to create an enabling environment for ICT adoption and integration in the education system. In so doing there would be far greater access and use of ICTs at all levels of Zambia's education system across the country. This would include not only systems for the enhancement of teaching and learning in schools but also in the administration and management of education in the whole country

While most of the staff has been on the job over 10 years, and most of them are advanced in age, such a workforce was more likely to resist change and be apprehensive of technological innovations, Contrary to expectations, it is gratifying to find that there is no apparent resistance in taking on ICT.There is a certain level of ICT appreciation and knowledge among the staff making them more likely to adopt and use any technological innovations they would access. This finding ultimately validates the Technology Acceptance Model (TAM) as postulated by Venkertesh and Davis (1989).

CHAPTER SIX

CONCLUSION AND RECOMMENDATIONS

6.0 Overview

This chapter gives the conclusion and recommendations of the study. The conclusion is made in line with the objectives of the study and theory that guided this study. The recommendations are segmented into those that broadly relate to the identified challenges and then the recommendations for future research on ICT in education management

6.1 Conclusion

Having undertaken this study whose objective was to evaluate the extent to which District Education Board Secretaries (DEBS) offices have adopted and made use of Information Communication Technology (ICT) in the management of education in their districts, and accordingly establish the challenges being faced by the management team at these offices, this Study has finally presented its report on the challenges faced by DEBS offices in their adoption and utilization of ICT in education management. The challenges were identified through a survey that was conducted at DEBS offices in three selected districts of Luapula Province. The survey took the form of interviews and questionnaires on the District Education Board management team comprising the DEBS, the DESOs, the ESOs, Human Resource Officers, District Planning Officers, and District Accounts Officers in the selected districts.

The study found that although all staff in the management team at DEBS offices know how to use the computer in word processing, spreadsheets power point presentations, emailing and web browsing their knowledge and skills base is still low. As such, they still need capacity building so that they may be exposed to numerous capabilities of the computer.

Ultimately, the study revealed numerous challenges which the District Education Board offices are facing in their adoption and utilization of ICT in education management. These challenges are as follows: staff has insufficient knowledge and skills in ICT; inadequate ICT resources; outdated computer hardware and software; funding challenges to sustain ICT infrastructure; poor internet access; and inadequate ICT policy on Education

The study investigated the challenges so that appropriate recommendations could be made, aimed at achieving the objectives of the National ICT policy (MCT, 2006) and the Draft ICT policy for Education (MOE, 2006) formulated to promote and facilitate the integration of ICTs in the management of the education system. In so doing, it was hoped that ICT applications on the education system in regions such as Luapula Province may help eliminate the digital divide that has characterized the urban and rural districts in Zambia. All in all, it is hoped that the findings of this study will cultivate the efforts of all stakeholders in the education system towards meeting the ICT needs of education managers in districts so that all can contribute to the delivery of quality education in Zambia institutions of learning.

6.2 Recommandations

Reflecting on the findings and conclusion, the following recommendations are hereby made:

1. The Ministry of General Education should finalise the Draft ICT policy on Education and come up with a fully fledged ICT policy on Education to effectively guide all education officials and other stakeholders on ICT integations and what is expected of them.
2. A directorate solely responsible for ICT in education should be established at the Ministry of General Education headquarters to oversee the intergrations of not only ICT in teaching and learning in schools but also the adoption and utlilization of ICT in education managent at all levels of the education system. This should result in the Ministry of employing IT officers for each district.
3. A position of education standards officer in charge of ICT should be introduced so that , at district level. Such an officer would be able to effectively monitor and evaluate the provision of ICT in schools and its intergration in teaching and learning as well as its utilization by education managers.

4. The Government should subsidize the procurement of ICT resource by educational institutions in the country so as to increase their level of affordability by schools and education departments or alternatively reduce tax on ICT related imports.
5. Education managers should endevour to supplement government efforts in ICT in education by engaging in fund raising activies as well as soliciting in-kind support from individual volunters. NGOs, and the donor community.
6. Private- Public partnership should been encouraged in the sourcing of ICT resources as one way of lightening the burden of educational institutions and departments in the procurement, maintanace and sustainability of the ICT resources. Through sustainable partnership, the private sector can help to provide and maintain infrastructure, such as internet access at an affordable cost.
7. There is need for concerted effort to insure that all the schools have access to internet connection. In addition to that, in house ICT training need to be conducted bi annually for the teachers to acquint themselves with changes in technology.

