A Study of the Enablers and Challenges in the Implementation of e-Learning Policies in Technical Education, Vocational and Entrepreneurship Training Colleges in Zambia

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Abstract

This study investigated the enablers and challenges in the implementation of e-Learning policies in public technical education, vocational and entrepreneurship training (TEVET) institutions under the Ministry responsible for Vocational Education and Training in Zambia. The aim of this study was to explore how implementation of e-Learning policies in a developing context could be enhanced so as to lead to improved access to TEVET. The study was guided by the following research questions: what knowledge do managers and lecturers have of e-Learning; what are the key enablers and challenges in implementing e-Learning policy; what criteria do individuals/institutions use to make the decision to adopt or reject e-Learning innovations and how are decisions made in the implementation of e-Learning in the TEVET sector.

The study used the Diffusion of Innovation (DOI) theory to answer the main research question in the study. The theory was used to gain insights into TVET implementers and policy makers motivations and actions. The study was qualitative with seven (7) individuals interviewed. In the study, interviews of TEVET managers and lecturers were conducted to provide the data required to answer the research questions.

The study found that respondents had varying levels of experience and knowledge of e-Learning in teaching. e-Learning was described by the participants as having some specific characteristics and also the use of devices. It was also found that teaching staff and managers had varying levels on the knowledge of national e-Learning policies. The challenges of e-Learning policy implementation were identified around: inadequate and lack of devices, lack of adequate skills, poor attitude and poor support services. Enablers for e-Learning were found to be centred on learning facilitation, teaching facilitation, communication improvement and training. The study recommended increased partnership with international organisations and stakeholders in supporting and strengthening e-Learning policy implementation, a focussed roll-out of e-Learning policy implementation in TEVET institutions, the Ministry creating an enabling environment for sharing of good and best practices in e-Learning implementation.

Keywords: *e-Learning, policy, e-Learning policy, policy implementation, technical and vocational education and training.*

Declaration

This work has not been previously submitted in whole, or in part for the award of any degree. It is my own work. Each significant contribution to, and quotation in, this dissertation from the work, or works, of other people has been attributed, and has been cited and referenced.

Signature: G. S. Konayuma Date: 8 October, 2015

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List of Acronyms

COL	Commonwealth of Learning
DOI	Diffusion of Innovation
EHC	Evelyn Hone College
MESVTEE	Ministry of Education, Science, Vocational Training and Early Education
MOODLE	Modular Object-Oriented Dynamic Learning Environment
TEVET	Technical Education, Vocational and Entrepreneurship Training
TEVETA	Technical Education, Vocational and Entrepreneurship Training Authority
TVTC	Technical and Vocational Teachers' College
ZIBSIP	Zambia Institute of Business Studies and Industrial Practice
ZICTA	Zambia Information and Communication Technology Authority

Chapter 1

Introduction

1.1 Introduction

This study investigates enablers and challenges in the implementation of e-Learning policies in Technical Education, Vocational and Entrepreneurship Training (TEVET) institutions under the Ministry responsible for vocational training in Zambia. In this chapter, background information on the study topic is provided, along with the context and rationale to the research problem. The aim of the study along with the associated research objectives is then identified. The significance and format of the study are also discussed.

1.2 Background

The Zambian Technical Education and Vocational and Entrepreneurship Training (TEVET) sector has grappled with issues of increasing access to training. Though the TEVET Policy has an objective of providing access to training opportunities to all citizens (MSTVT, 1996) only 30,000 out of 236,000 school leavers in 2008 were enrolled in TEVET institutions (Ministry of Education, 2010:28). Low access to TEVET has been attributed to a number of factors such as: lack of funding to pay tuition fees, training institutions being far from some communities, lack of lecturers or unqualified staff in some colleges and lack of flexible training pathways (Ministry of Science, Technology and Vocational Training, 2009).

To address these challenges, the use of e-Learning and open and distance learning (ODL) has begun to grow in TEVET with policy intentions to: “provide a quality and relevant e-Learning environment that is accessible by at least 70% of Zambians in all sectors of development” (Ministry of Education, 2010). Very few institutions, however, are offering distance learning, let alone e-Learning as an alternative means of learning. For institutions using e-Learning for teaching, the following challenges have been identified: inadequate capacity to support e-Learning, access to e-Learning facilities being too costly, poor access to power, inadequate e-Learning infrastructure, low appreciation about e-Learning in Zambia, bias against open educational resources, and lack of a national e-Learning policy (Ministry of Education, 2010).

Other reasons advanced for introducing e-Learning in Zambia are that once e-Learning materials for example Open Educational Resources (OERs) have been created, they can be used by many students anywhere in the country using electronic devices, with or without a teacher. In addition, higher education institutions are resorting to e-Learning as a means of solving authentic learning and performance problems, while other institutions are hopping onto the bandwagon simply because they do not want to be left behind (Govindasamy, 2002:287).

Despite very good policy intentions and good practices in some institutions, implementation of e-Learning policies is poor in Zambia a developing nation (i.e. nation with a lower standard of living, underdeveloped industrial base, and low Human Development Index (HDI) relative to other nations (Sullivan and Sheffrin, 2007). The TEVET Policy (1996) and TEVET Strategy Paper (1997) were developed by MSTVT to provide policy guidance on the implementation of TEVET. In 2008, when a comprehensive policy review was done by a TEVET Policy Review Technical committee, it was found that whilst the TEVET policy was well distributed to stakeholders, the TEVET Strategy paper was not (MSTVT, 2008). As such, some stakeholders were not able to implement the TEVET policy as intended by policy makers.

Institutions that use e-Learning for teaching and learning face a number of challenges. Some of the challenges that have been identified and may be a barrier to many Zambians benefiting fully from the advantages offered by e-Learning include: the low numbers of people with Internet access, availability and affordability of computer hardware, cost of acquiring the training (Konayuma, 2007). In addition, "the penetration levels of ICTs in Zambia's education institutions remains low, with those schools that are equipped mostly utilizing second-hand and refurbished computers. The integration of ICTs in learning and teaching practice has been limited, although the introduction of computer studies as a school study subject has begun to change this" (Isaacs, 2007:1).

In a study done on the status of information and communication technology (ICT) and higher education in nine countries (Egypt, Ghana, Kenya, Madagascar, Mozambique, Nigeria, South Africa, Tanzania and Uganda) within the Partnership for Higher Education in Africa (PHEA) it was found with regards to the use of ICT in support of teaching and learning, a closer look at national ICT frameworks revealed the existence of national or institutional ICT frameworks, which did not in of itself constitute an enabling environment in which

educational technology can thrive (Czerniewicz, 2007:viii).

Implementation of e-Learning policy in a number of developing nations remains a challenge despite the lofty ideals in the policies. This is seen in the unevenness of ICT access and use in Caribbean schools as argued by Daniel and Uvalic-Trumbic (2012:12). It was further noted that the unevenness of ICT access and use in Caribbean schools was demonstrated by the continued application of technology access models that were out-dated alongside attempts at distributing the latest available devices, software and access solutions. The study warned against "the challenge of introducing ICT in schools which is too often reduced to "attempts at distributing the latest available devices" (Daniel and Uvalic-Trumbic, 2012:12).

The National Information and Communication Technology Policy has a vision of "A Zambia transformed into an information- and knowledge-based economy supported by consistent development and pervasive access to ICTs by all citizens by 2020" (Ministry of Communications and Transport, 2006:20). This gives a policy direction of how the different sectors, like the TEVET one, should align their strategies in their training. It has been noted by Jones and Kozma (2003) that national ICT policies can serve several important functions. Firstly, ICT policies provide a rationale, a set of goals, and a vision of how education systems work if ICT is introduced into teaching and learning, and they can benefit students, teachers, parents and the general population of a given country. Secondly, ICT policies are expected to provide guidance, and failure to do so means that individual school and classroom innovations would be unlikely to be sustained.

1.3 Problem Statement

Low access to TEVET and poor quality training has been attributed to a number of factors. Among the factors are the following: inadequate learning materials and equipment, lack of qualified teaching staff and inadequate teaching staff. Some technical and vocational education and training institutions in Zambia have adopted e-Learning in the teaching of both face-to-face and in open and distance learning students with an aim to improving their learning and performance. However, the implementation of e-Learning policies has been a challenge in most colleges. The purpose of the study is to explore how implementation of e-Learning policies in a developing context can be enhanced so as to lead to improved access to TEVET. To this effect, response to the problem statement can best be summed up by answering the question: "What are the enablers and challenges in the implementation of

e-Learning Policies in Technical Education, Vocational and Entrepreneurship colleges in Zambia?"

1.4 Aim

The aim of this study is to explore how implementation of e-Learning policies in a developing context can be enhanced so as to lead to improved access to TEVET. The following objectives in the next section were identified to help achieve this aim.

1.5 Objectives of the Study

The objectives of the study within the context of vocational training were to:

1) Identify the knowledge that managers and lecturers have of e-Learning.
2) Establish the key enablers and challenges in implementing e-Learning policy.
3) Establish the criteria individuals/institutions use to make the decision to adopt or reject e-Learning innovations.
4) Discuss how decisions are made in the implementation of e-Learning in the TEVET sector.

1.6 Research Questions

The study was directed by the following research questions:

1) What knowledge do managers and lecturers have of e-Learning?
2) What are the key enablers and challenges in implementing e-Learning policy?
3) What criteria do individuals/institutions use to make the decision to adopt or reject the e-Learning innovation?
4) How are decisions made in the implementation of e-Learning in the TEVET sector?

1.7 Definition of Key Terms

This section discusses some of the key terms that were used in the study. Some of the terms that were used have other more commonly used generic meanings. In this study they are defined as follows to develop a common understanding between the reader and the researcher on these terms.

1.7.1 e-Learning

e-Learning commonly refers to the intentional use of networked information and communications technology in teaching and learning (Ghandi, 2011:35). Other aspects that can be included in the definition are self-paced or instructor-led online learning in and outside schools worldwide.

1.7.2 Policy

A policy is a principle or rule to guide decisions and achieve rational outcomes. A policy can be considered as a "statement of intent" or a "commitment" (Anderson, 2005). Another definition of policy is an actor or actors' deliberate actions in the management of a situation in order to achieve a certain goal or goals (Ferreira, 2003:14). This is similar to the definition by Basu (2005:436), who states that "policy can be broadly defined as a proposed course of action of an individual, a group, an institution or government, to relay a specific objective or purpose, within a given environment".

1.7.3 Policy Implementation

Implementation of policy involves the execution of policy decisions. Policy implementation is defined by Theodoulou and Kofinis (2004) as the stage where Government or agencies executes an adopted policy as specified by legislation or policy action. Tying these definitions together a more simplified working definition of policy implementation as defined by Hayes (2002:1) is: organized activities by Government directed toward the achievement of goals and objectives articulated in authorized policy statements.

1.7.4 Technical and Vocational Education and Training

Technical and Vocational Education and Training is a comprehensive term referring to those aspects of the educational process involving, in addition to general education, the study of technologies and related sciences, and the acquisition of practical skills, attitudes, understanding and knowledge relating to occupations in various sectors of economic and social life (UNESCO, 2001:8).

1.8 Significance of the Study

By studying the enablers and challenges in implementation of e-Learning Policies in Technical and Vocational Education and Training Institutions in Zambia, the study will:

1) Inform policy measures that affect the implementation of e-Learning and e-Learning policies in training institutions;

2) Propose recommendations to the various challenges faced by training institutions in Zambia in the implementation of e-Learning Policies;

3) Identify key success factors and enablers in the implementation of e-Learning Policies;

4) Contribute to the body of knowledge of information and communication technologies in education in Zambia that can be used by academicians, researchers, technology companies and policy makers.

1.9 Format of the Study

Chapter 1 introduces the study and provides background information to the enablers and challenges in the implementation of e-Learning policies in technical and vocational education and training institutions. The aim and objectives of the study are also considered.

Chapter 2 is a literature review that seeks to provide a background to the objectives and research questions that have been raised above on the enablers and challenges in the implementation of e-Learning policies in technical and vocational education and training institutions. It reviews the empirical and theoretical literature that has informed the study and justifies the conceptual framework;

Chapter 3 discusses the research methodology and research paradigm that are used in the study. The chapter also covers issues of data collection, data analysis and the limitations associated with the collection of data.

Chapter 4 presents the findings and analysis of the findings of the study as per responses received from the research instruments administered.

Chapter 5 is a discussion of and interpretation and analysis of the findings. The findings in this chapter are compared to the findings in the literature review.

Chapter 6 provides conclusions and recommendations to the study. It also highlights the action plan in addressing the challenges in the implementation of e-Learning policies in technical and vocational education and training institutions.

1.10 Conclusion

The chapter started with a background to the research problem under investigation to highlight empirical foundations of the study topic. This was then followed up by a statement of the aim of the study being to explore how implementation of e-Learning policies can be enhanced so as to lead to increased access to TEVET. The aim was aligned to associated objectives and research questions. An overview of the six chapters was outlined to provide a sense of direction of the study. The next chapter is a literature review of the study where literature on the enablers and challenges in implementation of e-Learning Policy in vocational training is reviewed.

Chapter 2

Literature Review

2.1 Introduction

The previous chapter identified the aim of the study as being to explore how implementation of e-Learning policies in a developing context can be enhanced so as to lead to improved learning. TEVET provision in Zambia faces the challenge of improving training and access to training by students in TEVET colleges. e-Learning is being offered in some colleges to address these challenges. Educational research literature has identified challenges faced by technical and vocational education and training (TVET): Wahba (2015:1); Woyo (2015:182), UNESCO-IICBA (2011:10-13); International Labour Organisation (2010:2).

The following topics aligned to the research objectives will be covered in this chapter: Challenges and key enablers in implementation of e-Learning policies, communication of e-Learning Policies, communication channels used in the diffusion of e-Learning innovations, criteria used by institutions to make decisions to adopt e-Learning innovations, implications of e-Learning implementation for e-Learning Policy, effect on adoption of e-Learning of interaction between policy actors and decisions in the implementation of e-Learning. Thereafter the conceptual framework will be discussed before concluding the chapter.

2.2 Knowledge of e-Learning

Some studies done on teachers' knowledge and use of e-Learning have a positive outlook while others are cautionary. One study that is both cautionary and encouraging in use of e-Learning in teaching is a study by Trucano (205:35) who mentions that ICTs are seen as tools to help teachers create more 'learner-centric' learning environments and ICTs can be used to support change and to support/extend existing teaching practices. He further cautions that using ICTs as tools for information presentation is of mixed effectiveness as sometimes uses of ICTs can re-enforce traditional pedagogical practices and divert focus from the content of what is being discussed or displayed to the tool being utilized.

2.3 Enablers in e-Learning Policy Implementation

In order for e-Learning Policy to be effectively implemented there is need for an enabling environment or enabling factors. These may range from social, legal, economic, political, and technological (SLEPT) factors. Policy implementation has some enablers for it to be successful. Some of these enablers are identified by Burke, Morris and McGarrigle (2012:9)

as: stakeholder consultation and buy in, leadership, implementation teams, implementation plan, staff capacity, organisational support, supportive organisational culture and communication. This suggests that in order for a policy to be effectively implemented, what happens before and during policy implementation matters a lot.

At institutional level the implementation of e-Learning policies is likely to be enabled by good institutional managers that are open to change. e-Learning policy and implementation is increasingly affecting how higher education institutions operate, are structured and are organized (DfES, 2003a; de Freitas and Attewell, 2004). This suggests that there is a relationship between e-Learning policy and organizational change and development. In a study that was done by (Brown, Anderson and Murray, 2007:75) the following enablers for e-Learning were identified: strategies to develop physical infrastructure, building and ensuring quality in e-Learning, creating a system wide approach to e-Learning and embedding e-Learning and aiming for sector efficiencies.

These enablers were part of policy objectives drawn on the experience of early adopters of e-Learning, or on their experience of previous adoption of technology use in education. Policy makers sought to encourage the mainstreaming of e-Learning and enhancement of its quality while seeing the potential for sector efficiencies and the need for policy alignment (Brown, Anderson and Murray, 2007:76).

2.3.1 Enablers in International Institutions

In a study done by Raouf, Naser and Jassim (2012:663-664) it was found that institutions that had advanced Information Technology (IT) infrastructure had better implementation success of web applications like e-Learning. Other success factors were: information systems expertise related to e-Learning and institutions having shared database for their applications. This can be compared to the findings by Nawaz, Siddique and Khan (2012:48) citing Valdez, Glenn, Wimmer and Blomeyer (2004), who cite enablers such as: proper support and maintenance of ICT hardware and software, having a supportive and responsive technical and/or teaching and learning unit that responds to the needs of individual staff (Lewis and Goodison, 2004). Another enabling factors as advanced by Ehlers (2005) for successful e-Learning implementation are: software developers having an interdisciplinary exchange with teachers, authors and learners.

In a study by Chiome (2012:15) on Access and Success in e-Learning in the Zimbabwe Open University the following are recommended in order for e-Learning to succeed in the University: prioritising of the use of ICTs by students in their studies, establishing

e-Learning and students' support centres in every region in the nation and having compulsory courses on computer skills and e-Learning techniques for all students in universities. This approach underscores the importance that higher education students should have ICT literacy as a key skill to use in their learning.

Another enabler for successful ICT integration in higher education is the role of ICT champions as stated by Cross and Adam (2007:89). These ICT champions provide strong leadership. This is similar to the following enablers of ICTs in education in identified in South African universities by Blignaut, Hinostroza, Els and Brun (2010:1557) of: access to ICT resources, technical and pedagogical support available to teachers, principal's or management's vision for ICT use and teacher training In Kenya enablers of ICTs in Education have been capacity building in ICT integration course for senior Educational Managers at the Ministry of Education and Heads of Training Institutions (Ministry of Education, 2012:16).

2.3.2 Enablers in Zambian Institutions

The National ICT Policy in Zambia has a policy goal of integrating ICTs in the education system (Ministry of Communications and Transport, 2006:27). This policy goal is supported by the objectives of deploying ICTs at all levels of the Zambian educational system in order to improve and expand access to education, training and research facilities and modernising the educational delivery system with the aim of improving the quality of education and training at all levels (Ministry of Communications and Transport, 2006:27). These objectives are supported by a number of objectives such as:

- promoting and facilitating the integration of ICT skills into the teaching and learning process at all levels of learning;
- introducing programmes on teacher education in ICTs at all training institutions in the country;
- developing partnerships with private sector and other stakeholders in the quest for increased ICT literacy;
- accelerating the extension of tertiary education programmes at the nations colleges and universities to teacher training colleges through e-Learning systems and promoting the development;
- deployment and utilization of electronic-based distance education;
- training and learning systems in the Zambian educational system to complement and supplement residential education and training (Ministry of Communications and

Transport, 2006:28).

2.4 Challenges in Implementation of e-Learning policies

The challenges in the implementation of e-Learning and e-Learning policies are looked at from two levels: international level and national level.

2.4.1 Challenges at international level

A number of challenges in the implementation of e-Learning policies have been identified in literature. Some of these are having a weak economy and absence of adequate infrastructure facilities in least developed countries (Mahmud and Gope, 2009:1). Other challenges are unwillingness to change the learning atmosphere, lack of funds and technical resources in universities, lack of confidence to practise computer applications coupled with absence of infrastructure such as electricity and telephone lines in many parts of Bangladesh (Mahmud and Gope, 2009:1). This is similar to the challenges in the use of ICT by teachers and students in sub-Saharan Africa, particularly in rural schools that were identified by (Hawkins, 2002): lack of electricity and frequent power outages, poor technology infrastructure, overcrowded computer labs and low bandwidth, high costs of (mainly satellite) internet connectivity, software licences and equipment maintenance, insufficient and inappropriate software. Non-competitive telecommunications policies and regulations may impede connectivity and sustainability Geographic and demographic factors include population density and dispersion, linguistic and political factors.

According to United Nations Development Programme (2002), in the Arab world some of the challenges in the implementation of e-Learning are: illiteracy and educational access. Other challenges as stated by (Nasser and Abouchedid (2001) are: fears by educational decision makers that e-Learning would abruptly shift traditional education into a new pedagogical venture where teachers and policy makers are not adequately familiarized with its objectives, content and learning outcomes. Other challenges are the lack of plans for a smooth transition from traditional learning to e-Learning. These challenges are similar to those identified by Malik (2012:35): lack of vision and top management support, absence of institutionalized agenda, skeletal team structure and coordination, weak project planning, technology infrastructure, as well as lack of faculty involvement.

In Egypt teaching and learning challenges, as stated by Said (2001) cited by Czerniewicz (2007:9), have been experienced in the use of ICT in higher education due to lack of an overall technology plan, coupled with the short-term funding model and the absence of a clear acquisition and replacement plan leading to an inconsistent and unproductive approach

to IT implementation. In Kenya some of the challenges to the spread in the use of ICT in education are: lack of electricity, most public school teachers being computer illiterate, large number of primary and secondary schools (over 20,000) making implementation of an e-Learning programme a costly exercise (Czerniewicz, 2007:9).

In Nigeria the challenges to implementing ICT policies have been attributed by Mac-Ikemenjima (2005) to lack of adequate ICT infrastructure such as computer hardware and software, and high-speed Internet access, lack of skills to manage the available networks, resistance of change from traditional methods to ICT-based teaching and learning methods. Others challenges in the implementation of e-Learning that have been identified by Chiome (2012:14) in a study of Zimbabwean students are the lack of access to computers by students, lack of adequate training in e-Learning, lacking e-Learning learner support.

