



**MZUZU UNIVERSITY**  
**Faculty of Humanities and Social Sciences**  
**Department of Information Sciences**

**Use of e-library services at Mzuzu University Library by postgraduate students**

**Hamis Lack Abdullah**

**A report submitted in partial fulfilment of the requirement for the award of a Master of  
Library and information Science to the Department of Information Science**

**Mzuzu University,**

**Malawi**

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Hamis Lack Abdullah

A dissertation submitted in partial fulfilment of the requirement for the award of Master's  
Degree in Library and Information Science (MLIS) in the Department of Information Science,  
Mzuzu University, Malawi

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.....

June 2022


## DECLARATION

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## ABSTRACT

Mzuzu University provides various electronic library services or e-library services to its users. However, little is known regarding the specific use of e-library services by Mzuzu University postgraduate students.

Therefore, this study investigated the use of e-library services by postgraduate students at Mzuzu University Library. This study addressed four objectives which are: determine the level of awareness of e-library among postgraduate students, ascertain the level of use of e-library by postgraduate students, find out the level of postgraduate students' satisfaction with the e-library services, determine factors that contribute to the use of and factors that discourage the effective use of e-library services by postgraduate students.

Apart from being guided by the Unified Theory of Acceptance and the Use of Technology (UTAUT) Model, the study was inspired by the Pragmatic School of Thought which is the basis for mixed methods research enabling the collection of quantitative and qualitative data from postgraduate students. A census was used to recruit postgraduate students while purposive sampling was used to identify two assistant librarians and a computer technician. Questionnaires were used to collect mostly quantitative data from 78 postgraduate students while interviews were conducted with assistant librarians and a computer technician. The Statistical Package for Social Sciences was used to analyse quantitative data by producing tables, figures with frequencies, percentages and cross-tabulations and Chi-square tests. Thematic analysis was used to analyse qualitative data.

Findings revealed that postgraduate students have high awareness of e-library services. However, the majority only knew two (internet and e-journals) out of ten e-library services which are offered at Mzuzu University Library. In terms of use, the study established that the most postgraduate used e-library services such as internet and e-journals, while the most frequently used e-library service on daily basis was the internet. The main purpose for using e-library services is research and the benefits of using e-library services were accessing information 24/7, finding relevant information, and performing well in academic endeavours. The majority of postgraduate students were satisfied with the usefulness of e-library services while also perceiving their skills for accessing e-library services not satisfactory. Overall, most postgraduate students were mainly satisfied with internet

and e-journal services, and the majority were not satisfied with the rest of e-library services offered by Mzuzu University Library. Factors which influence the students' use of e-library services are the availability of computers, Wi-Fi hotspots, website; training; and awareness as some of the factors which influence such use among postgraduate students. However, inadequate computers, slow internet; inadequate training, awareness; inadequate staff to support e-library service users as some of the factors which discouraged the effective use of e-library services.

## **DEDICATION**

I dedicate this work to my late Uncle Hasibu Kachoma, My Mother Zainabu Kachoma, My wife Zahra Hassan and Children Fahad and Muhammad who always wanted me to succeed in life. Their unwavering support assisted me to obtain a higher qualification in my life.

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## **ABBREVIATIONS AND ACRONYMS**

CIA: Central Intelligence Agency

E-books: Electronic books

E-journals: Electronic journals

E-library services: Electronic library services

E-reference: Electronic reference

E-Resources: Electronic resources

IFLA: International Federation of Library Association

JSTOR: Journal Storage

MALICO: Malawi Library Consortium

MZUNIREC: Mzuzu University Research Ethics Committee

NCHE : National Council for Higher Education

NSO: National Statistical Office

UN: United Nations

UNESCO: United Nations Education and Cultural

UTAUT: Unified Theory of Acceptance and Use of Technology



## CHAPTER ONE: INTRODUCTION AND BACKGROUND

### 1.0 Introduction

Academic libraries are generally referred to as the heart of universities (Mathews, 2009) because they support the core functions of universities, such as teaching, learning and research (McKnight, 2010). Academic libraries offer various products and services sought by their users. Although the terms products and services are commonly used interchangeably, these two terms mean different things in the contexts of academic libraries. A product is anything that can be offered to a market to satisfy a want or need while a service is anything that a library is offering, or could offer, that would be of benefit to users (de Saez, 2002). There are a number of services that academic libraries offer to the university community. According to Alvite (2011), academic libraries offer services which include customer care, bibliographic reference, reference services, and information literacy.

Historically, traditional academic libraries focused on offering paper-based services which required users to visit the libraries physically, thereby limiting users access to information due to closed access collections, outdated information and limited interaction with library staff to get support (Alawiye et al., 2016). However, with advancement in Information and Communication Technologies (ICTs), modern academic libraries have new and dynamic ways of offering services. The proliferation of ICTs such as Internet, social networking tools, and open access technologies have facilitated the provision of information services 24/7 to users anywhere (Chawinga, 2017; Chawinga & Ngwira, 2015; Chawinga & Selemani, 2017; Chawinga & Zinn, 2016; Chawinga & Zinn, 2015; Nyasulu & Chawinga, 2019; Zozie & Chawinga, 2018; Chawinga et al., 2020; Chawinga & Zinn, 2020; Nyasulu & Chawinga, 2018; Chawinga & Zinn, 2020b; Chawinga & Zinn, 2019). The services offered and delivered to the library users with the help of ICTs are called e-library services. Scupola (2011), Umukoro and Tihamiyu (2017) define e-library services as services which libraries provide through the use of internet. Examples of e-library services include e-references, e-journals, bibliographic databases, web portals, current awareness, e-books, digital repositories, chat with librarians, and internet access (Scupola, 2011; Umukoro & Tihamiyu, 2017). In this study, e-library services refer to services that are offered and delivered to library users through the use of internet. Some examples of e-library services reported in literature include:

internet service, e-journals, electronic theses, e-table of contents, Online Public Access Catalogue (OPAC), e-reference service, web-based resources, and institutional repository technologies (Chaputula, 2016; Malemia, 2014; Nnadozie et al., 2019; Umukoro & Tihamiyu, 2017).

E-libraries have become popular because of several benefits they offer to university communities. Lwoga and Sife (2018) states that e-library services contribute and improve research, teaching and learning activities in institutions of higher learning. In addition, Gavit (2019) opines that electronic library services save time of the library users, fulfil information requirements in a timely manner, increase numbers of users accessing information at one time without restriction, and are available to multiple places where the users can concurrently access them. Barfi (2015) states that electronic library services offer the library users advantages such as remote access to information services, easy search for information and fast and convenient services to users. According to Okello-Obura and Ikoja-Odongo (2010), e-library services offer postgraduate students with faster access to wider information resources which are up-to-date for their research activities thereby leading to improved academic performance.

E-library services became popular in the late 90s and early years of the new millennium, following the introduction of World Wide Web (WWW) (Patra et al., 2013). Calhoun (2014) cites a number of projects which were initiated in western countries to offer e-library services. The first project was implemented by the National Library of Australia in 1999, and had over 289, 890, 268 online resources comprising books, images, historic newspapers, maps, music and archives. The second key project was introduced by the Journal Storage (JSTOR) which began with funding from Mellon Foundation to the University of Michigan. This project was designed to substitute for back-issue files and also serve as an archive of scholarly journals. The JSTOR project had 44 million pages of content with 7,000 participating institutions from 156 countries in the world. Another breakthrough in the provision of e-library services, was the introduction of Elsevier in 1997, but had restricted access to subscribers only.

While the developed world adopted e-library services in the early years of the millennium, African e-library services have only been reported nearly a decade ago. According to Carnegie (2012) West and East African countries had made progress in providing access to e-library services to users in

universities of four countries: Ghana, Nigeria, Uganda and Tanzania. In addition, Carnegie (2012) reported that six universities from the four countries had websites from where users accessed e-library services from remote locations. Furthermore, Ubogu and Pickover (2011) report of other e-library initiatives from West, East and Southern Africa countries. For example, in Ghana the Database of African Theses and Dissertations Programme in collaboration with Research Libraries in Ghana organised a seminar to create advocacy for institutional repositories. This seminar, among other resolutions agreed to increase the advocacy efforts to all African countries.

In East Africa, the Kenya Libraries and Information Consortium organised their first digital repositories workshop to raise awareness about open access institutional digital repositories (Ubogu & Pickover, 2011, p. 80). Ubogu and Pickover further explain that in Southern Africa, the Southern African Regional Universities Association organised an open access leadership summit in Botswana in association with African Access to Knowledge Advocacy for e-library services in Southern Africa. The authors also elaborated that efforts from the initiatives of West, East and Southern Africa led to the registration of 28 institutional repositories registered under the Open Directory of Open Access Resources (OPenDOAR) to provide e-library services to users online.

In Malawi, access to e-library services has been reported with the formation of the Malawi Library Consortium (MALICO) in 2003 with support from Electronic Information for Libraries (EIFL, 2020; Mapulanga, 2012). With further support from EIFL, Malawi Library Consortium has successfully provided access to various electronic resources worth of \$3 million through a project of three countries Malawi, Zambia and Zimbabwe; which supported the creation of open access repositories and policies in University Libraries in Malawi (EIFL, 2020; Mapulanga, 2012). A study report by Salanje (2011) reveals that several university libraries in Malawi have implemented open institutional repositories providing access to information for research. Another study by Majawa (2016) reported availability of e-library services to the University Community of Bunda College of Agriculture. Chaputula and Mutula (2018) have also reported the use of several e-library services through mobile phones in some academic libraries in Malawi.

## **1.1 Background**

Malawi is located in Southern Africa and is bordered by Zambia to the West, Mozambique to the West, South and East, and Tanzania to the North and East (Central Intelligence Agency, 2020). It has a population of about 18 million (National Statistical Office, 2018). According to the United Nations Development Programme (2018), Malawi is one of the low human development countries rated at 171 out of 189 countries. The literacy rate for Malawi is 62.14% (World Bank, 2021). Malawi is one of the countries with the lowest enrolment rate of 0.4 percent in higher education (Ministry of Education, Science and Technology, 2014).

The higher education in Malawi is entrusted with training of human resources in Malawi (Ministry of Education, 2014). According to the National Council for Higher Education (NCHE), the higher education in Malawi has registered public universities and colleges; and private universities. There are six public universities in Malawi which are: University of Malawi, Mzuzu University, Lilongwe University of Agriculture and Natural Resources, and Malawi University of Science and Technology, Kamuzu University of Health Sciences and Malawi University of Business and Applied Sciences (National Council for Higher Education, 2021). Mzuzu University was established under the Parliament Act of 1997 and was officially launched in 1999 (Mzuzu University, 2019). The University has six faculties which include Faculty of Education, Faculty of Environmental Sciences, Faculty of Science, Technology and Innovation, Faculty of Health Sciences, Faculty of Humanities and Social Sciences and Faculty of Tourism and Hospitality (Mzuzu University, 2019).

To achieve its teaching, learning and research activities, the university has a library which provides access to various information services in print and electronic form to undergraduate students, postgraduate students, faculty members and administrative staff. Mzuzu University Library provides access to e-library services through subscription of e-resources from Malawi Library Consortium (Mapulanga, 2012). Furthermore, the University Library offers other services such as space for reading and reprographic services to all students and staff. However, Mzuzu University Library got burnt in 2015 and lost a collection of over 50,000 volumes of print books (Chawinga & Majawa, 2018). The fire incident reduced the capacity of the University Library to provide adequate print information services including the provision for reading space. Following the fire

incident, the Government of Malawi and Mzuzu University Council requested the University Library to find other alternative means of providing information services to avoid disturbing the university calendar (Chawinga & Majawa, 2018). To minimize the effect of the disruption, Mzuzu University Library prioritised access to e-library services to meet faculty members' and students' information needs (Dube et al., 2018).

## **1.2 Statement of the problem**

Mzuzu University Library, like other academic libraries in Malawi offer their library services for 14 hours only due to staff constraints (Chaputula, 2016). In addition, Mzuzu University Library has reduced the seating capacity from 400 to over 100 seats in response to Covid-19 social distance recommendation by the Malawi Government (Mzuzu University Library, 2020). Furthermore, libraries have been challenged to offer all day-and-night services to avoid the congestion of students in the library as a Covid-19 prevention measure (Ministry of Education National Planning Taskforce on the Re-Opening of Schools, Colleges and Universities during the Covid-19 Pandemic, 2020). According to one author Gavit (2019), e-library services save the time of library users, fulfil information requirements in a timely manner, increased numbers of users can access information at one time without restriction and promoting access to knowledge at multiple places where users can easily access 24/7. Therefore, using e-library services in the provision of information services can reduce the need for more space since students can access the services while in their classes, halls of residence, as well as in their homes when they are on block release. This can reduce congestion in the current small library.

Realising the role of e-library services, Mzuzu University has invested heavily in ICTs such as internet, tablets, Wi-Fi and social media technologies to facilitate access to e-library services among the university community (Chawinga & Zozie, 2016). However, regardless of these efforts, little is known regarding the usage of e-library services by postgraduate students at Mzuzu University Library. Noting this gap, this study therefore intended to investigate the use of e-library services by postgraduate students at Mzuzu University Library.

### **1.3 Aim of the study**

The aim of the study is to investigate the use of e-library services by postgraduate students at Mzuzu University Library.

#### **1.3.1 Objectives**

- To determine the level of awareness of e-library services among postgraduate students at Mzuzu University Library
- To ascertain the level of use of e-library services by postgraduate students at Mzuzu University Library.
- To find out the level of postgraduate students' satisfaction with the e-library services provided by Mzuzu University Library.
- To determine factors that influence the use and discourage the effective use of e-library services by postgraduate students

#### **1.3.2 Questions**

- What is the level of awareness of e-library services among postgraduate students at Mzuzu University Library?
- What is the level of use of e-library services by postgraduate students at Mzuzu University Library?
- What is the level of postgraduate students' satisfaction with the e-library services provided by Mzuzu University Library?
- What are the factors that influence the use and discourage the effective use of e-library services by postgraduate students?

### **1.4 Significance of the study**

The study was aimed at providing insights that may help librarians to come up with measures to increase awareness among postgraduate students about the availability of and need for promoting the use of e-library services at Mzuzu University Library. Furthermore, study findings may act as a guide for Mzuzu University Library to improve the provision of e-library services so that they promote access to information for teaching, learning and research. Additionally, it will also pave way for the creation of awareness for the use of e-library services, managerial intervention in

infrastructural development such as access points and networks for e-library services, increased provision of information literacy among postgraduate students, and policy for the use of e-library services. The study might also be beneficial to researchers who will be interested to study the provision of e-library services in most academic libraries in Malawi and beyond. Likewise, it is envisaged that the study would provide insights into the use of e-library services in public universities which offer postgraduate studies in Malawi. Finally, the research will add to the body of knowledge through updating it with new findings and influence policy and practice.

### **1.5 Scope and delimitations of the study**

The study focused on the use of e-library services by postgraduate students at Mzuzu University Library. This study excludes other public universities which offer postgraduate studies in Malawi. Since it was only done at Mzuzu University, the study findings may not be generalised to the use of e-library services by postgraduate students in all public universities which offer postgraduate studies.

### **1.6 Structure of the thesis**

#### **Chapter One:** Introduction and Background

This chapter introduces the concept of e-library services, explains the context of the study, statement of the problem, aim of the study and questions to be used in the study. In addition, the thesis also includes significance of the study, scope, and limitations of the study.

#### **Chapter Two:** Literature Review

This chapter reviews literature related to the use of e-library services by postgraduate students and the university community in general in higher learning institutions across the globe. The literature is guided by themes that include level of awareness of e-library services, use of e-library services, user satisfaction of e-library services and factors for the use and discourage the effective use of e-library services.

**Chapter Three:** This chapter explains theoretical frameworks used in studying e-library services. The chapter discusses weaknesses and strengths of three theoretical model and justified the theoretical framework which underpinned this study.

**Chapter Four:** Research Methodology

This chapter discusses the research methodology and explains the research paradigm, research design and research methods. It also explains the population of the study, sampling techniques, sample size, data collection procedures, validity and reliability, ethical considerations, data analysis and research dissemination.

**Chapter Five:** Findings and Interpretation of the Findings

This chapter presents and analyses data collected from the questionnaires distributed to postgraduate students and interviews conducted with Assistant Librarians and a computer technician.

**Chapter Five:** Discussion of Findings

This chapter discusses the findings and interprets them using the lens of theoretical framework. In addition, findings are compared with other research findings from other scholars in literature of the study.

**Chapter Six:** Summary of Findings, Conclusions and Recommendations

This chapter provides a summary, conclusion and recommendations based on the findings of the study at Mzuzu University.

**1.7 Chapter summary**

This chapter explained the introduction and background of the study. It also explained the problem statement; the aim of the study; research objectives; significance of the study; scope and limitations, and the structure of the thesis. The next chapter (Chapter Two) discusses the literature review and theoretical framework of this study.



## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

This section presents an overview of literature written on e-library services. Many authors such as Aveyard (2014), Denscombe (2012), Garrard (2011), Kombo and Tromp (2006) have defined literature review. For the purpose of this study, however, the definition of Denscombe (2012, p.57) was adopted which considers literature as a piece of work that “examines key ideas, key issues, and key findings contained in publications relevant to a specific area of study.” Literature review serves several purposes in a study. According to Denscombe (2012), the main aim of literature review is to lay a basic foundation for the proposed research. Additionally, Aveyard (2014) provides three reasons for literature review such as summarising available literature on the topic thereby informing other readers about what has been written without them spending time to read all sources, assisting the researchers to identify gaps in the existing studies and enable researchers to evaluate the impact of research in a certain subject area. In light of this, this review of literature will examine different research studies to discern emerging issues and identify gaps which will justify this study.

### **2.2 Arrangement of themes**

The first section clarifies the concept of e-library services and electronic resources which are generally used interchangeably in many studies, and justify this study’s choice and use of e-library services as opposed to electronic resources. The second section discusses forms e-library services. The third section discusses awareness of e-library services. The fourth section discusses use of e-library services while the fourth part discusses satisfaction of users with library services. The fifth section discusses factors influencing use and discouraging effective use of e-library services. The sixth section explains the theoretical framework and how it fits into this study. Finally, literature reviewed in this study is summarised to highlight emerging themes and gaps identified to justify why this study was done.

### **2.3 E-library services, electronic information services and electronic resources**

Scupola (2011), and Umukoro and Tiamiyu (2017) have defined e-library or electronic library services as services that libraries provide through the use of the Internet. On the other hand, IFLA (2012) define electronic resources as materials that require the help of a computer to access them,

whether through a personal computer, mainframe, or hand-held mobile devices. According to IFLA, these electronic resources may be accessed via internet or offline through local area network. Appleton (2006) argued that the terms electronic library services (e-library services) and electronic information resources may be used interchangeably noting that their use and definition among scholars remain inconsistent. For example, Alajmi (2019) uses the two terms interchangeably. However, this literature adopts the term e-library services. Firstly, to emphasise user access of electronic resources through the Internet. Secondly, Schlembach and Mischo (2002) add that e-library services include human interaction (a librarian interacting with user) while providing a service through the Internet.

#### **2.4 Forms of e-library services available in academic libraries**

Previous studies have reported the availability of various forms of e-library services in academic libraries. Umukoro and Tihamiyu (2017) used a mixed method approach which employed a multistage sampling technique to conduct a study that identified some e-library services including Internet; e-journals; Online Databases, Online Public Access Catalogue (OPAC); electronic reference; current awareness, and consortia services. Another descriptive survey study by Nnadozie et al. (2017) which investigated the availability and accessibility of e-library services in two Nigerian University Libraries of Michael Okpara University of Agriculture and National Root Crop Research Institute, uncovered several e-library services including e-selective dissemination of information, e-current awareness services, electronic theses, and dissertation services, e-table contents, Online Public Access Catalogue (OPAC), online search services, and e-reference services. A study conducted in Malawi by Malemia (2014) reported one form of e-library services namely, e-journals available at Mzuzu University Library. Similarly, Chaputula and Mutula (2018) reported some e-library services such as e-journals, e-books, web portal, OPAC and institutional repository. Among these e-library services, the internet has been mostly used by users owing to the benefits it brings to researchers, such as postgraduate students which include convenience for the users to access information, access to current and peer reviewed information, (Akuffo et al., 2019; Asogwa et al., 2016; Chawinga, 2017; Islam & Sheikh, 2019; Kumbhar & Bidve, 2016). Other e-library services which mostly used are electronic journals because lecturers usually refer students to use them in their assignments and research projects(Boakye, 2017; Malemia, 2014; Nanda, 2017).