6.3 Recommandations for future research

Since the research was limited to selected district in Luapula Province and the finding cannot be obviously generalized to all the rural districts in Zambia, it is highly recommended that Government initiates a nationwide survey to ascertain the level at which the country has reached in the adoption of e-government in education departments country-wide and to ascertain the challenges being faced in this area of development as we focus on Vision 2030. It is also recommended that Individual researchers undertake comparative studies on ICT education management in different regions of the Republic of Zambia to identify disparities in terms of adoption and integration of ICTs in the education system.

There is need to carry out a study to ascertain the level of computer literacy among teachers in the province. This will provide basis on which an education management system can be fully

implemented in the Zambia Education Sector. Much as there is strong evidence that an ICT management will enhance efficiency in the way education is management in Zambia, there is apparently no evidence of teachers and school administrators being able to fully utilize such a system as well as the associated challenges.

Further research could be a comparative study of teacher satisfaction among teachers in districts that have good ICT infrastructure and those without ICT infrastructure. This research would be trying to evaluate the extent to which ICT improves service delivery by the DEBS offices. Service delivery would be measured by teacher satisfaction with the services they access at the DEBS offices as a proxy. Such research may cover either the entire province or even the nation as a whole.

REFERENCES

Ajzen, I (1991) **The Theory of Planned Behavior, "Organisational Behavior and Human decision processes.** Vol.50 page 179-211.

Antwi S K and Hamza K (2015) **Qualitative and Quantitative Research Paradigm in Business Research: A Philosophical Reflection.** European Journal of Business and Management. Volume 7 No3, 2015

Babbie F and Mouton J (2010) **The Practice of Social Research**. Cape Town: Oxford University Press.

Campbell, D and Sellbom, M (2002) **Barriers to adopting technology for teaching and learning.** Educase Quarterly, 25 (2),22-28.

Cano, E V and Garcia M.S (2013) **ICT Strategies and Tools the Improvement of Instructional Supervision. The Virtual Supervision:** Turkish Online Journal of Education Technology Volume 13(1) Page77-97

Creswell J W (2009**) Research Design: Qualitative and Quantitative and Mixed Methods Approach.** New York: Sage

Davis, F.D. (1989) **Perceived usefulness, perceived ease of use, and user acceptance of information technology**, "MIS Quarterly", Vol. 13, No. 3, pp 319-34

Davis, F D., Bajozzi., and Warshaw (1989) **Development and Test of a Theory of Technological Learning and Usage.**Human Relations**,**45(7), 660-686, 1992

Davis, F D.,Bajozzi R P., and Warshaw P R (1989) **User acceptance of Computer technology: A comparison of two theoretical models.** Management Science Vol.35 No.8 page 982-1003

Gratton C and Jones I (2010) **Research Methods for Sports Studies**. Abingdon: Routledge

Greene J C,Caracelli V J and Graham W F(1989) **Towards a conceptual framework for Mixed Method Evaluation design.** Educational Evaluation and Policy analysis. Volume 11(3) pp 255-274.

GRZ (2001) **Report on Restructuring of Ministry of Education Pages 56-57**.

GRZ (2009) **Information Communication Technology (ICT) Act No.20 of 2009**. Lusaka: Government Printers.

Gulati, S. (2008) **Technology-Enhanced Learning In Developing Nations**. International Review of Research in Open and Distance Learning, Vol. 9, No.1

Gyaase, P O., Anokye-Sarfo, A., and Bediako Y (2013) **The Adoption Of Information And Communication Technology In The Public Sector; A Study Of The Financial Management In The Ghana Education Service.** International Journal of Scientific and Technology Research Volume 2, Issue 12.