The table below lists a number of challenges that are likely to meet e-Learning adoption initiatives in African nations. The top three challenges are: limited bandwidth at 17%, human resource capacity at 11% and electricity at 11%. The countries indicated as most likely to identify these challenges as constraints are: Zambia, South Africa and Kenya respectively. This table is significant as it gives an overview of the key challenges faced by African nations in e-Learning adoption. These challenges tie in with the challenges identified in literature (Andersson and Gronlund, 2009:1; Mahmud and Gope, 2009:1; Chiome, 2012:14; Ministry of Communications and Transport, 2006:1).

Table 1: Key Challenges in e-Learning Adoption

Rank	Constraining Factor	%	The Country Most Likely to Identify This is a Constraint	The Country Least Likely to Identify This is a Constraint
1	Limited Bandwidth	17	Zambia	Kenya
2	Financial resources	1	Zambia	Nigeria
2	Human resource capacity	11	South Africa	Tanzania
2	Electricity	11	Nigeria	South Africa
5	Appropriate training	8	Kenya	Uganda
6	Appropriate hardware	7	Tanzania	Ghana
7	Lack of trained teachers	6	South Africa	Nigeria
8	Appropriate software	6	Tanzania	Ghana
8	Political will is lacking	4	Nigeria	Uganda
8	Corruption and theft of resources	4	Uganda	Zambia
11	Lack of good quality educational content	4	Tanzania	Nigeria
12	Pressure of poverty	3	Kenya	Uganda
12	Sustainability is not prioritized	3	Kenya	Tanzania
12	Leadership is lacking	3	Nigeria	Uganda
15	Instability and lack of security	1	South Africa	Zambia
15	Other factors	1	N/A	N/A

Key constraints to e-Learning (34)

(Source: Rupp (2012), Technology, e-Learning and Education in Africa.)

2.4.2 Challenges in Zambian Institutions

In Zambia, some challenges in the educational system as listed in the National ICT Policy are likely to have an impact on the implementation of e-Learning in training institutions. These challenges are: general financial and technological resource constraints, inadequate awareness on the benefits of integrating ICTs in the administration of the delivery chain in the education sector, lack of co-ordinated approach in the adoption and implementation of initiatives targeted at the deployment of ICTs within the educational system and high opportunity cost of deploying ICTs in the educational system (Ministry of Communications and Transport, 2006:3).

2.4.3 Framework on Enablers and Challenges for e-Learning Implementation

In summing up this section and the previous section on enablers of e-Learning, it is useful to

consider a framework that outlines the enabling and inhibiting factors for e-Learning implementation. One useful framework is that by Andersson (2008:46) shown in Table 2 below. The framework has 37 factors that are grouped under 8 categories i.e. student, teacher, technology, course, institution, costs, support and society. This is a useful framework for considering the enablers for e-Learning implementation as it provides overall categories where various factors can be grouped. Andersson (2008:45-46) argues that this framework takes a holistic view as one cannot exclusively look at technological or individual factors when discussing e-Learning enablers and inhibitors. Important factors are also found in the surrounding society, in the support functions provided, at the institutional arrangement and so forth. This study adopted this framework for these reasons when categorising enablers and challenges to e-Learning implementation.

In the study only 7 categories were used because students were not interviewed. Under the seven categories the various factors were compared to responses given by respondents to the interview questions under the four main research questions. This was useful in categorising the key challenges and enablers in implementation of e-Learning Policies in vocational colleges. These inhibiting and facilitating factors were done in Sri Lanka, a developing nation and therefore have some relevance for Zambia a developing nation. It needs to be acknowledged that though both nations are developing the conditions may not be exactly the same. However, the inhibiting and enabling factors provide a useful framework in which to analyse the responses made by participants in the study and the findings from literature.

Table 2: Inhibiting and Facilitating Factors for e-Learning

Student	**Teacher**
Motion	Technological confidence
Conflicting priorities (time)	New learning style confidence
Academic confidence	Motivation and confidence
Technological confidence	Qualification and competence
Learning style	Time
Gender	
Age	**Course**
	Curriculum design
Technology	Pedagogical model
Access	Subject content
Software and interface design	Teaching & learning Activities
Costs	Flexibility (delivery mode)
Localisation	Localisation
	Availability of educational resources
Institution	
Knowledge management	**Support**
Training of teachers and staff	Support for students from faculty
	Social support for students
Costs	Support from employer
Technology	Support for faculty
Access rates	
Tuition course fees	**Society**
Books	Role of teacher and student
Institutional Economy and funding	Attitudes on e-Learning and IT
	Roles and regulations

Source: (Andersson, 2008:46).

2.5 Adoption of e-Learning Innovations by Institutions

An innovation according to Rogers (1995:11) is an idea, practice or object that is perceived as new by an individual or other unit of adoption. The use of tablets for teaching and learning purposes in higher education maybe regarded as an innovation in some communities. e-Learning can transform how people approach teaching and learning and provide alternatives to traditional face-to-face instructor-led education (Douglas and Van der Vyver, 2004). The effectiveness of e-Learning is that it creates new and innovative ways to deliver instruction through a distributed environment (Liao and Lu, 2008). Diffusion is defined by Rogers (1995) as the process by which an innovation is communicated through certain channels over time among the members of a social system.

Adoption of e-Learning in the university context according to Elgort (2005:181) is influenced by a number of factors, including organisational, socio-cultural, intra- and interpersonal factors, to mention a few. This study focuses on the personal decisions made by teaching practitioners and institutions and how they influence the adoption of e-Learning. Lecturers who are more creative and innovative are more likely to adopt innovative e-Learning approaches in their teaching. In a study conducted by Elgort (2005: 182, 183) in New Zealand higher educational institutions it was found that despite a high rate of e-Learning adoption in teaching, the majority of e-Learning specialists interviewed pointed out that poorly thought through approaches to using LMS were of serious concern. This is similar to the views of Straub (2009:645) who says that successfully facilitating a technology needs to address cognitive, emotional, and contextual concerns.

In a study on e-Learning take-up intention from an innovation adoption perspective by Chinese students done by Duan, He, Feng, Li and Fu (2010:237) it was found that only perceived compatibility and trialibility had significant influence on e-Learning adoption intention. Similar findings are reported by Nichols (2008:598) in a study on the challenges of e-Learning diffusion in New Zealand in which he states that the findings of the study indicate that institutions have either achieved a state of sustainable embedding for e-Learning, or else need to. He further states that unless a state of institutional sustainability is achieved, it is likely that e-Learning activity will in the long term be limited to enthusiasts (Nichols, 2008:598).

According to Askar and Halici (2009:1097), the adoption of the Internet as a learning environment is influenced by the following set of factors: the individuals' perception of the attributes of e-Learning; the nature of the communication channels; the nature of the social system, and the extent of the change agents' efforts in the e-Learning. In a study done by Hammadi, Zualkernan and Ahmed (2010:1) on impediments to adoption of e-Learning technology in combating anti-money laundering in UAE banks it was found that e-Learning readiness and perceived complexity were the major impediments to adoption. This ties in with the advice by Clarke (2002) that in order for [innovative] technology to improve learning, it must "fit" into students' lives not the other way around.

2.6 e-Learning Policy Implementation

A well-developed policy with excellent policy objectives doesn't necessarily lead to good implementation of policy. As stated by Fox, Bayat and Ferreira (2006:103) many of the policy measures introduced by governments, in practice, bring about little by way of

fundamental change. It is for this reason that Cloete (1998:131) cited in Fox et. al. (2006:103) argues that, usually, when policy is formulated, careful thought has to be given to all possible implications that may occur during the implementation stage. One of the ways of introducing e-Learning into higher educational institutions as espoused by Salmon (2005) is through large-scale centralization and provision of professional services.

The second is a more incremental introduction of e-Learning involving all members of staff to make their contribution. Other studies (Kizza, 2008:46) emphasize the role of technology planning in helping organisations focus attention on the appropriate priorities and issues. Another approach in policy implementation as discussed by van Baalen and de Coning (2006:242) is that of log-frame conceptual approach. Log-frame is a programme management technique used by the World Bank and other development organizations to manage the complete project cycle from design to implementation, monitoring and evaluation (Van Baalen and de Coning, 2006:242). Table 3 below shows an example of how a log-frame would be used to guide the policy implementation process in a project management approach.

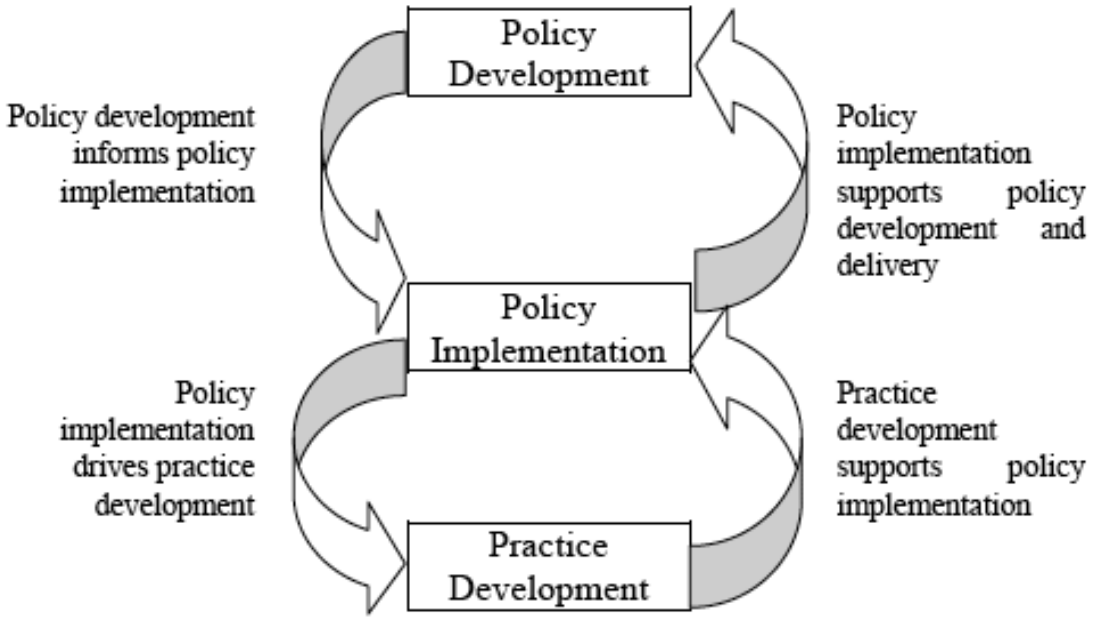
On the left hand side of the log-frame the programme aims, objectives, outputs and outcomes of an e-Learning Policy should be clearly stated in a Policy to enable subsequent monitoring and evaluation of the Policy implementation easier to carry out. Where this is not done it will be a huge challenge to know what has been achieved and was not because of an unclear policy with unclear targets. On the right horizontal side of the table aspects such as objectively verifiable indicators, main assumptions, costs, time frame and persons responsible for policy implementation make it clear on how the policy implementation will be measured, its' duration and persons and funding required for successful implementation.

Table 3: Generic log-frame matrix for policy implementation

Logical Framework Matrix	Intervention strategy details	Objectively verifiable indicators	List sources of verification	Main assumptions/ Risks	Whose responsibility	Time Frame	Costs
Programme aims							
Project objectives							
Project activities (outputs)							
Project results (outcomes)							

(Source: van Baalen and de Coning, 2006:243)

Figure 1: Relationships between policy development, policy implementation and practice development



(Source: Scottish Government, 2009:2)

This figure shows the relationships policy development, policy implementation and practice development. In practice the relationships are not always clear and working well leading to poor policy implementation. In the Zambian vocational training context this kind of relationship is not apparent as policy implementation is normally informed by policy development and hardly vice versa.

The figure below shows the policy process and how policy implementation is a circular process that never ends. This diagram paints an accurate picture of the policy making and implementation process in the Zambian vocational training system. However, monitoring and evaluation processes are not always consistently carried out with the possibility of poor policy development and implementation.

Figure 2: Policy Process

(Source: Center for Advanced Strategic Analysis, 2010:1)

In Zambia, the implementation of the National ICT Policy is being spearheaded by the Department of Communications under the Ministry of Communications and Transport. A National ICT Implementation plan has been developed where all sectors are expected to align their ICT policies (Ministry of Communications and Transport, 2006:64). The development of the national implementation plan is based on the SUNRISE model as shown in Figure 3 below. The model shows how the various factors such as resources, standards and guidelines, legal framework among other things are vital and need to be considered in implementation of ICT policies.

Figure 3: SUNRISE Model for Policy Implementation

S	Special ICT Programmes, Development of Incentives and Policy Instruments
U	Universal Human Resource Development Programme
N	National ICT Applications such as E-Government, Telemedicine etc.
R	Resource (Technical and Financial) Mobilisation and Deployment
I	Integrated ICT (Public Sector Computerisation) Programme
S	Standards, Practices and Guidelines for ICT deployment and exploitation
E	Enabling Legal/Regulatory and Institutional Framework

(Source: Ministry of Communications and Transport, 2006:64).

In the draft National e-Learning Strategic Plan it has been noted by the Ministry of Education (2010:33) that in order to have a fully developed and supported e-Learning system for all on a sustainable basis there is need to have a conducive e-Learning policy and legislation available supported with an autonomous governing body in place. Also the need for continuous Internet connectivity and electricity in all districts in Zambia is emphasized (Ministry of Education, 2010:33). These outputs are desirable in any nation seeking to have an effective e-Learning system implemented, yet the realities of developing economies are that it is not easy for nations to implement them due to competing social needs. It would be more practical to have some institutions in selected districts pilot the use of e-Learning after conducting e-Learning readiness surveys.

2.7 Conceptual Framework

This section discusses the conceptual framework for the study in order to underpin the study in previous studies relating to enablers and challenges of e-Learning policy implementation. Successful policy implementation may be determined by effective management of the various stages in the policy development process. Successful policy implementation involves a number of factors such as having strong administrative structures, sufficient budgetary allocation and adequate human resources. Policy implementation is likely to fail where there is an inadequate understanding of the issues to be addressed, lack of clear ownership and well focused leadership, a failure to define appropriate measures of success, lack of realism about how the policy will work in practiced and a failure to establish an effective framework for monitoring and evaluating performance (Economic Policy Unit, 2011:1).

Successful implementation of e-Learning policies is likely to be affected by resistance or slow adoption of new technologies by implementers such as educators. e-Learning can be regarded as an innovation and as such its implementation among various players is likely to vary. Diffusion of Innovation (DOI) is a theory that (Rogers, 2005) put across to explain the process by which an innovation is communicated through certain channels over time among the members of a social system. In the theory it is argued that certain innovations are successful due to compatibility with existing values and practices, simplicity and ease of use, trialability, relative advantage and observable results (Rogers, 2005). This study will be anchored on Diffusion of Innovation theory. The key elements in diffusion research are outlined in Table 4 below:

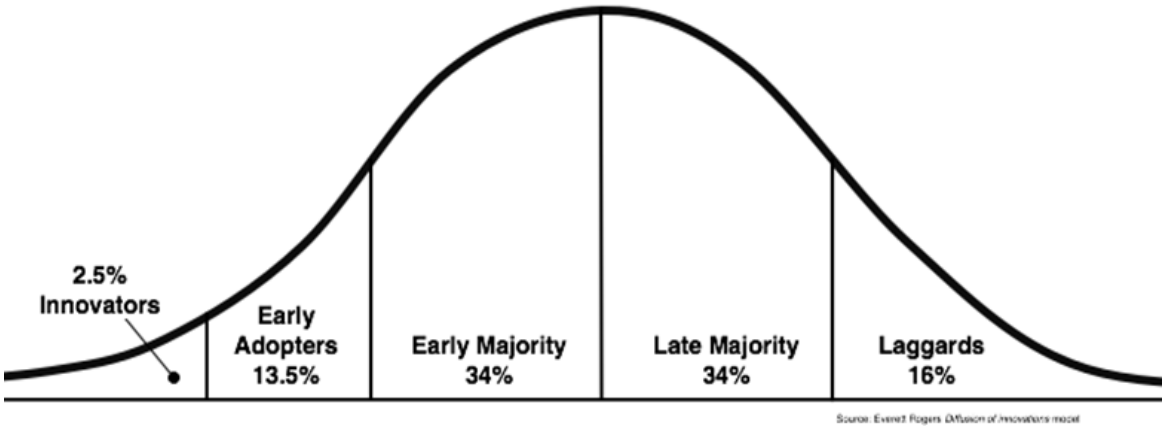
Table 4: Five Stages of the Adoption Process

Stage	Definition
Knowledge	The individual is first exposed to an innovation, but lacks information about the innovation. During this stage the individual has not yet been inspired to find out more information about the innovation.
Persuasion	The individual is interested in the innovation and actively seeks related information/details
Decision	The individual takes the concept of the change and weighs the advantages/disadvantages of using the innovation and decides whether to adopt or reject the innovation. Due to the individualistic nature of this stage, Rogers notes that it is the most difficult stage on which to acquire empirical evidence.
Implementation	The individual employs the innovation to a varying degree depending on the situation. During this stage the individual also determines the usefulness of the innovation and may search for further information about it.
Confirmation	The individual finalizes his/her decision to continue using the innovation. This stage is both intrapersonal (may cause cognitive dissonance) and interpersonal, confirmation the group has made the right decision.

Source: (Rogers, 1983)

In addition to the above table, Rogers used the following diagram to illustrate the stages of adopting an innovation.

Figure 4: Rogers' Adopter Categories on the Basis of Innovativeness



(Source: Rogers (2003) *Diffusion of Innovations*, 5th edition)

When Table 4 and Figure 4 are compared it can be noted that the knowledge stage relates to sceptics (the researcher prefers this term to that of laggards which sounds condescending in

describing those still trying to make a decision on adopting technology) who make up 16% of the population. The stages of persuasion and decision with the most people (total of 68% combined) are represented by the late majority at 34% and early majority at 34%. The early adopters at 13.5% are represented by the implementation stage. Relating this to the study, it can be observed how e-Learning, as an innovation in teaching and learning is being adopted by implementers (managers and lecturers) over a period of time and how policy makers communicate e-Learning policies. Furthermore the study as indicated in the research question sought to establish the enablers and challenges of implementing e-Learning policies in technical and vocational education and training institutions.

Furthermore, two factors, as Rogers (1983) states determine what type a particular decision is:

- Whether the decision is made freely and implemented voluntarily
- Who makes the decision.

Based on these considerations, three types of innovation-decisions have been identified within diffusion of innovations.

Table 5: Three Types of Innovation-Decisions

Type	Definition
Optional Innovation-Decision	This decision is made by an individual who is in some way distinguished from others in a social system.
Collective Innovation-Decision	This decision is made collectively by all individuals of a social system.
Authority Innovation-Decision	This decision is made for the entire social system by few individuals in positions of influence or power.

(Source: Rogers, 1983)

Finally, Rogers notes that five (5) factors that are regarded as intrinsic characteristics of innovations will influence an individual's decision to adopt or reject an innovation as shown in the table below:

Table 6: Five factors of innovations

Factor	Definition
Relative Advantage	How improved an innovation is over the previous generation.
Compatibility	The level of compatibility that an innovation has to be assimilated into an individual's life.
Complexity or Simplicity	If the innovation is perceived as complicated or difficult to use, an individual is unlikely to adopt it.
Trialability	How easily an innovation may be experimented. If a user is able to test an innovation, the individual will be more likely to adopt it.
Observability	The extent that an innovation is visible to others. An innovation that is more visible will drive communication among the individual's peers and personal networks and will in turn create more positive or negative reactions.

(Source: Rogers, 2005)

These characteristics are important in seeking to explain how institutions in Zambia are adopting e-Learning in their teaching. In the study, it will be useful to note to what extent these factors describe how lecturers and managers in vocational training institutions are implementing e-Learning.

2.8 Conclusion

The chapter has reviewed literature on knowledge of e-Learning, the challenges and key enablers in implementation of e-Learning policies. In addition, literature on criteria used by institutions to make decisions to adopt e-Learning innovations and the effect on adoption of e-Learning of interaction between policy actors and decisions in the implementation of e-Learning was also reviewed. Thereafter, the conceptual framework that underpins the study in previous research relating to enablers and challenges of e-Learning policy implementation has been discussed. The next chapter discusses the methodology that was used in the study.

Chapter 3

Research Methodology

3.1 Introduction

This chapter provides an overview of the research methodology or design that was used to direct the study. The chapter then explains the research orientation that was used for data collection. It then goes on to discuss the research methodology and selection of participants for the study. This is followed by a discussion of methods of data collection and the framework used for data analysis. Issues of validity and ethical issues are addressed in the study are also discussed. The chapter ends by looking at the limitations and potential problems that were faced when the research was conducted.

3.2 Research Orientation

The overall research orientation for the study was interpretative research as it allowed the researcher make an objective interpretation of participants' views on the enablers and challenges of implementing e-Learning in TEVET institutions in Zambia. Interpretative methodologies according to the Institute of Public and International Affairs (2009:1) position the meaning-making practices of human actors at the centre of scientific explanation. In some disciplines, interpretative research is called qualitative research and is conducted from an experience-near perspective in that the researcher does not start with concepts determined a priori but rather seeks to allow these to emerge from encounters in 'the field'. Therefore, this study explored the experiences participants had implementing e-Learning in TEVET institutions by using interview questions in a qualitative study.