The introduction of e-library services has been attributed to paradigm (Sharma et al., 2011; Taha & Taha, 2012; Zhang et al., 2011; Zozie & Chawinga, 2018; Gama, Chipeta & Chawinga 2022; Chawinga & Ngwira, 2015; Lubanga et al., 2018). The other reason cited among scholars is that e-library services are making their way in academic libraries because they are key in supporting research and academic activities in higher learning institutions (Chawinga, 2017; Garg et al., 2017; Gupta, 2011; Lwoga & Sife, 2018; Machimbidza, 2014; Min & Yi, 2010; Umukoro & Tihamiyu, 2017).

The provision of e-library services in academic libraries has spurred scholars to conduct user studies. Law (2012) opined that the user studies act as evidence-based practice which support decision making in the provision of information services. Ankrah and Atuase (2018) state that the user studies identify areas for improvement in the provision of e-library services. Several studies have been conducted on the use of e-library services by students, researchers and scholars around the globe. The studies have centred on awareness, use, satisfaction and factors influencing the use and discouraging the effective use of the e-library services.

## **2.5 Awareness of e-library services**

Awareness is key in the use of e-library services in an academic library (Bamidele et al., 2014). According to Alawiye et al. (2016), awareness shows the extent of users' knowledge about e-library services in the library. Evidence from research findings show that awareness has a critical role in increasing the use of e-library services. For example, Nyamboga et al. (2014) research findings from Mount Kenya University, Kigali Campus, revealed that the high awareness contributed to high use of e-library services. Statistically, 83.7% of postgraduate students were aware of e-library services while 96.6% of undergraduate students were aware of e-library services provided in the libraries. The study revealed that most users became aware of e-library services from reading notice boards as compared to library seminars and workshops. A similar study from Nigeria by Edem and Egbe (2016) reported findings from the University of Calabar about postgraduate students' high awareness of e-library services of 76.6% in the Faculty of Education, and 87.11% in the Faculty of Science. The study revealed that those who used electronic resources were 86.39% of all the users, connecting this increased use to high awareness among users. A

similar study was reported in Saudi Arabia through studying students' knowledge and use of e-databases to identify areas for further training; Ahmed and Al-Reyae (2017) targeted 300 undergraduate students who responded to a questionnaire and unstructured interview. Findings from the study indicated high awareness of 90.9%. Another study by Garg and Tamrakar (2014) revealed slightly lower awareness level of e-library services at Indian Institute of Technology, where the findings revealed that over 63% were fairly aware of the e-library services and also satisfactorily used the e-library services.

Yebowaah and Plockey (2017) caution that high awareness of e-library services may not always translate into high use by the library users. A study by Boakye (2017) conducted in Ghana at Garden City University College and Christian Service University College revealed high awareness of e-library services by the faculty members while access and use of e-library services was low. The study uncovered several challenges such as slow internet slow network, regular power cuts and unstable power supply. A similar finding was reported in China where high awareness was reported but there was low adoption of e-library services. Wang and Bai (2016) investigated students' awareness, usage and attitude towards e-books at Zhejiang University. Using a mixed method approach which employed quantitative method through convenience sampling procedure to recruit students, and also used interviews to collect information from the library staff, the study indicated that students' awareness was high about e-books but there was low adoption. Similarly, Tyagi (2011) also noted that although most respondents showed high awareness of e-library services that were provided, the majority used e-library services as supplementary information sources.

Akinola et al. (2018) studied several strategies through which libraries created awareness among postgraduate students at the University of Ibadan in Nigeria, and found that there were several ways of creating awareness such as 51% indicated library website, 47% said through colleagues or friends, while 22% indicated through selective dissemination, 15% indicated through visiting the library, 13% said university bulletin and 11% indicated bills or posters. Among these methods for creating awareness other scholars have mentioned that library orientation is a key strategy for creating awareness about library services, introducing users to various library services, enabling users to seek help from librarians, removing anxiety in new library users and imparting learners

with skills to use library services (Amuda & Tella, 2019; Chawinga & Zozie, 2016; Goldman et al., 2016; Kannegiser, 2021; Osinulu & Okewale, 2018; Pelemo et al., 2020). However, Thindwa, Chawinga and Dube (2019), Phiri, Chipeta and Chawinga (2019), Chipeta et al., (2028), Chawinga and Zinn (2021), Gama, Chipeta, Phiri and Chawinga (2020), Chipeta and Chawinga (2018) and Chipeta (2010) reported in findings from Malawi and South Africa that library orientation library orientation was not successful because it was not compulsory and did not have enough time to impart required skills among learners.

Although students may be aware of different e-library services, their knowledge about access points is crucial. Deng (2010) states that students' awareness about where they can access e-library services can help librarians in developing strategies and policies for establishing and developing technology infrastructure for storing and distributing electronic library services in an effective manner. Many studies have reported about students' awareness of access points for e-library services. For example, Machimbidza (2014) reported that the majority of academics were aware of accessing e-journal services from their offices rather than visiting the library. Ramakrishna and Urs (2017) conducted a study using a survey design among 135 postgraduate students to study the use of e-resources in Bangalore, India. Findings indicated that 82.9% of respondents were aware that they could access e-resources and services from the library, 24.8% were aware that they could access at their departments, 53.3% were aware of accessing e-resources through mobile phones and 12.4% mentioned other places of their convenience.

## **2.6 Use of e-library services in a library**

E-library services are introduced in academic libraries in order to be used by clients. This is attested in Ranganathan's laws of librarianship which emphasises on library services that meet the user needs. For example, the third law 'every book its reader' emphasises on the importance of promoting access and use of information materials to every library user irrespective of distance. According to McMenemy and Mcmenemy (2007), the third law makes libraries adopt e-library services such as online reference to provide the necessary support to all remote users to access information for use without visiting the library, to meet their information needs. As a result, some academic libraries have experienced increased use of e-library services. Similarly, Malemia (2014)

stated that there is increasing use of electronic services in global higher education institutions to serve the needs of scholars and researchers.

Emerging trends are showing that there is increased adoption and use in the developing countries. For example, a study conducted in India by Madhusudhan (2010) among researchers at the University of Delhi, India, established that 62% of the respondents used e-library services on daily basis while 16% used e-library services occasionally. Similar findings were reported by Umukoro and Tiamiyu (2017) from Nigeria at John Harris University, and reported increased use of some e-library services such as internet access service used by 32.7% of users on daily basis, and 33% of users use it in every three days; e-journals are used by 14.4% on daily basis, and 12.3% of users use them in every three days; while Online Databases are used by 11.8% of users on daily basis, and 12.6% of users use them in every three days. In Zimbabwe, Machimbidza (2014) also carried out a study in three universities namely: National University of Science and Technology, Bindura University of Science Education and Midlands State University. Findings revealed high use of one form of e-library services (e-journals) registering 98.8% at Bindura University of Science Education and Midlands State University respectively while the National University of Science and Technology registered an 89% usage.

However, other findings about the adoption and use in some academic libraries in Africa reveal low adoption and usage of e-library services. Tlakula and Fombad (2017) conducted a study in South Africa to investigate the use of electronic resources by the University of Venda students using qualitative method gathered data through semi-structured interviews. The findings revealed that the majority of the university community used e-library services occasionally, while one respondent used the e-library services twice a week and the other respondent indicated that they did not use the services frequently. In a study reported by Malemia (2014), academic staff and researchers at Mzuzu University accessed e-journals provided by the library less frequently with the majority (52%) accessing e-journal services occasionally while only 13% percent reported accessing them on daily basis. The findings reveal that adoption and use in some academic libraries is low. Malemia (2014) findings only reported one form of e-library services among academic staff at Mzuzu University. Chaputula and Mutula (2018) discovered low usage of e-library services such as e-journals, e-books, web portal, OPAC and institutional repositories. For example, at the

Malawi University of Business and Applied Sciences (MUBAS) formerly called Malawi Polytechnic, students' level of use of e-library services was 9%, followed by Mzuzu University at 6.5%, Lilongwe University of Agriculture and Natural Resources registered 6%, College of Medicine registered 1% while none from Kamuzu College of Nursing.

Adoption and use have also been explained using age, gender, experience and discipline. Machimbidza and Mutula (2020) revealed high use of electronic journals among older academics as compared to youthful academics. Results of the study revealed that academics ranging from the age of 41 – 50 used more than 21 articles compared to youthful scholars with age of less than 30. This finding was noted to be against the youth who were more skilled and heavy users of e-journals. This finding also disputed the claim by Unified Theory of Acceptance and Use of Technology (UTAUT) which postulates that the youth are more active users of technology, hence being heavy users of e-library services (Venkatesh et al., 2003)

Other research studies have revealed various types of e-library services mostly used by students in institutions of higher learning. For example, Edem and Egbe (2016) carried out a study at the university of Calabar in Nigeria, which examined the utilisation and availability of electronic resources by postgraduate students. The results of the study showed that postgraduate students preferred the use of electronic journals with a score of 60.53%. Umukoro and Tihamiyu (2017) in a study which was conducted in Nigeria at John Harris University reported the Internet as the most used e-library service on daily basis followed by reprographic services. Thirdly, e-journals were also another e-library service reported with 12.8%. Other e-library services least used in the study were online database services, Online Public Access Catalogue (OPAC) services, e-reference services, current awareness services, web-based resources services and consortia services.

Other studies have also reported about the frequency of the use of e-library services. In Malaysia, Bagudu and Sadiq (2013) studied e-library services among engineering postgraduate students. The findings revealed that 12.8% postgraduate students used e-library services daily, 25.6% used them weekly, 18.3% used 2-3 times a week, 11% used them fortnightly, 17.7% used them monthly, while 7.3% used them twice a semester, and 12.8% them daily.

Ocholla et al. (2017) states that research is one of the niches of higher learning institutions citing ranking as a motivating factor. This is attested in literature from several studies that has uncovered research as a main purpose for use of e-library services. Gupta (2018) reported several purposes of using e-library services and found that research was ranked first with 95.5%, followed by updating domain knowledge (81.8%), enhancing education (77.3%), writing research paper (77.3%), and aid for teaching assignments (40.9%). Bakare et al. (2015) reported several purposes from a survey which used a questionnaire among postgraduate students from the University of Agriculture in Nigeria, where research ranked first with 28.6%, followed by choosing project topics with 23.7%, and also choosing seminar topics with 21.6%. Akinola et al. (2018) reported several purposes of using e-library services from a study conducted in Nigeria at the University of Ibadan among 150 postgraduate students using a survey and questionnaire. The findings revealed that research was the main purpose with a mean score of 3.31, followed by literature searching with a mean score of 3.14, to generate new information with a mean score of 3.11, to update knowledge with the mean score of 3.03, for doing course assignment had a mean score of 3.02, to write seminar or conference paper with a mean score of 3.01, laboratory or field research with mean score of 2.81, and assisting friends to get information materials had a mean score of 2.71. Although research has been found to be the major reason for postgraduate students' use of e-library services, the other findings reveal contrary results. For instance, Katabalwa (2016) in Tanzania using mixed methods approach conducted at the University of Dar-es-Salam reported that 63% of the postgraduate students used e-library services for assignments while a few postgraduate students indicated 32% used e-library services for the other purposes such as literature review, research report writing, current awareness, leisure and extra exploration of other subjects. Thanuskodi (2016) also studied social scientists at Alagappa University in India and reported purposes for using e-library services among M.Phil. and PhD research scholars who were preparing seminars or conference papers for research purposes. Wang and Bai (2016) also observed that postgraduate students use e-library services such as e-books for academic purposes, while undergraduate students use e-books for leisure. Other scholar have stressed that research forms part of a core function of any university (Kumar Tamrakar & Garg, 2014; Islam & Sheikh, 2019; Naqvi, 2012; Pelemo et al., 2020; Singh, 2018; Sohail et al., 2019). In another study, Katabalwa (2016) reported that postgraduate students from the University of Dare-salaam used e-library services mainly for assignments followed by research.



Additionally, the use of e-library services has brought many benefits to scholars in the academic institutions. Baikady et al. (2014) reported the benefits such as continued access to e-resources for 24/7 and 365 days, new databases providing information within a short period of time. Chandel and Saikia (2012) reported several benefits, including convenience for use, increased readership with increased access to e-libraries, leading to more productive research. The findings of Akuffo et al. (2019); Baikady et al. (2014); Edem and Egbe (2016); Katabalwa (2016); and Lwoga and Sife (2018) reported several benefits such as accessing information 24/7, improving performance in research and assignments, easy access to information, and find relevant information for academic activities.

## **2.7 Satisfaction with the e-library services**

The main aim of a library is to provide services that satisfy the information needs of all its clients (Tamrakar & Garg, 2016). Satisfying user information needs signifies meeting user expectations about what the library offers and how these expectations have been met. User satisfaction is one of the benchmarks for determining how effective library services are meeting user information needs (Mirza & Mahmood, 2012). Kotler and Armstrong (2016) define user satisfaction as “the extent to which a product’s perceived performance matches a buyer’s expectations.” Additionally, Marinković et al. (2020) describes satisfaction as meeting customer expectations. Grewal and Levy (2011) argue that for service providers to know how they meet customer expectations, they have to be aware of the initial customer expectations that determine their satisfaction. Chen et al. (2009) have postulated that the more users have positive beliefs about the services provided, the more they will be satisfied. In this study, therefore, the researcher was interested in understanding postgraduate students’ expectations or intentions about e-library services and how these expectations influenced users satisfaction with e-library services offered at Mzuzu University.

Two key studies were conducted to help facilitate the understanding of how four constructs of Unified Theory of Acceptance and Use of Technology can influence satisfaction. Marinković et al. (2020) in Serbia investigated the moderating effects of gender on customer satisfaction and continuance intention in mobile commerce using UTAUT constructs. The study tested three constructs of performance expectancy, effort expectancy and social influence if they influence

satisfaction among the users of mobile services. The findings showed that performance expectancy (the beliefs that mobile services were useful) influenced satisfaction among the users of mobile services who had used services. The study recommendations emphasised that to achieve user satisfaction, service providers should intensively provide information through media campaigns to promote beliefs among users about the usefulness of services, and convince the users that such services can ably meet user expectations. Another study by Chan et al. (2010) also tested modelling satisfaction with mandatory adoption of an e-government technology in Hong-Kong. The study used UTAUT constructs such as performance expectancy, effort expectancy, social influence and facilitating conditions. Results from this study revealed that performance expectancy was the highest determinant of satisfaction, followed by effort expectancy, then facilitating conditions while social influence was not salient in influencing satisfaction among the users. The study therefore concluded that performance expectancy, effort expectancy and facilitating conditions had influenced satisfaction among participants. The study recommended further testing of the variables in other environments, to find out how they can assist in helping to meet user satisfaction. Although the two studies are not related to e-library services, they are key in explaining the use of UTAUT to understand satisfaction in the use of technology and the provision of e-library services.

Another study was carried out in Pakistani by Islam and Sheikh (2019) to determine postgraduate students' satisfaction when using Online Databases. Issues such as perceived usefulness, perceived ease of use, and self-efficacy, were studied as determinants of user satisfaction. The study therefore, concluded that perceived usefulness, self-efficacy, and perceived ease of use, influenced the user to achieve satisfaction among postgraduate students in Pakistan libraries. Habiba and Ahmed (2020) conducted a study in Bangladesh using structured questionnaires to determine faculty members satisfaction of the use of e-resources, and found that computer proficiency level affected satisfaction.

In addition, other prior studies have reported in various studies about satisfaction of e-library services. An example is a study by Tyler and Hastings (2011) who conducted a study at Joint Special Operations University in United States of America where they found that virtual patrons highly appreciated the provision of e-library services due to high satisfaction with the e-library services provided by the university's online library. Despite the study establishing high satisfaction

among users, several recommendations were made to improve the e-library services that needed increased awareness, improving navigation of some e-library services such as websites and enhanced students' satisfaction. Mirza and Mahmood (2012) carried out a study in Pakistani in four academic libraries to determine the effectiveness of library services through user satisfaction, it found out that users were satisfied with e-library services such as OPAC, Online Databases, electronic reference services, and other information services provided in most academic libraries.

Literature also reveals that studying satisfaction exposes inadequacy of e-library services provision in meeting the different user needs. For instance, a descriptive study by Anyim (2018) targeting postgraduate students and academic staff in three universities of Kogi State (Nigeria) revealed that most of the users were dissatisfied with the e-library services. The study recommended increasing budget for improving library services, enhancing and upgrading e-library services from all the three libraries.

Literature reviewed in this section shows that scholars have reported about overall satisfaction of e-library services. Nonetheless, little literature has connected user expectations using the UTAUT model against overall satisfaction which is crucial in the provision of information services in academic libraries. This study differs from the others by explaining how the user expectations influenced their overall satisfaction on each of the e-library services provided at Mzuzu University.

## **2.8 Factors that influences the use or discourage the effective use of e-library services**

There are several factors which influence the use and discourage effective use of e-library services in academic libraries as noted by the various scholars.

### **2.8.1 Factors influencing the use of e-library services**

Akpojotor (2016) explains that awareness plays a crucial role in informing and alerting postgraduate students to the use e-library services available in an academic library. Awareness promotes postgraduate students of the use of e-library services across the university campus. Das et al. (2013) mention that awareness is core to the usage of e-library services since it can facilitate access to library web services that support research activities of postgraduate students in the university.

In Nigeria, a study by Ajala and Adetimirin (2018) investigated the influence of user education and adjustment factors such as perceived enjoyment and objective usability on use of Online Databases by postgraduate students of four universities. Findings of the study indicated that there was significant relationship between conducting library user education and increased use of Online Databases. In a study conducted by Alison et al. (2012), it was revealed that 94.2% of the students who had undergone training used e-resources more frequently and also, that there was significant relationship of  $p < 0.05$  between e-resources usage and training. Chinsinde (2019) reported that 74% of the respondents had easy access to e-resources due to user training respondents received from the library. This demonstrates that training or user education is one of the factors that influence the use of e-library services.

Arif et al. (2018) investigated factors influencing students use of Allama Iqbal Open University's web-based services using the Unified Theory of Acceptance and Use of Technology (UTAUT) model, targeting Pakistani distance education students. The study revealed that students who possess the necessary resources, such as a computer, internet access, the required online support, knowledge and the needed skills (facilitating conditions) used web-based services.

Chaputula and Mutula (2018) study in Malawi revealed that availability of infrastructure such as Internet, integrated library management systems, servers, desktop computers and Wi-Fi are factors that facilitate the use of e-library services in Malawi University Libraries. A study conducted by Chinsinde (2019) which aimed at finding out the use of electronic information resources at a private university in Malawi using a mixed method approach and targeting all students, revealed 77% of respondents who indicated internet connectivity, 69% indicated the number of computers, while 55% indicated the availability of power.

In a recent study, using moderating factors that influence the use of e-resources, Habiba and Ahmed (2020) also noted that age, level of education and experience had influence on the use of e-resources among faculty members. The findings of the study showed that middle aged faculty members had higher intention to use e-resources than the younger faculty. Furthermore, faculty members with higher qualifications (PhD) were more likely to use e-resources since they are engaged in research and publishing activities than those with masters' degrees.

A similar finding was reported by Machimbidza and Mutula (2020) who noted that middle aged faculty members of 41-50 years used more articles or electronic resources compared with those aged 27 below, and those above the age 50.

Arif et al. (2018) reported contrary findings in a study which showed that moderating factors such as age, gender and experience did not have any relationship as factors which influenced the use of web-based services. An explanation from researchers speculates that non-mandatory environments contributed to this situation. Adeleke and Nwalo (2017) established that there was a significant relationship of  $\alpha = 0.05$  between computer literacy and use of electronic library services in a study that was conducted at the University of Ibadan in Nigeria.

### **2.8.2 Factors discouraging the effective use of e-library services**

Despite notable benefits which e-library services offer in academic libraries, factors discouraging effective use of e-library services, according to Asogwa et al. (2015) study from Nigeria in Africa can be attributed to poor funding in libraries, intermittent power supply, poor internet service, weak telecommunication infrastructure, low level of ICT skills by users and library staff. In another study, Akporhonor and Akpojotor (2016) reported more challenges, in addition to the challenges found by Asogwa, as common factors which discourage effective use of electronic services in African academic libraries. The challenges included information overload, high cost of data bundles to access e-library services download delays and difficulty in accessing some websites. Akinola et al. (2018) study revealed slow internet connectivity, incessant power cuts, lack of full text citations and abstracts, inaccessibility of websites, lack of knowledge of search techniques, downloading delays, lack of skill, and irrelevant information sources, as some of the barriers that hindered users from effectively using e-library services.

Okogwu (2019) from Nigeria, also found that lack of perpetual access to e-library services, slow internet, struggle with information overload, irregular power supply, loss of access to content due to cancellation of subscription, non-availability of e-library services relevant to the needs of the users, and e-library services being difficult when the users accessed them. Bakare et al. (2015) also found that users in Ghana had barriers ranging from lack of e-library services needed by users, untrained library staff, insufficient computer systems, poor internet and power outage.