Habenzu S (2010) **Zambia ICT Sector Performance Review 2009/2010:** Towards Evidence Based ICT Policy and Regulation. Volume 2 Policy Paper 17, 2010

Hebert P A, Lungwangwa G, Nance W B, and Saasa OS (2002) **Review and analysis of Zambia's educational sector.** Volume 1 .Lusaka: USAID/ Zambia

Jeevan, V. K., and Saji, N. S. (2004)**Information technology adoption in libraries of Kerala : A survey of selected libraries in Thiruvananthapuram.**Annals of library and information studies, 51(4), 137-144.

Johnson, R. B. (2014). **Mixed methods research design and analysis with validity: A primer.**Department of Professional Studies, University of South Alabama, USA.

Kalila C K, Sayifwanda S, Mwale M M, Mutale B, Livune D, Miyanda C, Chisala O C, and Chabala (2011)**Report of the Committee on Education, Science and Technology for the First Session of the Eleventh National Assembly**. Lusaka: National Assembly of Zambia, Parliament Building.

Kipsoi, E.J., Chang'ach, J.K., and Sang, H.C.(2012) **Challenges facing adoption of Information Communication Technology (ICT) in educational management in schools in Kenya.** Journal of Sociological research ISSN 1948-5468 2012 Vol.3, No.1

Love P. E. and Irani Z. (2004) **An Exploratory Study of Information Technology Evaluation and Benefits Management Practices of SMEs in the Construction Industry**. Information and Management,Volume 42, Issue 1 pp. 227-242.2004

Laudon K C and Laudon J B(2014) **Management Inforamtion System: Managing the Digital Firm (13thed).** Boston: Pearson.

Leedy, P D and Ormrod, J E(2010**) Practical Research: Planning and Design(10th Ed).** Upper Saddle River, NJ: Merrill Publishers

Lufungulo E S (2015) **Primary School Teachers attitude Towards ICT Integration In Social Studies:** A Study of Lusaka and Katete Districts. Lusaka: University Of Zambia

Mathieson, K (1991)**Predicting User Intentions: Comparing the Technology Acceptance Model with the Theory of Planned Behavior.** Information Systems Research, vol. 2, no. 3, pp. 173-191.

MCT (2006) **National ICT policy**. Lusaka, Zambia. Ministry of Communications and Transport.

Moursund D (2005) **Introduction to Information Communication Technology in Education.** Oregon: University of Oregon.

MOE (2005) **Principles of Educational Boards.** Governance and Management Manual. Lusaka: Ministry of Education

MOE (2002) .**Job Advertisement: Teaching Service Commission.** Lusaka: Ministry of Education

MOE (2006) **Draft ICT Policy on Education**. Lusaka: Ministry of Education

Mulima O (2013) **The Perception of Teachers and Learners on the Role of ICT in the Teaching and Learning of Religious Education**. Lusaka: University of Zambia

Munsaka J S (2009) ICT4D.**Challenges and Opportunities in Zambia**. Lusaka: Comdev

Naidu S.D. and Jasen C (2002) **The Experience of Practitioners with Technology Enhanced Teaching and Learning**. Educational Technology and Society, 5(1), 23-24.

Norris, P.(2001) **Digital Divide: Civic Engagement, Information Poverty, and the Internet Worldwide**. Cambridge:Cambridge University Press.

Perry R (2006) **Diffusion theories Encyclopedia of Sociology in Borgatta E F and Montgomery, Vol 1 2nd ed.** New York: Macmillan reference. USA. 2001. pp 674-681

Patton, M (1990) **Qualitative Evaluation and Researches** .Beverly Hill, CA: Sage

Rogers E M (2005) **Diffusion of Innovations** (4thed). New York: Free Press

Sandelowski M (1995) **Qualitative Analysis: What It Is and How to Begin**. Research In Nursing and Health. Volume 18(4) 371-375

Shafika I (2007) **ICT in Education in Zambia, Survey of ICT Education in Africa**. Zambia Country Report.