The study sought to generate primary data and act as baseline survey on the challenges and enablers of e-Learning Policy implementation in TEVET institutions in Zambia. The study used the Diffusion of Innovation (DOI) theory as the main theory to answer the main research question in the study on why Technical and Vocational Education and Training (TVET) institutions seemed to have challenges in implementing e-Learning policies. In addition enabling factors of e-Learning Policies were also considered. The theory was used to gain insights into TVET implementers and policy makers' motivations and actions. The study was qualitative with seven (7) individuals interviewed. The 'why' nature of this type of research according to Biggam (2011:86) and the use of interviews – where the opportunity to explore matters in depth exists – provide evidence that this research would be primarily qualitative in nature.

3.3 Research Methodology

Qualitative research design adds value to a study when a topic has not been addressed with a particular group of people, and when richness of information is sought (Cresswell, 2003). This study chose the qualitative research approach so as to gain deeper insights into the enablers and challenges of e-Learning implementation in Zambian Vocational training institutions selected from Kitwe, Luanshya and Lusaka. In addition, the study used the qualitative approach because of its characteristics that were more suitable to the nature of the study. Some of these characteristics are that qualitative research is especially strong in describing and exploring phenomena and generating tentative explanations. Furthermore, qualitative research is very helpful in adding new dimensions of understanding (for example, understanding groups from the insider's perspective, understanding the importance of local context, studying complicated processes that occur over time).

The researcher used face-to-face interviews to collect data. The method of interviews was used in preference to other methods such as surveys, questionnaires, observations and case studies because of the suitability of interviews for obtaining data for the study topic. Interviews were used to allow the researcher understand and describe e-Learning enablers and challenges in Vocational Training Institutions in Zambia and to obtain attitudes and beliefs about the study topic (Dawson, 2013:95). Interviews were also used to ensure neutrality, technical detail and ensuring that experiential knowledge was transmitted from the interviewees to the interviewer (Dawson, 2013:95).

The researcher also used interviews to gain rich, qualitative information about managers and teachers' experiences, attitudes and perspectives on e-Learning enablers and challenges (Cottrell, 2014:157). Using interviews also enabled the researcher to develop a working relationship with the interviewees leading them to be more comfortable talking with the researcher (Cottrell, 2014:157). However, some of the disadvantages of interviews are that few can be undertaken (in this case the researcher undertook seven interviews), results are not open to generalisation, and the interpretation of the data can be highly subjective (Cottrell, 2014:157).

The researcher had easy access to the participants as they all work for institutions reporting to the researchers' organisation. Also the researcher was conducting research in a subject that has received much interest from vocational training policy makers, managers and teaching

staff. However, the researcher had a challenge of conducting the research in terms of the timing, location and costs. In terms of timing, the challenge was to find a suitable time when the respondents were free and were available for interview when the researcher was free. This was particularly a challenge when the researcher travelled to the Copperbelt Province, as he had limited time where he had to interview all the four scheduled participants in a space of two (2) days in two towns. The participant from Luanshya was interviewed using Skype due to time constraints and the participant being busy when the researcher travelled to the Copperbelt Province. In terms of costs, the researcher could only travel to Kitwe and Luanshya when funds were available for travel and lodging. This meant a slight delay in the timing of conducting the interviews. Lastly, in terms of location, four (4) of the participants interviewed were from outside town, i.e. about 480 km from Lusaka. This posed the challenge of finding the right time (suitable to both interviewer and interviewees).

Table 7: Profiles of Participants Interviewed

Participant	**Position**	**Institution/Town**	**Date Interview Conducted**
Martha	Senior Lecturer Business Studies	Evelyn Hone College, Lusaka	October 2012
Friday	Senior Lecturer Paramedical Sciences	Evelyn Hone College, Lusaka	October 2012
Edward	IT Specialist	Technical and Vocational Teachers College, Luanshya	December 2012
Levy	Senior Lecturer	Zambia Institute of Business and Industrial Practice, Kitwe	October 2012
Shakila	Senior Lecturer	Zambia Institute of Business and Industrial Practice, Kitwe	October 2012
Christopher	Director	Evelyn Hone College, Lusaka	October 2012
Peter	Training Manager	Zambia Institute of Business and Industrial Practice, Kitwe	October 2012

3.4 Sampling

3.4.1 Target Population

In the study, the target or theoretical population was twenty-five Vocational training institutions belonging to the Ministry of Education, Science, Vocational Training and Early Education. Within this target group the focus was institutions that offer programmes by distance learning and e-Learning. This target group was done because of the convenience it afforded the researcher to access the sample in this population. This is referred to as

convenience sampling.

3.4.2 Study Population

This refers to the population that a researcher can get access to. In this study the study population was vocational institutions along the line of rail i.e. institutions in Lusaka, Central, Southern and Copperbelt provinces. For Lusaka province, i.e. where the researcher resides, it was simpler, while Central province is less than two hours by road from Lusaka province. For Copperbelt and Southern provinces, the institutions are about six hours away and accommodation charges are reasonable in these two provinces. In addition, the researcher's work involved frequent travel to institutions in these three provinces outside Lusaka province.

Sample

The study considered three institutions as a representative sample for the twenty-five institutions under the Ministry. These institutions were chosen (based on monitoring and evaluation reports by the Ministry to cater for: (i) an institution that was doing well in terms of e-Learning and Open and Distance Learning (ODL) implementation, (ii) an institution that was having challenges in implementing e-Learning and (iii) and institution that had plans to implement e-Learning and had concerns it needed to address before doing so. These institutions, along what is referred to the line of rail, were easily accessible to the researcher. Because of limited time and financial constraints, the study was only restricted to the above mentioned three colleges and towns.

The participants in the study were chosen according to their functions in the implementation of e-Learning policy and practice in their respective colleges. For the Vice Principals and Training Managers (at TVTC and Evelyn Hone College) these were chosen because they are in charge of training in the colleges. At ZIBSIP, one of the participants was chosen (by management) because they were in charge of the ODL section while the other participant was chosen as she was involved in the teaching of ODL programmes. At Evelyn Hone College, the participants were chosen because they were available and used some technology in their teaching. In this study therefore, strategic sampling was used to select the participants based on their experience and availability..

Evelyn Hone College of Applied Arts and Commerce

Evelyn Hone College of Applied Arts and Commerce is the largest vocational training

college in Zambia with an annual enrolment of 3,000 students. However, the demand for training by school leavers is much more than the capacity that the College can meet. In order to meet part of this demand, the College will be offering Pharmacy studies in Isoka in Muchinga Province from 2016. The College offers academic and professional training in various disciplines such as Business and Management, Information and Communication Technology, Health Sciences, Laboratory Sciences, Art and Music, Communication Skills and Library Studies, Journalism and Printing and Secretarial and Office Management. The vision of the College is to be an institution of preferred choice for training in Applied Arts, Commerce, Science and Technology. The College's mission is to provide quality training in Applied Arts, Commerce, Science and Technology to local and international students in order to fulfil requirements of the labour market (Evelyn Hone College of Applied Arts and Commerce, 2014).

Evelyn Hone College offers full-time and part-time studies in all its seven departments i.e. Academic and Applied Sciences, Business Studies, Communication Skills, Education, Health Sciences, Library Studies, Media Studies and Secretarial and Office Management (Evelyn Hone College of Applied Arts and Commerce, 2014). The College has recently established a new department for Open and Distance Learning. This is in order to plan and manage the provision of open and distance learning programmes that the College intends to introduce by 2015. Evelyn Hone College has an online portal which is used for e-Learning by students in Business and Management programmes. There are plans to increase the number of programmes with online programmes in future. The College is one of the leading training institutions in Information and Communication Technology programmes in the country providing an enabling environment for e-Learning.

The Technical and Vocational Teachers' College

The Technical and Vocational Teachers' College (TVTC) was established in 1975 to provide Teacher education in order to service training institutions under the then Department of Technical Education and Vocational training in the Ministry of Science, Technology and Vocational training. In January 2000 TVTC was established as a management board through the Technical Education, Vocational and Entrepreneurship Training Act No. 13 of 1996. The College is an affiliate of the University of Zambia (UNZA) and all College diplomas are underwritten by UNZA. The college is also an affiliate of the Zambia Institute of Chartered Accountants (ZICA) and the Zambia Institute of Marketing (ZIM) (TVTC, 2014).

TVTC offers full-time, part-time, short courses and distance learning programmes. TVTC is the largest provider of open and distance learning vocational training programmes in Zambia with over 2,000 students enrolled annually. The College has been using educational technology to facilitate the learning process by distance learners. Students are able to access study materials online using Moodle, a virtual learning management system. Teaching staff and managers at the College have also undergone some training in the use of ICTs in teaching and management of vocational training programmes. Training has been conducted under the sponsorship of UNESCO, Commonwealth of Learning and the Ministry of Education, Science, Vocational Training and Early Education.

Zambia Institute of Business Studies and Industrial Practice

The Zambia Institute of Business Studies and Industrial Practice (ZIBSIP) was established in 1993. ZIBSIP currently operates as a Management Board under the Ministry of Education, Science, Vocational Training and Early Education. ZIBSIP is a TEVETA-registered institution that is also accredited to various examination boards internationally. ZIBSIP offers tertiary education in demand driven business and Accountancy courses through full time, part time and open and distance learning programmes. ZIBSIP has partnerships with some companies like the Zambia National Commercial (ZANACO) bank in providing apprenticeship to its students. The mission statement is to provide quality technical and entrepreneurship training and consultancy services for self-reliance and sustainable growth in industry commerce and small-scale enterprises (ZIBSIP, 2014:1).

3.5 Selection of participants

In the study, interviews of TEVET managers and lecturers were conducted to provide the data required to answer the research questions. As stated earlier, random sampling was used for the study. In order to gain access to the participants for the study population, the researcher made appointments with the managers and teachers in the colleges and explained the purpose of the study and ethical considerations. These appointments were made by phone (for the two institutions outside Lusaka) and in person (for the institution in Lusaka province). The researcher requested the head of each training institution for three participants, i.e. a manager and two lecturers. The criterion of gender balance in the selection of participants was also emphasized. A total of three participants each were selected from each of the three institutions. From each institution, one manager and two lecturers were selected. Despite intentions by the researcher, data was only obtained for one participant

from TVTC. Therefore, data was only available for *seven* participants, i.e. two managers and five lecturers. Two of the participants were female while five of the participants were male.

3.6 Methods of Data Collection

The interviews were structured and open-ended, and incorporated questions based on the observations. According to Kombo and Tromp (2006:94), structured interviews have the following advantages:

- The reliability of the information gathered is high. This is because each item of information is subjected to questions similar to the others.
- It gives in-depth information about particular cases of interest to the researcher. This is because the researcher seeks information on specific issues.
- It is systematic. Researchers intensively investigate a particular issue before moving to the next.
- The researcher gets a complete and detailed understanding of the issue from the respondent.

However, there are some disadvantages. These are:

- The rigidity displayed by the researcher can affect the responses given. The respondent can feel as if s/he is under investigation and is being probed. This may affect the response.
- The researcher may miss out on some important points that are not included in the questions formulated (Kombo and Tromp, 2011:95).

In order to mitigate against these disadvantages, the researcher made use of follow-up questions and clarified answers that were not clear or get further information on points of interest raised by the respondents.

The study also made use of a number of literature sources, including reference to pertinent books, journals, reports, conference and seminar proceedings and Government documents. Examples of these include education and training policies, and Commonwealth of Learning surveys.

In order to ensure that the data quality, the study had clearly developed objectives and research questions backed by a detailed plan for data collection and analysis that stipulated who was to be interviewed (managers and lecturers teaching e-Learning and distance learning programmes), how and when they would be interviewed. The researcher read

through the responses after the interviews to ensure that responses were captured correctly and made sense. The responses that were written down during the interviews were compared to the recorded responses to counter check correct capturing of responses.

3.7 Data Analysis

The analysis of all the data collected was done using the Diffusion of Innovation (DOI) theory. The study sought to establish to what extent TEVET institutions have adopted e-Learning technology as is outlined in the five stages of the adoption process, i.e. Knowledge, Persuasion, Decision, Implementation and Confirmation by Rogers in the table in the section on the Conceptual Framework above. The stages of knowledge, persuasion, decision and implementation were the themes to which the research questions were aligned and provided a framework for the coding of the data. Coding was used for comparison across interviews, and interview summaries in order to retain the context of the data. In the final phase of data analysis each interview was re-read so as to write individual short summaries. Content analysis of technical and vocational education and training policies institutional policies on training, open and distance learning and e-Learning policies were done to find out if the institutions how implement e-Learning in their teaching and learning.

Table 8 below illustrates how the Five Stages of the Adoption Process were used as an analytical framework.

Table 8: Using the Five Stages of the Adoption Process as an Analytical Framework

Stage	**Research Question**	**Research theme**	**Previous research**
Knowledge	What knowledge do managers and teachers have on e-Learning?	Knowledge of e-Learning/ Policy awareness	Trucano, M. (2005)
Persuasion	What persuades managers and teachers to adopt e-Learning as a mode for learning?	Persuasion/ Challenges/ Enablers	Mahmud and Gope (2009); UNDP (2002); Nasser and Abouchedid (2001); Czerniewicz (2001); Brown, Anderson and Murray (2007); Chiome (2012); Raouf, Naser and Jassim (2012)
Decision	What makes managers and teachers decide to adopt e-Learning as a mode for learning?	Decision/Institutional Support/ e-Learning readiness	Elgort (2005); Duan, He. Feng, Li and Fu (2010); Hammadi, Zualkernan and Ahmed (2010).
Implementation	How do managers and teachers implement e-Learning as a mode for learning?	Implementation/ Policy Actor Interaction	

In addition the data was also be analysed according to Roger's five (5) factors i.e. relative advantage, compatibility, complexity/simplicity, trialability and observability that are regarded as intrinsic characteristics of innovations that influence an individual's decision to adopt or reject an innovation as shown in the table above in the section on the Conceptual Framework. The table below illustrates how Roger's five factors of innovations will be used to analyse institution's decision's to adopt or reject e-Learning as an innovation for learning.

Table 9: Using the Five Factors of Innovation as an Analytical Framework

Stage	Analysis
Relative Advantage	What improvements has e-Learning made to teaching and learning since it was first used?
Compatibility	What is the level of compatibility that e-Learning as an innovation has to be assimilated into the teacher's and student's life?
Complexity or Simplicity	To what extent to managers/teachers/students view e-Learning as a mode for learning as being complicated or difficult to use?
Trialability	How easily can teachers and students experiment with e-Learning?
Observability	To what extent is e-Learning visible to the teaching/student community and local community?

(Source: Rogers, 2005).

3.8 Validity and Ethical Issues

3.8.1 Validity Issues

Validity in the study was addressed by ensuring that the interview questions were carefully developed, by aligning the research question, research objectives and questions with the problem statement. These were further linked to previous similar studies that addressed the research questions. The validity of this study was likely to be affected by managers and teachers giving the researcher the answers they thought he would like to hear. Respondents would not feel very free to give very honest answers unless they were assured of confidentiality. Further discussion of findings with managers and teachers was done and findings were compared with theory. The researcher asked for clarifications to the responses provided from respondents. The responses provided were arranged in groups to identify common themes that were compared to previous studies.

3.8.2 Ethical Issues

The study was guided by the research ethical standards of the University of Cape Town so as not to harm the participants of the study psychologically or otherwise. The ethical form attached in appendix 4 indicates the issues that the researcher needed to address in the study. Ethical considerations for the study were also important to protect the researcher from any allegations of abuse of authority and for having a peace of mind. The study sought to meet all legal requirements, data protection. All references to participants in the study were made anonymous and confidential by not including pseudo names and not including any details that would identify a participant without their permission. Participants were also guaranteed

security of the data that arose from the study by how the researcher would store and use it.

In addition, participants also completed and signed a consent form before taking part in the study indicating their understanding of what the research was, the parameters of the research and acceptance of the participants to take part in the study and an agreement that the researcher could use their responses and data as part of the research. Measures were taken to avoid affecting the participants' dignity and to minimize the possible effect of the researcher's authority as a Government officer. These measures included an emphasis that the research was primarily for academic studies though they had a bearing on my work. Also participants were informed that they had the right to decline taking part in the study with no consequences on their careers or relationship with the Ministry where the researcher worked.

3.9 Research Procedure

Step 1: Pre-Interviews with each Research Participant

Before the interviews, each participant was told of the purpose of the study and assured of confidentiality. The participants were then asked to complete and sign a consent form agreeing to take part in the research study. The consent form described the nature of the research and possible risks and benefits. The form also contained information on protection of confidentiality of participants. Each participant spent about 10 minutes in this step. Interviews were held at any mutually agreeable place where the participants and researcher were able to have an uninterrupted conversation.

Step 2: One-one Interviews

The interviews for each participant were held for approximately thirty minutes. Participants were asked questions as per interview questions in Appendices 1 and 2. The research interview repeated questions and made follow up questions to clarify responses. These interviews were recorded using a voice recorder on a mobile phone. This step existed only as a data collection device, and was not designed to have any effect on the intuitive thinking that was manifested via the core steps of the research interview. In addition, the Evernote app from the Google Play Android Market was used for recording three of the interviews.

Step 3: Post interviews

The researcher thanked participants after the interview and re-iterated that the confidentiality would be maintained in the study. Thereafter, the researcher transcribed the audio-recordings by using software that could play back the audio recordings and also had a text typing

window. The recording could be paused and rewound. The responses were organized according to the Colleges were the participants worked. The findings and analysis of the responses was done by looking at major themes and codes. These were linked to the research questions and the literature review.

3.10 Conclusion

This chapter discussed the research orientation of the study as being interpretative. The research objectives of the study were outlined. This was followed by a discussion of the research methodology being qualitative to gain deeper insights into the study topic. The chapter highlighted the criteria used in selecting participants for the study. Also discussed in the chapter were methods of data collection where one-to-one interviews were used. This was followed by data analysis methods using the five stages of the adoption process of the Diffusion of Innovation theory. Issues of validity and ethics were discussed with gaining informed consent from participants in the study emphasized. The chapter ended with a discussion of the research procedure that was used in the study. The next chapter presents the findings, analysis and discussion of the findings of the study.

Chapter 4

Findings

4.1 Introduction

The previous chapter described the research design, linking the research questions to the methodology. This chapter presents the findings with the analysis and discussion of the findings of this research. These findings include views obtained from the interviews conducted with managers and teaching staff in three Zambian Vocational Training Colleges on the enablers and challenges of e-Learning Policy implementation in technical education, vocational and entrepreneurship training (TEVET) institutions in Zambia. The data were collected and then processed in response to the research questions posed in Chapter 1 of this study. Interviews were conducted with nine participants from three training institutions from Lusaka, Luanshya and Kitwe districts in Zambia.

The responses to the research questions were analysed using the Diffusion of Innovation (DOI) analytical framework consisting of five themes: knowledge, persuasion, decision, implementation and confirmation. Only the first four themes were used in the study as they were more relevant to the study. The findings of the data are presented according to these four items. Pseudonyms are used to refer to respondents in the study in order to ensure anonymity of the respondents. The chapter concludes with a summary of the findings.

4.2 Comparison of Five Stages of the Adoption Process as an Analytical Framework with Research Interview Questions

The five stages of the adoption process as an analytical framework were compared with the interview questions. Relevant questions were matched with the relevant stage of the Adoption Process. The responses to the interview questions are then presented in the following sections. Each stage in the Adoption Process represents a theme that is presented and analysed. The table below shows the stages in the Diffusion of Innovation Theory linked to the analysis and interview questions in the study.

Table 10: Comparison of Five Stages of the Adoption Process as an analytical framework with Interview Questions

Stage	**Analysis**	**Interview Question**
Knowledge	What knowledge do managers and teachers have on e-Learning?	1. Tell me about e-Learning at your institution. 5. Are you aware of any policies with regards to e-Learning for example TEVET for example e-Learning policies, ODL policies? How did you find out about these?
Persuasion	What persuades managers and teachers to adopt e-Learning as a mode for learning?	4. What challenges/ problems have you faced? How do you think these problems could have been overcome? 3. What would you say has worked well in your implementation of e-Learning in your teaching?
Decision	What made managers and teachers decide to adopt e-Learning as a mode for learning?	6. Do you have institutional support for your use of e-Learning in your teaching? 7. Tell me about when you did something new or different in e-Learning. What made you decide to do this or if you haven't tried anything new lately what's made you decide not to do this?
Implementation	How do managers and teachers implement e-Learning as a mode for learning?	2. How have you implemented e-Learning in your teaching? [When, what course, why did you decide to use e-Learning, etc. 8. Do you think how you implement e-Learning influences TEVET or e-Learning Policy? Or i.e. versa. Does TEVET policy influence how you implement e-Learning?

Note: It needs to be noted that the interview questions above were derived from the research questions in Chapter 1. They were simplified to make it easier for the respondents to understand the questions.

The study was guided by four (4) objectives and research questions below.

4.3 Knowledge of e-Learning

Research Question 1: *What knowledge do managers and lecturers have of e-Learning?*

In order to gain an insight into the knowledge of e-Learning respondents were asked to explain about e-Learning at their institution. Two sub-questions were asked to respondents. The first was:

Tell me about e-Learning at your institution.

This question was asked to establish the knowledge of e-Learning or technology in teaching by management and staff. The second question was:

Are you aware of any policies with regard to e-Learning for example e-Learning policies, ODL policies. How did you find out about these?

This question was meant to establish if managers and teachers had any knowledge of e-Learning and ICT related policies.

From the findings below are responses by lecturers and managers knowledge or understanding of e-Learning in the three vocational colleges where the study was conducted.