## **2.9 Chapter summary**

This literature concludes that there is information service paradigm shift from traditional to e-library services which has given rise to various benefits of many academic users. However, literature also reveals that there is growing awareness of e-library services which is also leading to their use. Furthermore, literature reveals that there is increased adoption and use while other academic libraries are facing low adoption and usage. Additionally, it has been revealed that there is satisfaction about e-library services among the users who have knowledge of usefulness, skills and recommendations from their significant others. Finally, there are a number of factors highlighted in the literature that influence the users of an academic libraries including postgraduate students. However, academic library users face many obstacles that discourage effective use of e-library services. Literature reviewed about Malawi has mostly dwelt on general students and academic staff and reveal that there is dearth of literature in the studies about the provision of e-library services among postgraduate students.

## **CHAPTER THREE: THEORETICAL FRAMEWORK**

### **3.1 Introduction**

A theoretical framework is a general set of assumptions about the nature of phenomena (Kombo & Tromp, 2006). Based on this definition, a theoretical framework is composed of principles which guide researchers to conduct a study so that they are objective by using the given principles. In this Chapter, three models such as Theory of Reasoned Action (TRA)(Fishbein & Ajzen, 2011), Technology Acceptance Model (TAM) (Davis, 1986) and Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003), will be reviewed. The Chapter, among other things, reviews strengths and weaknesses of each conceptual framework, thereby leading to the justification of the model which underpins this study, which is the Unified Theory of Acceptance and Use of Technology (UTAUT).

### **3.2 Importance of theoretical framework**

The theoretical framework is in research because it introduces the researcher to the new views of the research problem and also enhances objectivity in studying the problem (Kombo & Tromp, 2006). Ravitch and Riggan (2017) state that a theoretical framework connects researchers to existing knowledge, convinces readers about the importance of the study, and helps the researchers to collect variables and identify them for answering research questions in the study.

Some of the theoretical frameworks which can be used to study the use and adoption of information systems include ‘Theory of Reasoned Action, Technology Acceptance Model, and Unified Theory of Acceptance and Use of Technology’. However, these theoretical frameworks can also be used in studying e-library services in academic libraries (Arif et al., 2018; Awwad & Al-majali, 2015; Islam & Sheikh, 2019; Machimbidza, 2014).

### **3.3 Theory of Reasoned Action**

Theory of Reasoned Action (TRA) was coined from collaborative research in 1980 (Fishbein & Ajzen, 2011, p.20). According to the authors, TRA is centred on peoples’ attitudes and their behaviour. The theory has two constructs such as attitude towards behaviour and subjective norm (Machimbidza, 2014; Sejane, 2017; Fishbein & Ajzen, 2011).

The construct of attitude towards behaviour stipulates that people develop attitudes from the beliefs they have about certain behaviours which influence their intention to engage in that behaviour (Fishbein & Ajzen, 2011). Attitude is defined as positive or negative evaluation about an object (Fishbein & Ajzen, 1975). On the other hand, subjective norm is one's belief that other important people think that one should or should not engage in a certain behaviour (Fishbein & Ajzen, 2011). Buabeng-Andoh (2017) explains that the strength of TRA is that it has been used for many years to study human behaviour and acceptance, and use of technologies. However, its limitation is its emphasis on individual attitude resulting in having few constructs, and this makes the model to be rather narrow (Rawstorne, 2005). This limitation makes it not applicable in answering all objectives of the use of e-library services which includes organisational context rather than individual attitudes only.

### **3.4 Technology Acceptance Model**

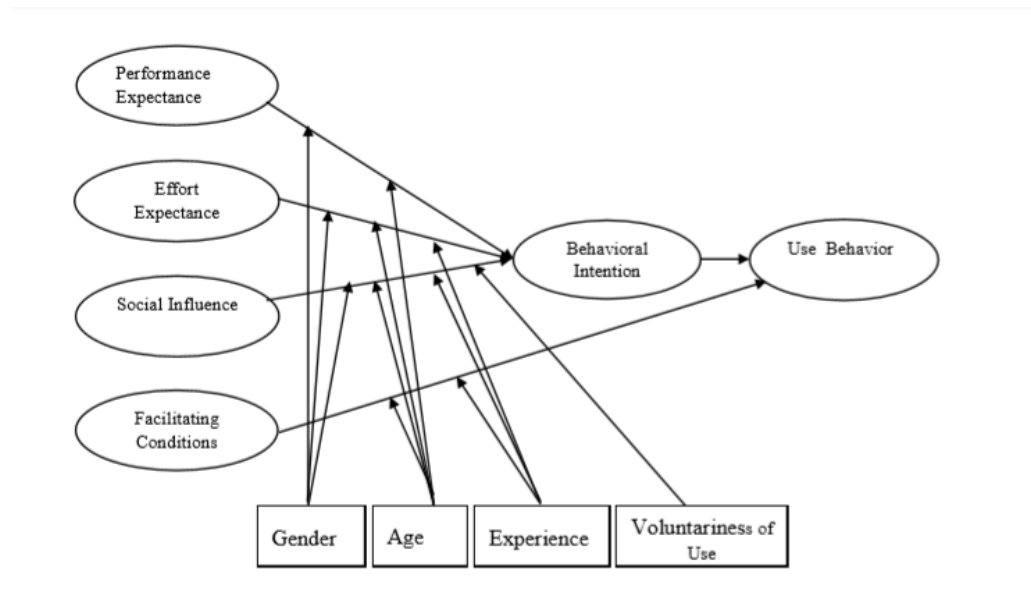
The second model is Technology Acceptance Model (TAM) introduced by Davis (Davis, 1986). The main aim of TAM is to predict technology acceptance. TAM has two constructs: perceived usefulness and perceived ease of use which are key in predicting acceptance and the use of technology (Davis, 1989). TAM model has not been adopted in this study because it does not consider social influence as a factor in the adoption of information technologies (Taherdoost, 2018). This theoretical framework is also not applicable in the current study because it has only two constructs which are perceived usefulness and also perceived ease of use, making it inadequate to address all the objectives of postgraduate students' use of e-library services.

### **3.5 Unified Theory of Acceptance and Use of Technology (UTAUT)**

Another model is UTAUT (Venkatesh et al., 2003). According to (Chaputula & Mutula, 2018) UTAUT model is broad and encompasses many theories. The model identifies four key constructs which drive use: performance expectancy (PE), effort expectancy (EE), social influence (SI) and facilitating conditions (FC) (Venkatesh et al., 2003). In addition, the model has moderating factors such as gender, age, experience and voluntariness that may influence the four drivers in creating behaviour intention to use or influence the actual use of services (Venkatesh et al., 2003). The Model has been used by several scholars. For example, Arif et al. (2018) used the model in studying factors influencing student use of web-based services at Allama Iqbal Open University.



Awwad and Al-Majali (2015) also used UTAUT to study electronic library services acceptance and use in Jordan. In addition, Machimbidza (2014) used UTAUT in studying adoption and use of peer reviewed electronic journals by academics in Zimbabwean State Universities. In Malawi, UTAUT was used by Chaputula (2016) who studied e-Readiness of Public University Libraries in Malawi with reference to use of mobile phones in the provision of library and information services. The following figure is the UTAUT model with its main constructs/variables and moderating factors.



**Figure 3. 1: UTAUT Model (Venkatesh et al., (2003, p.447).**

### **3.6 Application of UTAUT constructs/variables and moderating factors**

In this section, key UTAUT constructs will be explained, listing key variables of the construct, brief explanation of the variables that will be used in this study, and contextualisation of the UTAUT construct in the study.

#### **3.6.1 Performance expectancy**

Performance expectancy is defined as a degree in which an individual believes that using a system will enhance or help in achieving the gains for his or her job performance (Venkatesh et al., 2003). The variables of this construct are: perceived usefulness, extrinsic motivation, job fit, relative advantage, and outcome expectations (Venkatesh et al., (2003). Perceived usefulness is the “belief that using a particular system or e-library service will enhance the user’s job performance”

(Venkatesh 2003, p.448). In this context, the expectation is that if postgraduate students perceive the use of e-library services, is valuable or enhance their academic success, they will influence their intention or behaviour to adopt and use e-library services provided by Mzuzu University Library. Furthermore, when postgraduate students perceive that their expectations have been met because e-library services were useful, they will achieve satisfaction.

### **3.6.2 Effort expectancy**

Effort expectancy defines the degree of ease associated with the use of the system (Venkatesh et al., 2003). The variables that constitute this construct are perceived ease of use, complexity, ease of use (Venkatesh et al., 2003). Ease of use is a “degree to which an innovation is perceived as being difficult to use” (Venkatesh et al., 2003, p.451). Therefore, the study anticipates that if postgraduate students find it easier to use the e-library services, they will influence their intention to use e-library services, thereby also determining their satisfaction level. On the other hand, when students find e-library services difficult to use, they will be dissuaded to use e-library; services hence not being satisfied with the e-library services. In this study, both statements from ease of use were used to determine the satisfaction of postgraduate students on e-library services which are offered.

### **3.6.3 Social influence**

Social influence is defined as the degree to which an individual perceives that the important others believe he or she should use the system (Venkatesh et al., 2003). Venkatesh derived three variables for this construct, such as subject norm, social factors and image from other theories. Subjective norm is the “person’s perception that most people who are important to him think he should or should not perform the behaviour in question” (Venkatesh et al., 2003, p.452). The study therefore, expects that if postgraduate students perceive that their lecturers, librarians and colleagues who matter in their academic life believe that they should use the system, this will influence their intention to use the e-library services, and also, meeting their satisfaction of use of e-library services.

### **3.6.4 Facilitating conditions**

Facilitating conditions are defined as the degree to which an individual believes that an organisational and technical infrastructure exists to support the system (Venkatesh et al., 2003). This construct has three variables such as perceived behavioural control, facilitating conditions and compatibility (Venkatesh et al., 2003). This study employed perceived behavioural control and facilitating conditions. Perceived behavioural control is “perceptions of internal and external constraints on behaviour and encompasses self-efficacy, resource facilitating conditions, and technology facilitating conditions” while facilitating conditions are “objective factors in the environment that make an act easy to do, including, the provision of computer support” (Venkatesh et al., 2003, p.454). In this study, the support which Mzuzu University provides in form of resources such as computers, Wi-Fi hotspots, website; training, awareness, policies are some of the factors which can influence the use of e-library services. On the part of users, if they perceive that they have resources such as computers or laptops, mobile phones and data bundles, they are more likely to use e-library services. On the other hand, unavailability or inadequacy of these conditions can discourage the effective use of e-library services.

### **3.6.5 Usage behaviour**

Usage behaviour is defined as actual frequency of electronic library services use to access the needed information (Awwad & Al-Majali, 2015). In this study, usage behaviour will be determined by their actual use of e-library-services and frequency of use.

### **3.6.6 Moderating factors**

In addition, the model has moderating factors such as gender, age, experience and voluntariness that may influence the four drivers in creating behaviour intention to use or influence the actual use of the services (Venkatesh et al., 2003). In this study, gender, discipline(faculty), experience will be used to moderate awareness, level of use, and factors influencing postgraduate students use of e-library services.

## **3.7 Strengths and shortfalls of the UTAUT theory**

Venkatesh et al. (2003) argued that UTAUT is a powerful model with 70% variance in explaining technology acceptance and use when compared with eight models which were used to develop it, inclusive of TRA and TAM. In addition, UTAUT may be used in many areas such as

implementation of technology, job satisfaction, organisational commitment, and other performance related activities (Venkatesh et al., 2003). The third reason for adopting UTAUT is because it has been accepted and used in many continents as a model for studying the provision of electronic library services (Machimbidza, 2014 & Sejane, 2017).

Although UTAUT has been rated highly, Bankole and Bankole (2016) have noted UTAUT model fails to explain why some technologies are more accepted within the same study population. Despite this weakness, UTAUT will be adopted because this study does not compare acceptance of technologies among postgraduate students.

### **3.7 Chapter Summary**

The Chapter reviewed three models, TRA, TAM and TAM, and selected the UTAUT model which underpinned this study because of its robustness in answering all the objectives and questions of this study. Chapter Four (Research Methodology) which is the next will present methods for carrying out the study.

## **CHAPTER FOUR: RESEARCH METHODOLOGY**

### **4.1 Introduction**

This chapter discusses the methodology which was used to carry out the study. Kumar (2012, p.288) defines research methodology as “the way of finding answers to research questions”. The chapter explains how the research problem introduced in Chapter One was pursued to come up with answers that are presented in Chapter Four. Additionally, it also justifies how each of those paths were chosen above the others. Therefore, this chapter outlines research paradigms, research design, research methods, population of the study, sampling strategies, sample size, data collection procedures, research instruments, reliability of instruments, ethical considerations and the dissemination of results.

The main aim of this study was to investigate the use of e-library services by postgraduate students at Mzuzu University Library. The investigation adopted the following objectives: to determine the level of awareness of e-library services among postgraduate students at Mzuzu University Library, to ascertain level of use of e-library services by postgraduate students at Mzuzu University Library, and to find out the level of postgraduate students’ satisfaction with the e-library services provided by Mzuzu University Library.

### **4.2 Research paradigms**

In general terms, a paradigm is defined as “a way of looking at the world” (Mertens, 2010, p7). In other words, people view the world differently from each other. Similarly, researchers have their own view of this world. According to (Morgan, 2007, p. 49), a paradigm in research is defined as “systems of beliefs and practices that influence how researchers select both the questions they study and the methods that they use to study them.” Creswell (2014) gives some examples of paradigms as follows: positivism, postpositivism, constructivism, pragmatism and transformative. This study is underpinned by pragmatic paradigm. However, all paradigms are briefly discussed in order to provide their strengths and weaknesses to justify why other paradigms were not adopted in this study.

#### **4.2.1 Positivism**

Positivism is a paradigm which believes that social world should be studied like the natural world, through the use of the quantitative methods (Mertens, 2010). Gray (2013) states that positivists claim that reality can be studied using senses of a human being and that inquiry should be based on scientific observation rather than philosophical speculation. This belief has been criticised by scholars who accused it of reducing scientific study as a mere observation, thereby neglecting the use of theories to explain a phenomenon. According to Gray (2013), science can produce theories which can assist in making observations. The emphasis of positivism on quantitative research and observation makes it inadequate in studies which aim at collecting different data types. However, Creswell and Plano Clark (2007) state that the positivist approaches represent the traditional form of research which is purely quantitative in nature. Therefore, the researcher has not found it appropriate for this study since it only involves the collection of quantitative data.

#### **4.2.2 Postpositivism**

This is the world belief which was born in the 1950s and 1960s due to dissatisfaction among researchers about positivism or scientific method (Teddlie & Tashakkori, 2009). However, postpositivism by meaning, emerged after positivism. Postpositivists share beliefs that determine outcomes, ideas are reduced to variables that comprise hypotheses and research questions, and that human behaviour should be measured in quantitative forms (Creswell, 2014). The clear distinctive feature between postpositivism and positivism is that the postpositivists accept that human beings can influence findings of the study, hence the need for validating the results (Teddlie & Tashakkori, 2009). Teddlie and Tashakkori (2009) further state that the postpositivists allow the findings to be generalised to the general population. On the other hand, the fact that postpositivism is quantitative in nature, it was not suitable for this study as well since it is underpinned in both quantitative and research approaches.

#### **4.2.3 Constructivism/interpretivism**

Constructivism paradigm believes that reality is socially constructed as part of people's experiences (Creswell, 2014). Cohen and Manion (1994) claim that constructivist and interpretivist approaches share a belief in understanding human experience where reality is socially constructed.

According to Gray (2013), social reality is different from the natural world stating that the social world deals with actions of people while the natural world deals with laws of nature that require consistencies in the data that is collected, hence the need for different methods to study them. Gray (2013) further argues that central to social behaviour is meaning, which is usually not stable due to different experiences of human beings leading to inconsistencies in the pattern of data, hence this paradigm uses purely qualitative data collection strategies. Constructivism was not selected for this study because it only emphasises on qualitative data collection.

#### **4.2.4 Pragmatism**

Pragmatism is a paradigm that believes that reality is what works and therefore can exist as single or multiple realities that are open to empirical inquiry (Creswell, 2014). According Kaushik and Walsh (2019), researchers who adopt pragmatism can select a research design or method that is most appropriate to address the research problem. In other words, the pragmatism paradigm does not restrict the researcher to belong to a single philosophy in carrying out the study. According to Teddlie and Tashakkori (2009), using pragmatism paradigm researchers can choose philosophies or methods that work best for a particular research problem. This study used pragmatism paradigm because the study is underpinned on the collection of both, quantitative and qualitative data, in order to answer the questions appropriately.

### **4.3 Research designs**

A research design is the plan for the collection, measurement and analysis of data (Gray, 2013, p. 405). In other words, this means data collection procedures and the analysis of data to get meaning out of the data collected. Considering that the study is underpinned by pragmatic paradigm, it will use the mixed methods design. Creswell and Creswell (2018, p.56) says the mixed method design “involves combining or integration of qualitative and quantitative research and data in a research study.” Creswell and Creswell (2018) further identify three core mixed method designs which are used in the pragmatic world view are convergent parallel mixed methods design, and exploratory sequential mixed methods design.

#### **4.3.1 Convergent parallel mixed methods design**

According to Creswell and Creswell (2018), convergent parallel mixed design involves collecting both quantitative and qualitative data at the same time in order to compare both quantitative and

qualitative data. In other words, contradictions are further probed to establish the actual reality. Creswell and Creswell (2018) explains that the key advantage of convergent parallel mixed methods because it helps the research to make emphasis both quantitative and qualitative data. However, Chaputula (2016) explains that convergent parallel mixed methods design requires great effort from the researcher. On the other hand, Creswell (2014) indicates that this design may experience challenges in resolving contradictions which may arise from the two designs. However, this design was not chosen because the researcher collected quantitative data first and then followed with qualitative design later.

#### **4.3.2 Exploratory sequential mixed methods design**

This is a design which involve collecting qualitative data in the first phase, analyse it and then follow up with quantitative data to further explain gaps identified in the initial qualitative data results (Creswell & Creswell, 2018). The main purpose of this design is to test an instrument when one is not available, when variables are not known, and when a researcher wants to explore a study in depth and measure its prevalence (Creswell & Piano Clark, 2007)). The key advantage of this design is that it easy to implement (Chaputula, 2016). However, its disadvantage is that it takes longer to implement when compared with convergent parallel mixed method design. This design was not chosen

#### **4.3.3 Explanatory sequential mixed methods design**

Since this study is inspired by pragmatism school of thought, the study used explanatory sequential mixed method design which involves collecting quantitative data at the initial phase of data collection and analysing it, and then collecting qualitative data as a follow-up to quantitative data (Creswell, 2014). This explanatory sequential mixed method was used in this study because it enabled the researcher to collect quantitative information in the first place and then later, conducting follow-up interviews with some postgraduate students to explain further some issues arising from the quantitative data.

### **4.4 Research Methods**

Research method is a particular approach to answering a research question (Wilson & Mclean, 2011). There are three major research methods that include qualitative, quantitative methods and mixed methods. However, Creswell (2014) also calls these research methods as research designs.



#### **4.4.1 Quantitative methods or approaches**

Quantitative methods use questionnaires with closed ended questions to collect data (Creswell & Creswell, 2018). The quantitative method is advantageous to researchers because it helps them to generalise research data to large amounts of populations (Leedy & Ormrod, 2016). Leedy and Ormrod (2016) also states that quantitative research helps in making sure that there is objectivity since variables form the basis for interpreting findings and making conclusions. Given (2008) criticises quantitative approaches for stripping voice and actions of the people in research findings. This method was not chosen in the study because it included the voices of people through data that was collected from follow up interviews with library staff.

#### **4.4.2 Qualitative methods or approaches**

Qualitative is a type of research method which is “designed to explore the human elements of a given topic, where specific methods are used to examine how individuals see and experience the world” (Given, 2008, p. xxix). The qualitative research is best suited to explore new phenomena and to capture individuals’ thoughts, feelings, or interpretations of meaning and process. However, qualitative research methods have their own weaknesses and quantitative methods have their own weaknesses too. Given (2008) indicates that qualitative research method may not be used to collect data which can explain case-effect relationship in the findings. According to Creswell (2014), these weaknesses can be overcome by using both methods to collect data.