Snoeyink R and Ertmer P (2001**) Thrust into Technology: How veteran teachers respond. Journal of Educational Technology Systems** .Volume 30(1) 85-111

Thompson, R L (1997) **Personal Computing: Toward a Conceptual Model of Utilization.** MIS Quaterly, vol. 15, no. 1, pp. 124-143, 1997.

Venkatesh, V (2000) **Determinants of Perceived ease of Use: Integrating Control, Intrinsic Motivation and Emotion into the Technology Acceptance Model.** Information Systems Research, vol. 11, no. 4, pp. 342-465.

Venketesh V., Moms M G.,Davis G B and Davis F D (2003) **User acceptance of Information Technology. "MIS Quarterly"** vol.27, No.3 page 450-478

Welman J C, Kruger S J and Mitchel B (2005) **Research Methodology** (3rded) Cape Town: Oxford University Press.

Zucker, L G (1987) "**Institutional Theories of Organization,"** Annual Review of Sociology, vol. 13, pp. 443-46

Appendix 1

ZIMBABWE OPEN UNIVERSITY

in collaboration with

THE UNIVERSITY OF ZAMBIA

DIRECTORATE OF RESEARCH AND POSTGRADUATE STUDIES

INFORMED CONSENT TO PARTICIPATE IN THE RESEARCH

My name is Chris Mwiya Subulwa. I am pursuing a postgraduate programme (Master of Education in Educational Management) offered by the University of Zambia in collaboration with Zimbabwe Open University (UNZA/ZOU).

I am here to carry out a research on challenges being faced by District Education Board Secretary's (DEBS) Offices in adopting Information Communication Technology (ICT) in Luapula Province. The DEBS, DESOs, ESOs, Human Resource Officers, District Planning Officers, and District Accounting Officers are hereby invited to participate in the study. Participation in the study is entirely voluntary. However, ethics demand that informed consent is obtained from the participants.

There are no risks involved in taking part in this study. This is purely an academic exercise. Data collected will be anonymised, treated as confidential and no individual participant will be identifiable in the research report. Instead, your taking part in the study may help to contribute to the possible improvement in access to information and communication technologies at DEBS offices.

For any further information regarding this research, please contact me on 0978739333 or my supervisor at the University of Zambia, Dr. P C Manchishi on 0955784476.

Please sign your name below to indicate that you consented to your participation in the study.

Name…….signature……..

Appendix 2

FACE TO FACE INTERVIEW GUIDE : District Education Board Secretaries

Intoduction

In this interview with you sir, i would like to learn from you about the challenges you are facing in adopting Information Communication Technology (ICT) at this office. I shall be very grateful if you can share with me your experiences on the extent to which your office has embraced ICT. Your name will not be revealed to anybody and what you will talk about will be kept confidential. This study is purely an academic undertaking. Before we proceed i would like to get your permission to conduct and record this conversation with you.

Part1: Personal particulars

Place of interview……District……..Start time…….

Age range: 26-35years [ ] 36-45years [ ] 46-55years [ ] 56years and above. [ ]

Interviewees highest professional qualification……

Length of service in the Ministry of General Education.....

Length of service in the current position.....

Part 2: ICT access and challenges.

4. What ICT resources are available at this DEBS office?
5. What ICT resources are insufficient at this DEBS office?
6. What ICT resources are not available at all at this DEBS?
7. Do you or any of your subordinates have difficulties in using any of the following computer applications: word processing, spreadsheets, database (e.g. Microsoft Access), presentations, and internet communication /web browsing?
8. If yes, which computer application would you wish to learn more about?
9. Is there a database management system at this office?
10. If yes, what various kinds of data are stored in your database?

11. Who is the administrator of your database?
12. Do you have established internet connectivity at this office?
13. If yes, who are your the Internet Service Providers? If no, how do you access internet?
14. Do you own a Smartphone?
15. What challenges are you facing in adopting ICTs at this station?
16. How are you trying to overcome the challenges being facing in adopting ICTs at this office?
17. How best do you think the government can help to solve the existing challenges in ICT at your station?
18. Any other information you wish to put across?

Thank you for your time!

End Time…….

Appendix 3.