(a) e-Learning as Devices

Two lecturers expressed their understanding of e-Learning by describing it as a device used for teaching. One Lecturer who has been teaching at the College for over 5 years shared her understanding of e-Learning as:

"... using electronic devices to deliver lectures using devices such as projectors and the Internet". [Martha, Lecturer EHC]

This response is similar to the following:

"What we use currently are projectors. That's the only system we have at the moment. We use them to show PowerPoint slides". [Friday, Lecturer, EHC].

(b) e-Learning as a Tool

Four respondents described their understanding of e-Learning as a tool. This is evidenced by the following quotes:

"The college has developed a Moodle platform and learning material has been uploaded. Staff have been trained in the use of Moodle and they have also done courses under Commonwealth of Learning under the Flexible and Blended Learning programme".

[Edward, ICT Officer and Lecturer TVTC]

Another respondent, from ZIBSIP College also mentions the use of Moodle at his College:

" We recently launched e-Learning last year in September. We are currently piloting e-Learning through Moodle. Presently we have managed to post quizzes on Moodle for Project Management. Some students are also using Moodle for communication". [Levy, Lecturer, ZIBSIP].

Christopher also refers to e-Learning and Moodle interchangeably as can be seen from this quote:

Christopher, a manager at ZIBSIP also explained that the College had installed Moodle software.

Another respondent from the same college gives a different description of e-Learning when she says:

"At my college e-Learning has not yet developed beyond simple instructions to students via mobile phone and research topics given to students which require them to use the Internet ... Distance learners receive learner support via mobile phones" [Shakila, ZIBSIP].

(c) e-Learning as Flexible

e-Learning was viewed by three respondents as being flexible. This is evidenced by the use of phrases such as 'e-Learning being quicker' and 'e-Learning being faster 'and 'using flexible and blended methods':

"Quick and enables students grasp concepts faster".[Martha, EHC]

"Coverage has worked well. When one is using traditional teaching methods they take long to write notes on a blackboard" [Friday, EHC].

“ ... using flexible and blended methods of delivering ODL ....This encouraged lecturers to be flexible and take advantage of the facilities that they have. [Christopher, Training Manager, ZIBSIP].

(d) e-Learning as easier

e-Learning was described to be easier by three respondents who used words such as ‘convenience', and ‘saves time'.

“We found it convenient to use". [Friday, EHC]

“Study material are designed in such a way that they are easy to understand". [Levy, ZIBSIP]

“PowerPoint is embedded with video, we have online and offline quizzes on the Moodle platform. Study material are designed in a way that they are easy to understand" [Edward, TVTC]

Table 11: Responses on e-Learning as easier

Quote	**Respondent**	**College**	**Code**
"We found it convenient to use”	Friday	EHC	Convenient
"Study material are designed in such a way that they are easy to understand	Levy	ZIBSIP	Easy
"PowerPoint is embedded with video, we have online and offline quizzes on the Moodle platform. Study material are designed in a way that they are easy to understand	Edward	TVTC	Easy

(e) e-Learning as Interesting

e-Learning was also described to be interesting by two respondents as evidenced from the following statements:

" e-Learning draws students attention" [Friday, Lecturer, EHC].

" Students showed a lot of interest in using Moodle and have continued using it as mode of communication while awaiting resource persons to post the study materials and quizzes" [Christopher, Manager, ZIBSIP].

Christopher described e-Learning as interesting more explicitly while Friday's description implied it.

(f) e-Learning as better Teaching and Learning

Only one participant described e-Learning as contributing to better teaching and learning.

"The e-Learning project was quite helpful. It helped enhance teaching and learning". [Edward, ZIBSIP].

The above responses on teachers and managers knowledge of e-Learning can be summarised

in the following table:

Table 12: Summary of participants' responses on Knowledge of e-Learning

Knowledge of e-Learning	**Number of times mentioned**	**Participant/ Institution**	**Code**
e-Learning as devices	2	Martha; Friday/EHC	Devices
e-Learning as a tool	4	Edward, Christopher, Levy and Shakila/TVTC, EHC	Tool
e-Learning as flexible	3	Martha, Friday and Christopher/EHC and ZIBSIP	Flexible
e-Learning as easier	3	Friday, Levy and Edward/EHC,	Easier
e-Learning as Interesting	2	Friday, Christopher/EHC/ZIBSIP	Interesting
e-Learning as better Teaching and Learning	1	Edward/TVTC	Better teaching

From the above summary of responses of participants' knowledge of e-Learning it can be noted that the most common response is that of e-Learning as a tool with *four* (4) responses. This is followed by e-Learning as flexible and e-Learning as easier with *three* (3) responses each. The least common responses are that of e-Learning as devices and e-Learning as interesting with *two* (2)responses and lastly e-Learning as being better teaching and learning with only *one* (1) response.

4.4 Awareness of e-Learning Policies

In order to find out the participants' levels of knowledge of e-Learning policies and related policies the following question was asked:

Are you aware of any policies with regards to e-Learning (for example TEVET Policy, e-Learning policies, Open and Distance Learning policies? How did you find out about these?

(a) Policy awareness

From the responses made by participants', awareness of e-Learning policies or related policies ranged from being uninformed to being informed. Out of 7 respondents, 5 were aware of the national ODL, ICT and e-Learning policies.

At EHC two respondents were unaware of ODL and e-Learning policies while one respondent (a manager) was aware. It can be noted that the manager is aware of ICT policies but teaching staff are not aware. This may suggest that there is no knowledge sharing about policy documents by management with teaching staff.

At ZIBSIP all the three respondents were aware of existing policies such as the TEVET ODL, policy, national ODL policy, SADC ODL policy and national ICT policy. At TVTC the respondent mentioned that the College had developed an institutional ODL policy (a copy was provided to the researcher). Though respondents at ZIBSIP did not mention their institutional ODL policy, the researcher was availed a copy of the policy at the end of the interview.

Table 13 below gives a summary of the responses that were given by the participants:

Table 13: Responses on policy awareness

Quote	**Participant**	**Institution**	**Code**
No	Martha	EHC	Unaware
Not to my level, I am not aware	Friday	EHC	Unaware
"Yes we are aware, especially those that have attended workshops in the use of ICTs in education. They are especially aware of the National IT Policy.	Peter	EHC	Aware
Yes there is a draft ODL National Policy and there is a TEVET ODL National Policy.	Levy	ZIBSIP	Aware
"I am aware of e-Learning Policies, TEVET Policies on ICT and ODL. I am also aware of SADC policies"	Shakila	ZIBSIP	Aware
"I am aware of the ODL document that the Ministry has been working on. But at the same time there is a document that TEVET produced on ODL. We have found it helpful in terms of assisting us come up with an ODL Policy. ZICTA has a policy on ICT".	Christopher	ZIBSIP	Aware
"Yes the College has also developed an ODL Policy".	Edward	TVTC	Aware

4.5 Persuasion of e-Learning

Research Question 2: *What are the key challenges and enablers in implementing e-*

Learning policy?

This section provides findings to the views of managers and lecturers on what persuades them to adopt e-Learning as a mode for teaching in light of the challenges and successes that they have when implementing e-Learning. This is done by looking at responses to the following questions:

- *What challenges/problems have you faced? How do you think these challenges could have been overcome?*
- *What has worked well in your use of technology for teaching?*

The question on challenges faced by educators was asked to establish what challenges if any the management or staff face as they seek to implement national and institutional e-Learning policies and innovations. The follow up question on their views on how best the challenges they face can be overcome was asked to help the respondents reflect on the opportunities that they challenges they faced provided to them in the implementation of e-Learning for teaching and learning

The question on what had worked well in the use of technology for teaching was asked to find out some good or best practices that are enablers for the implementation of e-Learning in teaching.

(a) Challenges in Implementing e-Learning

The table below gives a summary of the responses that were given by the participants on the challenges faced in implementation of e-Learning :

Table 14: Responses on Challenges in Implementing e-Learning

Quote	**Participant**	**Institution**	**Code**
"Incompatible devices such as a data projector not being compatible to a particular laptop"	Martha	EHC	Technological
"not having power on a particular day".	Martha	EHC	Technological
"Not having plenty of projectors. We have only one data projector in the department. If two or more teachers are teaching at the same time and want to use projectors it becomes a challenge".	Friday	EHC	Access
… motivation in using technology in teaching has been a challenge".	Peter	EHC	Motivation
"E-Learning is a new mode of training, so many people may not understand it.	Peter	EHC	Technological confidence
Finding time to use technology has been a challenge …	Peter	EHC	Time
"Lack of sufficient equipment"	Levy	ZIBSIP	Access
"Some lecturers have not shown interest and still prefer the traditional face to face and teacher exposition method of teaching".	Levy	ZIBSIP	Motivation
"Lack of capacity among members of staff in ICTs"	Levy	ZIBSIP	Technological confidence
"Lack of shared vision on the use of ICTs in teaching and learning".	Levy	ZIBSIP	Shared vision
"The challenge has been in ensuring that learners have e-Learning skills".	Shakila	ZIBSIP	Technological confidence
"Change management when moving from traditional methods to use of delivery methods centred on ICTs"	Christopher	ZIBSIP	Change management
"On the revenue base this has been quite a challenge".	Christopher	ZIBSIP	Funding
"Internet connectivity" "Costs too high" "Poor service from ISPs"	Edward	TVTC	Technological Costs
"Not all students have access to the Internet".	Edward	TVTC	Access

From the table above, the main challenges that emerged from the data in response to the question: 'What challenges/problems have you faced' by College were:

EHC: Technology, access, motivation, technological confidence and time.

ZIBSIP: Access, time, motivation, technological confidence, shared vision? Change

management and funding. N.B. Technological confidence was mentioned twice by two respondents from the College.

TVTC: Technology, costs and access. N.B. The respondent mentioned the challenge of technology twice.

Therefore the most common challenges that were mentioned thrice were those of: technology, access, and technological confidence. The next common challenges (mentioned twice) were those of: motivation and time. The least common challenges were: shared vision, change management, funding and costs. A total of nine (9) challenges were mentioned by the seven (7) respondents from the three Colleges.

These challenges can be grouped into four main areas i.e. individual challenges, course challenges, contextual challenges and technological challenges.

(i) Individual Challenges

Individual challenges are those faced by students and teachers. From the data these challenges are technological confidence represented in the data as lack of skills by students. This was described as:

"The challenge has been in ensuring that learners have e-Learning skills" [Shakila, EHC].

For teachers the challenges have to do with technological confidence described as lack of capacity and lack of understanding, motivation and time. These challenges were described in this way:

"There is lack of capacity among members of staff in ICTs" [Levy, ZIBSIP].

"e-Learning is a new mode of training, so many people may not understand it" [Peter, EHC].

"Motivation in using technology in teaching has been a challenge" [Peter, EHC].

"Finding time to use technology in teaching has been a challenge too" [Peter, EHC].

"Some lecturers have not shown interest and still prefer the traditional face to face and teacher exposition method of teaching" [Levy, ZIBSIP].

It can be noted that the individual challenges faced by students and teachers are mentioned in two institutions i.e. EHC and ZIBSIP. Peter from EHC mentioned the most challenges for

teachers i.e. three (3) challenges followed by Levy who mentioned two (2) challenges. For challenges faced by students only one was mentioned by Shakila.

(ii) Course Challenges

These were seen mostly as centred on teaching and learning activities. This challenge was described in this way:

"When it comes to programmes that are knowledge-based there is a challenge to illustrate them" [Christopher, ZIBSIP].

(iii) Contextual Challenges

These challenges centred on organisational issues such as knowledge management and funding. These challenges from an organisational perspective were described by respondents as:

"There is lack of a shared vision on the use of ICTs in teaching and learning" [Levy, ZIBSIP].

"There is the challenge of change management when moving from traditional methods to use of delivery methods centred on ICTs" [Christopher, ZIBSIP].

With regards to the challenge of funding the following was mentioned:

"We have limited resource capacities…..on the revenue base this has been quite a challenge" [Christopher, ZIBSIP].

It can be noted that the three contextual challenges are only mentioned by one college i.e. ZIBSIP and mentioned by two participants, i.e. Levy and Christopher with Levy mentioning one and Christopher two.

The challenge of revenue base or finances is also mentioned by Friday as being a challenge. Friday, of Evelyn Hone College mentions of having support from management in the use of e-Learning but points out the issue of funding as being a challenge. This implies that with increased funding, management can provide more support to teaching staff in their use of e-Learning for teaching.

(iv) Technological Challenges

Technological challenges were mentioned most than other challenges. A total of eight

challenges were mentioned. These challenges centred on access, cost and technology issues such as software and hardware.

On challenges associated with access respondents mentioned the following three:

"Not having plenty of projectors. We have only one data projector in the department. If two or more teachers are teaching at the same time and want to use projectors it becomes a challenge" [Friday, EHC].

"Lack of sufficient equipment" [Levy, ZIBSIP].

"Not all students have access to the Internet" [Edward, TVTC].

On challenges associated with cost the following was mentioned:

"The challenge is costs are too high" [Edward, TVTC].

On challenges associated with technology the following challenges were mentioned:

"Incompatible devices such as a data projector not being compatible to a particular laptop" [Martha, EHC].

"not having power on a particular day" [Martha, EHC].

The challenges are Internet connectivity and at times poor services from Internet Service providers" [Edward, TVTC].

(b) Successes in Implementing e-Learning

Enablers or successes in the use of e-Learning can persuade management and teaching staff of a learning institution to use e-Learning for teaching they need. This section presents the findings to the question:

" What has worked well in your use of technology?"

The enablers for e-Learning were centred on the following areas: student, teacher, technology, course, institution and support derived from the data and literature review

Table 13 below gives a summary of the responses that were given by the participants on the enablers or facilitators in implementation of e-Learning:

Table 15: Responses to Enablers of e-Learning Policy Implementation

Quote	Respondent	Institution	Code
"Students can get back to slides that have been shown as opposed too using a board where you can't read what was there when it is erased"	Martha	EHC	Learning facilitation
"Subject matter coverage has worked well. When one is using traditional teaching methods they take long to write notes on a board and explain the notes"	Friday	EHC	Teaching facilitation
"Teacher training was conducted to enable lecturers know how to use e-Learning"	Peter	EHC	Institutional Training
"e-Learning was introduced to a selected team of members of the teaching staff especially those teaching open and distance learning classes"	Levy	ZIBSIP	Institutional Training
"Students continued using it [Moodle] as a mode of communication while awaiting resource persons to post the study materials and quizzes"	Levy	ZIBSIP	Learning facilitation
"Distance learners in particular require some contact with tutors for support so mobile phones play an important role in ensuring that learners get the support they need swiftly and cheaper"	Shakila	ZIBSIP	Institutional support
"We have adopted an academic software AIMS….it helps administer the educational system in terms of the enrolments of the students.	Christopher	ZIBSIP	Software
"In 2010 two members of staff attended a workshop organised by the Commonwealth of Learning. From there we were adopted as an institution that could be helped in terms of capacity building at institutional level and resource person level"	Christopher	ZIBSIP	Institutional Training
"In terms of course delivery, we have learnt different approaches and different ways of delivering the course"	Christopher	ZIBSIP	Curriculum design
"Study material are designed in a way that they are easy to understand - Powerpoint is embedded with video, we have on-line and off-line quiz on the platform.."	Edward	TVTC	Curriculum design

In the study, a total of six (6) enablers or facilitators for e-Learning implementation were mentioned by seven (7) respondents. A total of three (3) enablers were mentioned by three respondents from EHC, five (5) by ZIBSIP three respondents from ZIBSIP and only one (1) by one respondent from TVTC.

The most common enabler mentioned thrice was that of Institutional training followed by learning facilitation and curriculum design which were mentioned twice. The other three enablers which were mentioned only once were: teaching facilitation, institutional support, software and curriculum design.

(i) Institutional Training

Institutional training was mentioned three times by respondents from two institutions as seen in the following three quotes:

"Teacher training was conducted to enable lecturers to now how to use e-Learning" [Peter, EHC].

"e-Learning was introduced to a selected team of members of the teaching staff especially those teaching open and distance learning classes" [Levy, ZIBSIP].

"In 2010 two members of staff attended a workshop organised by the Commonwealth of Learning. From there we were adopted as an institution that could be helped in terms of capacity building at institutional level and resource person level" [Christopher, ZIBSIP].

It is worth noting that the enabler of training is mentioned by two managers, Peter and Christopher from different institutions.

(ii) Learning Facilitation

Learning facilitation as an enabler was mentioned twice by two respondents from EHC and ZIBSIP as seen in the following quotes:

"Students can get back to slides that have been shown as opposed too using a board where you can't read what was there when it is erased" [Martha, EHC].

"Students continued using it [Moodle] as a mode of communication while awaiting resource persons to post the study materials and quizzes" [Levy, ZIBSIP].

(iii) Curriculum Design

Curriculum was mentioned twice by two respondents from ZIBSIP and TVTC as seen from these quotes:

"In terms of course delivery, we have learnt different approaches and different ways of delivering the course" [Christopher, TVTC].

"Study material are designed in a way that they are easy to understand - Powerpoint is embedded with video, we have on-line and off-line quiz on the platform" [Edward, TVTC].

(iv) Teaching Facilitation

This enabler was mentioned once by a respondent from EHC:

"Subject matter coverage has worked well. When one is using traditional teaching methods they take long to write notes on a board and explain the notes" [Peter, EHC].

(v) Institutional Support

This enabler was mentioned by a respondent from ZIBSIP:

"Distance learners in particular require some contact with tutors for support so mobile phones play an important role in ensuring that learners get the support they need swiftly and cheaper" [Shakila, ZIBSIP].

(vi) Software

This enabler was mentioned by a respondent from ZIBSIP:

"We have adopted an academic software AIMS … it helps administer the educational system in terms of the enrolments of the students" [Christopher, ZIBSIP].

4.6 Decision

Research Question 3: What criteria do individuals/institutions use to make the decision to adopt or reject the e-Learning innovation?

This section provides findings to what managers and lecturers said on how decisions on adoption of e-Learning as a mode for learning are made. This is in answer to the above research question, which was rephrased as follows for easier understanding:

"What made managers and teachers decide to adopt e-Learning as a mode for teaching".

This is done by looking at responses to the following sub questions:

- *Do you have any institutional support for your use of e-Learning/technology in your teaching?*
- *Tell me about when you did something new or different in e-Learning. What made you decide to do this or if you haven't tried anything new lately what's made you decide not to do this?*

The question on institutional support in the use of technology was asked to establish the extent to which the presence or lack of support impacts on teaching staff using technology in their teaching. On the other hand the question on whether teaching staff had tried something new or different in e-Learning or in the use of technology was meant to establish whether teaching staff were innovative in their teaching.

Table 16 below gives a summary of the responses that were given by the respondents on the institutional support they get in the use of e-Learning.

Table 16: Responses on Institutional Support in use of e-Learning

Quote	**Respondent**	**Institution**	**Code**
"Yes at the basic level we do have support as each department has been given two projectors to use for teaching although I can't say much because we have not expanded much"	Martha	EHC	Physical Infrastructure
"Yes, that's why we were given projectors. It's a just a question of funds".	Friday	EHC	Physical Infrastructure
"Anything that goes with training, management must support. Without that support, the training cannot succeed".	Peter	EHC	Training
"Yes there has been some support such as provision of an Internet Café, a Computer Lab and having an ICT specialist to provide training and support to staff in use of e-Learning for teaching. More could be done especially in sharing the ICT vision and teaching".	Levy	ZIBSIP	Physical Infrastructure Teacher support
"Students continued using it [Moodle] as a mode of communication while awaiting resource persons to post the study materials and quizzes"	Levy	ZIBSIP	Learning facilitation
"The institution supports e-Learning in teaching by providing Internet facilities and facilitating learner support via mobile phones by paying for air time for teachers"	Shakila	ZIBSIP	Physical Infrastructure
"Yes it [e-Learning] is a very powerful tool because it gives you access to unlimited information, you can reach people as long as you have the necessary facilities"	Christopher	ZIBSIP	Physical Infrastructure
"Good support from management in terms of staff training locally and outside the country"	Edward	TVTC	Training
"When students come for contact lessons they are given laptops for use. The College has bought 40 laptops, has Internet café with 25 desktops, a computer lab and a wireless network which covers the whole campus"	Edward	TVTC	Physical Infrastructure

Institutional Support in the use of e-Learning by teachers

In the study, a total of three (3) factors were mentioned that influenced decisions on adoption of e-Learning as a mode for learning. A total of two factors were mentioned by three respondents from EHC, three by three respondents from ZIBSIP and two by one respondent from TVTC. The most common factor mentioned relating to physical infrastructure was mentioned six (6) times. The factor of training was mentioned two (2) times while the factor of teacher support was mentioned once.

(a) Physical infrastructure

Factors related to physical infrastructure were mentioned six times by six respondents from all the three colleges. This is evidenced by the falling quotes:

"Yes at the basic level we do have support as each department has been given two projectors to use for teaching although I can't say much because we have not expanded much" [Martha, EHC].

"Yes, that's why we were given projectors. It's a just a question of funds" {Friday, EHC].

"Yes there has been some support such as provision of an Internet Café, a Computer Lab. More could be done especially in sharing the ICT vision and teaching" [Levy, ZIBSIP].

"The institution supports e-Learning in teaching by providing Internet facilities and facilitating learner support via mobile phones by paying for air time for teachers" [Shakila, ZIBSIP].

"Yes it [e-Learning] is a very powerful tool because it gives you access to unlimited information, you can reach people as long as you have the necessary facilities" [Christopher, ZIBSIP].