#### **4.4.3 Mixed methods**

Mixed research methods are approaches to inquiry which involves collecting both qualitative and quantitative data and integrating the two forms of data (Creswell, 2014). Leedy and Ormrod (2016) commends the mixed methods research approach for its ability to effectively answer research questions through giving a complete picture of the study. However, Robson (2011) adds that the mixed methods are challenging to novice researchers. Therefore, the study adopted mixed research methods on the premise that the use of both quantitative and qualitative methods provides complete understanding of the research problem (Creswell, 2014). The study adopted this method because other prior studies were employed in understanding the use of e-library services. For instance, Chaputula and Mutula (2018), Machimbidza (2014), Ahmed and Amjad (2014), all successfully used both quantitative and qualitative in the provision and use of e-library and information services. The researcher collected quantitative data through the use of questionnaires which were

self-administered to postgraduate students. In the follow-up phase which collected qualitative data, the researcher conducted interviews with librarians and a computer technician to confirm and provide detailed explanations of the quantitative results gathered through questionnaires.

#### 4.5 Population of the study

According to Levy and Lemeshow (2013) a population is an entire set of individuals to which findings of a study are to be extrapolated. Examples of a population in a research study may include a person, a group, an organisation, records or even an action that is being studied by the researcher (Levy & Lemeshow, 2013). This study will target postgraduate students at Mzuzu University in the faculties of Education, Humanities and Social Sciences, Science, Technology and Innovation; and Environmental Sciences. In addition, the study will include librarians and a computer technician. The population of students and staff is highlighted in Table 1.

**Table 4. 1: Postgraduate students and library staff at Mzuzu University**

<b>Faculty/Department</b>	<b>Program</b>	<b>Male</b>	<b>Female</b>		<b>Total</b>
Education	Master of Education (Leadership and Management)	8	4		12
	Master of Education (Teacher Education)	8	7		16
Environmental Sciences	Master of Science (Construction Real Estates)	1	0		1
	Master of Science Forestry	6	2		2
	Master of Science in Sanitation	17	2		6
	Master of Science in Fisheries Science	3	1		10
	Master of Science in Transformative Community Development	10	7		26

	Master of Science in Urban and Regional Planning	4	0		4
	Master of Science in Water Resources Management and Development	8	2		6
	Master of Science in Geographical Information Systems (GIS)	6	1		7
	Doctor of Philosophy in Transformative and Community Development	8	2		10
	Doctor of Urban and Regional Planning	1	0		1
	Doctor of Philosophy in Water and Sanitation	5	0		3
	Doctor of Philosophy in Environmental Forestry	1	0		1
	Doctor of Philosophy in Geographical Information Systems	2	0		2
Humanities and Sciences	Master of Library and Information Science	11	1		12
Library	Assistant Librarians	1	1		2
Library	Computer Technician	0	1		1
<b>Total</b>		<b>100</b>	<b>30</b>		<b>132</b>

**Source:** Mzuzu University (2019)

#### 4.6 Sampling strategies

Babbie (2007) defines sampling as a process of selecting units of study and groups sampling into probability and non-probability. Probability sampling is based on the concept of giving to all members of the population equal chance to be included in the sample (Dhivyadeepa, 2015). Examples of probability sampling include: simple random sampling, stratified sampling and cluster sampling. Non-probability sampling is where members of the population do not have equal

chance of being included in the sample (Dhivyadeepa, 2015). Examples of non-probability sampling include: haphazard sampling (haphazard sampling), quota sampling, snowball sampling, deviant-case sampling, sequential sampling and theoretical sampling. However, Israel (2012) argues that there is no need to sample the population of less 200; instead, all of them should be included in the study and this is referred to as census. Israel (2012) defines census as an approach that uses the whole population as a sample. Hence, postgraduate students were included in the study through census. Additionally, librarians and computer technicians were sampled using purposive sampling technique since the researcher felt these staff members had information which could help explain postgraduate students use of e-library services at Mzuzu University Library.

#### **4.7 Summary of participants who participated in the study**

A sample is a portion of a population or universe that forms the subject basis for the study (Etikan & Bala, 2017). This study included all participants in the population since it was less than 200 (Israel, 2012). The study had 129 postgraduate students, two assistant librarians and one Computer Technician who were 132 in total. Refer to Table 3.1 for more details.

#### **4.8 Data Collection instruments**

These are tools that helps a researcher to obtain relevant information for one's research project (Wilkinson & Birmingham, 2003). Wilkinson mentions three forms research instruments which are questionnaires, interview guides and observation schedules. These instruments are discussed in detail in the subsections that follows:

##### **4.8.1 Questionnaires**

Gray (2013) defines questionnaires as research tools through which people are asked to respond to the same set of questions in a predetermined order. Andrew and Halcomb (2009) mention that questionnaires are relatively cheap and can easily reach a wider population in different geographic locations. However, questionnaires were used in this study because they were cheap and easy to administer among the busiest population such as postgraduate students. Secondly, using an electronic questionnaire, the researcher was able to reach respondents who could not easily be reached due to lock down during closures as a result of the Covid-19 disease.

Through the use of questionnaires (See Appendix 2) which contained open and closed ended questions, the researcher collected data by physically distributing to 31 postgraduate students in the Faculties of Education and Humanities and Social Sciences who were available on campus when approval to collect data was granted. However, due to prolonged unavailability of postgraduate students in the Faculty of Environmental Sciences from the campus due to the Covid-19 lock down, the researcher converted the questionnaire into google form which was shared to 98 postgraduate students via e-mail addresses with the help of postgraduate students' coordinators. According to (Denscombe, 2012), the advantage of the web-based questionnaire is that it is less expensive and can be administered through arranging with lecturers.

While the questionnaire offered the researcher several advantages, it also had weaknesses. According to Andrew and Halcomb (2009), a questionnaire does not allow clarifications and also non-response to some questions cannot be interrogated. As a result of this, the researcher triangulated with interview schedules. The questionnaire contained 20 questions which were designed following themes reviewed in literature and the Unified Theory of Acceptance and Use of Technology (UTAUT) Model in (Chapter Two). The questionnaire was divided into five sections.

**Section A:** The section sought information about postgraduate students' demographic characteristics such as gender, department, program, faculty, and age.

**Section B:** The section intended to capture students' general awareness of e-library services, awareness about types of e-library services, sources of postgraduate students' awareness about e-library services, and awareness about where to access e-library services.

**Section C:** The section sought information about postgraduate students' use of different types of e-library services, frequency of use of the e-library services, intensity of use of e-library services, purpose for use and benefits for using the e-library services.

**Section D:** This section sought to find out if participants felt satisfied with e-library services provided by Mzuzu University Library. The second part aimed at investigating if they were also

satisfied with their expected performance, effort and social influence expectations when using e-library services.

**Section E:** The section aimed at finding out factors that influence the use of e-library services and factors which discourage the effective use of e-library services.

Variables for the study are as indicated in the table below:

**Table 4. 2: Mapping of research questions against study variable**

<b>Research questions</b>	<b>UTAUT Model Constructs</b>	<b>Variables being addressed From literature</b>	<b>Selected prior studies that used these models and variables</b>
What is e-services level of awareness of postgraduate students at Mzuzu University Library?	Facilitating conditions Moderating factors	awareness, internet service, e-journals, e-books, Online Databases, institutional repository, OPAC, e-reference, online search services, e-current awareness, remotex, awareness, strategies for creating awareness, awareness of e-library services access points.	Anyim, W. O. (2018). E-Library Resources and Services: Improvement and Innovation of Access and Retrieval for Effective Research Activities in University E-libraries in Kogi State Nigeria. 22. <a href="https://digitalcommons.unl.edu/libphilprac/1647">https://digitalcommons.unl.edu/libphilprac/1647</a>  Venkatesh, Morris, Davis, & Davis. (2003). User Acceptance of Information Technology: Toward a Unified View. <i>MIS Quarterly</i> , 27(3), 425. <a href="https://doi.org/10.2307/30036540">https://doi.org/10.2307/30036540</a>
What is the level of use of e-services by	<ul style="list-style-type: none"> <li>• Usage behaviour</li> </ul>	Services used, frequency of e-library services use, number	Umukoro, I. O., & Tihamiyu, M. A. (2017). Determinants of e-library services' use among university students: A study of

<p>postgraduate students? at Mzuzu University Library.</p>	<ul style="list-style-type: none"> <li>• Mode rating factors</li> <li>• Performance expectancy</li> </ul>	<p>of articles/e-books used</p> <p>Purpose, benefits</p>	<p>John Harris Library, University of Benin, Nigeria. <i>Journal of Librarianship and Information Science</i>, 49(4), 438–453. <a href="https://doi.org/10.1177/0961000616653176">https://doi.org/10.1177/0961000616653176</a></p> <p>Shaltoni, A. M., Khraim, H., Abuhamad, A., &amp; Amer, M. (2015). Exploring students' satisfaction with universities' portals in developing countries: A cultural perspective. <i>International Journal of Information and Learning Technology</i>, 32(2), 82–93. <a href="https://doi.org/10.1108/IJILT-12-2012-0042">https://doi.org/10.1108/IJILT-12-2012-0042</a></p>
<p>What is the level of postgraduate students' satisfaction with the e-services provided by Mzuzu University Library?</p>	<ul style="list-style-type: none"> <li>• Performance expectancy</li> <li>• Effort expectancy</li> <li>• Social influence</li> </ul>	<p>Satisfaction with e-library services</p> <p>Usefulness of e-library services</p> <p>Ease of use or level of difficulty</p> <p>Subjective norm</p>	<p>portals in developing countries: A cultural perspective. <i>International Journal of Information and Learning Technology</i>, 32(2), 82–93. <a href="https://doi.org/10.1108/IJILT-12-2012-0042">https://doi.org/10.1108/IJILT-12-2012-0042</a></p>
<p>Which factors are influencing the use and discourage the effective use e-</p>	<p>Facilitating conditions and social influence.</p> <p>Moderating factors.</p>	<p><b>Factors for use</b></p> <p>Awareness, skills, training, availability of Internet, bandwidth, integrated library management</p>	

<p>services by postgraduate students?</p>		<p>systems, computers, Wi-Fi, mobile phones</p> <p><b>Factors that discourage the effective use</b></p> <p>Inadequate computers, Wi-Fi hotspots, inadequate searching and downloading skills, erratic internet connection, bandwidth congestion, power blackouts, information materials that do not meet information needs, straining eyes when reading from screen.</p>	
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**4.8.2 Interview guides/schedules**

Interview schedules were also employed in the data for this study (See Appendices 3 and 4). Interview guides were helpful in this study because they helped the researcher to ask supplementary questions to library staff in a second phase of the study (Creswell, 2014). Magnusson and Marecek (2015) define an interview guide as a memory aid which helps the researcher to gather all necessary information that answers his study. However, Magnusson and Marecek (2015) mention that an interview schedule has an advantage because allows the interviewee to narrate all experiences they have related to the topic.



The interview schedule for this study had thirteen questions with five sections: Section A addressed the biodata information of the respondents; section B addressed level of awareness of the respondents; Section C addressed use of e-library services by postgraduate students; section D addressed satisfaction of postgraduate students about e-library and section E addressed factors influencing postgraduate students to use e-library services and also factors discouraging effective use of e-library services.

The interview guide had its own challenges and weaknesses. For instance, Andrew and Halcomb (2009) mentions that interviews may bring the biasness during data collection. Hence combining the interview guide and questionnaires.

#### **4.8 Data collection procedures**

Data collection procedure is a way in which data is collected from research respondents. According to Gray (2013), some examples of data collection procedures are questionnaires, interviews, and observation. Data collection took three weeks although it was planned to be collected in two weeks. The reason for the prolonged period was due to Corona Virus pandemic which made difficult for postgraduate students to be on Campus at Mzuzu University.

To collect data in the first phase, questionnaires were physically distributed to postgraduate students who were available on campus in the first week. These postgraduate students were given one week to respond and thereafter the researcher visited them to collect the filled questionnaires. Secondly, postgraduate students who were not available on campus because of Corona Virus Pandemic were reached through google forms which were sent to through e-mail and WhatsApp groups. The postgraduate coordinators assisted the researcher to identify postgraduate students who responded to the questionnaire through WhatsApp and e-mails.

In addition, face-to-face interviews were conducted with three library staff: two assistant librarians and one computer technician in the second phase of data collection (See appendix 3: Interview guide for librarians). The participants were given informed consent and were also duly informed that the interviews will be recorded. The interviewees were given interview guides in advance in order to allow them prepare for the interviews. The interviews were recorded using an android

phone and then transferred the recordings to the laptop. To further secure them, the recordings were archived in the google drive. Each interview on average lasted for about 12 minutes.

#### **4.9 Validity and reliability**

The mixed research method is considered to be valid and reliable because of its use of several techniques of collecting data (Creswell, 2014). Gray (2013) defines validity is as what an instrument intended to measure. In other words, validity helps to determine whether the data collected is the one which was intended to be collected. Gray (2013) points out that the data can be used for generalisation or compared with other data for comparison. On the other hand, reliability is defined as a measure of an instrument which will give similar results if repeated in data collection processes by other people. In other words, has the study collected the data which if replicated can produce similar results using the same instrument.

Creswell (2014) provides a number of strategies for achieving both validity and reliability. Firstly, using triangulation such as using multiple procedures of collecting data such as questionnaires, interviews and observations (Creswell, 2014). For example, this study first collected quantitative data from respondents and then conducted follow-up interviews with assistant librarians and computer technician.

Secondly, peer or expert reviewing to correct errors in the instruments and the proposal document. In this study, the questionnaires were reviewed by the supervisor and then went for ethical review with Mzuzu University Research Ethics Committee where reviewers recommended necessary changes before the study was conducted.

Thirdly, the study adapted some questions and variables from the approved research instruments of Venkatesh et al. (2003), Machimbidza (2014), and Islam and Sheikh (2019), who successfully studied electronic library services from researchers and postgraduate students in Zimbabwe and Pakistan respectively.

#### **4.10 Ethical considerations**

Gray (2013) explains that since research involves working with people, ethical issues are inevitable during planning, implementation and reporting stages. In other words, a researcher should plan in advance for ethical issues which may arise while at any stage in the research process. Gray (2013) points out that the main aim of ethical issues in research is not to harm others emotionally or physically. Similarly, Creswell (2014) explains that the researcher has an obligation to observe and respect the values, needs and desires of the respondents. To observe ethical values in this study, the researcher sought clearance from the Mzuzu University Research Ethics Committee (see appendix 4 and 5). In addition, respondents were asked to participate in the study voluntarily, to observe anonymity by not indicating names on the questionnaires (see appendix 1). Furthermore, the data collected through questionnaires was kept with confidentiality by locking it in a drawer. On the other hand, electronic data was also in a computer which restricted access through use of passwords.

#### **4.11 Data analysis**

Data analysis is the process of systematically searching and arranging the interview transcripts, filed notes, and other materials that researchers accumulate to enable one to come up with findings (Bogdan & Biklen, 2007). In coming up with findings of this mixed research method study as alluded to earlier, the researcher accumulated both quantitative and qualitative data which was analysed and presented.

##### **4.11.1 Quantitative data**

Quantitative data was analysed using the Statistical Package for Social Sciences (SPSS) version 20.0 to produce charts, graphs and tables that will help the researcher to interpret the findings of the study. According to Babbie (2013) quantitative data is always almost handled by computers using different software such as SPSS. The SPSS software provides different functionalities that help lessen the researcher's role of conducting complex mathematical calculations. In this study therefore, quantitative data was analysed as follows: Objective 1, 2 and 3, and 4 were analysed using descriptive statistics such as percentages, frequencies, and chi-square tests to show relationships of variables. To conduct these statistical tests, the researcher converted 30 physical questionnaires and 48 google forms data into SPSS.

#### **4.11.2 Qualitative data**

Babbie (2013) describes qualitative analysis as a method of examining social research data without converting them to numerical data. In this study, therefore, data was collected through conducting interviews with two assistant librarians and one senior computer technician. Qualitative data was analysed thematically. The data collected was arranged and then prepared for analysis. The data was organised using themes of the study. Emerging themes in each objective were added to the major themes in order to generate patterns which were not intended during the planning of data collection.

#### **4.12 Dissemination of results**

The researcher presented the findings of the study at a seminar which was organised by the Department of Information Science at Mzuzu University. Secondly, the researcher deposited the thesis in Mzuzu University Institutional Repository. Thirdly, the researcher is expected to publish the dissertation in peer open access journals.

#### **4.13 Chapter summary**

This chapter discussed research methodology in detail and in particular explained research paradigms, research design, research methods, target population, sampling strategies, sample size, research procedures, research instruments, valid and reliability, data collection, ethical consideration and dissemination of findings. Chapter Four which is next will present data analysis and interpretation of findings. Chapter Five will present data analysis and interpret the findings.

## **CHAPTER FIVE: DATA ANALYSIS AND INTERPRETATION OF RESULTS**

### **5.1 Introduction**

The purpose of this study was to investigate the use of e-library services at Mzuzu University Library by postgraduate students at Mzuzu University in Malawi. As discussed in Chapter Three, the researcher collected quantitative data through questionnaires which were self-administered and also through sending e-mails to postgraduate students. Qualitative data was collected through follow-up interviews with assistant librarians and a computer technician at Mzuzu University Library. The tools that were used to collect data were questionnaires. The results of quantitative data were analysed using SPSS and presented in form of frequency tables, figures and charts. The two datasets were triangulated to ensure reliability and integrity of the findings. Triangulation helps to give a true reflection of a situation through a combination of several methodological tools (Babbie, 2013).

The study addressed the following objectives:

- To determine the level of awareness of e-library services among postgraduate students at Mzuzu University Library
- To ascertain level of use of e-library services by postgraduate students at Mzuzu University Library.
- To find out the level of postgraduate students' satisfaction with the e-library services provided by Mzuzu University Library.
- To determine factors that influence the use and discourage effective use of e-library services by postgraduate students at Mzuzu University Library.

Specifically, the data presentation in this chapter covers demographic profile of respondents; awareness of types of e-library services by postgraduate students; use of e-library services by postgraduate students; focuses on the level of postgraduate students' satisfaction with e-library services; and factors that influence the use and discourage the effective use of e-library services by postgraduate students. The results are organised and presented in terms of themes obtained from research objectives and from variables gleaned from the theoretical framework in Chapter Three.

For each of the objectives, data from the study questionnaires was presented first, then followed by data collected through use of an interview guide when the researcher conducted when follow-up interviews with library staff such as assistant librarians and the computer technician.

However, take note that in this study, percentages are rounded-up to the nearest whole numbers to minimise of fractions in the results.

## **5.2 Response rate**

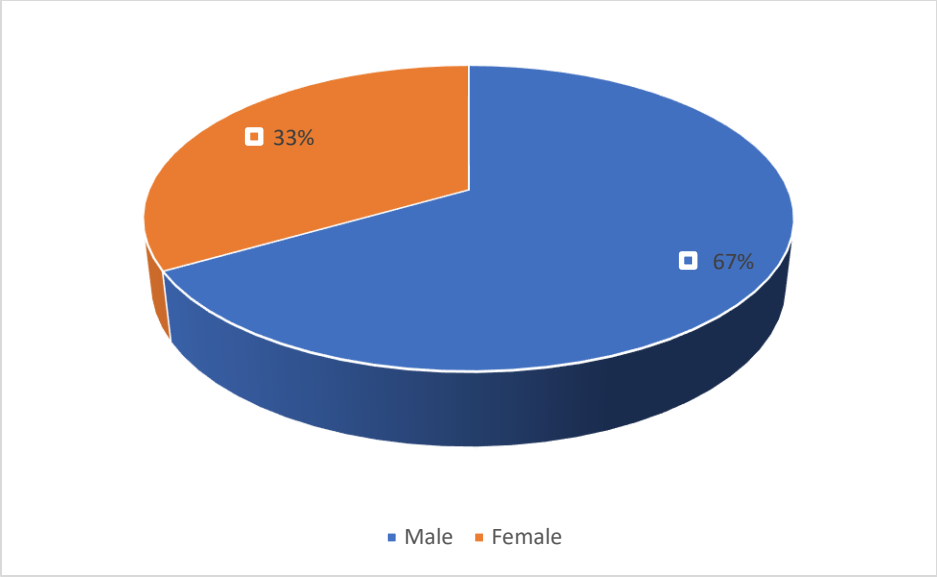
From the 129 self-administered questionnaires that were distributed to postgraduate students 78 (60%) responded. According to Fincham (2008) all researchers should aim at reaching a 60% response rate in a study. On the other hand, Babbie and Mouton (2001) rated effectiveness by showing that a study with 70% response rate is considered excellent; 60% response rate is considered good while a 50% response rate was considered fair. However, the response rate for this study was close to that of Machimbidza (2014) who got 58% in a study which was conducted among academics in Zimbabwean universities. Therefore, this response rate was considered good and acceptable. The study also conducted followed-up interviews with three library staff: two assistant librarians and one computer technician. Data collected from the library staff specifically targeted those themes which required further explanation from library staff to supplement issues which were not clearly explained by postgraduate students.