ZIMBABWE OPEN UNIVERSITY

in collaboration with

THE UNIVERSITY OF ZAMBIA

DIRECTORATE OF RESEARCH AND POSTGRADUATE STUDIES

Dear Respondent,

I am a University of Zambia Post Graduate student pursuing a Master of Education (Educational Management) programme, seeking information purely for academic purposes on the "*challenges being faced by District Education Board Secretary's (DEBS) Offices in adopting Information Communication Technology (ICT) in Luapula Province"*

You are one of the respondents selected for this research. Please answer the following questions as objective as possible. Do not withhold any views that you have on the questions as all information you give will be treated confidentially.

INSTRUCTIONS

1. Please answer all the questions. 2. Answer by putting a tick to indicate the answer or answers of your choice or fill in the blanks were necessary. 3. Do not write your name on the questionnaire.

SECTION A: PERSONAL DETAILS OF THE RESPONDENT

1. Sex: Indicate by ticking in the box provided. Male ☐ female ☐
2. Please tick your age range
   i. 26-35 years ☐
   ii. 36-45 years ☐
   iii. 46-55 years ☐
   iv. 56 - above ☐
3. What is your highest Professional qualification?
   i. Certificate ☐
   ii. Diploma ☐
   iii. Bachelors degree ☐

iv. Masters degree ☐

v. Ph.D ☐

4. What is your current position/job title?.....
5. How long have you been serving in your current position?.....

SECTION B: ICT AVAILABILITY AND ACCESS.

6 Below is a list of some ICT resources. If any of these resources are available in your own office, kindly tick in the space provided and indicate the quantity.

S/N	Description	Tick	Quantity
1.	Desktop computer		
2.	Laptop computer		
3.	Printer		
4.	Scanner		
5.	LCD Projector		
6.	TV set		
7.	Radio		
8.	Smartphone		
9.	Internet connectivity		
10.	Any other (specify)		

7 Below is a list of some computer application/programmes. Please indicate by ticking the applications or programmes that you often use in carrying out your duties.

i. Word processing e.g. Microsoft word ☐
ii. Spread sheets e.g. Microsoft excel ☐
iii. Presentation e.g. power point ☐
iv. Database e.g. Microsoft Access ☐
v. Internet communication ☐

8. Does this DEBS office have a database management system?

i. Yes ☐ ii. No ☐

9. If the answers is yes to question 3 which of the following data are stored in your database?

I. Administration data ☐
II. Financial data ☐
III. Human resource data ☐
IV. Monitoring and evaluation data ☐
V. Learner performance (assessment) data ☐
VI. Any other (specify)……

10. If the answer to question 3 is No, then what system is in use for storage and retrieval of data at this office ?.....

SECTION C: COMPUTER PROFICIENCY

11. Kindly tick in the appropriate box in response to the following questions:

A. How much do you know about computer hardware and software components?

No idea	Novice: I am a just a beginner	Medium: Have a useful level of knowledge and skills	Expert: Skilled and experience in computer hardware and software.

B. Are you able to use a word processing application to create, work with or modify text documents and letters, e.g. Microsoft word?

No idea	Novice: I am a just a beginner	Medium: Have a useful level of knowledge and skills	Expert: Skilled and experience in word processing

C. Are you able to use a spreadsheets application e.g. Microsoft Excel to create numeric records and reports as well as charts?

No idea	Novice: I am a just a beginner	Medium: I have a useful level of knowledge and skills	Expert: skilled and experienced in working with spreadsheets

D. Do you understand what a database management system is?

No idea	Novice: I am a just a beginner	Medium: have a useful level of knowledge and skills	Expert: skilled and experience in database.

E. Are you able to present the contents of a topic to an audience using PowerPoint?

No idea	Novice: I am a just a beginner	Medium: I have a useful level of knowledge and skills	Expert: I am skilled and experienced in presentations

F. Are you able to communicate effectively using the internet?

No idea	Novice: I am a just a beginner	Medium: I have a useful level of knowledge and skills	Expert: skilled and experience in internet communication.