"*"When students come for contact lessons they are given laptops for use. The College has bought 40 laptops, has Internet café with 25 desktops, a computer lab and a wireless network which covers the whole campus" [Edward, TVTC]*.

(b) Training

Factors related to training were mentioned two (2) times by two (2) respondents as evidenced from these quotes:

"Anything that goes with training, management must support. Without that support, the training cannot succeed" [Peter, EHC].

"Good support from management in terms of staff training locally and outside the country" [Levy, ZIBSIP].

(c) Teacher Support

The factor of teacher support was mentioned once by one (1) respondent as evidenced from this quote:

"Yes there has been some support such as having an ICT specialist to provide training and support to staff in use of e-Learning for teaching" [Levy, ZIBSIP].

4.6.3 Innovation in e-Learning

In the study, a total of four responses were give in response to the question:

Tell me about when you did something new or different in e-Learning. What made you decide to do this or if you haven't tried anything new lately what's made you decide not to do this?

There was one response from a respondent at EHC and three responses from respondents at ZIBSIP. The table below gives a summary of the responses that were made:

Table 17: Responses on new things tried out by lecturers in their teaching

Quote	Respondent	Institution	Code
"No (Nothing new)"	Martha	EHC	No innovation
"Installed Moodle software and had an in-house workshop for some academic staff on how to use Moodle as a teaching tool"	Levy	ZIBSIP	Using Moodle for teaching
"I have not really done anything new or different in e-Learning and this is due to the absence of new facilities for that purpose".	Shakila	ZIBSIP	No innovation

Note: The two managers, Peter and Christopher, were not asked this question as it was specific to teaching staff. Friday was not asked due to running out of time and Edward's role is that of providing support to lecturers so the question was not relevant to him.

From the three responses given, the most common response given was nothing new tried out (or no innovation) in e-Learning by two respondents from EHC and ZIBSIP. This quote by a

respondent from ZIBSIP gives more details as to why nothing new was tried:

"I have not really done anything new or different in e-Learning and this is due to the absence of new facilities for that purpose" [Shakila, ZIBSIP].

One respondent mentioned of having tried out the use of Moodle for teaching. This is evidenced by the following quote:

"Installed Moodle software and had an in-house workshop for some academic staff on how to use Moodle as a teaching tool" [Levy, ZIBSIP].

4.7 Implementation

Research Question 4: How are decisions made in the implementation of e-Learning in the TEVET sector?

This section provides findings to what managers and lecturers said on how they make decisions to implement e-Learning as a mode for teaching. This is done by looking at responses to the following re-phrased sub questions:

How have you implemented e-Learning in your teaching?

Do you think how you implement e-Learning influences TEVET or e-Learning Policy?
Or vice-versa. Does TEVET policy influence how you implement e-Learning?

The question on how teachers had implemented e-Learning in teaching was meant to find out the process and rationale in implementing e-Learning in the courses taught and why they decided to use particular technologies in their teaching.

The question on whether the interaction between policy makers and policy implementers affect the adoption of e-Learning and learning policies in general was meant to establish to what extent such interaction had a positive or negative effect in e-Learning policy implementation.

(a) Implementation of e-Learning in Teaching

A total of five (5) responses on were made on how respondents had implemented e-Learning in teaching. Three (3) responses were given by three (3) respondents from ZIBSIP and two (2) responses were given by one respondent from TVTC. Peter as a manager did not answer the question as it was not relevant to him. Martha had other commitments and the researcher

could not complete the interview.

From the responses given the most mentioned response given was that of piloting e-Learning with few members of staff and in a few subjects mentioned twice by two respondents from two institutions. This is evidenced by the following quotes:

"e-Learning was introduced to a selected team of members of the teaching staff, especially those teaching Open and Distance Learning classes. The pilot course on e-Learning is Advanced Diploma in Project Management" [Levy, ZIBSIP].

"On Flexible and Blended Learning about three groups have taken part and now we have about four members of staff taking part in Flexible and Blended learning" [Edward, TVTC].

The other most mentioned response was that of training mentioned twice by two respondents from two institutions. This can be seen from the following quotes:

"ODL started in 2008 after a workshop that was conducted by the Copperbelt University which focussed on producing manuals for ODL … In 2010 two members of staff attended a workshop organised by the Commonwealth of Learning (COL). From there we were adopted as an institution that could be helped in terms of capacity building at institutional and resource person level" [Christopher, ZIBSIP].

"All the lecturers have been trained to use Moodle" [Edward, TVTC].

Two other responses were mentioned once by respondents from two different institutions. These have to do with the use of short message service (sms) in assessments and the use of a combination of various technologies in teaching. The quotes below show this:

"In my teaching I have implemented e-Learning in the dissemination of assignments. I have given assignments to my students via sms" [Shakila, ZIBSIP].

"Powerpoint is embedded with video, we have online and offline quizzes on the platform" [Edward, TVTC].

Table 16 below summarises the responses given by the participants:

Table 18: Responses on lecturers' implementation of e-Learning in their teaching

Quote	Respondent	Institution	Code
"e-Learning was introduced to a selected team of members of the teaching staff, especially those teaching Open and Distance Learning classes. The pilot course on e-Learning is Advanced Diploma in Project Management"	Levy	ZIBSIP	Piloting
"In my teaching I have implemented e-Learning in the dissemination of assignments. I have given assignments to my students via sms".	Shakila	ZIBSIP	Use of sms
"ODL started in 2008 after a workshop that was conducted by the Copperbelt University which focussed on producing manuals for ODL….In 2010 two members of staff attended a workshop organised by the Commonwealth of Learning (COL). From there we were adopted as an institution that could be helped in terms of capacity building at institutional and resource person level"	Christopher	ZIBSIP	Training
"All the lecturers have been trained to use Moodle". "On Flexible and Blended Learning about three groups have taken part and now we have about four members of staff taking part in Flexible and Blended learning".	Edward	TVTC	Training Piloting
"Powerpoint is embedded with video, we have online and offline quizzes on the platform"	Edward	TVTC	Integrated technologies

(b) e-Learning Policy Implementation Influences

Do you think the interaction between policy developers and policy makers affect the adoption of e-Learning in the TEVET sector?

The question on whether the interaction between policy developers and policy makers affect the adoption of e-Learning and learning policies in general was meant to establish to what extent such interaction had a positive or negative effect in e-Learning Policy implementation. This had to do mostly with the influence of external or Government policies on implementation of e-Learning policies in institutions of learning. Table 19 below shows the responses that were given by respondents:

The responses ranged from the possibility of some in e-Learning implementation in institutions coming from the TEVET policy to the policy having little or no influence. Out of the four (4) respondents that responded to the question on whether the implementation of e-Learning influenced policy, two (2) mentioned that it did influence policy. This is seen in

the following quotes:

"Yes it can influence policy at different levels depending on what challenges people are facing. During evaluation of the implementation of e-Learning implementation the outcomes can feed into the review of policy" [Martha, EHC].

"I think in the long run institutions are going to greatly influence the TEVET policies on e-Learning because they are making individual strides in this area. Some institutions also have international partners who are helping them develop capacity in the use of ICTs in teaching" [Levy, ZIBSIP].

Martha is of the view that national policies can be influenced by drawing from lessons in what is being implemented in training institutions. This has been the case with Open and Distance Learning where some Colleges such as TVTC and ZIBSIP implemented ODL in their teaching and developed institutional ODL policies before ODL policies at ministerial and national policies were developed.

Levy identifies the progress that institutions have made in the use of technology in teaching as something that can influence policy makers as they are able to develop policy that is informed by practice. These are good or best practices in the use of technology while taking note of some of the challenges faced in implementing the use of e-Learning in teaching. This had to do mostly with the influences for using educational technologies being institutional driven and aimed at improving teaching and learning in the institution. It can also be noted that he mentions the aspect of capacity building of teachers in the use of ICTs in teaching as being important as teachers are key in e-Learning policy implementation. Policy makers developing or revising e-Learning Policy would have examples of good/best practices in e-Learning to inform their policy development process.

One respondent mentioned that implementation of e-Learning did not influence policy as seen from this quote:

"I do not think how we implement e-Learning influences TEVET or e-Learning Policy because there is still a gap between TEVET teachers and policy makers in my view. I do think that how we implement e-Learning should influence TEVET policy because it brings to light the challenges of implementing the various modes of e-Learning. Attempts are being made to ensure that TEVET Policy guides how we will implement e-Learning in the future" [Shakila, ZIBSIP].

Table 19 below summarises the findings to the research question.

Table 19: Responses on Influences on e-Learning Policy Implementation by Policy Actors

Quote	Respondent	Institution	Code
"Yes it can influence policy at different levels depending on what challenges people are facing. During evaluation of the implementation of e-Learning implementation the outcomes can feed into the review of policy"	Martha	EHC	Influences policy
"The college is following the TEVET policy from the Ministry"	Peter	EHC	Non responsive
"I think in the long run institutions are going to greatly influence the TEVET policies on e-Learning because they are making individual strides in this area. Some institutions also have international partners who are helping them develop capacity in the use of ICTs in teaching".	Levy	ZIBSIP	Influences policy
"I do not think how we implement e-Learning influences TEVET or e-Learning Policy because there is still a gap between TEVET teachers and policy makers in my view. I do think that how we implement e-Learning should influence TEVET policy because it brings to light the challenges of implementing the various modes of e-Learning. Attempts are being made to ensure that TEVET Policy guides how we will implement e-Learning in the future".	Shakila	ZIBSIP	No influence on policy

4.8 Conclusion

This chapter has presented the findings of the study that was conducted. The research interview questions were compared with the five stages of the adoption process as an analytical framework. The findings were presented in response to the four research questions presented in the first chapter and aligned to four themes of knowledge, persuasion, decision and implementation in the diffusion of innovation theory. The findings were from data collected from seven participants in three colleges. The next chapter is an analysis and discussion of the findings.

Chapter 5

Analysis and Discussion of Findings

5.1 Introduction

The previous chapter presented the findings to the study on the challenges and enablers of e-Learning Policy implementation in Vocational Training Colleges in Zambia. This chapter is an analysis and discussion of the findings presented in Chapter 4. In Chapter 1, four inter-related questions were raised: What knowledge do managers and lecturers have on e-Learning? What are the key enablers and challenges in implementing e-Learning policy? What criteria do individuals/institutions use to make the decision to adopt or reject the e-Learning innovation? How are decisions made in the implementation of e-Learning in the TEVET sector?

The discussion is based on the findings to these research questions and their link to literature. The discussion of these findings is followed by an analysis of the implications of these findings for e-Learning practice and policy implementation and in Vocational training Colleges in Zambia. The findings from the study and from literature suggest key issues that are useful in e-Learning policy implementation in TEVET. These issues are the enablers and challenges that make the implementation of e-Learning policies succeed or fail in vocational training institutions.

5.2 Summary of findings

Knowledge on e-Learning by Managers and Lecturers: In the study it was found that there was a good knowledge of e-Learning by staff in vocational colleges as can be seen in the descriptions of e-Learning devices as a tool, flexible, easier, interesting and as contributing to better learning and teaching by lecturers and managers suggests. On policy awareness five (5) out of seven (7) respondents were aware of e-Learning policies or related policies.

Key enablers and challenges in implementing e-Learning Policy: With regards to challenges of e-Learning the following were mentioned: access, technological, motivation, time, shared vision, funding and costs, shared vision and change management. Learning and teaching facilitation, institutional training, institutional support, software and curriculum design were mentioned as successes/enablers in implementing of e-Learning.

Criteria used by individuals/institutions use to make decisions to adopt or reject an e-Learning innovation: On the decision to adopt e-Learning for teaching, physical

infrastructure, training, learning facilitation and teacher support were mentioned by respondents as deciding factors.

How decisions are made in the implementation of e-Learning: Respondents mentioned piloting of e-Learning in teaching, use of short message service (sms), staff training and integrated technologies in teaching as deciding factors in e-Learning implementation.

5.3 Discussion of Findings

Research Question 1: What knowledge do managers and lecturers have on e-Learning?

In the study it was found that teachers and managers had varying and similar understanding of what e-Learning was.

(a) Knowledge of e-Learning by Teachers

Friday from EHC had many perceptions on what e-Learning was and described e-Learning as devices, flexible, easier and interesting. This understanding is similar to the literature by Trucano (205:35), who describes ICTs as tools to help teachers create more 'learner-centric' learning environments. Friday, a lecturer of Radiography, a subject that has a great deal to cover in terms of theory and practice, would definitely find the use of technology that makes learning flexible, easier and interesting ideal for his students. It can be noted that concepts of flexibility and easier are complementary as flexibility facilitates learning in that it allows for self-paced learning and taking into the account the specific needs of the learner.

Flexibility also may make learning interesting as the learners' learning styles are accommodated, unlike traditional learning which has a set way of learning that is usually teacher-centred. This is in line with literature, such as the study by Naidu (2006:4), who describes flexibility as flexible access and use of information and resources at a time, place and pace that is suitable and convenient to individual learners rather than the teacher and/or the educational organization.

e-Learning being referred to as 'devices' does not necessarily fit in with the concepts of learning being flexible, easier and interesting because some devices may be suitable to colleges and not students, for example where colleges have student ICT laboratories which are not available to learners 24 hours a day and are far from where the students reside.

Friday has been exposed to e-Learning through the use of Powerpoint on projectors for teaching Radiography. However, he appears to lack more information about how Powerpoint

can be used more creatively and in a more innovative manner than using it in a basic way to deliver lessons just as one would with a blackboard. This could imply that Friday is among the laggards still in the 'knowledge' stage of e-Learning adoption (Rogers, 2003).

Levy from ZIBSIP described e-Learning as a tool and as easier method of learning. The description of e-Learning as a tool was mentioned most often (i.e. four times). This indicates that e-Learning is seen as a tool that is aligned to the pedagogical framework of the teacher so that teaching and learning can be made easier. This is in line with what Diaz and Entonado (2009:342) state: the positively-valued tasks carried out by teachers are identical in both teaching systems (face-to-face and online/e-Learning), i.e. the facilitating of the teaching/learning process, combining the explanation of theoretical contents with activities, and encouraging interaction.

In addition, Levy being a co-ordinator of Open and Distance Learning (ODL), where concepts of flexibility, openness and easier learning are commonly used terms, helps the reader understand the background of his responses as ODL at ZIBSIP has been using various tools such as computers, mobile phones and Moodle to make learning easier for distance learners. It would appear that in terms of the e-Learning adoption process Levy is an early adopter at implementation stage where e-Learning is being used in varying degrees to deliver teaching to ODL students.

Edward from TVTC is the only teacher who mentioned e-Learning as leading to better teaching and learning. This could be due to his also being an IT manager who is therefore prone to having a positive outlook on the affordances of technology. However, use of technology does not always lead to better teaching, especially where that use is not aligned to the pedagogical needs of the learners. This argument is advanced by Toyama (2011:2), who states that "Computers/technology can help good schools do some things better, but they do nothing positive for underperforming schools. This means, very specifically, that efforts to fix broken schools with technology or to substitute for missing teachers with technology invariably fail". Edward can be regarded as an innovator who has finalised his decision to continue using the innovation of e-Learning.

(b) Knowledge of e-Learning by Managers

Christopher from ZIBSIP described e-Learning as a tool, as flexible and as interesting. He spoke of the use of Moodle for e-Learning and use of blended and flexible methods of delivering e-Learning. Christopher is a manager in charge of training and quality assurance

in training in a college that offers programmes through ODL and as such is likely to be concerned with innovative and better ways of training delivery. It is also interesting to note that Christopher's view of e-Learning as a tool is only similar to that of Levy and Shakila from the same college.

However, his views of e-Learning as interesting and as flexible were not mentioned by teachers in the same college. This could be due to the gap that sometimes exists between what managers and teachers think of how implementation of teaching using technology is done. A manager may have a theoretical view of how a certain innovation can be implemented while the teacher has a different perspective. It is interesting to note, however, that Christopher's views of e-Learning as a flexible and interesting tool, shared by teachers from TVTC, EHC and ZIBSIP, could be due to exposure of the three colleges to training from the same institutions, i.e. Commonwealth of Learning and University of Cape Town.

(c) Knowledge of e-Learning at EHC

The knowledge of e-Learning is described by five (5) of the six (6) respondents with terms such as: devices, a tool, flexible, easier and interesting. This suggests that the college has a broad understanding of what e-Learning is and can do for teaching. However, it needs to be noted that the use of e-Learning at the college is not widespread in all departments so the descriptions of e-Learning are most likely to be based on the possibilities that e-Learning offers to the teachers and managers at the college rather than the actual practical application of e-Learning for teaching at the college. Currently e-Learning at the college is used by a few departments in face-to-face programmes. e-Learning appears to be at the knowledge stage in the adoption of e-Learning with lecturers exposed to and using e-Learning in their teaching. They have not been inspired to find out more about using available e-Learning tools for teaching.

(d) Knowledge of e-Learning at ZIBSIP

The knowledge of e-Learning was described as a tool, flexible, easier and interesting. This is almost similar to the description at EHC, except for e-Learning as devices which was not mentioned by a respondent at ZIBSIP. At ZIBSIP some programmes are taught using ODL where blended and flexible learning is being practised so as to meet the needs of distance learners. The use of Moodle as a tool for e-Learning at the college is done to improve the administration and delivery of ODL programmes. The stage of e-Learning adoption at ZIBSIP could at implementation stage if considered from the perspective of Levy and

Christopher, especially Levy who uses e-Learning in teaching to a varying degree. However, with the views of Shakila considered, who can be said to be weighing the advantages and disadvantages of using e-Learning and deciding whether to adopt or reject the innovation, adoption could be considered to be at decision stage (Rogers, 2003).

(e) Knowledge of e-Learning at TVTC

The knowledge of e-Learning was described as a tool and as better teaching and learning. The mention of Moodle as a tool that is used for teaching and learning at the college is because TVTC, like ZIBSIP, has been receiving support from COL where teachers have been trained in the use of Moodle. TVTC as a Grade 1 (highest rating for Zambian TEVET colleges) is a college offering ODL programmes and trains technical and vocational teachers for TEVET colleges, and has been using e-Learning to enhance its teaching of ODL programmes. This could explain why e-Learning is regarded as leading to better teaching and learning at the college. From the views of Edward, the college can be considered to be at implementation stage in the adoption of e-Learning (Rogers, 2003).

5.4 Awareness of e-Learning Policies

Awareness of e-Learning and related policies among the three colleges was high, with five (5) out of the seven (7) participants being aware. Only one participant from EHC (a manager) and all the participants from ZIBSIP and from TVTC were aware of policies such as National IT Policy, ODL policies at national and regional levels, TEVET and e-Learning policies. This suggests that awareness of e-Learning and related policies has been well carried out by MESVTEE and TEVET college managers. However, at EHC, where two of the teachers were not aware and only the manager was aware, it may suggest that this is because the college is not offering ODL programmes and use of e-Learning is not widespread across departments. It also can be noted that this lack of awareness of e-Learning polices by teachers at EHC could be the case in other colleges due to poor information flow between management and teaching staff. This points to the need to improve sensitisation of new and existing policies on a regular basis.

Research Question 2: *What are the key enablers and challenges in implementing e-Learning policy?*

5.5 Persuasion of e-Learning

The findings focussed on what persuaded managers and teachers to adopt e-Learning in light of the challenges and enablers/successes in e-Learning implementation.

5.5.1 Challenges in implementing e-Learning – EHC

The challenges that were mentioned of access, motivation, time and technological confidence matched to some extent with those in literature of courses, individuals, technology and context (Andersson and Gronlund, 2009:1). Peter's mention of the challenges faced by teachers in using technology for teaching could be attributed to the fact that EHC is a large college (by enrolment) and is likely to face more challenges of consensus building by lecturers in the adoption of technology for teaching than ZIBSIP and TVTC which have lower enrolments. Furthermore, Peter as a manager could have mentioned the most challenges as e-Learning implementation at the college was in early stages of adoption compared with teachers' capacity to use technology for teaching not fully developed, as compared to ZIBSIP and TVTC. The challenges mentioned by lecturers and the manager did not match suggesting a lack of consensus on what the major challenges are that the college faces in adopting e-Learning. This confirms literature where absence of institutionalised agenda and co-ordination are mentioned (Malik, 2012:35).

5.5.2 Challenges in implementing e-Learning – ZIBSIP

The challenges that were mentioned of access, motivation, technological confidence, funding, shared vision and change management confirm those in literature of funding by Mahumud and Gope (2009:1) and vision and change management by Nasser and Abouchedid (2001), and Mac-Ikemenjima (2005). These challenges being similar, especially the challenge of funding, could be attributed to the nations that were researched in the literature being developing nations. Governments in developing nations face challenges of providing adequate funds for varying competing needs for social services such as health, food security and education. Therefore finding funding for e-Learning in a developing nation may be a huge challenge. The challenges of access, technological confidence and motivation are common for both EHC and ZIBSIP. The challenges of funding, shared vision and management are mentioned only at ZIBSIP, but can be implied in the other colleges, for example at EHC, where the manager was aware of e-Learning policies but teachers were not aware, suggesting a lack of shared vision in the college.

5.5.3 Challenges in implementing e-Learning – TVTC

Of the challenges mentioned of technological confidence, costs and access, the most common in all the three colleges was that of access. This confirms literature where lack of access to computers (Chiome, 2012:14) and technology infrastructure (Malik, 2012) are mentioned. The issue of costs and funding was common to ZIBSIP and TVTC. These challenges tie in with those mentioned by Hawkins (2002) of high costs of Internet

connectivity and general financial constraints (Ministry of Communications and Transport, 2006:1). However, TVTC's financial capacity could be better than EHC and ZIBSIP due to higher enrolment figures of distance learners which improves the college's financial capacity.