## **5.3 Demographic information of the respondents**

The first section of the questionnaire sought demographic details of respondents. These demographic details were gender, age, faculty, level, and program of study.

### **5.3.1 Respondents by gender**

Respondents were asked to indicate their gender. Results are as presented in the Figure 5.1.



**Figure 5. 1: Gender of respondents**

Data presented in Figure 5.1 indicates that out of 78 postgraduate students, the majority of the respondents were 52 (67%) males while 26 (33%) were females. These results imply that there is a big gap between male and female recruitment in postgraduate studies in higher education in Malawi.

**5.3.2 Age of respondents**

Respondents were asked to indicate their age range. Results are as displayed in Table 5.1.

**Table 5. 1: Age of respondents (n=78)**

Years	<i>F</i>	%
26-35	33	42
36-44	24	31
45-50	9	12
0-25yrs	7	9
Above 50	5	6
<b>Total</b>	<b>78</b>	<b>100</b>

Results presented in Table 5.1 show that the majority of postgraduate students who participated in the study were in the age range 26-35 years with the score of 33 (42%), followed by age range of 36-44 with the score of 24 (31%). The least age ranges were 45-50 with the score of nine (12%), age range of 0-25 with the score of seven (9%), and age range of above 50 years with a score of five (6%). The findings imply that most postgraduate students who participated in the study were in the age ranges of 26-35 years.

### 5.3.3 Faculty of respondents

Respondents were asked to indicate details of their faculty. The results are presented in Table 5.2.

**Table 5. 2: Respondents Faculty (n=78)**

<b>Faculty</b>	<b><i>F</i></b>	<b>%</b>
Environmental Sciences	48	62
Education	18	23
Humanities and Social Sciences	12	15
<b>Total</b>	<b>78</b>	<b>100</b>

Analysis of data in Table 5.2 shows that a total of 78 postgraduate students were enrolled in the study from three faculties of Environmental Sciences, Education and Humanities and Social Sciences. The majority of the postgraduate students who were 48 (62%) came from the Faculty of Environmental Sciences while 18 (23%) came from the Faculty of Education and 12 (15%) from the Faculty of Humanities and Social Sciences.

### 5.3.4 Cross-tabulation of respondents by Faculty

Postgraduate students were asked to provide details of their gender and faculty. Table 5.3 provides for cross-tabulation of gender and faculty of respondents.

**Table 5. 3: Cross-tabulation of respondents by faculty and gender(n=78)**

<b>Faculty</b>	<b>Gender</b>					
	Male		Female		Total	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%



Education	10	13	8	10	18	23
Environmental Sciences	31	40	17	22	48	62
Humanities and Social Sciences	11	14	1	1	11	15
Total	52	67	26	33	78	100

According to the data presented in Table 5.3, there was no much difference between males and female respondents from the faculty of education. For instance, out of 18 respondents from the faculty, 10 (13%) were males while 8 (10%) were females. Regarding respondents who came from the faculty of Environmental Sciences who were 48 in total, 31 (40%) were males while 17(22%) were females. On the other hand, respondents from the faculty of Humanities and Social Sciences who were 12 in total, 11 were males and 1 was a female. The data presented in the table suggests that there was good female representation in the Faculty of Education since the gap in percentages between males and females was very small. However, when chi-square was conducted, no significant relationship was noted ( $N=78$ ,  $\chi^2=4.469$ ,  $df=2$ ,  $P=0.107$ ) as regards to recruitment of gender by faculty.

### 5.3.5 Level of postgraduate study

Respondents were asked to indicate the level of study. Findings are displayed in Table 5.4.

**Table 5. 4: Level of study of postgraduate of students (n=78)**

Type of postgraduate study	<i>f</i>	%
Masters	67	86
PhD	10	13
Missing	1	1
Total	78	100

Data presented in Table 5.4 clearly shows that out of 78 respondents, 67 (86%) were masters students, 10 (13% were PhD students while one (1%) did not indicate the qualification of study. The results suggest that Mzuzu University has more masters students than PhD students.

### 5.3. 2 Respondents by program of study

This item aimed at determining programmes in which postgraduate students were enrolled. To solicit this information, respondents were asked to choose a programme in which they were registered at Mzuzu University. Results are as indicated in the Table 5.5.

**Table 5. 5: Respondents' programme of study(n=78)**

<b>Program</b>	<b><i>f</i></b>	<b>%</b>
Master of Science in Sanitation	15	19
Master of Science in Water Resources Management and Development	12	15
Master of Library and Information Science	12	15
Master of Education (Teacher Education)	11	14
Master of Science in Transformative Community Development	10	13
Master of Education (Leadership and Management)	8	10
Doctor of Philosophy in Water and Sanitation	2	3
Master of Science in Fisheries Science	1	1
Doctor of Philosophy in Environmental Forestry	1	1
Master of Science in Forestry Management	6	<b>8</b>
Total	78	100

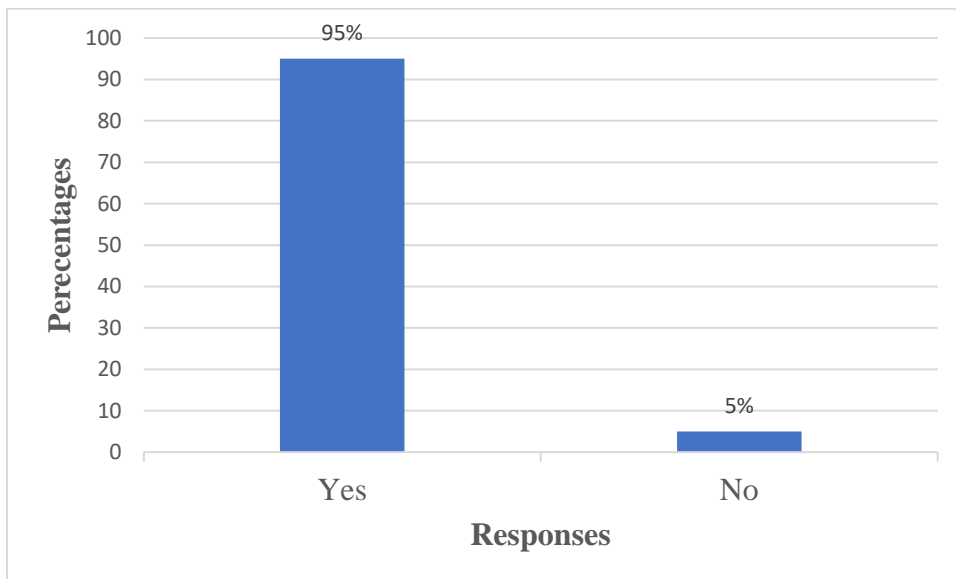
The findings in Table 5.5 indicate that postgraduate students who responded to the questionnaire were enrolled in 10 programmes. Out of 78 postgraduate students, 15 (19%) were enrolled in Master of Science in Sanitation, while 12 (15%) were enrolled in Master of Science in Water Resources Management, 12 (15%) were enrolled in Library and Information Science. In addition, 11 (14%) were enrolled in Master of Education (Teacher Education), 10 (13%) were enrolled in Master of Science in Transformative Community Development, eight (10%) were enrolled in Master of Education (Leadership and Management), six (8%) enrolled in Master of Science in Forest Management, two (3%) were enrolled in Doctor of Philosophy in Water and Sanitation, one (1%) were enrolled in Master of Science in Fisheries Science and one (1%) was enrolled in Doctor of Philosophy in Environmental Forestry. These findings suggest that there are more masters' students than doctoral students in postgraduate programmes at Mzuzu University.

#### 5.4 Level of awareness of postgraduate students about e-library services

This item aimed at finding out the extent of awareness by determining the general awareness of all postgraduate students about e-library services, awareness of each e-library service, strategies for creating awareness among postgraduate students, and awareness of access points for accessing e-library services.

##### 5.4.1 Awareness of postgraduate students about e-library services

This item aimed at determining the frequency or percentage of postgraduate students who are aware of e-library services. Respondents were asked to select Yes or No if they were aware or not about e-library services offered at Mzuzu University Library. Responses are indicated in Figure 3.



**Figure 5. 2: Awareness of postgraduate students about e-library services**

Analysis in Figure 3 indicates that the majority of postgraduate students are aware of the existence of e-library services at Mzuzu University Library. Out of 78 postgraduate students, 74 (95%) indicated that they were aware of e-library services which are offered at Mzuzu University Library while four (5%) indicated that they were not aware. The findings suggest that most postgraduate students are aware of e-library services which are offered at Mzuzu University.

To collect qualitative data, the follow-up interview was conducted with assistant librarians. The findings from these library staff members reveal mixed reactions regarding the use of e-library

services. For instance, one staff member accepted that there is awareness of e-library services, while another felt conducting a study was important to ascertain whether postgraduate students are aware of e-library services offered at Mzuzu University in the following statements:

*There is high awareness of e-library services among postgraduate students when they are on campus since they are given library orientation, brochures, and other face-to face sessions at the reference desk (Assistant Librarian 1).*

It is difficult to measure awareness since most postgraduate students are on block release sessions and also that there is no study which has been done to quantify the claim (Assistant Librarian 2). The findings suggest that there is high awareness of e-library services among postgraduate students since both quantitative and qualitative results agree that most postgraduate students are aware of e-library services. The findings also underscore the importance of carrying out a study to confirm the level or extent of awareness among postgraduate students.

#### 5.4.2 Cross-tabulation of awareness of e-library services across faculties

To establish the awareness of e-library services among postgraduate students in all faculties a cross tabulation was conducted. The results are presented in the Table 5.6.

**Table 5. 6: Cross-tabulation of awareness of e-library services across faculties (n=78)**

Faculty	Awareness				
	Yes		No		Total
	<i>f</i>	%	<i>f</i>	%	
Education	17	94	1	6	18 (100%)
Environmental Sciences	45	94	3	6	48 (100%)
Humanities and Social Sciences	12	100	0	0	12 (100%)

The findings presented in Table 5.6 reveal, 12 (100%) of postgraduate students who belonged to the Faculty of Humanities and Social Sciences were aware of e-library services offered at Mzuzu University Library, while 45 (94%) of postgraduate students from the Faculty of Environmental Sciences indicated that they were aware of e-library services, and 17 (94%) of postgraduate

students from the Faculty of Education indicated that they are aware of the e-library services. The findings show that all the postgraduate students from the Faculty of Humanities and Social Sciences who were librarians, were aware of e-library services offered at Mzuzu University when compared to other faculties of Education and Environmental Sciences.

However, the Chi-square tests conducted in the cross-tabulation of the awareness of e-library services across faculties shows that ( $N=78$ ,  $df=2$ ,  $\chi^2 = 780$ ,  $P=0.677$ ). This therefore, indicates that there was no significant relationship among postgraduate students' awareness of e-library services provided at Mzuzu University Library across the three faculties.

#### **5.4.3 E-library services that postgraduate students were aware of at Mzuzu University Library**

To further determine the extent of awareness, respondents were asked to select as many e-library services as possible which they were aware of at Mzuzu University Library. The results are as indicated in Table 5.7.

**Table 5. 7: E-library services that postgraduate students were aware of(n=78)**

<b>E-library services</b>	<b>Yes</b>	
	<b><i>f</i></b>	<b>%</b>
Internet services	65	83%
E-journals	57	73%
E-books	29	37%
Online public Access Catalogue (OPAC)	28	36%
Online Databases	27	35%
Institutional repository (electronic theses)	22	28%
Online search services	22	28%
Online reference (use of WhatsApp)	14	18%
Remotex	12	15%
E-current awareness	4	5%

The results presented in Table 5.7 reveal that the majority 65 (83%) of the postgraduate students were aware of the internet services while 57(73%) were aware of the electronic journals. The

findings further show that 29 (37%) were aware of e-books, 28(36%) were aware of Online Public Access Catalogue (OPAC), 27 (35%) were aware of Online Databases, 22 (28%) were aware of institutional repository, 22 (28%) were aware of online search services. In addition, 14 (18%) postgraduate students were aware of online reference services, 12(15%) were aware of remotex, 4 (5%) were aware of e-current awareness. The findings suggest that the internet service and electronic journals are the most well-known e-library services among postgraduate students at Mzuzu University Library.

However, library staff were also asked to ascertain through interviews about e-library services that are actually used by postgraduate students at Mzuzu University Library. Two respondents confirmed that some e-library services are known among postgraduate students. The findings from the data collected from librarians reveal that internet, e-journals and e-books were mentioned as e-library services which are mostly known by postgraduate students. Further, the findings reveal that one library staff indicates that it is also difficult to measure the number of e-library services which are known due the time and nature of postgraduate programmes which are offered through block release, hence stating that research needs to be conducted to know the extent of use of e-library services as stated in the following statements:

*They are mostly aware of internet, e-journals and e-books (Assistant Librarian 1)*

*Yes, most postgraduate students are aware of e-library services such as e-books, e-journals and internet, but to know its specific level, is not possible since most of the postgraduate students do not live on campus (Assistant Librarian 2)*

#### **5.4.4 Cross-tabulation of awareness of e-library services across faculties**

To establish relationship of awareness of e-library services across faculties, data was cross-tabulated. Findings are presented in Table 5.8.

**Table 5. 8: Cross-tabulation of awareness of e-library services across faculties**

<b>E-library service</b>	<b>Response</b>	<b>Education</b>	<b>Environmental Sciences</b>	<b>Humanities and Social Sciences</b>	<b>Total</b>
Internet services	Yes	15	41	9	65
E-journals	Yes	10	37	10	57
E -books	Yes	4	20	5	29
Online Public Access Catalogue (OPAC)	Yes	2	20	6	28
Online databases	Yes	2	17	8	27
Institutional repository	Yes	2	15	5	22
Online reference service	Yes	1	9	4	14
Remotex	Yes	1	8	3	12
Web tutorials	Yes	1	3	0	4
E-current awareness	Yes	1	2	1	4

Table 5.8 illustrates that 15 postgraduate students from Education were aware, 41 from Environmental Sciences indicated were aware, nine from Humanities and Social Sciences were aware about internet service; about e-journals 10 postgraduate students from Education indicated were aware , 37 from Environmental Sciences indicated were aware, 10 and from Humanities and Social Sciences indicated were aware; regarding e-books, four from Environmental Sciences, 20 from Environmental Sciences indicated were aware, and six from Humanities and Social Sciences indicated were aware; about Online Public Access Catalogue, two postgraduate students from Education, were aware, 20 from Environmental Sciences were aware, and six from Humanities and Social Sciences were aware; regarding online databases, two postgraduate students from Education indicated were aware, 17 postgraduate students from Environmental Sciences indicated were aware, and eight from Humanities and Social Sciences indicated were aware; On institutional repository, two postgraduate students from Education indicated were aware, 15 form Environmental Sciences indicated were aware, and five from Humanities and Social Sciences

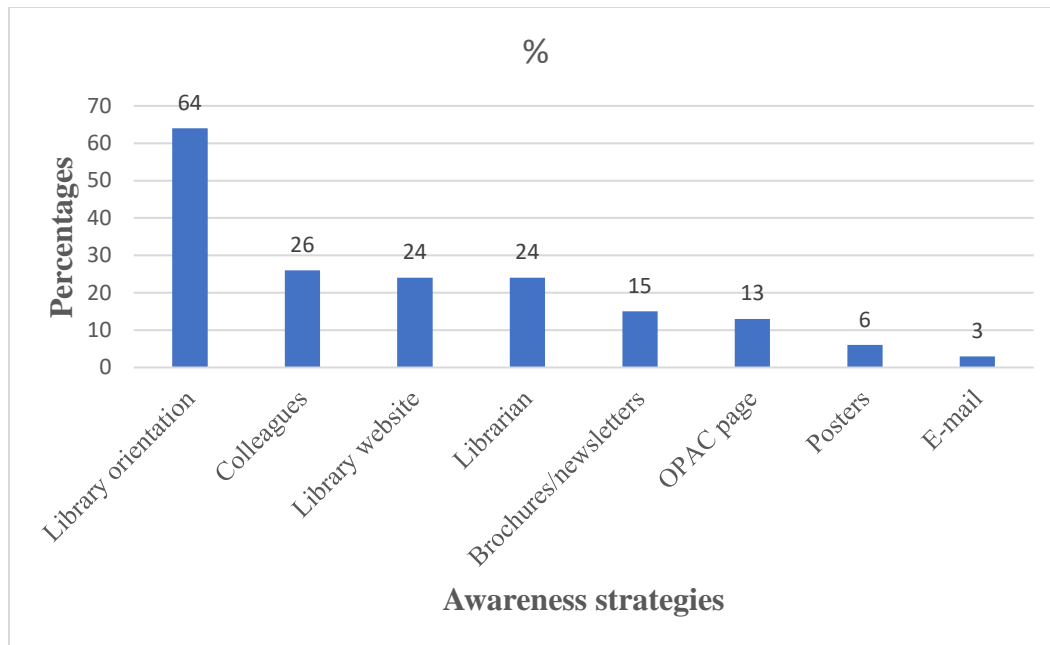
indicated were aware; About online reference service, one postgraduate student from Education indicated was aware, nine from Environmental Sciences indicated were aware, and four from Humanities and Social Sciences indicated were aware; while the remotex had one postgraduate student from Education who indicated was aware, eight from Environmental Sciences indicated were aware, and three from Humanities and Social Sciences indicated were aware; on the other hand, web tutorials had one postgraduate student from Education who indicated was aware, three postgraduate students from Environmental Sciences indicated were aware, and zero (0) from Humanities and Social Sciences indicated were aware, and lastly one postgraduate student from Education indicated was aware, two from Environmental Sciences indicated were aware, and one

Both quantitative and qualitative findings reveal that internet and e-journals are mostly known among postgraduate students at Mzuzu University Library. However, quantitative results differ with opinion of librarians on e-books in that quantitative results show that very few postgraduate students are aware of e-books while all librarians have a strong conviction that most postgraduate students are also aware of e-books.

#### **5.4.4 Strategies used to create awareness of e-library services among postgraduate students**

This item aimed at determining the strategies through which postgraduate students became aware of e-library services. Therefore, respondents were asked to select as many options as possible about the strategies which assisted them to become aware of e-library services at Mzuzu University Library. Responses from respondents are indicated in Figure 4.





**Figure 5. 3: Strategies used to create awareness among postgraduate students**

The results presented in Figure 4 indicate that the majority of postgraduate students who were 50 (64%) became aware of e-library services through library orientation while 20 (26%) became aware of e-library services through colleagues. Furthermore, 19 (24%) became aware of e-library services through library website and 19 (24%) became aware of e-library services through the Librarian. However, 12 (15%) became aware of e-library services through brochures/newsletters, 10 (13%) became aware of e-library services through OPAC page, five (6%) became aware of e-library services through posters and two (3%) became aware through e-mail. This suggests that Mzuzu University Library predominantly uses face-to-face library orientation as its chief strategy for disseminating information about the awareness of e-library services when compared to other methods such as websites, newsletters, posters and e-mail.