G. Are you able to use a web browsing application to accomplish web browsing tasks?

No idea	Novice: I am a just a beginner	Medium: I have a useful level of knowledge and skills	Expert: skilled and experience in web browsing

H. Are you aware about the security of your computer and how it can be protected from malicious software?

No idea	Novice: I am a just a beginner	Medium: I have a useful level of knowledge and skills	Expert: skilled and experience in computer security.

SECTION D: CHALLENGES IN ADOPTING ICT.

10. How far do you agree or disagree with each one of the following assumptions as being the challenges faced by this DEBS office in adopting ICTs? Please indicate your response by ticking in the appropriate box.

S/N	Challenges	Strongly agree	Agree	Neutral	disagree	Strongly disagree
1.	Staff have insufficient knowledge and skills in ICTs					
2.	Inadequate ICT resources					
3.	Outdated computer hardware and software					
4.	High cost of procurement					

	and maintenance of ICT facilities					
5.	Lack of an established internet facility					
6.	Insufficient funding to DEBS office					
7.	Unsatisfactory internet connectivity					
8.	The high cost of internet usage					
9.	Unclear ICT policy on education					
10	Electricity loadshedding					
11	Any other (specify)					

END! Thank you for your time.

Appendix 4

THE UNIVERSITY OF ZAMBIA
INSTITUTE OF DISTANCE EDUCATION

Telephone: 26021-1-291777-78 Ext. 3500 0978772249
Telegrams: UNZA LUSAKA
Telex: UNZALU ZA 44370
Fax: 26021-1-290719
Your Ref:
Our Ref:

P.O. Box 32379
LUSAKA, ZAMBIA

17th March, 2017

MWIYA SUBULWA
C/O DEBS Office
P. O. Box 740040
CHIENGE

Dear Sir/Madam

RE: CONFIRMATION OF STUDY

Reference is made to the above subject.

This serves as a confirmation that the above mentioned person of NRC No: 190785/82/1 and computer number 715810224 is a bonafide student of the University of Zambia in collaboration with Zimbabwe Open University (UNZA-ZOU).

The student is pursuing a Master of Education in Educational Management and that he will be carrying out a research on The Challenges faced by DEBS offices in adopting ICT: A Case Study of Selected DEBS offices in Lusaka Province

Any assistance rendered to him will be greatly appreciated.

Yours faithfully

Dr. D. Ndhlovu
ASSISTANT DIRECTOR (PG)
INSTITUTE OF DISTANCE EDUCATION

APPENDIX 5

39

MWIYA SUBULWA TS 32982
DISTRICT EDUCATION BOARD SECRETARY'S OFFICE
P.OBOX 740040
CHIENGE

19 MAY 2017
PROVINCIAL EDUCATION OFFICER
LUAPULA PROVINCE
P.O. BOX 710196, MANSA

Grant authority

REPUBLIC OF ZAMBIA
MINISTRY OF GENERAL EDUCATION
PROVINCIAL EDUCATION OFFICE
P.O. BOX 710196, MANSA

18TH MAY, 2017

THE PROVINCIAL EDUCATION OFFICER
P.OBOX 710196
MANSA

Akoyi
Authority has been granted

Dear Sir,

REF: PERMISSION TO CONDUCT EDUCATIONAL RESEARCH IN THREE (3) SELECTED DEBS OFFICES IN LUAPULA PROVINCE

Kindly refers to the above subject matter.

I write to request for permission to conduct educational research in three selected DEBS office in Luapula Province that is, Mansa, Nchelenge and Samfya.The study is on challenges faced by DEBS officers in adopting Information Communication Technology (ICT).

The, DESOs, ESOs Human Resource Officers, Planning officers and District Accounts Officers are invites to participate in the study by responding to a questionnaire while the DEBS will be interviewed face to face. The research will not interfere with routine administrative work at the research site.

The study is in line with my post graduate programme of Master's degree in Educational Management by Distance learning at the University of Zambia.

Any assistance rendered to me will be highly appreciated.

Yours faithfully,

MWIYA SUBULWA

CC: THE DEBS, P.O.BOX 740040 CHIENGE