5.5.4 Challenges from Managers perspectives

The managers at EHC and ZIBSIP had different views on the challenges in implementing e-Learning. This is expected, because the two colleges are at different levels in e-Learning and ODL implementation, with ZIBSIP being more advanced in both. It can be noted, however, that the challenge of technological confidence mentioned by Peter at EHC and that of change management when moving from traditional methods to use of technology are similar as confidence in use of technology, are made easier when the change management process is handled well by management and institutions. The challenges of motivation and technological confidence mentioned by Peter were also mentioned by Levy and Shakila, both teachers at ZIBSIP. This points to the need for these two issues to be considered when colleges are adopting the use of technology in teaching and learning. Are the teachers confident in the use of technology? If they are not, what measures can be taken to enhance their confidence? Do the teachers have the right motivation to use technology in their teaching?

5.5.5 Challenges from Teachers perspectives

The challenges most commonly mentioned by teachers were that of access (Friday and Levy) of EHC and ZIBSIP respectively, and of technology mentioned twice by Martha of EHC. Insufficient equipment can be a drawback in e-Learning implementation. These challenges match with those mentioned by Andersson (2008:46), of technological confidence, for example. Stakeholders in educational technology need to support colleges, for example by establishing e-Learning and support centres (Chiome, 2012:15) in addressing the challenges of access.

5.5.6 Successes in Implementing e-Learning – EHC

The successes in e-Learning implementation of learning facilitation, teaching facilitation and institutional training confirm literature: staff capacity are mentioned by Burke, Morris and McGarrigle (2012:9), and technological and pedagogical support available to teachers (Blignaut, Hinostroza, Els and Brun, 2010:1557). EHC provides vocational programmes up to diploma level and so has to balance theory and practice in teaching, making subject coverage an issue.

5.5.7 Successes in Implementing e-Learning – ZIBSIP

Most successes or enablers of e-Learning were mentioned, i.e. learning facilitation, institutional support, institutional training, software and curriculum design confirming literature where learning facilitation and curriculum design were foremost (Andersson, 2008:45). The high number of enabling factors or successes at ZIBSIP could be due to support that the college has been receiving from partners such as COL and MESVTEE.

5.5.8 Successes in Implementing e-Learning – TVTC

The only enabler mentioned was that of curriculum design. It needs to be noted that two (2) of the interviews that were done were lost (mentioned in the Methods chapter), so more enablers or successes could have been mentioned. TVTC is a teacher training college, so the focus there is on equipping teachers with skills to teach effectively, of which curriculum design is one such skill.

5.5.9 Successes in Implementing e-Learning from Managers' perspectives

Institutional training (confirmed in literature) was mentioned by both managers of ZIBSIP and EHC, making it an important enabler in e-Learning policy implementation consideration. The enablers of software and curriculum design mentioned only by the ZIBSIP manager could be due to the different mandates of the two colleges, with EHC being focussed on Applied Arts and Commerce and ZIBSIP on Business programmes. In addition, ZIBSIP offers programmes by ODL while EHC does not, so the levels of technology use are likely to differ.

5.5.10 Successes in Implementing e-Learning from Teachers' perspectives

Learning facilitation, mentioned by two lecturers from EHC and ZIBSIP as a success in e-Learning implementation, confirms literature where online approaches led to changes in learning providing greater stimulation and more opportunities to understand (Saunders & Pincas (2004:99). This suggests that learning facilitation is worth considering in e-Learning policy implementation. The other enablers mentioned by other teachers, of teaching facilitation and institutional support, ties in with literature, where establishing e-Learning and students' support centres in every region in the nation is recommended (Chiome, 2012:15).

Research Question 3: *What criteria do Individuals/Institutions use in to make the decision to adopt or reject an e-Learning innovation?*

5.6 Individual/Institutional Criteria in Decision Making to Adopt e-Learning Innovation

Findings to the above research question centred on institutional support in the use of e-Learning and innovations in e-Learning.

5.6.1 Institutional support in use of e-Learning – EHC

Availability of physical infrastructure (provision of projectors for teaching) and training is in line with literature where advanced IT infrastructure is mentioned by Raouf, Naser and Jassim (2012:663:664). Training, another factor mentioned, is also confirmed in literature (Ministry of Communications and Transport, 2006:28).

5.6.2 Institutional support in use of e-Learning – ZIBSIP

Physical infrastructure (Computer lab, Internet café) was mentioned by three (3) participants, making it an important issue in decision-making to adopt e-Learning in teaching. Teacher support confirmed in literature (Blignaut, Hinostroza, Els and Brun, 2010:1557) along with learning facilitation were mentioned as indicators of institutional support in e-Learning adoption for teaching.

5.6.3 Institutional support in use of e-Learning – TVTC

Physical infrastructure and training were mentioned as criteria that indicated institutional support in use of e-Learning. As can be noted, the issue of physical infrastructure is mentioned in all the three colleges by six (6) of the seven (7) respondents. This makes it an important consideration in e-Learning policy implementation decisions. The issue of training, though mentioned only twice (TVTC and EHC), deserves consideration in e-Learning policy implementation as well.

5.6.4 Institutional support in use of e-Learning – Teachers' perspective

All the teachers in the three colleges mentioned the aspect of physical infrastructure as showing institutional support in the use of e-Learning. The manager at ZIBSIP also mentioned physical infrastructure. While the role of infrastructure is important, a careful assessment of what type of infrastructure is best suited for institutions in a developing context is important, as Omisdinia, Masrom and Selamat (2011:124) advise on the need to think of innovative ways to deliver online content on the national backbone, instead of

relying on unreliable and expensive Internet.

5.6.5 Institutional support in use of e-Learning – Managers' perspective

The two managers from EHC and ZIBSIP mentioned physical infrastructure and training as factors that influenced their decision to adopt e-Learning as a mode for learning. Though these factors are different, they are complementary to each other as staff require on-going training so as to make best use of available physical infrastructure.

5.6.6 Innovation in e-Learning

The innovation by Levy at ZIBSIP of using Moodle for teaching against no innovation in teaching was mentioned most (twice) by two respondents from EHC and ZIBSIP who had not tried out anything new. The use of Moodle at ZIBSIP as a teaching tool suggests how the influence of stakeholders in e-Learning, i.e. COL for ZIBSIP, has an effect on what type of technologies and software colleges use for teaching. It needs to be noted that whether low-tech (a chalkboard) or high-tech (a 3-D interactive visualization), a tool's learning benefits depend on when, where, how, and why it is used (Carnegie Mellon, 2015:1). The study found that the decision to adopt e-Learning as a mode for teaching was influenced by availability of physical infrastructure and training of teaching staff facilitated by an environment where teachers can be innovative in using technology for teaching.

Research Question 4: *How are decisions made in the implementation of e-Learning in the TEVET sector?*

5.7 Implementation of e-Learning as a mode for Teaching

5.7.1 Implementation of e-Learning in teaching

Teachers indicated piloting of e-Learning, especially those teaching ODL classes (Levy, ZIBSIP) and teaching using flexible and blended learning (Edward, TVTC), the use of sms to send assignments (Shakila, ZIBSIP) and integrating various technologies (Edward, TVTC). Piloting was the most frequently mentioned response as to how colleges had implemented e-Learning. This could suggest that colleges may wish to be confident about how teaching using technology works well before implementing it on a larger scale. This is in line with the views of Salmon (2005), who states the need for more incremental introduction of e-Learning involving all members of staff to make their contribution. The challenge, however, is to remain at the pilot stage for a very long time, as appears to have

happened at EHC. The factor of trialability in Diffusion of Innovation theory Rogers (2005) states that if an innovation can easily be experimented by a user, they are more likely to adopt it. This could explain the piloting of e-Learning in ODL at ZIBSIP and teaching using flexible and blended learning at TVTC.

Respondents on lecturers' implementation of e-Learning in teaching were from ZIBSIP (3 responses) and TVTC (2 responses). This ties in with both colleges offering programmes using ODL and thus using technology more than EHC, which only has face-to-face and part-time programmes. For managers, only the manager at ZIBSIP spoke about how training had been used to equip lecturers with skills to teach ODL programmes using e-Learning. From the responses made by respondents it would appear that innovation-decisions in the use of e-Learning (with reference to Table 5 on page 21) belongs to the type collective innovation decisions. At ZIBSIP for example, the ODL department has meetings to plan and review ODL implementation. Issues of how to use technology in teaching are discussed at that level and therefore innovation-decisions in the use of e-Learning are more likely to collective as opposed to optional innovation-decisions (Rogers, 1983).

5.7.2 e-Learning Policy Implementation Influences

The responses ranged from the possibility of some influence in e-Learning implementation in institutions coming from the TEVET policy to the policy having little or no influence. Out of the four (4) participants that responded to the question on whether the implementation of e-Learning influenced policy, two (2) (from EHC and ZIBSIP) mentioned that it did influence policy while one (1) from ZIBSIP said it did not influence policy in line with literature (Brown, Anderson and Murray, 2007:79), and one (1) from EHC was non-responsive. This suggests there is some possibility of influence in e-Learning implementation in institutions coming from the TEVET policy supporting authority innovation-decision (Rogers, 1983).

5.8 Application of Three Types of Innovation-Decisions and the Five Factors of Innovations to Research Findings

In concluding this chapter it is worth reflecting on the three types of innovation-decisions and five factors of innovations i.e. relative advantage, compatibility, complexity or simplicity, trialability and observability that were discussed in Chapter 2 on pages 21 and 22 and how these explain the research findings in decision making in adopting e-Learning innovations.

5.8.1 Application of Three Types of Innovation-Decisions

Optional Innovation-Decision: From the findings this type of decision-making is not apparent as the managers and lecturers were more oriented to collective decision-making. However, in the case of Evelyn Hone College where ODL and flexible and blended learning are not yet used for teaching optional innovation-decision is the most likely form of decision-making for e-Learning implementation in teaching.

Collective Innovation-Decision: This type of decision-making was more apparent from the responses given by participants. This is especially so with ZIBSIP and TVTC which have ODL departments and Flexible and Blended teams to support implementation of flexible and blended learning by lecturers.

Authority Innovation-Decision: This could explain more the policy intentions by policy makers in the Ministry of Communication and in the Ministry of Education with ICT and e-Learning policies that they expect training institutions to follow in e-Learning implementation.

5.8.2 Application of the Five Factors of Innovations

Discussing these findings in relation to the five factors of innovation as presented in table 8 above, the following can be noted:

Relative Advantage: Respondents referred to the use of Moodle as an e-Learning tool (page 38). From the findings, participants indicated how the use of Moodle had improved their teaching and learning of students. This improvement is in increased flexibility especially at ZIBSIP and TVTC which has seen an increase in enrollments as distance learning students use the affordances of educational technologies to learn by distance learn. In addition, the improvement can be seen with more adaptive teaching which allows for increased learning. Lecturers have been able to use tools such as Moodle to create and share learning resources and also use PowerPoint to cover more learning material in a shorter time.

One lecturer observed that students have been able to grasp concepts faster and refer to previous slides unlike when notes are written on a blackboard. There has also been flexibility in teaching leading to flexible learning. However, the flip side is that there is no empirical evidence on how performance in learning has been before and after the introduction of the use of projectors and PowerPoint. This would require a study that gets views from students in various disciplines.

While use of Moodle may not be an innovation internationally, in the Zambian context it is as its' use is new. There is not much relative advantage in the use of Moodle as a learning platform in the Zambian context. The use of Moodle offers better benefits to lecturers and learners such as readily available learning materials to all students with Internet access regardless of their location. This is much better than mailing learning materials by post to students in remote parts of the country as the mailing system can take from 2-4 weeks to deliver mail.

Compatibility: Compatibility is the degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of potential adopters. Looking at lecturers, they have experience of improving their teaching and wanting students to perform well (at least in the three institutions in this study) so the use of e-Learning is more likely to be assimilated into the teaching life's of staff in colleges. However, it is also possible that lecturers can be a victim of their own success. If they have students that have performed well without use of technology, they are most likely going to resist or avoid the use of technology in their teaching.

Using the use of Moodle as an e-Learning tool doesn't require a lot of adjustment in lecturer's lifestyles especially those teaching through distance learning. This is because teaching by distance learning requires them to share learning materials, assessments and regular information and feedback with students. However, those teaching regular face-to-face classes may not find use of Moodle or other learning management systems compatible with their lifestyles as they regularly meet with their students and give them learning materials, assessments and instructions when they meet for classes. However, they may benefit from the use of Moodle or other learning management systems as giving students printed materials is costly, bulky and restricts diversity in what students can access.

Complexity or Simplicity: From the responses on e-Learning as easier and interesting, it can be noted that the innovation of e-Learning has been regarded as easier and not complex. This is why they have moved from the knowledge stage to decision stage and implementation stage. However, it should be noted that not all TEVET colleges in Zambia are using e-Learning. However, the benefits indicated by participants using e-Learning provides useful lessons for lecturers and learners in other programmes in the colleges where participants were interviewed and other Zambian vocational colleges intending to start using e-Learning for teaching and integrate into their teaching styles.

Trialability: from the responses given by respondents form the three colleges it can be noted that they had found e-Learning tools such as use of PowerPoint presentations on data projectors, Moodle learning platform, use of sms on mobile phones as offering them an opportunity to try out various technologies to suit their teaching needs and that of their learners. However, it ought to be noted that a number of lecturers and managers are likely to be digital immigrants (i.e. born in times when use of technology wasn't widespread) while their students are most likely to be digital natives (that is born with technology) and thus the students are more likely to experiment with the innovations offered by e-Learning more than their teachers.

Observability: From the findings it cannot be clearly stated to what extent e-Learning is visible to the local community. The innovation of using PowerPoint Presentations for teaching and learning is something that lecturers (even those not using the facility) and students can see in a tangible way and therefore is likely to generate interest for its' use by other lecturers. However, the use of Moodle at TVTC and ZIBSIP may not be visible to teachers and students who don't use it as it is a learning management system software which is not physical. So only those that are using it maybe aware of the visibility of the Moodle Learning Management System.

5.9 Conclusion

This chapter analysed and discussed the findings in the previous chapter. The discussion was anchored on Roger's Diffusion of Innovation theory. The findings were linked to the literature review to establish if there were similarities and differences. The next and final chapter summarises and reflects on the study and offers conclusions and recommendations of the study.

Chapter 6

Conclusions and Recommendations

6.1 Introduction

The previous chapter analysed and discussed the findings of the study. This chapter provides a summary and recommendations of the study followed by a discussion of the limitations of the study. Thereafter conclusions arising from the discussions on the research findings are provided followed, by recommendations for implementation and further research.

6.2 Research Question and Methodology

The study was guided by the following research question: "What are the enablers and challenges in the implementation of e-Learning policies in Technical and Vocational Education institutions in Zambia?" The study used the Diffusion of Innovation theory as a framework to answer the main research question and guide the research methodology. A qualitative study using face-to-face interviews was done with seven (7) participants (i.e. 2 managers and 5 lecturers) conducted in three (3) TEVET institutions in Lusaka and the Copperbelt provinces in 2012. The sample of three (3) out of the 25 colleges was adequate to address the different stages of e-Learning implementation starting from early stages to advanced stages. EHC was in early stages of e-Learning implementation, while ZIBSIP was advanced and TVTC the most advanced of the three colleges.

6.3 Achievement of Research Aim and Research Questions

The overall aim of the study was to explore how implementation of e-Learning policies in a developing context can be enhanced so as to lead to improved teaching. The aim has been achieved through the findings to the main research question and related research questions in the study.

The study was guided by the following research questions:

1) What knowledge do managers and lecturers have of e-Learning?

2) What are the key enablers and challenges in implementing e-Learning policy?

3) What criteria do individuals/institutions use to make the decision to adopt or reject the e-Learning innovation?

4) How are decisions made in the implementation of e-Learning in the TEVET sector?

6.4 Summary of Findings

The following table summarises the findings from the Literature Review and research.

Table 20: Summary of Findings Using the Five Stages of the Adoption Process

Stage	Research Question	Literature Review Findings	Research Findings
Knowledge	What knowledge do managers and teachers have on e-Learning?	e-Learning as: tools,	*e-Learning as:* devices; tool; flexible; easier; interesting and better teaching. 71% aware of e-Learning policies.
Persuasion	What persuades managers and teachers to adopt e-Learning as a mode for learning?	*Teacher:* technological confidence, motivation and confidence, motivation and commitment, qualification. *Course:* Curriculum design, pedagogical design, teaching and learning activities, flexibility, availability of educational resources. *Support:* Student support, social support, support for faculty. Technology: Access, software and interface design, costs. Institution: Knowledge management, Training of teachers and staff. *Costs:* Technology, Access rates, Tuition, course fees, institutional economy and funding.	*L*earning facilitation; teaching facilitation; institutional training; institutional support; software & curriculum design
Decision	What makes managers and teachers decide to adopt e-Learning as a mode for learning?	*Personal decisions:* creative and innovative, perceived compatibility and trailibility (Duan, He, Li & Fu, 2010), Addressing of cognitive, emotional and contextual concerns (Straub, 2009).	Physical infrastructure, teacher support, learning facilitation, training
Implementation	How do managers and teachers implement e-Learning as a mode for learning?	Large scale centralisation, professional services (Fox, 2006), technology planning (Kizza, 2008), Log-frame conceptual approach (Baalen & de Coning, 2006)	Piloting/incremental, use of sms, training and integrated technologies.

6.5 Conclusions

Arising from the discussion on the findings of the study the following conclusions are made:

6.5.1 Knowledge of e-Learning by policy Implementers

The knowledge of e-Learning by lecturers and managers is varied, but there is some basic knowledge of e-Learning devices as a tool, flexible, easier and leading to better teaching. This provides a good foundation for capacity building and sharing of best practices among TEVET institutions by the Ministry and other stakeholders. Awareness of e-Learning policies at 2 of the 3 colleges interviewed was high providing a strong foundation for e-Learning implementation in vocational colleges.

6.5.2 Enablers and Challenges to e-Learning Policy Implementation

The research findings of the enablers and challenges to implementation of e-Learning policies matched to some extent to literature. The challenges and enablers varied and differed from institution to institution and from one lecturer to another, depending on the management support and vision for e-Learning implementation. Therefore a one-fits-all e-Learning policy is not suitable for all vocational institutions.

6.5.3 Criteria used by individuals/institutions to make the decision to adopt or reject e-Learning innovations

Physical, infrastructure, training of staff and institutional support were the key criteria stated by individuals and institutions as deciding factors for them to adopt e-Learning innovations. Therefore, policy interventions by institutions and the Ministry need to consider these criteria in any e-Learning development.

6.5.4 Decision making in the implementation of e-Learning in the TEVET sector

At institutional level piloting of e-Learning seemed to be the more preferred approach to e-Learning implementation with varying levels of innovativeness in using technology for teaching in institutions. With regards to interaction between policy makers and implementers, it appears poor due to it not being clearly thought out. Policy makers seem to have minimal interaction with implementers during policy dissemination and occasional monitoring leading to challenges in policy implementation.

6.6 Recommendations

Arising from the findings and conclusions of the study, it is recommended that:

6.6.1 Enabling e-Learning Policy Implementation

It is recommended that the Ministry, in partnership with international organisations such as UNESCO and COL, creates an enabling environment for e-Learning Policy Implementation by supporting research and training into emerging technologies and best practices in e-Learning in TEVET locally and internationally. It is further recommended that an e-Learning Policy Implementation team be established to oversee this process.

6.6.2 Developing an e-Learning Implementation Model

The Ministry and TEVET institutions need to develop a workable Technology Acquisition plan and e-Learning Implementation model so as to have a coherent and focussed roll-out of the implementation of e-Learning policy and strategies in TEVET institutions.

6.6.3 Enhancing Decision Making in the Implementation of e-Learning in the TEVET sector

The Ministry needs to create an environment where institutions that are doing well in terms of e-Learning implementation can be used as models by institutions that are just beginning to use e-Learning in their teaching. The Ministry needs to facilitate information sharing and sharing of best practices among TEVET colleges. This could be through meetings organised by the Ministry, institutions themselves and also using the Internet.

6.7 Recommendations for Further Research

This research focussed on the challenges and enablers in implementing e-Learning policies in Vocational colleges in Zambia with a focus on diffusion of innovation theory as a theoretical framework. One of the issues not addressed is looking at critical success factors in e-Learning implementation. Another is a lack of consideration of challenges from the students' perspectives, who are ultimately the targets and beneficiaries of e-Learning policy implementation. This study can be replicated using DOI theory in other sectors such as public health, primary and secondary school systems, higher education and single-mode distance learning institutions. The use of other technology acceptance models could also be applied to the study to compare research findings. e-Learning is a field that is constantly changing, it is possible that research is constantly developing.

6.8 Conclusion

Despite, the limitations that are associated with qualitative research, especially generalising findings of a small sample to a diverse population with varying circumstances, the relevance of this study cannot be doubted. The study has been able to systematically gather data on current enablers and challenges in e-Learning policy implementation inn TEVET which will

prove a useful reference to those that wish to conduct similar studies in education and other fields. This study is unique in the Zambian educational system as it is pulled together and integrated significant subjects of policy implementation and the adoption of e-Learning challenges and enablers. Therefore the study has made a contribution to the research of e-Learning policy implementation in the vocational education and training sector in Zambia where very few studies have been conducted on e-Learning implementation challenges and enablers.