The study further wanted to understand the strategies that the library uses to create awareness through the follow-up interview with library staff. The findings from the interview with library staff show that the library creates awareness through library orientation, brochures face-to-face sessions through reference desk and use of WhatsApp. This is noted from the statements of two assistant librarians who said:

*Mzuzu University uses different strategies to create awareness about e-library services. For instance, we create awareness to postgraduate students through library orientation, brochures, and face-to-face sessions at the reference desk. In addition, we contact postgraduate students using WhatsApp. So, using these strategies, we are able to reach postgraduate students and promote utilisation of e-library services in our library (Assistant Librarian 1).*

However, one assistant librarian emphasised that the main strategy for creating user awareness about e-library services is through library orientation as captured in the following statement:

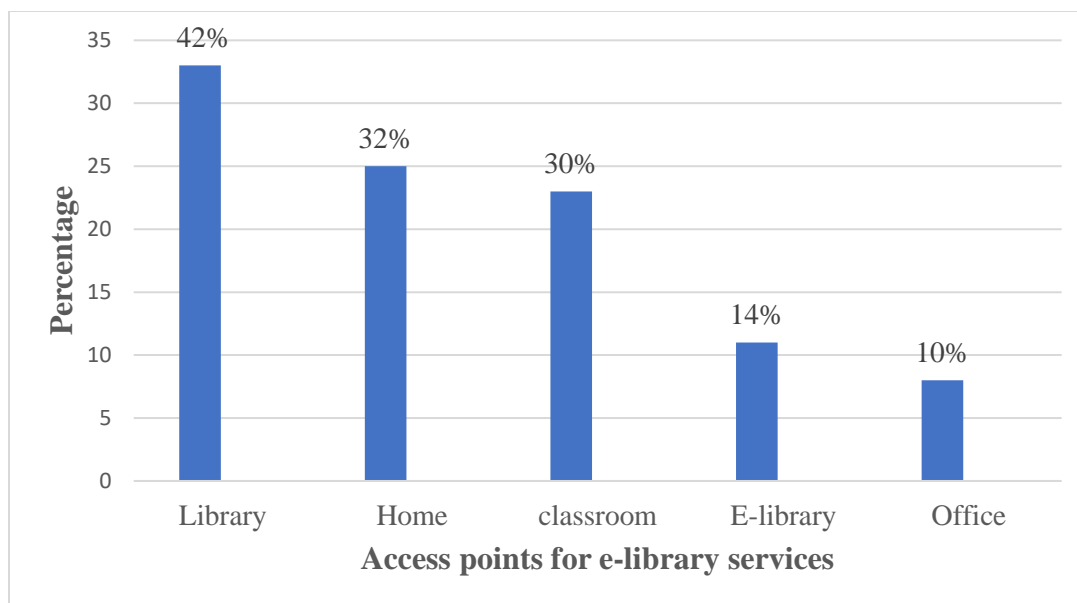
*We realise the importance of creating awareness about e-library services among postgraduate students. As such, we mainly create awareness through library orientation when students just arrive on campus (Assistant Librarian 2).*

*We have created a website where postgraduate students become aware of e-library services. This library website can be accessed from a link which is available at Mzuzu University Home page (Computer Technician).*

The findings from both quantitative and qualitative data imply that the major way of creating awareness among postgraduate students about e-library services is library orientation. The findings also imply that other minor strategies for creating awareness are through colleagues, brochures, library website, librarians, brochures/newsletters, OPAC page, posters and e-mail.

#### **5.4.5 Awareness about access points for e-library services**

This question aimed at knowing the awareness of respondents about where they can access e-library services. Respondents were asked to select multiple responses about access points for accessing e-library services postgraduate students were aware of at Mzuzu University Library. Responses are indicated in Figure 5.



**Figure 5. 4: Awareness about access points for e-library services**

According to the findings presented in Figure 5, 33 (42%) of postgraduate students indicated that they were aware that they can access e-library services while in the library, 25 (32%) indicated that they were aware that e-library services can be accessed from their homes, 23 (30%) indicated that they were aware that they can access them from the classroom, 11 (14%) indicated that they were aware of accessing e-library services from the E-library, and eight (10%) indicated they were aware that they can access e-library services from the office. The findings suggest that most postgraduate students are aware that they can access e-library services while in the library.

## **5.5 Level of use of e-library services by postgraduate students at Mzuzu University Library**

This section addressed questions with the aim to understand the types of e-library services that were used, frequency of use of e-library services, extent of use of e-library services, purpose and benefits for postgraduate students' use of e-library services.

### **5.5.1 E-library services used by postgraduate students at Mzuzu University Library**

The question intended to know exactly the e-library services that postgraduate students use at Mzuzu University Library. As such, respondents were asked to select all e-library services they ever used at Mzuzu University Library. Responses are as indicated in Table 5.9.

**Table 5. 9:Types of e-library services postgraduate students mostly used(n=78)**

E-library services	Responses (Yes)	
	<i>f</i>	%
Internet services	62	80%
E-journals	50	64%
Online Public Access Catalogue (OPAC)	17	22%
E-books	17	22%
Remotex	13	17%
Online Databases	12	15%
Institutional repository	7	9%
Online reference	7	(9%)
Online search services	7	(9%)
E-current awareness	4	(5%)

According to Table 5.9, 62 (80%) of postgraduate mostly used Internet service, followed by 50(64%) who said e-journals, 17 (22%) said OPAC and e-books respectively, 13 (17%) said remotex, 12 (15%) said online databases, seven (9%) said institutional repository, online reference, and online search services respectively while 4 (5%) said e-current awareness. This implies that most respondents used Internet service and e-journals.

Since the results showed that postgraduate students rated internet and e-journals as e-library services which are mostly used when compared to other e-library services offered at Mzuzu University Library, the researcher asked library staff through follow-up interview to explain e-library services which are used by postgraduate students. The findings confirmed from the interview conducted with library staff that e-library services that are used by postgraduate students are mainly internet and e-journals as indicated in the following statements:

*Our postgraduate students use e-library services such as internet, e-journals and e-books on daily basis. They visit the e-library to borrow tablets and laptops which are loaded with e-journal articles and e-books (Assistant Librarian 1).*

Further findings from the second respondent agreed with the Assistant librarian 1 and quantitative results from postgraduate students by mentioning internet and e-journals as key e-library services used by postgraduate students:

*Yes, postgraduate students use e-library services such as internet and e-journals. However, I may not know the level of use since most of the postgraduate students do not live on campus (Assistant Librarian 1).*

### **Cross-tabulation of e-library services use across faculties of Mzuzu University**

To establish use of e-library services across faculties, cross-tabulation of data about e-library services and faculties were computed. Findings are presented in Table 5.10

**Table 5. 10: Cross-tabulation of e-library services use across faculties of Mzuzu University**

<b>E-library services</b>	<b>Responses</b>	<b>Education</b>	<b>Environmental Sciences</b>	<b>Humanities and Social Sciences</b>	<b>Total</b>
Internet services	Yes	14	38	10	62
E-journals	Yes	8	34	8	50
E -books	Yes	2	12	3	17
Online Public Access Catalogue (OPAC)	Yes	0	10	1	17
Remotex	Yes	2	7	4	13
Online databases	Yes	1	6	5	12
Institutional repository	Yes	0	4	3	7
Online reference service	Yes	1	4	2	7
Online search services	Yes	1	2	4	7
E-current awareness	Yes	1	1	2	4

Web tutorials	Yes	0	0	3	3
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According to Table 5.10 indicates that internet services was used by 14 from Education, 38 from Environmental Sciences, 10 from Humanities and Social Sciences; E-journals were used by eight from Education, 34 from Environmental Sciences and eight from Humanities and Social Sciences; E-books were used by two from Education, 12 from Environmental Sciences, three from Humanities and Social Sciences; Online Public Access Catalogue was used by zero (0) from Education, 10 from Environmental Sciences, one from Humanities and Social Sciences; Remotex were used by two from Education, seven from Environmental Sciences, and from four Humanities and Social Sciences; Online databases were used by one from Education, six from Environmental Sciences, and five from Humanities and Social Sciences; Institutional repository was used by zero (0) from Education, four from Environmental Sciences, and three from Humanities and Social Sciences; Online reference was used by one from Education, four from Environmental Sciences, and three from Humanities and Social Sciences; Online searching services were used by one from Education, two from Environmental Sciences, and four from Humanities and Social Sciences; E-current awareness was used by one from Education and Environmental Sciences respectively and two from Humanities and Social Sciences. Web tutorials were used by zero (0) from Education and Environmental Sciences, and three from Humanities and Social Sciences.

The findings, both quantitative and qualitative data, suggest that internet and e-journals are the most used e-library services among postgraduate students at Mzuzu University Library, while other e-library services such as e-books, remotex, Online Databases, institutional repository, online reference, online search services and e-current awareness are the least used e-library services.

### 5.5.2 Frequency of e-library services use by postgraduate students

This item asked postgraduate students to rate their frequency with which they used e-library services which are offered at Mzuzu University Library by selecting the following: *Daily*, *Weekly*, *Monthly*, *Occasionally* and *Never*. Those who selected *daily* meant that they used this e-library service more frequently during their study at Mzuzu University, those who indicated *weekly* meant that they used the particular e-library service on weekly basis, those who selected *monthly* meant

they used the e-library service on monthly basis while those selected who *occasionally* meant they used the e-library service at infrequent or irregular intervals, and those who selected never meant they never used the e-library service offered by Mzuzu University. Table 5.11 shows the frequency of e-library services used by postgraduate students at Mzuzu University Library.

**Table 5. 11: Frequency of use of e-library services(n=78)**

<b>E-library service</b>	<b>Daily</b>	<b>Weekly</b>	<b>Monthly</b>	<b>Occasionally</b>	<b>Never</b>
Internet	43 (55%)	10 (12%)	5 (6%)	22 (28%)	2 (3%)
E-journals	7 (8%)	21 (27%)	5 (6%)	22 (28%)	7 (9%)
OPAC	4 (5%)	8 (10%)	4 (5%)	17 (22%)	11 (14%)
E-books	5 (6%)	8 (10%)	3 (4%)	12 (15%)	12 (15%)
Online Databases	2 (3%)	6 (8%)	3 (4%)	3 (4%)	14 (18%)
Institutional repository	4 (5%)	6 (8%)	2 (3%)	12 (15%)	14 (18%)
Remotex	2 (3%)	2 (3%)	3 (4%)	3 (4%)	14 (18%)
Web tutorial	0 (0%)	2 (3%)	2 (3%)	2 (3%)	21 (27%)
E-current awareness	2 (3%)	1 (1%)	0 (0%)	2 (3%)	22 (28%)
Online reference	5 (6%)	2 (3%)	4 (5%)	1 (1%)	20 (26%)

The findings presented in Table 5.11 show that most postgraduate students frequently use Internet service, thus when 43 (55%) said they use it on daily basis, 10 (12%) said they use it on weekly basis, five (6%) said they it on monthly basis, 22 (28%) said they use it occasionally and two (3%) never used it. About the use of e-journals, seven (8%) said they use them on daily basis, 21 (27%) said use them on weekly basis, five (6%) said use them on monthly basis, 22 (28%) said they use it occasionally and seven (9%) said never used it. Additionally, four (5%) said they use OPAC daily, eight (10%) said use it weekly, four (5%) said they use it monthly, 17 (22%) said use it frequently and 11(%) said they never use it. However, the least used -library services were e-books

when five (6%) said use them daily, eight (10%) use them weekly, three (4%) use them monthly, 12 (15%) said use them occasionally, while 12 (15%) said never used them. Furthermore, two (3%) said they use Online Databases daily, six (8%) said they use them weekly, three (4%) said use monthly, three (4%) use occasionally, 14 (18%) never used them. As regards to institutional repository, four (5%) said use it daily, six (8%) said they use them weekly, two (3%) said use monthly, 12 (15%) said they use it occasionally and 14 (18%) never use. Two (3%) indicated use remotex daily, two (3%) use weekly, three (4%) use monthly, three (4%) use them occasionally and 14 (18%) never use. None indicated use web tutorial daily, three (3%) indicated use it weekly, two (3%) use them monthly, two (3%) uses them occasionally and 21(%) never uses them. On e-current awareness, three (3%) said use daily, one (1%) use weekly, three (3%) uses occasionally and 22 (28%) never use. About online reference service five (8%) said they use it daily, two (3%) said use it weekly, four (5%) use monthly, one (1%) use occasionally and 20 (26%) never uses them. The findings suggests that most postgraduate students use internet services most frequently on daily and weekly basis while e-journals is most frequently used in weekly and occasional basis.

### 5.5.3 Extent of use of e-library services by postgraduate students

Respondents were asked to select the number of e-journal articles or e-books they read or downloaded per week. This question aimed at determining the extent of postgraduate students' use of e-library services such as e-journal articles or e-books by selecting the following options: *Less than 5 articles/e-books per week, 5-10 articles/e-books per week, 11-20 articles/e-books per week, over 21-30 articles/e-books per week, and Over 30 articles/e-books*. Responses are indicated in Table 5.12.

**Table 5. 12: Extent of postgraduate students' use of e-library services (n=78)**

Extent of use	<i>f</i>	%
Less than 5 articles/e-books per week	35	45
5-10 articles/e-books per week	19	24
11-20 articles/e-books per week	5	6
Over 21-30 articles/e-books per week	5	6
Over 30 articles/e-books	5	6



As it can be seen in table 5.12, the majority of postgraduate students who were 35 (45%) used less than 5 articles per week, followed by 5-10 articles per week who were 19 (24%), and 11-20 articles per week who were 5(6.4%). On the other hand, those who used 21-30 articles per week and those who used over 30 articles per week were five (6%) each respectively. This suggests that the most of the postgraduate students are very low users of e-library services.

#### 5.5.4 Cross-tabulation of age by extent of use of e-library services

From the information about the age of respondents and the extent of use of e-library services, a cross tabulation was done to explore a pattern about a relationship between age and extent of use. The study classified use of e-journals/e-books into categories as follows: *Very low users* (less than 5 articles/e-books per week), *Low users* (5-10 articles/e-books per week), *Average users* (11-20 articles/e-books per week), *High users* (Over 21-30 articles/e-books per week), *Very high users* (Over 30 articles/e-books). Table 14 below shows the relationship between age and the extent of use of e-library services.

**Table 5. 13: Cross-tabulation of age by extent of use e-library services (n=69)**

Age range	Very low users	Low users	Average users	High users	Very high users	
0-25yrs	3(43%)	2(29%)	0(0%)	2(29%)	0(0%)	7(100%)
26-35	14(50%)	7(25%)	5(18%)	2(7%)	0(0%)	28(100%)
36-44	12(54%)	6(27%)	0(0%)	1(5%)	3(14%)	22(100%)
45-50	4(57%)	2(29%)	0(0%)	0(0%)	1(14%)	7(100%)
Above 50yrs	2(40%)	2(40%)	0(0%)	0(0%)	1(20%)	5(100%)
Total	35	19	5	5	5	69

Data presented in Table 5.13 reveal that 3 (43%) in the age range of 0-25 are very low users, as are 14 (20%) in age range of 26-35, 12 (54%) in the age range of 36-44, 4(57%) in the age range of 45-50, two (40%) in the age range of above 50yrs, respectively. On the other hand, six (29%) indicated that they are low users, as are seven (25%) in the age range of 26-35, six (27%) in the age range 36-44, 2(29%) in the age range of 45-50, two (40%) in the age range of above 50,

respectively. Average users were only five (18%) in the age range of 26-35. Furthermore, two (29%) were indicated as high users in age range of 0-25, as are two (7%) in the age range of 26-35, one (5%) in the age range of 36-44 and none in the age ranges of 45-50 and above 50 years.

The chi-square test was done to test the relationship between age and the use of e-library services. The results show that (N=10269, df=16,  $\chi^2=18.858$ ,  $p<0.276$ ) the P value is 0.276 which is more than 0.05. Therefore, there is no significant difference between age-range and the extent of use of e-library services at Mzuzu University Library.

### 5.5.5 Cross-tabulation of gender of postgraduate students' extent of use of e-library services

To determine the extent of the use of e-library services among the gender of postgraduate students, the researcher conducted cross-tabulation of gender and the extent of use of e-library services. Results are indicated in Table 5.14.

**Table 5. 14: Cross-tabulation of gender of postgraduate students' extent of use of e-library services(n=69)**

Gender	Very low users	Low users	Average users	High users	Very high users	Total
Male	21(47%)	15(33%)	5(11%)	1(2%)	3(7%)	45(100%)
Female	14(58%)	4(16%)	0(0%)	4(16%)	2(8%)	24(100%)
Total	35	19	5	5	5	69

Data presented in Table 5.14 reveal that 21 (47%) males were very low users, as are 15 (33%) were low users, 5 (11%) were average users, one (2%) were high users and three (7%) were very high users respectively. As regards to females, 14 (58%) were very low users, four (16%) were low users, zero (0%) were average users, four (16%) were high users and two (8%) were very high users. When chi-square was performed the findings reveal that there was no significant relationship between gender and the extent of use of e-library services by postgraduate students. For instance, chi=quare values were (N=69,  $\chi^2 = 9.232$ ,  $df = 4$ ,  $P= .056$ ).

### 5.5.6 Purposes for postgraduate students' use of e-library services

The item aimed at establishing the purposes of postgraduate students for using e-library services at Mzuzu University Library. Therefore, respondents were asked to select all purposes they use e-library services for at Mzuzu University Library. Responses for this question are as indicated in Table 5.15.

**Table 5. 15: Purposes for postgraduate students' use of the e-library services(n=78)**

Purpose	Responses (Yes)	
	<i>f</i>	%
Research	53	68%
Assignment	38	49%
Knowledge	23	30%
Teaching	17	22%

Data presented in Table 5.15 shows the purposes for using e-library services at Mzuzu University Library. Fifty-three (68%) of the postgraduate students indicated that the main purpose for using e-library services at Mzuzu University was research, 38 (49%) indicated assignments, 23 (30%) indicated knowledge, 17 (22%) indicated teaching. The results suggests that most postgraduate students use e-library services for research purposes.

The researcher interviewed library staff through interview to explain the purposes through which postgraduate students use e-library services for. Findings revealed that postgraduate students have two purposes for using e-library services which are research and writing assignments as indicated in the following statements:

*Postgraduate students are researchers and they require information for research. So, the main purpose for postgraduate students to use e-library services is research (Assistant Librarian 1).*

*The main purpose is to access information for writing assignments as well as conducting research (Assistant Librarian 2)*

Both quantitative and qualitative findings suggest that research is the major purpose for postgraduate students' use of e-library services at Mzuzu University Library is research, followed by academic assignments. Other purposes are gaining knowledge and using them for teaching.

### **5.5.6 Benefits which postgraduate students accrued from using e-library services at Mzuzu University**

Respondents were asked to indicate all benefits they found when using e-library services at Mzuzu University Library. Their responses are as indicated in Table 5.16.

**Table 5. 16: Benefits postgraduate students accrued from using e-library services (n=78)**

<b>Benefits</b>	<b>Yes</b>	
	<b>f</b>	<b>%</b>
Access to information 24/7	51	65
Performing well in research	45	58
Gaining knowledge	44	35
Passing assignments	27	35

Data presented in Table 5.16 shows that 51 (65%) of the postgraduate students who used e-library services perceived that they benefitted from using e-library services by accessing information 24/7 a day, followed by 45 (58%) who indicated that they benefitted through gaining knowledge 44 (54%) and 27 (34.66%) who indicated they benefitted through passing assignments. The findings suggest that most postgraduate students find access to information 24/7 as the major benefit. Likewise, the need to do well in research, gaining knowledge and passing assignments were some of the benefits they found from using e-library services.

Furthermore, conducted follow-up interviews with librarians to ascertain the benefits that postgraduate students get from using e-library services. Results reveal several benefits such as postgraduate students get relevant and up-to-date information, easy and access to information. This was attested in the following statements of the library staff:

*Postgraduate students get relevant and up-to-date information* (Assistant Librarian 1)

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*Postgraduate students get benefits such as easy access to information* (Assistant Librarian 2)

Both quantitative and qualitative findings show that there are benefits that postgraduate students get from using e-library services which are accessing information 24/7, doing well in research, gaining knowledge including passing assignments which they do while studying in their programmes.

## **5.6 Level of postgraduate students' satisfaction with e-library services**

This section asked questions which aimed at understanding the perceptions of postgraduate students perceived of usefulness, perceived ease of use, perception of important people if they think postgraduate students should use e-library services, and perception of each e-library services that is offered at Mzuzu University Library.

### **5.6.1 Postgraduate students' satisfaction with e-library services**

The aim of this item was determining the extent of satisfaction among postgraduate students with various e-library services offered at Mzuzu University Library. This question was in form of a Likert scale and postgraduate students were required to indicate the extent to which they were satisfied by choosing from options of *Extremely Satisfied*, *Satisfied*, *Neutral*, *Dissatisfied* and *Strongly Dissatisfied*. Postgraduate students who selected *extremely satisfied* meant that they experienced extreme satisfaction with that particular service, those who selected *satisfied* meant that they experienced satisfaction with that particular service, those who selected *neutral* meant that they neither experienced satisfaction nor could not comment on their satisfaction about a particular service, those who selected *dissatisfied* meant experienced dissatisfaction while those

who selected *extremely dissatisfied* meant they experienced strong dissatisfaction with that particular service. Findings are presented in Table 5.17.

**Table 5. 17: Postgraduate students’ satisfaction with e-library services (n=78)**

<b>E-library services</b>	<b>Extremely satisfied</b>	<b>Satisfied</b>	<b>Neutral</b>	<b>Dissatisfied</b>	<b>Extremely dissatisfied</b>
Internet services	17 (22%)	36 (46%)	17(22%)	6(8%)	2(3%)
E-journals	13(17%)	42(54%)	12(16%)	9(12%)	2(3%)
Online Public Access Catalogue (OPAC)	4(5%)	18(23%)	13(17%)	4(5%)	3(4%)
E-books	3(4%)	13(17%)	13(17%)	5(6%)	5(6%)
Online Databases	3(4%)	6(8%)	11(14%)	6(8%)	3(4%)
Web tutorial	3(4%)	3(4%)	10(13%)	5(6%)	2(3%)
E-current awareness	2(3%)	1(1%)	12(16%)	2(3%)	2(3%)
Institutional repository	2(3%)	4(5%)	9(12%)	2(3%)	1(1%)
Remotex	1(1%)	3(4%)	7(9%)	5(6%)	0(0%)

Table 5.17 illustrates satisfaction of postgraduate students with e-library services which are offered at Mzuzu University Library. For instance, 17 (22%) indicated that they were extremely satisfied with internet services, 36 (46%) indicated that they were satisfied, 17 (22%) indicated that they were neutral, six (8%) indicated that they were dissatisfied while two (3%) were extremely dissatisfied with internet services. Regarding satisfaction on e-journals, 13 (17%) were extremely satisfied, 42 (54%) were satisfied, 12 (16%) were neutral, nine (12%) were dissatisfied and two (3%) were extremely dissatisfied. Four (5%) indicated strongly satisfied with Online Public Access Catalogue (OPAC), 18 (23%) were satisfied, 13 (17%) were neutral, four (5%) were dissatisfied and three (4%) were dissatisfied. On the use of Online Databases, three (4%) were strongly satisfied, six (8%) were satisfied, 11 (14%) were neutral, six (7%) were dissatisfied and three (4%)

were strongly dissatisfied). 3(4%) were extremely satisfied, three (4%) were satisfied, 10 (13%) were neutral, 5(6%) were dissatisfied and two (3%) were strongly dissatisfied with the use of web tutorial. E-current awareness scored two (3%) who were strongly satisfied, one (1%) was satisfied, 12 (16%) were neutral, three (3%) who were dissatisfied and two (3%) extremely dissatisfied. However, institutional repository scored two (3%) who were extremely satisfied, four (5%) were satisfied, nine (12%) were neutral, two (3%) were dissatisfied, one (1%) were dissatisfied, and one (1%) were extremely dissatisfied regarding its use. On use of remotex, one (1%) was strongly satisfied, three (4%) were satisfied, seven (9%) were neutral, five (6%) were dissatisfied zero (0%) were strongly dissatisfied. The findings clearly demonstrate that internet service and electronic journals satisfied postgraduate students while the rest of the databases did not satisfy postgraduate students.

Regarding postgraduate students' satisfaction about e-library services, qualitative information from librarians gathered through interviews reveal that librarians feel that most postgraduate students are satisfied with the e-library services that are offered at Mzuzu University Library. This is indicated in the following statements from assistant librarians:

*Respondents provide feedback that the e-library services they use are helpful especially in research (Assistant Librarian 1)*

*Most of the times postgraduate students' express thankfulness and sometimes show appreciation, and that is when we know that they are satisfied with e-library services we offer (Assistant Librarian 2).*

Findings from quantitative data suggest that postgraduate students are satisfied with internet and e-journal services while other e-library services least satisfied them. On the other hand, librarians were of the view that postgraduate students were generally satisfied with all library services that are offered at Mzuzu University Library.

### 5.6.3 Postgraduate students' perception of the value (performance expectancy) of e-library services

In this item, respondents were provided with a list of various statements and were asked to indicate their satisfaction about the usefulness or performance expectancy of e-library services that are provided at Mzuzu University Library. The item made use of Likert scale ranging from *Extremely Satisfied*, *Satisfied*, *Neutral*, *Dissatisfied* and *Strongly Dissatisfied*. of the e-library services that are provided at Mzuzu University Library. Responses are as indicated in Table 5.18.

**Table 5. 18: Postgraduate students' perception of the value (performance expectancy) of e-library services (n=78)**

<b>Performance expectancy (Usefulness)</b>	<b>Extremely Satisfied</b>	<b>Satisfied</b>	<b>Neutral</b>	<b>Dissatisfied</b>	<b>Extremely Dissatisfied</b>
Using e-library services increases my research productivity	13(16%)	37(48%)	2(3%)	6(8%)	0(0%)
Using e-library services provides latest information	17(22%)	35(44%)	8(10%)	4(5%)	4(5%)
Using e-library enhances knowledge and research skills	18(23%)	31(40%)	12(15%)	5(6%)	3(4%)
Using e-library services improves quality of my work	16(21%)	27(35%)	13(16%)	5(6%)	6(8%)

Data presented in Table 5.18 indicates that 13 (16%) were extremely satisfied that using e-library services increases research productivity whereas 37 (48%) were satisfied somewhat, two (3%) were neutral, six (8%) were dissatisfied and nobody was extremely dissatisfied. Additionally, 17 (22%) were extremely satisfied and 35 (44%) were satisfied that using e-library services provides latest information while eight (10%) were neutral, four (5%) were dissatisfied and extremely



dissatisfied respectively. On the expectation that e-library services enhance knowledge and skills, 18 (23%) were extremely satisfied, 31 (38%) were satisfied, 12 (15%) were neutral, five (6%) dissatisfied and three (4%) were extremely dissatisfied. On the usefulness of using e-library services to improve quality of work, 16 (21%) were extremely satisfied, 27 (35%) were satisfied, 13 (16%) were neutral, five (6 %) were dissatisfied and six (8%) were extremely dissatisfied. The quantitative findings suggest that respondents were satisfied with the usefulness of e-library services.

### 5.6.3 Postgraduate students' perception of the level of difficulty (effort expectancy) of e-library services

The question aimed at understanding postgraduate students' satisfaction about how ease or difficult are the e-library services when they use them. Therefore, respondents were asked to rate their satisfaction on the expected performance of e-library services which were offered to postgraduates at Mzuzu University Library through selecting the following options: *Extremely Satisfied, Satisfied, Neutral, Dissatisfied* and *Extremely Dissatisfied*. Responses are as indicated in Table 5.19.

**Table 5. 19: Postgraduate students' perception of the value (performance expectancy) of e-library services (n=78)**

<b>Effort expectancy</b>	<b>Very true</b>	<b>True</b>	<b>Neutral</b>	<b>Untrue</b>	<b>Very untrue</b>
It easy to access e-library services for research.	17(22%)	24(31%)	14(18%)	5(6%)	1(1%)
It is easy to remember how to search journals/ articles using the e-library services	11(14%)	23(30%)	15(19%)	10(13%)	3(4%)
It is easy to become skilful to download e-library services	13(18%)	20(26%)	17(22%)	12(15%)	3(4%)

Browsing e-library services is easy.	10(13%)	20(26%)	18(23%)	7(9%)	4(5%)
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Table 5.19 shows that more than half of the respondents perceived true with easy access to the e-library services since 17 (22%) perceived very true, 24 (31%) perceived true, 14 (18%) were neutral, five (6%) perceived untrue and one (1%) perceived very untrue. Twenty-three (30%) perceived very true, 11(14%) perceived true, 15(19%) were neutral, 10(13%) perceived untrue and three (4%) perceived very untrue with e-library services being easy to remember and how to search them. Thirteen (18%) perceived very true, 20 (26%) perceived true, 17 (22%) were neutral, 12 (15%) perceived untrue and three (4%) perceived very untrue with e-library services being easy for them to become skilful when using them. Finally, 10 (13%) perceived very true, 20 (26%) perceived true, 18 (23%) were neutral, seven (9%) perceived untrue and four (5%) perceived very untrue that browsing e-library services was easy.

Preliminary quantitative data from questionnaires imply that e-library is easily accessible since almost over half of the respondents expressed satisfaction with their accessibility. In addition, the results further suggest that more respondents were satisfied with accessibility of e-library services while less than half of postgraduate students who participated in the study were satisfied with searching skills, ability to use and browse e-library services.

This finding prompted the researcher to seek further explanation from the assistant librarians and a computer technician on their views regarding postgraduate students’ satisfaction about ease of use or effort expectancy of e-library services as Mzuzu University Library. The findings show that the assistant librarians and a computer technician are quite satisfied with the ease of use and skills that postgraduate students have when they use e-library services. This is revealed in the following statements:

*Postgraduate students find e-library services easy to use because they easily find the e-library services and if they have challenges, they ask how to use e-library from librarians (Assistant Librarian 1)*

*In terms of how easy they are, postgraduate students come to the library to ask how they can use them hence knowing how to access and use them easily.” In addition, we have not faced any complaint regarding failure to use e-library services, so we assume the services are easy to use (Assistant Librarian 2)*

*Our e-library services are designed to be easily accessed by all students since we put them on the website. So, that being the case, all students who can easily use the internet can easily access the services without any problem. Hence, I assume postgraduate students should find them easy to use (Computer Technician).*

The results suggest that questionnaire data and library staff opinions agree that the e-library services can be easily accessed. However, it seems to suggest that students are not satisfied with their searching skills, downloading and browsing of e-library services. On the other hand, the general feeling of library staff implies that e-library services are easy to use, hence postgraduate students should be satisfied.

#### **5.6.4 Postgraduate students’ perception of peers and significant others (social influence) influencing use of e-library services**

Postgraduate students were asked to rate their satisfaction on the expectations of being influenced by others to use e-library services which were offered to postgraduates at Mzuzu University Library by selecting the following options: *Extremely Satisfied, Satisfied, Neutral, Dissatisfied* and *Extremely Dissatisfied*. Responses are as indicated in Table 5.20.

**Table 5. 20: Postgraduate students’ perception of peers and significant others (social influence) influencing the use of e-library services (n=78)**

<b>Social Influence</b>	<b>Extremely Satisfied</b>	<b>Satisfied</b>	<b>Neutral</b>	<b>Dissatisfied</b>	<b>Extremely Dissatisfied</b>
Peers expect to see me to use e-library services	4(5%)	20(26%)	25(32%)	11(14%)	1(1%)
Use of e-library services will elevate my class to a higher status	10(13%)	13(17%)	24(30.8%)	12(15%)	2(3%)
Lecturers, fellow students and librarians recommend me to use e-library services	15(19 %)	17(22%)	17(22%)	10(13%)	4(5%)

According to Table 5.20, less than half postgraduate students were satisfied that other people influenced them to use e-library services. Four (5%) were extremely satisfied, 20 (26%) were satisfied, 25 (32%) were neutral, 11 (14%) were dissatisfied, one (1%) were extremely satisfied with the expectation that peers should see them using e-library services at Mzuzu University. Additionally, 10 (13%) extremely satisfied, 13 (17%) were satisfied, 24 (31%) were neutral, 12 (15%) were dissatisfied, 2(3%) were extremely dissatisfied with e-library services elevating their class to a higher status. Finally, 15 (19%) were extremely satisfied, 17 (22%) were satisfied, 17 (22%) were neutral, 10 (13%) were dissatisfied and four (5%) were extremely dissatisfied. The results suggest that few postgraduate students were influenced by others to use e-library services.

**5.7 Factors that influence the use and discourage the effective use of e-library services by postgraduate students at Mzuzu University Library**

This item aimed at finding out factors that influence the use of e-library services and factors that discourage the effective use of e-library services at Mzuzu University Library.

### 5.7.1 Factors influencing use of e-library services by postgraduate students at Mzuzu University Library

This item was intended to find out from postgraduate students about factors which influence them to use e-library services at Mzuzu University. To collect the information, respondents were asked to rate their agreement on the statements which reflected factors that influence their use of e-library services which are offered to postgraduates at Mzuzu University Library. Respondents were provided with a list of five statements as factors that influenced their use of e-library services at Mzuzu University Library by selecting *Strongly Agree*, *Agree*, *Neutral*, *Disagree* and *Strongly Disagree*. Responses are as indicated in Table 5.21.

**Table 5. 21: Factors influencing the use of e-library services by postgraduate students at Mzuzu University Library (n=78)**

<b>Factors</b>	<b>Strongly Agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Disagree</b>	<b>Strongly Disagree</b>
The University Library has Wi-Fi hotspots, computers and website required to access e-library services.	53(68%)	12(15%)	5(6%)	2(3%)	2(3%)
Mzuzu University Library has members of staff who train users to use e-library services.	7(9%)	58(74%)	5(6%)	4(5%)	0(0%)
Mzuzu University Library creates awareness about e-library services	53(68%)	7(9%)	9(12%)	1(1%)	4(5%)

I have a computer, cell phone and data bundle to access e-library services at Mzuzu University Library.	3(4%)	57(73%)	8(10%)	3(4%)	1(1%)
Mzuzu University has a policy that encourage use of e-library services.	2(3%)	8(10%)	58(74%)	3(4%)	2(3%)

According to data presented in Table 5.21, 53 (68%) strongly agreed, 12 (15%) agreed, 5(6%) were neutral, 2 (3%) disagreed and 2 (3%) strongly disagreed that Mzuzu University Library has the Wi-Fi, computers and website and the software required to access e-library services. Additionally, 7(9%) strongly agreed, 58 (74%) agreed, five (6%) were neutral, four (5%) disagreed and zero (0%) strongly disagreed that Mzuzu University Library has members of staff who train users the use of e-library services. Regarding Mzuzu University Library creating awareness about e-library services, 53 (68%) strongly agreed, seven (9%) agreed, nine (12%) were neutral, one (1%) disagreed while four (5%) strongly disagreed. On having resources such as computers, mobile phones and data bundle to access e-library services at Mzuzu University Library, three (4%) of respondents strongly agreed, 57 (73%) agreed, eight (10%) were neutral, three (4%) disagreed and one (1%) strongly disagreed. On the other hand, two (3%) strongly agreed, eight (10%) agreed, 58 (78%) were neutral, 3 (4%) disagreed, 2 (3%) strongly disagreed that Mzuzu University had a policy that encourages postgraduate students to use e-library services.

The researcher further conducted a follow-up interview with the assistant librarians and a computer technician to explain the factors they believed influenced postgraduate students to use e-library services. The results revealed that library staff agreed with postgraduate students that e-library services, availability of staff, access to free internet, and students having laptops easily accessible as indicated in the comments below:

*The availability of e-resources all the time encourages students to use them all the time (Assistant Librarian 1).*

*The library has furniture which attracts students to come to the library with their laptops to access e-library services. Secondly, the library offers free and fast internet and the availability of library staff at the reference desk (Assistant Librarian 2).*

*Most postgraduate students have laptops which they use to access e-library services and also easy access to information is also another factor that influence the use of e-library services (Computer Technician).*

**5.7.2 Cross-tabulation for factors that influence the use of e-library services by faculty**

To understand how the factors were influenced by the faculty of the postgraduate students, a cross-tabulation was performed. Results are displayed in Table 5.22.

**Table 5. 22: Cross-tabulation of factors influencing the use of e-library services by postgraduate students at Mzuzu University Library**

Factors		What is your faculty?			Total
		Education	Environmental Sciences	Humanities and Social Sciences	
The University Library has Wi-Fi hotspots, computers and the website required to access e-library services.	Strongly agree	0(0%)	2(3%)	0(0%)	2
	Disagree	2(3%)	0(0%)	0(0%)	2
	Neutral	3(4%)	1(1%)	1(1%)	5
	Agree	9(12%)	2(3%)	1(1%)	12
	Strongly Agree	2(3%)	41(55%)	10 (13%)	53
Mzuzu University Library has members of	Disagree	2(3%)	2(3%)	0(0%)	4
	Neutral	2(3%)	2(3%)	1(1%)	5

staff who train users the use of e-library services.	Agree	7(9%)	42	9	58
	Strongly agree	5(7%)	0(0%)	2(3%)	7
Mzuzu University Library creates awareness about e-library services.	Strongly disagree	2(3%)	2(3%)	0(0%)	4
	Disagree	0(0%)	1(1%)	0(0%)	1
	Neutral	5(7%)	2(3%)	2(3%)	9
	Agree	4	1(1%)	2(3%)	7
	Strongly agree	5(7%)	40 (51%)	8 (10%)	53
Mzuzu University has a policy that encourages the use of e-library services.	Strongly disagree	1(1%)	0(0%)	1(1%)	2
	Disagree	2(3%)	1(1%)	0(0%)	3
	Neutral	5(7%)	45(63%)	8	58
	Agree	6	0(0%)	2(3%)	8
	Strongly agree	1(1%)	0(0%)	1(1%)	2
I have a computer, cell phone and data bundle to access e-library services at Mzuzu University Library.	Strongly disagree	1(1%)	0(0%)	0(0%)	1
	Disagree	1(1%)	2(3%)	0(0%)	3
	Neutral	6	2(3%)	0(0%)	8
	Agree	5(7%)	42(58%)	10 (13%)	57
	Strongly agree	1	0(0%)	2(3%)	3

Table 5.22 shows that two (3%) from the Faculty of Education agreed that Mzuzu University Library has the hardware and software for using e-library services, nine (12%) agreed, three (4%) were neutral, 2 (3%) disagreed and zero (0%) strongly disagreed; Forty-one (55%) from the Faculty of Environmental Sciences strongly agreed, two (3%) agreed, one (1%) was neutral, zero (0%) disagreed, two (3%) strongly disagreed; From the Faculty of Humanities and Social Sciences, 10(14%) strongly agreed, one (1%) agreed, one (1%) was neutral, none disagreed and strongly



disagreed. Regarding Mzuzu University Library having staff who train postgraduate students to use e-library services, five (7%) from the Faculty of Education strongly agreed, seven (9%) agreed, two (3%) were neutral, two (3%) disagreed and zero (0%) strongly disagreed; zero (0%) strongly agreed from the Faculty of Environmental Sciences, 42 (56%) agreed, two (3%) were neutral, two (3%) disagreed and none strongly disagreed. About Mzuzu University Library creating awareness, five (7%) strongly agreed, four (5%) agreed, five (7%) were neutral, zero (0%) disagreed and none strongly disagreed; from the Faculty of Environmental Sciences, 40 strongly agreed, one (1%) agreed, two (3%) were neutral, one (1%) disagreed, two (3%) strongly disagreed; However, from the Faculty of Humanities and Social Sciences, eight (11%) strongly agreed, two (3%) agreed, two (3%) were neutral, zero (0%) disagreed, zero (0%) strongly disagreed. Additionally, on the point of Mzuzu University having a policy that promotes postgraduate students use of e-library services, one (1%) strongly agreed, six (8%) agreed, five (7%) were neutral, two (3%) disagreed, one (1%) strongly disagreed from the Faculty the Faculty of Education; on the other hand, postgraduate students from the Faculty of Environmental Sciences, zero(0%) strongly agreed, zero (0%) agreed, 45 (63%) were neutral, one (1%) disagreed, zero (0%) strongly disagreed; while those from the Faculty of Humanities and Social Sciences, one (1%) strongly agreed, two (3%) agreed, eight (11%) were neutral, zero (0%) disagreed and one (1%) strongly agreed. As regards to the factor of students having resources such as computers, data bundles, and cell phones to access e-library services from the Faculty of Education, one (1%) strongly agreed, five (7%) agreed, six (8%) were neutral, one (1%) disagreed and one (1%) strongly disagreed; zero (0%) strongly agreed, 42 (58%) agreed, two (3%) were neutral, two (3%) disagreed and zero (0%) disagreed from the Faculty of Environmental Sciences; In the Faculty of Humanities and Social Sciences, two (3%) strongly agreed, 10 agreed, zero (0%) were neutral, zero (0%) disagreed and zero (0%) strongly disagreed.

However, Chi-square ( $\chi^2$ ) was performed to determine the association between these factors in influencing the use of e-library services across faculties. The findings reveal that there was a strong relationship between these factors and the use of e-library services across the faculties. It was found that the provision of infrastructure such as Wi-Fi hotspots, computers, integrated management systems, influenced the use of e-library services across faculties by (N=74,  $\chi^2=43.624$ , df = 8, P=.000); and Mzuzu University Library having members of staff who train

postgraduate students, influenced use of e-library services by (N=74,  $\chi^2 = 19.942$ , df=6, P=.003); Mzuzu University creates awareness about e-library services by (N=74,  $\chi^2 = 22.663$ , df = 8, P=.004); Mzuzu University has a policy did not influence the use by (N=72,  $\chi^2 = 34.127$ , df=8, P=.000) because many users were neutral and could not comment because they were not aware of the policy that influence the use of e-library services at Mzuzu University; and have a computer, cell phone and data bundle to access e-library services at Mzuzu University Library (N=72,  $\chi^2=31.805$ , df=8, P=0.000).

The findings suggest that factors such as availability of Wi-Fi, Computers, website; providing training to postgraduate students; creating awareness to postgraduate students, students having resources such as computers, cell phones and data bundles to use, influenced students to use e-library services. However, Mzuzu University having a policy, did not influence the use since most respondents were neutral, suggesting that they did not know the availability of the policy. The Chi-square showed strong relationship between the factors influencing the use and the faculty in which postgraduate students belonged. On the other hand, findings suggest that most postgraduate students agreed and that there was a strong relationship for these factors to influence the use of e-library services across all faculties of Mzuzu University.