Diffusion is difficult to quantify because humans and human networks are complex. It is extremely difficult, if not impossible; to measure what exactly causes adoption of an innovation (Damanpour, 1996: 693-716). However, diffusion of innovation theory is useful in looking at how e-Learning and other innovations are adopted in colleges. The application of the diffusion of innovation theory as an analytical framework provides a reference for future related studies in different levels of education, i.e. secondary, higher education and teacher training. It has also provided a reference point for comparative studies of e-Learning policy implementation at regional and international level. The study has created scope for further research into other policy initiatives in vocational training such ODL, flexible learning and mobile learning. As a student of educational technology, the researcher found the research thought-provoking and stimulating.

Policy makers tend to lean towards top-bottom approach in policy making and rarely ever accommodate bottom-approach in policy development and analysis. From the study and literature it has been noted that there is a lot of merit in adopting the bottom-up approach in policy development as staff on the ground are better able to judge what works and doesn't work. The policy development process in the Ministry needs to change and move more towards the bottom-up approach as clearly the top-bottom approach has not yielded much positive results. Policy development has been characterised by delays in development, approval and review.

Thus vocational colleges have taken the initiative to develop their own local policies whether it is for open and distance learning, e-Learning or flexible and blended learning. Afterwards, when policy makers are ready with their policies, they then want to ask institutions to follow "their" policies without a critical look of what has worked and not worked without the national policies. This must change if the Ministry is to remain relevant in the policy making process. In addition, for e-Learning in particular, it is a field that changes constantly and thus

having a rigid policy that should be approved after 5-10 years is clearly being out of touch with reality.

e-Learning being a constantly evolving field needs regular review and so even e-Learning policies should be dynamic and not follow similar formats such as other ministerial policies. As has been stated in literature "the world for which policies have to be developed is becoming increasingly complex, uncertain and unpredictable. Citizens are better informed, have rising expectations and are making growing demands for services tailored to their individual needs" (Economic Policy Unit (2011:5). Policy makers need to take note of this seriously in policy making and implementation.

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Appendices

Appendix 1: Interview Questions

1) What knowledge do managers and lecturers have of e-Learning?

2) What are the key enablers and challenges in implementing e-Learning policy?

3) What criteria do individuals/institutions use to make the decision to adopt or reject the e-Learning innovation?

4) How are decisions made in the implementation of e-Learning in the TEVET sector?

Appendix 2: Interview Responses

A Study of the Enablers and Challenges in Implementation of Policies in Technical and Vocational Institutions in Zambia

Interview 1: Evelyn Hone College

GABRIEL: Start by telling me about e-Learning or how you use technology in teaching.

MARTHA: What I understand by e-Learning is using electronic devices to deliver our lectures such as LCD and the Internet.

GABRIEL: Which courses are using this technology for?

MARTHA: Research Methodology and Human Resource Management.

GABRIEL: Do you have any plans in using technology in teaching?

MARTHA: Plans are having a network to interconnect students to enable them access their assessments and administer lecture note to students

GABRIEL: Do foreign examination bodies have any form of e-Learning?

MARTHA: No, they don't. Traditional teaching is used

GABRIEL: What has worked well in your use of technology?

MARTHA: It is quick and enable students grasp concept faster. Also students can get back to slides that have been shown as opposed to using a board where you can't when you have erased something.

GABRIEL: What challenges have faced in your use of technology?

MARTHA: Incompatible devices such as an LCD not being compatible to a particular laptop or not having power on a particular day

GABRIEL: How can the challenge be overcome?

MARTHA: Having adequate socket in classes and also by procuring compatible devices and up to date devices.

GABRIEL: Is the department involved in the procurement of ICT devices?

MARTHA: The department involved though sometimes there are challenges when procurement gets alternative equipment from that specified by the department.

GABRIEL: Are you aware of e-Learning policies?

MARTHA: No.

GABRIEL: Do you have support from management in the use of e-Learning?

MARTHA: Yes, at the basic level we do have support, we have 2 LCDs for each department, although I can't say much because we have not expanded much.

GABRIEL: Is the communication of e-Learning by key stakeholders effective?

MARTHA: No, because personally I don't know so much about what is encompassed in e-Learning and what the main objectives of e-Learning and when it is supposed to be implemented. I only heard about e-Learning from professional circles. The Strategic Plan of the College talks of open and distance learning and how e-Learning can be used to deliver ODL.

GABRIEL: Is there anything new that you have tried out in the use of technology?

MARTHA: No.

GABRIEL: Can the implementation of e-Learning influence policy?

MARTHA: Yes, it can influence policy at different levels depending on what challenges people facing. During evaluation of the policy depending on the outcome it will feed into policy.

GABRIEL: Do you have any recommendations on e-Learning policy?

MARTHA: e-Learning policies should be well communicated to all stakeholders, starting from the grassroots.

GABRIEL: Are you aware of how the radiography department using e-Learning at one time in their teaching?

MARTHA: No, I am not aware.

Interview 2: Evelyn Hone College

GABRIEL: Start by telling me about e-Learning or how you use technology in teaching.

FRIDAY: What we use currently are projectors. That is the only system we use at the moment. We use them to show PowerPoint.

GABRIEL: Which courses are using this technology for?

FRIDAY: We found it convenient to use and it draws student's attention. Used in First Aid, imaging equipment, imaging processes and imaging techniques and in nearly all the subjects.

GABRIEL: What has worked well as you have used data project in you teaching?

FRIDAY: Subject matter coverage has worked well. When one is using traditional teaching methods they take so long to write note on a board and explain the notes.

GABRIEL: What are some of the challenges you have faced in the field of technology?

FRIDAY: Not having plenty of projectors. We have only one data projector in the department. If two or more teachers are teaching at the same time and want to use projectors it becomes a challenge.

GABRIEL: How can the challenges be overcome?

FRIDAY: By having one data project in each class permanently so that whoever goes in class finds the data project in place.

GABRIEL: Are you aware of e-Learning policies?

FRIDAY: Not to my level, I am not aware.

GABRIEL: Do you have support from management in use of e-Learning?

FRIDAY: Yes, that's why we were given data project. It is just a question of funds.

GABRIEL: Is the communication of e-Learning by key stakeholders effective?

FRIDAY: I am not aware of the communication, so I would say it's poor.

GABRIEL: How does the interaction between the Ministry of and TEVET affective?

FRIDAY: There is some interaction but the progress is not as expected?

GABRIEL: What would recommend for the improvement of use of technology in teaching?

FRIDAY: Easy access to technology.

GABRIEL: What is your comment on the computers that have been procured for teaching and learning in the college?

FRIDAY: I heard that some computers came but what the computer are to be used for I am not aware I am aware of the IT Centre where student can go and use the computers for IT learning.

GABRIEL: What time is available for use?

FRIDAY: It is open during normal working hours from 08:00 to 17:00. Students pay to access the facilities. Students can sit anywhere with their laptops to access wireless Internet. Some students copy information from the Internet. Some students copy information from the Internet word for word for their assignments.

GABRIEL: Has there been any move in using mobile phone in teaching?

FRIDAY: Not yet. Through students seem keen to use mobile phones.

FRIDAY: What is the status of the ORET project of Netherlands in Radiography where e-Learning was used? Did the project help in enhancing the use of e-Learning?

FRIDAY: The project was quite helpful it helped enhance teaching and learning. The project came to an end without any evaluation of the project by key stakeholders. The project was for the Ministry of Health and a training component that's why Evelyn Hone College was drawn into train Radiographers. Books, computer and the internet were brought in initially the project was supposed to be set up at Evelyn Hone; however, this was not possible as there was no building. That's how UTH was used.

GABRIEL: Any recommendations on improving e-Learning?

FRIDAY: There is need to improve Internet accessibility.

GABRIEL: Does the wireless Internet reach every part of the college?

FRIDAY: Not at the moment, but plans are there. Because of limited wireless Internet hotspots, students normally comes with laptops to access Internet.

Interview 3: Evelyn Hone College

GABRIEL: Tell me about e-Learning at your institution

PETER: e-Learning is a mode of learning that the college uses in its' training in order to cater for the large number of students that is college enrolls.

GABRIEL: What has worked well?

PETER: Before the college started using e-Learning in its teaching training was conducted to enable lectures know how to teach using e-Learning. Some members of staff have learnt from local and international institutions.

GABRIEL: When did you start implementing e-Learning?

PETER: We started implementing e-Learning two years ago. The Ministry has assisted us by sponsoring lecturers in workshops on how to use technology in teaching. We hope that the Ministry continues helping.

GABRIEL: What challenges have you faced?

PETER: e-Learning is a new mode of training so many people may not understand it. Finding time to use technology in teaching has been a challenge too. Also motivation in using technology in teaching has been a challenge.

GABRIEL: How can these challenges be addressed?

PETER: There is need to forge ahead in the use of ICT's in teaching.

GABRIEL: Are you aware of e-Learning and ICT policies in TEVET?

PETER: Yes we are aware, especially those that have attended workshops in use of ICT's in education. We are especially aware of the National IT Policy. The college also participation in Parliamentary queries on IT in education.

GABRIEL: Do you support the use of ICTs in teaching?

PETER: Yes, we do. Anything that goes with training management must support. Without that support, the training cannot succeed. The college will be sending a member of staff to Namibia to attend a workshop.

GABRIEL: Is the communication of e-Learning policies by key stakeholders effective?

PETER: There is need to improve on how communication of polices is done.

GABRIEL: Are you aware of any policies with regard to e-Learning for example e-Learning policies ODL policies? How did you find out about these?

PETER: Yes, I am aware except I am not really involved so much. Colleges that attended workshops are aware of the ICT policies. EHC has participated in presenting a paper to the Parliamentary committee on use of IT at college.

GABRIEL: Do you think the TEVET sector communicates effectively or poorly about e-Learning?

GABRIEL: Do you think how as a college implement e-Learning influences TEVET or e-Learning policy? or versa. Does TEVET policy influence how you implement e-Learning?

PETER: The College is following the TEVET Policy from the Ministry.

GABRIEL: How is the interaction between the Ministry and Training Institutions?

PETER: There is need to improve the interaction between the Ministry and Training institutions. For example, after the e-Learning Africa conference held in 2010 there should have been follow ups to find out how institutions were implementing e-Learning in their teaching. There was also need to have papers presented at international conferences undergo quality control at National level before they are presented.

Interview 4: ZIBSIP

GABRIEL: Tell me about e-Learning at your institution.

LEVY: We at ZIBSIP in Kitwe recently launched our e-Learning last year in September. We are currently piloting e-Learning through MOODLE. Presently we have managed to post quizzes on the Moodle for project management. Some students are also using the Moodle for communication.

GABRIEL: How have you implemented e-Learning in your teaching? When, what course, why did you decide to e-Learning.

LEVY: e-Learning was introduced to a selected team of members of the teaching staff especially those teaching open and distance learning classes. The pilot course on e-Learning is advanced diploma in Project Management. We felt that e-Learning would add value to our course delivery. ICT in the way forward in any sector and therefore we did not want to remain behind in the digital dispensation. We also wanted to add quality to our teaching and learning e-Learning make learning more interactive, interesting and easier.

GABRIEL: What would you say has worked well in your implementation of e-Learning in your teaching?

LEVY: Students showed a lot of interest in using the Moodle and have continued using it as a mode of communication whole awaiting resource persons to post the study materials and quizzes.

GABRIEL: What challenges problems have you faced?

LEVY: - Some lecturers have not shown interest and still prefer the traditional face and teacher exposition method of teaching.
- Lack of capacity among members of staff in ICTs.
- Lack of sufficient equipment.
- Lack of a shared vision on the use of ICTs in teaching and learning.

GABRIEL: How do you think these problems could have been overcome?

LEVY: - Enhance activities to share the vision on e-Learning
- Increase capacity in the use in the ICT in teaching. Implore take holders to supply the institution with sufficient ICT in related equipment.
- Emphasis on cascading workshops, seminars and conference information based on use of ICTs in teaching.

GABRIEL: Are you aware of any policies with regards to e-Learning for example TEVET for example e-Learning policies, ODL policies? How did you find out about these?

LEVY: Yes, there is a draft ODL national policy and there is a TEVET ODL national policy. I attended meetings on drafting the national ODL policy organized by the Ministry of Education. TEVETA a regulatory body has also circulated their ODL policy to all TEVET institutions.

GABRIEL: Do you have institutional support for your use of e-Learning in your teaching?

LEVY: Yes, there has been some support such as provision of an Internet Café and a Computer Laboratory and also an IT specialist who provides support in Internal communication and the use of Moodle although more could be done especially in sharing the ICT vision and capacity building.

GABRIEL: Do you think the TEVET sector communicates effectively or poorly about e-Learning?

LEVY: Not much is being done. It's like institutions are left to decide their way forward in e-Learning.

GABRIEL: Tell me about when you did something new or different in e-Learning. What made you decide to do this or if you haven't tried anything new lately what's made you decide not to do this.

LEVY: Installed the Moodle software and had an in-house workshop for some academic staff on how to use the Moodle as teaching tool. We believe that e-Learning was more effective as a teaching tool and our students would gain a lot of competency in the use of computers. This would make our graduates up to date with the world trends and enable them to compete globally.

GABRIEL: Do you think how you implement e-Learning influence TEVET or e-Learning Policy?

LEVY: I think in the long run institutions are going to greatly influence the TEVET policies on e-Learning because they are making individual strides in this area. Some institutions also have international partners who are help them to develop capacity in the use of ICTs in teaching. Such partners are not really connected to the Ministry and therefore the ministry and not be on the same page as institutions with regard to their advancement and understanding of ICTs in teaching.

Interview 5: ZIBSIP

GABRIEL: Tell me about e-Learning at your institution.

SHAKILA: At ZIPSIP, e-Learning has not yet developed beyond simple instruction to students via mobile phone and research topics given to students which require them to use the internet. Internet is provided as proof of library service on campus. Distance learners receive learner support via mobile phone.

GABRIEL: How have you implemented e-Learning in your teaching? When, what course, why did you decide to use learning etc.

SHAKILA: In my teaching I have implemented e-Learning in the dissemination of assignments. I have given assignment to my students via sms. I have chosen to use e-Learning because it closes the distance gap between tutor and learners as well as encourage learners to take responsibility for their learning beyond the classroom wall.

For distance learners in particular, they require some contact with tutors for support so mobile phones play an important role in ensuring that learners get the support that they need swiftly and cheaply.

GABRIEL: What would you say has worked well in your implementation of e-Learning in your teaching?

SHAKILA: At ZIPSIP, what has worked well in our implementation of e-Learning so far is the use of mobile phones because at least all students own a mobile phone.

GABRIEL: What challenge problems have you faced?

SHAKILA: ZIBSIP is in the process of implementing of e-Learning via Moodle. The challenge has been in ensuring that learners have e-Learning skills. Most of our learners are not skilled to use computers in learning.

GABRIEL: How do you think these problems could have been overcome?

SHAKILA: To address this challenge, ZIPSIP is in the process has developed training programmes for learners that want to learn via Moodle in the future. ZIPSIP has also made computer training compulsory for all distance learners residential sessions.

GABRIEL: Are you aware of any policies with regards to e-learning for example TEVT for example e-Learning policies, ODL policies? How did you find out about these?

SHAKILA: I am aware of e-Learning policies TEVET policies on ICT and ODL I am also aware of SADC policies, I found out about them during some workshop that I attended in the past 18 months.

GABRIEL: Do you have institutional support for your use of e-Learning in your teaching?

SHAKILA: The institution currently support e-Learning in teaching by providing internet facilities and facilitating learner support mobile via phones.

GABRIEL: Do you think the TEVET sector communicates effectively or poorly about e-Learning?

SHAKILA: I do not think TEVET sector communicates effectively about e-Learning and TEVET policies in general have been effectively communicated.

GABRIEL: Tell me about when you did something new or different in e-Learning. What made you decide to do this or if you haven't tried anything new lately what made you decide not to do this.

SHAKILA: I have not really done anything new or different in e-Learning and this due to the absence new facilities for that purpose. I hope to be assisted in the production of audio CDs for teaching.

GABRIEL: Do think how you implement e-Learning influence TEVET of e-Learning Policy? Or versa TEVET policy influence how you implement e-Learning?

SHAKILA: I do not think how we implement e-Learning influences TEVET or e-Learning policy because there is still a gap between TEVET teachers and policy makers in my view. I do think that how we implement e-Learning should influence TEVET policy because it brings to light the challenges of implementing the various modes of e-Learning. Attempts are being made to ensure that TEVET policy guides how we will be implement e-Learning in the future.

Interview 6: ZIBSIP

GABRIEL: You could start by telling me about e-Learning at your institution, how technology is used in ODL (open and distance learning) or face to face learning.

CHRISTOPHER: ODL started in 2008 after a workshop that was conducted by CBU which focused in producing manuals for ODL in 2010 two members of staffs attended a workshop organized by COL. From there we were adopted as an institution that could be help that in term of capacity building at institution level and resource person level. And that is where now we have seriously embarked on using flexible and blended method of delivering ODL. This we have seen it quite helpful useful because the way the capacity building with COL has been done is quite good. In the sense that they started first with emphasis on policy issues and also organizational structure, the pedagogical.

And this required some change management because people were used to traditional methods of delivery. This encouraged lecturers to be flexible and take advantage of technical facilities that they have ZIBSIP been developing itself in using models. Although there have been challenges here and there. One of the challenges we have had is resources. The number of students we have had is that of number not being big. The other problem we have had is that of certificate. On certification we do not have much of control. We train the students and tech students sit for exams with a beauty of capacity building at institutional level and individual is that you need to come up with a policy issue. For example you need a policy on ICT issues and you need a policy on ODL. This helps to be aligned with the needs that are there,, i.e. national and global needs.

The beauty about ODL is that you broaden your access in terms of education that you can provide to the students because if you rely on traditional methods the stats are very poor for example in Zambia there may be about 14% of those that finished secondary school goes on to do tertiary education. But with ODL there a lot of benefit that come forth. But there are constraints that are there. In terms of capacity building at personal level you adopt method that professional instead depending on your personal note that is not well edited. You embark on different methods such as Power Point presentation, use of Moodle. When it comes to administration it is a very powerful tool. Moodle's will be able to give your report, for example on how often students have been accessing Moodle. There are concerns that are there. We have limited resources capacities. In terms of government grants that we depend so much on levying the students

GABRIEL: What would you say has worked well in terms of e-Learning in the way teaching has done?

CHRISTOPHER: We have adopted academic software AIMS though we not used it to full capacity. When you have academic software it helps you to administer your educational system, in terms of the enrolment of the students. In terms of delivery we have realized that tech information sector is so huge we have been embarked to see how we can capture this sector mainly through developing food production and tailoring and design courses. In terms of delivery, we have learnt different approaches and different ways of delivering where you bring in the aspect of delivery. The background of the learners is different. The way you teach them differs. We have used audio and video for teaching; when you incorporate audio it makes the learning interesting.

So one of the other things that we have embarked on is to incorporate audio and video. Audio and video makes the learning interesting. When you look at Food Production you can engage an expert to prepare the dishes.

But when it comes to these programmes that are knowledge-based there is a challenge to illustrate them. But one can use audio to illustrate an income statement preparation to demonstrate that.

GABRIEL: How can the challenges you are facing be overcome?

CHRISTOPHER: For example, I talked of change management when moving from traditional methods to use of delivery method centered on ICTs. What is important is to sell the vision so that the resources persons can buy it so that when they internalise it they can help them to change.

On the revenue base, this has been quite a challenge and one of the things that we have been thinking of is to use delivery methods centered on ICTs. What important is to sell the vision so that the resources persons partner so that when they internalize it they can help them to change the objectives so that as an institution you must make sure that you align them to all the stakeholders.

Also on the revenue base, there is another challenge. We have also been thinking of entering into partnership with some of the other examining bodies particularly local where there is a component of continuous assessments. At least that would compel the students to attend all residential classes that we conduct. I can give you an example of the experience that we have had with the university. There is a programme, Diploma in Business Administration, which is underwritten by them so with that it comes to attendance, you have to make sure that you fulfill the forty percent continuous assessment if don't want to do that then you will not be eligible to write the exams. So that is one of the things that we have been pursuing and we have been talking with the Zambian Open University (ZAOU) where we could see the possibility of entering into agreement so that they underwrite some programmes. We see that they can help us to capture and retain the students therefore in terms of revenue you can have control over it.

GABRIEL: Are you aware of any policies with regards to e-Learning?

CHRISTOPHER: I am aware of the ODL policy document that the Ministry has been working on. But at the same time there is a document that TEVETA produced on ODL. We have found it helpful in terms of assisting us come up with an ODL policy. The Zambia Information and Communication Technology Authority (ZICTA) has a policy on ICT. The only concern with it is that it is very generic. We have also looked at the Sixth National Development Plan. The commonalities are increasing access to education.

GABRIEL: As someone in management would you say that you support the use of e-Learning in teaching?

CHRISTOPHER: Yes, you know it is a very powerful tool because it gives you access to an unlimited world where you can reach people as long as you have the necessary facilities. And in terms of administration and getting responses it is just the best. So you find that it proves to be very efficient and very effective unlike if you compare it with traditional methods.

GABRIEL: When you look at the TEVET sector would you say that it communicates poorly of effectively about e-Learning?

CHRISTOPHER: Efforts are there but I still think that they are not very adequate. More still needs to be done. You know there are certain things which individual institutions like us may not have the resources to do. I am happy that the Government is working on the ODL policy. The Government should assist with such big undertakings. And the Government also does support capacity building where training is given. It would be important to be visiting institutions to see exactly what is on the ground and where an institution is lacking they can be assisted because the feedback would be there and the true status of the situation can be known and the problems that we would have may be different from institution to institution but we very much need to embark and embrace the e-Learning particularly the area that talked about the information sector that is why at this institution we have identified food production and design and tailoring as area that can be exploited but I am sure there are many Engineering institutions that can be make a lot of advantages by using e-Learning. It is a huge thing the challenge is that it requires a lot of resources to be put in and institutions where the market is not there to support it may not be worth it for some of the institutions.

GABRIEL: The way that you as an institution implement e-Learning, would you say policy influences e-Learning?

CHRISTOPHER: You know when we started working with our friends; the Commonwealth of Learning (COL), what was emphasized was on the policy and the Strategic Plan because if that is not there then you have problems. Because even at board level if you have not identified the long term vision that this is where we went to go, this is the scope so you find that when it comes to actualization of things you will not have a vision and not know where you want to go. So that is why in our case we identifies that what the nation wants and also the Strategic Plan that is there at the Ministerial level it emphases ODL and the use of ICTs. So that has influenced us because you know if what we are we are doing as an institution is not in line with the Ministry and the nation, our direction is misdirected. So I would acknowledge that we are being influenced.

GABRIEL: Do you think the interaction between the policy developers in the Ministry and yourselves as implementers affects the adoption of e-Learning in the sector?

CHRISTOPHER: Yes, it does. I remember one time I was supposed to attend a workshop which was organized by the Ministry but we sent other members of staff to attend it. So the report that they gave from there it had an impact. And they were emphasizing so much on us adopting the recommendations that came from there. They came with the emphasis that we need to reflect this in our Strategic Plan and also on the organizational structure that we must have an ICT function to support ODL. Because without the support if ICT function when it comes to being effective and efficient we will not able to actualize a lot of things. For example, if we talk of Moodle it needs someone always there loading the material checking that things are working well not where you have an ad hoc type of arrangement you find that when it comes to implementation it is a problem. So an ICT function support is very crucial.

GABRIEL: So how would you describe the interaction of the Ministry with implementators?

CHRISTOPHER: I think there is room for improvement. We need to have more interaction and more follow ups. You know one of the challenges or concerns that we

normally have is that we would agree on ideas but when it comes to implementation it becomes a problem and whatever is agreed with the Ministry inspections or follow ups must be done or meeting regularly where perhaps an action plan is drawn up. Then after this period we can review what has been agreed on has been implemented them and if not what are the reason we have failed to actualize what we agreed on. And also understand some of the problems that are there that the institutions are going through particularly capacity at institutional level and individual level.

GABRIEL: As in institution how do you decide on how to implement e-Learning?

CHRISTOPHER: What we have done is we have formed a committee referred to as Flexible and Blended (FaB) team or quality assurance. The functions are that of using the quality assurance policy, it [the Committee] is often used to review teaching and learning. Meetings are conducted twice in a year where we review how we have been performing using the quality assurance policy. And then the experiences that are there if we find we have not being doing well in certain areas, recommendations are made to management. And if it is a policy issue the board is involved. So the important thing is that the board is fully aware from the Strategic Plan and activities of this QA committee reports are generated and from these reports recommendation are made. The committee reports to the management and then the management take it up to the policy makers i.e. the board. That is how the interaction is.

GABRIEL: So this committee, does it focus on ODL teaching or other teaching areas?

CHRISTOPHER: It also encompasses the other general teaching but because you know there is a traditional teaching sector and also ODL, the activities when they come in the report, they are separated.

GABRIEL: Any recommendation to the Ministry and to TEVET and how the challenges to implementing e-Learning can be addressed?

CHRISTOPHER: What is cardinal there are certain things that institutions may not have the capacity to do them. So I would strongly recommend that the Government comes in to support. Already there are some efforts being done in terms of the of the Strategic Plan and the policy for ODL and also the capacity building both at institutional level and also at individual level they must have this pedagogical skills because as I said the pedagogical skills that are focused on ODL are completely different when you compare with traditional methods although there are some overlaps that can be there. That's why the idea of flexibility can be strength depending on the situation. So what I would strongly recommend is assisting the institutions in areas that they cannot handle.

Once institutions have matured they can start assisting other institutions. So the Government support is very much needed. Like our experiences I talked about our limited revenue base, where the market is so low and we are trying to partner with others. What happened in 2000 when boards were introduced, it brought a mixed outcome. In terms of institutional level when it comes to managing the institutions their capacities have been enhanced. They are able to come up with strategic plans and budgets but the unfortunate thing is that they have been so pre-occupied with raising money to finance the budget so that they can pay the workers at the expense of their core business which is training. That has really compromised a lot of things including standards which have generally gone down.

But in terms of management capacity (how to survive) where they need to use their initiative, that has worked out well. What has not worked out well is that they have been competing amongst each other at the expense of providing good training. Unfortunately some of the institutions have gone into areas where there are less barriers. For example an institution that has been established for engineering will go into business studies because the business study barriers are very minimal. But for those in business studies it is not easy to go into engineering. But the whole thing is to raise money to finance the budget so that hasn't worked out so well. So even when it comes to the implementation of programmes like ODL anchored on ICT there has been that challenge. So the Government can see how they can increase on the grants to lessen this unnecessary competition so that maybe there were you can focus on your mandate.

GABRIEL: Thank you very much. If there will be anything I will get back to you.

CHRISTOPHER: I am very grateful that you came to see us.

INTERVIEW 7: Technical and Vocational Teachers College (TVTC)

[Interview Conducted using Skype]

[12/28/2012 6:34:42 PM] **GABRIEL:** Tell me about e- learning at TVTC

[12/28/2012 6:34:54 PM] ***Call ended, duration 02:43***

[12/28/2012 6:35:11 PM] **GABRIEL:** Or tell me how technology is used at TVTC

[12/28/2012 6:37:51 PM] **EDWARD:** e-Learning at TVTC, the college has developed a Moodle platform and material has been uploaded. Staff has been trained in the use of Moodle and they have also done courses under COL on Flexible and Blended.

[12/28/2012 6:38:13 PM] **GABRIEL:** Fantastic!

[12/28/2012 6:38:37 PM] **EDWARD:** Standard template has been developed for the modules to be uploaded.

[12/28/2012 6:38:42 PM] **GABRIEL:** Would you say all teachers use technology and are comfortable with Moodle?

[12/28/2012 6:39:32 PM **GABRIEL:** COL i.e. Commonwealth of Learning and FaB being Flexible and Blended learning.

[12/28/2012 6:41:56 Pm] **EDWARD:** All the lecturers have been trained to use Moodle, on FaB about three groups have taken part and now we have four staff taking part on FaB.

[12/28/2012 6:43:14 PM] **EDWARD:** Two weeks ago we had a six week Moodle for teachers course by Dr. Nellie Deutsch.

[12/28/2012 6:43:55 PM] **GABRIEL:** Excellent!

[12/28/2012 6:44:05 PM] **EDWARD:** Our Moodle platform can be accessed by our students both on ODL and full-time students.

[12/28/2012 6:44:21 PM] **GABRIEL:** I have heard of Dr Deutsch; she is good.

[12/28/2012 6:44:31 PM] **GABRIEL:** That's good!

[12/28/2012 6:44:40 PM] **EDWARD:** We have put text and video contents.

[12/28/2012 6:44:57 PM] **GABRIEL:** That's good!

[12/28/2012 6:45:19 PM] **GABRIEL:** How have you implemented e-Learning in your teaching? What courses, when did you start and why did you decide to use e-Learning?

[12/28/2012 6:52:01 PM] **EDWARD:** It's not yet full-time e-Learning but it's Flexible and Blended because there are times when our students come for contact sessions. PPT is embedded with video, we have on line and offline quiz on the platform, study material are designed in a way that they are easy to understand. Most of the students on ODL are serving

teachers and some working for private organizations and cannot be at college for fulltime programmes. Government policies have contributed in implementing e-Learning programmes.

[12/28/2012 6:54:00 PM] **EDWARD:** Limited online spaces, programmes on e-Learning are commercial teacher diploma, GCP and technical teacher's diploma.

[12/28/2012 6:55:05 PM] **GABRIEL:** Okay, that's very useful … for now can we say that e-Learning is only being used for ODL students?

[12/28/2012 6:56:05 PM] **EDWARD:** I say yes, though the platform are also accessed by students

[12/28/2012 6:58:39 PM] **GABRIEL:** Okay.

[12/28/2012 6:58:57 PM] **EDWARD:** When students come for contacts they are given laptops for use. The college bought 40 laptops, has an internet café with 25 desktops, computer lab and wireless network which covers the whole campus.

[12/28/2012 6:59:20 PM] **GABRIEL:** Excellent!

[12/28/2012 6:59:23 PM] **GABRIEL:** What would you say has worked well in your implementation of e-Learning in your teaching?

[12/28/2012 7:00:37 PM] **EDWARD:** Student information system has been implemented.

[12/28/2012 7:02:48 PM] EDWARD: Good support management in terms of staff training and outside the country. The challenges are internet connectivity, costs too high and at times poor service from the ISPs

[12/28/2012 7:04:45 PM] **GABRIEL:** What other challenges have you faced?

[12/28/2012 7:04:52 PM] **EDWARD:** The other challenge is that not all students have access to the internet

[12/28/2012 7:05:52 PM] **EDWARD:** The college has plans to give such pupils offline study materials on CDs and tapes

[12/28/2012 7:06:07 PM] **GABRIEL:** Okay.

[12/28/2012 7:06:32 PM] **GABRIEL:** How is the access of students to technology outside college?

[12/28/2012 7:11:37 PM] **EDWARD:** Students have access to Moodle once they have been registered on the student education system. Moodle is integrated with student information system. Web access is given to student's URL.

[12/28/2012 7:12:24 PM] **GABRIEL:** Okay.

[12/28/2012 7:12:50 PM] **GABRIEL:** How do you think the challenges you have mentioned can be overcome?

[12/28/2012 7:17:08 PM] **EDWARD:** Government should come on board to assist colleges with affordable Internet access.

[12/28/2012 7:18:59 PM] **GABRIEL:** Are you aware of any policies with regards to e-Learning, for example TEVET policies, e-Learning policies, ODL policies?

[12/28/2012 7:19:12 PM] **EDWARD:** Government should also support colleges with the needed e-Learning tools.

[12/28/2012 7:20:00 PM] **GABRIEL:** Okay.

[12/28/2012 7:20:31 PM] **EDWARD:** Yes, the college has also developed ODL policy.

[12/28/2012 7:21:26 PM] **GABRIEL:** Are you aware of any national ODL and educational policies that talk of e-Learning?

[12/28/2012 7:21:42 PM] **EDWARD:** We also have a quality assurance team for ODL.

[12/28/2012 7:21:45 PM] **EDWARD:** Yes.

[12/28/2012 7:22:26 PM] **GABRIEL:** How did you find out about the national ODL or TEVET policy?

[12/28/2012 7:22:35 PM] **GABRIEL:** Okay.

[12/28/2012 7:22:45 PM] **EDWARD:** My laptop is running of power.

[12/28/2012 7:23:04 PM] **EDWARD:** Sorry

[12/28/2012 7:23:31 PM] **EDWARD:** Through workshops.

[12/28/2012 7:23:48 PM] **GABRIEL:** Oh, okay.

[12/28/2012 7:24:11 PM] **GABRIEL:** Do you think the TEVET sector communicates effectively or poorly about e-Learning?

[12/28/2012 7:24:25 PM] **EDWARD:** Every year we attend e-Learning conferences.

[12/28/2012 7:24:33 PM] **GABRIEL:** If power runs out we can continue another day we are almost done.
[12/28/2012 7:27:46 PM] **EDWARD:** We can chat again on Monday at 10:00.

[1/18/2013 4:19:09 PM] **GABRIEL:** Hi are you ready to chat now?

[1/18/2013 4:23:10 PM] **GABRIEL:** Do you think the TEVET sector communicates effectively or poorly about e-Learning?

[1/18/2013 4:23:11 PM] **EDWARD:** Yes.

[1/18/2013 4:25:29 PM] **EDWARD:** They are not very effective more needs to be done, this can be seen from the number of colleges involved in e-Learning.

[1/18/2013 4:26:31 PM] **GABRIEL:** What do you think the ministry and TEVETA should do to communicate effectively about e-Learning?

[1/18/2013 4:36:21 PM] **EDWARD:** One thing must be done I think for e-Learning to work in this college is to make internet services cheap or make it free for the colleges since they are involved in educating the nation. Communicate on the e-Learning update and create centers for e-Learning in all TEVET institutions with people to coordinate. TEVET policy for e-Learning must be made available to all.

[1/18/2013 4:37:23 PM] **EDWARD:** You there?

[1/18/2013 4:37:34 PM] **GABRIEL:** Thanks, that sounds interesting.

[1/18/2013 4:38:41 PM] **GABRIEL:** Lastly, what would you regard as some of the key challenges and areas of improvement for the implementation of e-Learning at your college?

[1/18/2013 4:49:15 PM] **EDWARD:** High internet bandwidth, need to train staff in the use of new technology take long to be done. No local experts in e-Learning. Software and hardware issues.

[1/18/2013 4:51:55 PM] **GABRIEL:** Thank you so much for your answers. Any last words you wish to say?

[1/18/2013 4:53:54 PM] **EDWARD:** All the best in your studies.

[1/18/2013 4:56:44 PM] **GABRIEL:** Thanks a lot.

Appendix 3: Research Ethics Form

UNIVERSITY OF CAPE TOWN
School of Education

RESEARCH ETHICS: STUDENT/SUPERVISOR JOINT STATEMENT

This form should be completed by the research student and then co- signed by student and supervisor: Tick the YES or NO box, and write in details where appropriate. Please read the UCT Code for Research involving Human Subjects before completing the form. Ask your supervisor for clarification and help if needed.

Student researcher:	Name: Gabriel S Konayuma
Title of research project:	A Study of the Enablers and Challenges in Implementation of e-Learning Policies in Technical Education, Vocational and Entrepreneurship Training Institutions in Zambia
Course detail:	MPhil. Education, ICTs in Education
Supervisor:	Name: Cheryl Brown, PhD

1. Have you read the UCT Code for Research involving Human Subjects? (available from supervisor or at the UCT web-site - go to Research/ go to Standards and Procedures)	YES NO □	
2. Is your research making use of human subjects as sources of data?	YES NO □	

Research focus

3. In the space below state what your research question/focus is, and give a brief outline of your plans for data collection.

ResearchQuestion

What are some of the enablers and challenges in implementing e-Learning policies in Technical and Vocational Education and Training institutions?

Data Collection Plans

In the study, interviews and focus group discussions of policy makers in the TEVET sector, TEVET regulators, TEVET managers, TEVET providers and TEVET students will be conducted to provide the data required to answer the research questions. The TEVET managers, teaching staff and students will be selected using the criteria on how successfully an institution is implementing e-Learning. One institution that has challenges in implementation of e-Learning will be selected to allow for comparison. An institution that has had some measure of success in implementing e-Learning will also be selected. Finally, an institution that has plans to introduce e-Learning will be also selected. This will give a total of two (3) institutions. From each institution, one (1) manager, one lecturer/trainer will be selected. The table below summarises participants who will take part in the study:

Table1: Participants in Study

Institution	**Participants**
Training Institutions	3 managers
	6 teaching staff

Information

4. Will participants (research subjects) in the research have reasonable and sufficient knowledge about you, your background and location, and your research intentions? Describe briefly below how such information will be given to them. If there is any reason for withholding any information from participants about your identity and your research purpose, explain this in detail below	YES ☒	NO

I will introduce myself verbally and through an introductory letter stating my names, background and location. I will also indicate my research intentions. Participants will be asked to ask any questions before any interview or research is conducted with them. Participants will also be informed of their right to withdraw from the research at any time.

Consent

5. Will you secure the informed consent of all participants in the research? Describe how you will do this in the space below. If your answer is NO, give reasons below.	YES ☒	NO

The study will be guided by the ethical standards of the university (University of Cape Town) and poses no serious ethical problems. All the respondents in the study will be anonymous. Measures will be undertaken to minimize the possible effect of the researcher's authority as a Government officer. These measures will include emphasizing that the research is primarily for my academic studies though they have a bearing on my work. Also Respondents will be informed that they have the right to decline taking part in the study with no consequences on their careers or relationship with the Ministry where I work.

6. In the case of research involving children, will you have the consent of their guardians, parents or caretakers? If your answer is NO, give reasons below. If your answer is YES, describe briefly how this consent will be got from the participants.	YES	NO
This research will not involve any children. Participants will be from eighteen (18) years old and above.		

7. In the case of research involving children, will you have the consent of the children as much as that is possible? If your answer is YES, describe briefly how this consent will be got from the children. If your answer is NO, give reasons below.	YES	NO
N/A		

Confidentiality

8. Are you able to offer privacy and confidentiality to participants if they wish to remain anonymous? If you answer YES then give details below as to what steps you will take to ensure participants' confidentiality. If there are any aspects of your research where there might be difficulties or problems with regard to protecting the confidentiality and rights of participants and honouring their trust, explain this in detail below,	YES	NO
The findings and analysis of the findings will not reveal the identities of the participants.		

Potential for harm to participants

9. Are there any foreseeable risks of physical, psychological or social harm to participants that might result from or occur in the course of the research? If your answer is YES, outline below what these risks might be and what preventative steps you plan to take to prevent such harm from being suffered.	YES	NO

1. **Confidentiality** Are there any foreseeable risks of harm to UCT or to other institutions that might result from or occur in the course of the research? for example, legal action resulting from the research, the image of the university being affected by association with the research project, or a school being compromised in the eyes of the Education Ministry. If your answer is YES, give details and state below why you think the research is	YES	NO ☐

2. Are there any other ethical issues that you think might arise during the course of the research? (for example, with regard to conflicts of interests amongst	YES	NO ☐

Signed:

Student: .....

Date: 04/08/2012

Co–signed:

Supervisor: ……

Date: ……..

Appendix 5: Data Analysis Codes

Stage	**Implementation**
Analysis	How do Managers and teachers implement e-Learning as a mode for learning?
Interview Question	How have you implemented e-Learning in your teaching?
Construct	• Virtual Learning Environments • E-Learning Standards
Codes	• Education/learning • Flexible • Virtual Learning Environments/Learning Management Systems • Multi-media learning • Blended • Self-paced • Distance
Quotes from Martha	Using the Internet and electronic devices such as projectors to deliver our teaching
Quotes from Friday	• Use of projectors and Powerpoint to draw students attention and illustrate concepts of practical subjects. • Use of an ICT centre equipped with computers for learning purposes. • Access to Wireless Internet by students with their own laptops.
Quotes from Shakila	• Use of sms to send assignments. • Use of mobile phones to support distance learners.
Quotes from Christopher	• Use of Virtual Learning Environment (VLE) i.e. Moodle for course administration. • Incorporating audio and video in teaching and using the Internet for illustrating practical subjects.
Quotes from Edward	• Use of Moodle for teaching. • Incorporating audio and video in teaching. • Use of student information system.

Confidentiality

Stage	Implementation
Analysis	How do Managers and teachers implement e-Learning as a mode for learning?
Interview Question	Do you think the interaction between policy makers and policy implementers affect the adoption of e-Learning Policy?
Construct	• Virtual Learning Environments • E-Learning Standards • New ideas from workshop?
Codes	• Policy Analysis • Policy Formulation • Consultation • Decision-making • Policy Communication • Adoption • Co-ordination • Evaluation
Quotes from Martha	
Quotes from Friday	There is some interaction but the progress is not as expected.
Quotes from Peter	There is need to improve on how communication of policies is done.
Quotes from Shakila	Policies in general have not been effectively communicated.
Quotes from Levy	Not much is being done. It's like institutions are left to decide the way forward on e-Learning.
Quotes from Christopher	• Efforts are there….but they are not very adequate. More still needs to be done. You know there are certain things which individual institutions like ourselves may not have the resources to do. • Yes it does. I remember one time…we sent members of staff to attend a workshop organised by the ministry. The participants emphasized on management and the College adopting the workshop recommendations. • There is room for improvement. We need to have more interactions and more follow ups. One of the challenges that we normally have is that we would agree on ideas but when it comes to implementation it becomes a problem.
Quotes from Edward	They are not very effective more needs to be done, this can be seen from the number of colleges involved in e-Learning.

Confidentiality

Stage	Implementation
Analysis	How do Managers and teachers implement e-Learning as a mode for learning?
Interview Question	Do you think how you implement e-Learning influences TEVET or e-Learning Policy? Does TEVET Policy influence how you implement e-Learning?
Construct	
Codes	
Quotes from Martha	Yes it can influence policy at different levels depending on what challenges people are facing.
Quotes from Friday	
Quotes from Peter	The College is following the TEVET Policy from the Ministry.
Quotes from Shakila	I do not think how we implement e-Learning influences TEVET or e-Learning policy because there is still a gap between TEVET teachers and policy makers in my view. I do think that how we implement e-Learning should influence TEVET policy because it brings to light the challenges of implementing the various modes of e-Learning. Attempts are being made to ensure that TEVET policy guides how we will implement e-Learning in the future.
Quotes from Levy	I think in the long run institutions are going to greatly influence the TEVET policies on e-Learning because they are making individual strides in this area. Some institutions also have international partners who are helping them develop capacity in the use of ICTs in teaching.