### **5.7.3 Factors discouraging the effective use of e-library services by postgraduate students at Mzuzu University Library**

Respondents were provided with a list of 12 factors and were asked the extent to which the factors discouraged them from using e-library services at Mzuzu University Library. Respondents were asked to select *Strongly Agree*, *Agree*, *Neutral*, *Disagree* and *Strongly Disagree*. Responses are as indicated in Table 5.23.

**Table 5. 23: Factors discouraging the effective use of e-library services by postgraduate students (n=78)**

<b>Factor</b>	<b>Strongly agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Disagree</b>	<b>Strongly Disagree</b>
Inadequate computers, hotspots, to support access.	11(14%)	53(68%)	4(5%)	3(4%)	2(3%)
Erratic Internet connection.	8(10%)	57(73%)	6(8%)	1(1%)	0(0%)
Inadequate bandwidth and slow download speed.	8(10%)	57(73%)	6(8%)	1(1%)	0(0%)
Inadequate computers.	12(15%)	54(69%)	3(4%)	2(2.6%)	0(0%)
Inadequate skills to search e-library services.	55(71%)	6 (8%)	3(4%)	4(5%)	5(6%)
E-library services are difficult to search and download.	53(68%)	6(8%)	4(5%)	5(6%)	5(6%)
Inadequate staff support help when accessing information online.	3(4%)	53(68%)	5(6%)	5(6%)	7(9%)
Inadequate information that	3(3.8%)	52(68%)	4(5%)	9(12%)	4(5%)

meets research needs.					
Recurrent power outages.	7(9%)	55(71%)	3(4%)	5(6%)	3(4%)
Inadequate awareness about available e-library services.	3(4%)	50(64%)	2(3%)	4(5%)	4(5%)
My eyes are strained when reading electronic documents online.	5(6.4%)	51(65.4%)	5(6%)	4(5%)	5(6%)

According to Table 5.23, respondents agreed that inadequate infrastructure to support access of e-library services 53 (68%), 11(14%) strongly agreed, four (5.1%) were neutral, 3 (4%) disagreed and 2 (2.6%) strongly disagreed. On the aspect of erratic internet connection, 57 (73%) agreed, 8 strongly agreed, 6 (8%) were neutral, one (1%) disagreed and zero (0%). As regards to inadequate bandwidth and slow download speed, 57 (73%) agreed, eight (10%) neutral, six (8%) disagreed and zero (0%). On lack of computer access, 54 (69%) agreed, 12 (15%) strongly agreed, three (4%) were neutral, two (3%) disagreed and zero (0%) strongly disagreed. On lack of skills to search e-resources, 55 (1(70.5%) strongly agreed, six (8%) agreed, three (4%) were neutral, four (5%) disagreed and five (6%) strongly disagreed. On the factor that e -library are difficult to use, 53 (67.9%) strongly agreed, six (8%) agreed, four (5%) were neutral, five (6%) disagreed and five (6%) strongly disagreed. Concerning unavailability of library support, 53 (68%) agreed, three (4%) strongly agreed, five (6%) were neutral, five (6%) disagreed and seven (9%). As regards to lack of relevant materials in e-library databases, 52 (67%) agreed, three (4%) strongly disagreed, four (5%) were neutral, nine (12%) disagreed and four (5%) strongly disagreed. On recurrent power outage, 55 (71%) agreed, seven (9%) strongly agreed, three (4%) were neutral, five (6%) disagreed and three (4%) strongly disagreed. In terms of lack of awareness of the available e-library services,

50 (64%) agreed, three (4%) strongly agreed, two (3%) were neutral, four (5%) disagreed and 4 (5%) strongly disagreed. On the aspect of inability to access e-library from home, 54 (69%) were neutral, 8 (10%) strongly disagreed, six (8%) disagreed and three (4%) strongly agreed. Finally, 51 (65%) agreed, five (6%) strongly agreed, five (6%) were neutral, four (5%) disagreed and five (6%) strongly disagreed that their eyes are strained when reading electronic documents online.

The analysis of findings show that generally, the key factors which discouraged the effective use of e-library services by postgraduate students at Mzuzu University include inadequate infrastructure to support; erratic internet connection; inadequate bandwidth and slow download speed; inadequate computers; inadequate skills to search e-library services; e-library services are difficult to search and download; inadequate from library staff to use e-library services; recurrent power outage; inadequate awareness; and straining their eyes when reading e-library services from the internet.

During interviews, two assistant librarians were asked to explain the factors that hinder postgraduate students access to e-library services at Mzuzu University Library. The findings reveal that factors such as power blackouts, lack of EZ-proxy servers, inadequate computers, inadequate Wi-Fi hotspots and also weak signals in some hotspots as explained in the extracts from library staff.

*The major factor which hinders postgraduate students to access e-library services at Mzuzu University Library is blackouts. Usually, we do not have power when sometimes the genset does not have fuel. We wait up to the time they buy the fuel. Furthermore, the capacity of the generator is limited because it covers few sections of the University and leaving large part without electricity (Assistant Librarian 1).*

*There are three major challenges which hinder postgraduate students to access e-library services. These are power outages, lack of proxy servers which can enable students to access e-library services from home, and slow internet (Assistant Librarian 2).*

However, the computer technician further explained the use of e-library services is coupled with inadequate computers and inadequate wi-fi hotspots, and also weak wi-fi signals in some hotspots. The explanation is indicated in the extract below:

*We have shortage of computers in most computer laboratories assist users to access e-library services. Wi-Fi coverage is also not enough in the University, and in some instances where there is Wi-Fi, the signal is not strong* (Computer Technician).

Findings in this objective suggest that there are factors that influence the use of e-library services. On the other hand, postgraduate students face a number of factors which discourage effective use of e-library services.

### **5.8 Chapter summary**

This chapter presented quantitative data collected from postgraduate students through questionnaires. The chapter also included qualitative data which was collected from two assistant librarians and a computer technician through interviews. The next chapter (Chapter Five) discusses the major findings of Chapter Four. It relates the findings with extant literature on the topic and the Unified Theory of Acceptance and Use of Technology (UTAUT).

## **CHAPTER SIX: DISCUSSION OF FINDINGS, RECOMMENDATIONS AND CONCLUSION**

### **6.1 Introduction**

This chapter discusses the findings as presented in Chapter Four. The discussions and interpretation of findings is considered the essence of research since it demonstrates the researchers understanding of the study by linking research objectives to existing literature and theoretical frameworks (Lunenburg & Irby, 2008). This chapter merges data from questionnaires and interviews. The chapter seeks to answer objectives which were formulated in chapter one with the aim of explaining how the broader research problem was answered. The discussion is informed by the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh, 2003), and frequently refers to other studies cited earlier in the literature reviewed in Chapter Two. The discussion was organised around four objectives which were formulated in Chapter One as follows:

- To determine the level of awareness of e-library services among postgraduate students at Mzuzu University Library.
- To ascertain the level of use of e-library services by postgraduate students at Mzuzu University Library.
- To find out the level of postgraduate students' satisfaction with the e-library services provided by Mzuzu University Library.
- To determine factors that influence the use and discourage the effective use of e-library services by postgraduate students at Mzuzu University Library.

## **6.2 Awareness level of e-library services among postgraduate students at Mzuzu University Library**

The first objective of this study was to establish the level of awareness of e-library services among postgraduate students at Mzuzu University Library. This objective was divided into five parts: e-library services offered at Mzuzu University Library, the awareness of e-library services, types of e-library services, strategies through which students became aware of e-library services and awareness of access points of e-library services.

### **6.2.1 E-library services offered at Mzuzu University**

The study has established that Mzuzu University offers different e-library services to postgraduate students. These e-library services include Internet, e-journals, e-books, Online Public Access Catalogue (OPAC), institutional repository, web tutorials, online searching services, online databases, remotex, online reference services and e-current awareness. The offering of e-library services in academic libraries, especially at Mzuzu University Library, is not surprising since literature has abundantly discussed this phenomenon in detail. The first reason cited among scholars is that e-library services are key in supporting research and academic activities in higher learning institutions (Chawinga, 2017; Garg et al., 2017; Gupta, 2011; Lwoga & Sife, 2018; Machimbidza, 2014; Min & Yi, 2010; Umukoro & Tihamiyu, 2017). Other scholars have claimed that offering of e-library services is as a result of the paradigm shift from the traditional way academic libraries offer services due to the impact of internet (Sharma et al., 2011; Taha & Taha, 2012; Zhang et al., 2011; Zozie & Chawinga, 2018). Scholars such as Zhang et al. (2011) have attached academic library adoption of e-library services to their benefits like convenience in reaching users with information. The findings are in agreement with other research studies,

Umukoro and Tihamiyu (2017) who reported e-library services such as Internet, e-journals, Online Public Access Catalogue (OPAC), e-reference services, web-based resources and e-current awareness. According to UTAUT model offering of e-library services means availability of environmental factors in form of organisational support or facilitating conditions that makes an individual to believe that there are technical and organisational conditions to support technology (Alajmi, 2019; Awwad & Al-Majali, 2015; Venkatesh et al., 2003). In this case, Mzuzu University Library offers e-library services through internet and other network technologies, to promote the usage of electronic resources which libraries subscribe to support teaching, learning and research.

### **6.2.2 Awareness of e-library services**

The UTAUT Model which underpins this study clearly stipulates the need for facilitating conditions to be available in order to create awareness and use among users. Facilitating conditions are defined as a degree to which organisational and infrastructural conditions exist to support the use of technology (Venkatesh et al., 2003). According to Machimbidza (2014), awareness is directly linked to facilitating conditions because for any organisational technology to be used, there is need for awareness. In line with the UTAUT Model, the findings of this study reflect that Mzuzu University Library supports the use of e-library services through awareness as evidenced by high awareness among postgraduate students about e-library services which are offered at Mzuzu University Library. This may be attributed to the reason that it offers library orientation when postgraduate students just arrive at the campus. Apart from library orientation, age of the participants can also explain why there is high awareness. For instance, Machimbidza and Mutula (2020) conducted a study in three Zimbabwean universities and reported most young library users had high awareness of 96.2 % percent of academics of around 40 years of age, being highly aware of e-library services. According to the UTAUT, moderating factors like age affect facilitating conditions (Venkatesh et al., 2003).

### **6.2.3 Types of e-library services postgraduate students were mostly aware of**

Although there was a high awareness of e-library services among postgraduate students at Mzuzu University Library, the findings reveal a variation in awareness of e-library services among postgraduate students. For instance, the study established most postgraduate students were aware of internet services and e-journals. This is not surprising because students use the internet for research activities, and also accessible for free at Mzuzu University Library, and in strategic hot



spots on campus. More importantly, the use of e-library services particularly, the internet, can be attributed to the benefits it brings to researchers, such as postgraduate students which include convenience for the users to access information, access to current and peer reviewed information, (Akuffo et al., 2019; Asogwa et al., 2016; Chawinga, 2017; Islam & Sheikh, 2019; Kumbhar & Bidve, 2016) These findings are not unique to postgraduate students at Mzuzu University because, scholars such as Nkebukwa (2016) also reported that students in Tanzania were more dependent on the internet than other e-library services. The results are similar perhaps because in both studies, students accessed the Internet for free in their academic libraries. According to the UTAUT Model, when facilitating conditions are provided such as information in form of awareness, users are more likely to be aware of the services that are provided. In this study, most postgraduate students have little information about most of the services like e-books, Online Databases, institutional repository, online search services, online reference services, web tutorials, e-current awareness which are offered at Mzuzu University, hence mostly being aware of internet service and e-journals.

#### **6.2.4 Strategies which students used to become aware of e-library services**

For ages, libraries have used library orientation to create awareness about library services owing to their various benefits they offer to academic libraries. The findings of the study reveal that the main strategy which Mzuzu University Library uses to create awareness is library orientation. This was also confirmed by an assistant librarian who said *“We realise the importance of creating awareness about e-library services among postgraduate students. As such, we mainly create awareness through library orientation when students just arrive on campus”*. Various scholars have mentioned the reasons why academic libraries prioritise library orientation strategy which include creating awareness about library services, introducing users to various library services, enabling users to seek help from librarians, removing anxiety in new library users and imparting learners with skills to use library services (Amuda & Tella, 2019; Chawinga & Zozie, 2016; Goldman et al., 2016; Kannegiser, 2021; Osinulu & Okewale, 2018; Pelemo et al., 2020). These findings are also in agreement of Machimbidza (2014), who found that library orientation increased high awareness of e-journals among academic staff. However, the findings at Mzuzu University further agree with Machimbidza (2014), who found that although there was high awareness among academics, the quality of awareness was still low since the users were able to

mention few e-journals, when compared to the journals which were offered in the three universities. Similarly, the study at Mzuzu University reported low quality awareness where most respondents only knew few e-library services such as internet and e-journals. The possible reason for low quality awareness has been mentioned by Chipeta (2010) in a literature study conducted in Malawian and South African universities which noted that library orientation sessions were not effective due to their non-compulsory nature, and the lack of adequate time to impart the necessary knowledge and skills to learners. This was buttressed by a study carried out by Tlakula and Fombad (2017) at the University of Venda in South Africa, which also revealed that library orientation was not effective in imparting knowledge and skills to students. In an ideal situation, libraries are supposed to use a variety of strategies to reach the users of e-library services. However, this study has established that other strategies are least used, such as library website, Online Public Access Catalogue (OPAC) page, brochures, colleagues, librarians, flyers, newsletters and e-mails.

#### **6.2.5 Awareness about access points for e-library services**

The main aim of offering e-library services is to provide convenience to the access of information users in terms of time and space. This means, users should have access to information at any time and place. This would be helpful in situations where the library does not have enough space due to Corona Virus Pandemic or limited time for library operations. However, this study reveals that most postgraduate students were aware that they could access e-library services in the library when compared to awareness of other access points. One possible explanation for this is an explanation from an interview with an assistant librarian who stated that *“One of the factors which attracts postgraduate students to use e-library services in our library is because they are attracted by the furniture which the library provides”*. The other possible reason for this high number of students accessing e-library services from the library is the fact that the library provides free internet access to all students, including postgraduate students. This was confirmed in a study of Chawinga (2017) who found that the library was one most important access point for internet at Mzuzu University. One interesting finding in a study reported by Chawinga (2017) was that the majority of students owned gadgets like mobile phones, which helped them to access internet without using Mzuzu University computers. The current study has also established that very few students indicated that they were aware that they could access e-library services in the classroom, and office access points. This finding is against the current situation which has seen the library reducing the seating capacity

from 400 to 100 seats of students due to Corona Virus pandemic which requires students to observe social distance. The current findings confirm the findings of Ramakrishna and Urs (2017) who found that in Bangalore in India, the majority of students were aware that they could access e-resources at the library. To achieve its role of providing access to information to all students, Mzuzu University Library should promote awareness of access points for e-library services.

### **6.3 Level of use of e-library services by postgraduate students**

The study ascertained the level of use of e-library services by postgraduate students through focussing on e-library services postgraduate students used, frequency of use, extent of use, purposes and benefits for using e-library services.

#### **6.3.1 E-library services used by postgraduate students**

The findings revealed that the majority of postgraduate students used internet services and electronic journals. There are possible reasons which can be attributed to this finding. On the aspect of internet service use, it could be suggested that most postgraduate use it because they access it for free as provided by the library. Additionally, it can also be because most postgraduate students use internet services to connect with friends through social media technologies like WhatsApp, Facebook for classroom purposes or connect with friends. This was confirmed in several studies in Malawi which explained that students use the internet for several purposes such as sharing information for learning, collaborating with colleagues, receiving news from librarians including accessing other library services (Chaputula et al., 2020; Chawinga, 2016; Chawinga, 2017; Nyasulu & Chawinga, 2019). On the other hand, use of electronic journals can be attributed to lecturers' habit of referring students to use electronic journals in their assignments and research projects (Boakye, 2017; Malemia, 2014; Nanda, 2017). The current findings confirm and contrast findings of Chinsinde (2019) who also noted that the most used e-library services at African Bible College in Lilongwe (Malawi) is the internet, electronic books and electronic journals. The findings confirm Chinsinde's findings because they agree that internet and electronic journals were the most used e-library services. However, these studies contrast each other with the current findings which found e-books as the least used, while Chirnsinde found e-books as the most used e-library service. This contrast may be attributed to lack of promotion of e-books at Mzuzu University Library, or may also be attributed to irrelevance of such e-books to postgraduate

students' information needs since Mzuzu University does not subscribe to electronic books. In an ideal situation, the use of all e-library services which are offered is very significant in promoting research among postgraduate students. However, this study further established that online databases, Online Public Access Catalogue (OPAC), e-current awareness, institutional repository, remotex, online search services and online reference services are the least used e-library services. This study is in line with UTAUT Model which aims at predicting and measuring the usage of information systems or e-library services (Venkatesh et al., 2003). It measured the actual usage of each e-library service which is offered at Mzuzu University Library.

### **6.3.2 Frequency of use of e-library services**

Several scholars have measured the frequency of using e-library services in their studies (Chinsinde, 2019; Gakibayo, Ikoja-Odongo, & Okello-Obura, 2013; Sejane, 2017; Umukoro & Tiamiyu, 2017). It was very clear from these studies that the most frequently used e-library services on daily basis is the internet. However, in this study, findings revealed that internet service is the most frequently used e-library service on daily basis, when compared with the rest of the e-library services like e-journals, Online Public Access Catalogue (OPAC), e-books, institutional repository, e-current awareness, online reference which are used by less than 30 percent of the postgraduate students on daily basis. The UTAUT model is key in measuring the frequency of use of information systems or services to clearly describe the intensity of adoption and usage behaviour (Venkatesh et al., 2003). In line with the model, this study measured the frequency of use of each e-library service to establish the extent to which each of the e-library services are used.

### **6.3.3 The extent of use of e-library services**

The findings revealed that the majority of postgraduate students are low users of e-library services. However, through cross tabulation, the trend shows little difference between age and the extent of use since as age and the extent of use increases, there is little difference in all ages. Furthermore, after performing chi-square tests, findings showed no significant relationship ( $N=69$ ,  $df=16$ ,  $X^2=18.858$ ,  $P=0.276$ ) between age and the extent of use. This is contrary to the findings of Machimbidza and Mutula (2020) who found that as age of respondents increased, the extent of use increased from low to heavy use. The difference in the findings may be attributed to age. For instance, in the current study, most respondents were young and perhaps, most of them were not

engaged in teaching and publishing of research papers as reported in the study of Machimbidza. The UTAUT Model is very crucial as it explains this phenomenon through moderating factors which affect usage behaviour by age, experience, voluntariness and the discipline of users.

#### **6.3.4 Purpose of using e-library services**

The UTAUT Model explains the motivation or intention of users to adopt or use the use of e-library service. One key construct that is the in the UTAUT model is performance expectancy. Performance expectancy is defined as the extent or degree to which an individual believes usefulness of information systems or e-library services will help them attain gains in job performance(Awwad & Al-Majali, 2015b; Venkatesh et al., 2003). In agreement with the model, the findings have revealed that most postgraduate students indicated that research is the major purpose for using e-library services. Research forms part of a core function of any university (Kumar Tamrakar & Garg, 2014; Islam & Sheikh, 2019; Naqvi, 2012; Pelemo et al., 2020; Singh, 2018; Sohail et al., 2019). It is not surprising to find that postgraduate students find research as their main purpose for using e-library services because all postgraduate students write research reports in partial fulfilment for the award of masters and doctoral degrees(Katabalwa, 2016). Other purposes established in this study were writing assignments, gaining general knowledge and teaching. These other purposes signify that those postgraduate students at Mzuzu University also had other tasks such as undertaking other assignments, developing in depth understanding of their disciplines while a few others were engaged in teaching. This is in contrast with findings by Katabalwa (2016) who reported that postgraduate students from the University of Dare-salaam used e-library services mainly for assignments followed by research. This difference explained by Katabalwa was due to most postgraduate students pursuing master's through course work and were mostly engaged in writing assignments rather than research. However, Mzuzu University findings are in agreement with the findings from India by Gupta (2018), who found that the major purposes for postgraduate students use of e-library services is mainly for research, where 96% indicated research, followed by 77% of postgraduate students indicating research papers, with 41% of postgraduate students indicating for teaching assignments, and 64% indicating updating knowledge as purposes for using e-library services.

### **6.3.5 Benefits postgraduate students get in using e-library services**

The major benefits highlighted in the findings show that students use e-library services because they provide them with access to information 24/7, which makes it convenient for them to use information at their own time of need. This study has revealed that e-library services help postgraduate students to improve performance in research, assignments and teaching and gaining advanced understanding of the discipline of study, finding relevant and current information. The findings are in agreement with the findings of some authors (Akuffo et al., 2019; Baikady et al., 2014; Edem & Egbe, 2016; Katabalwa, 2016; Lwoga & Sife, 2018) who reported several benefits such as accessing information 24/7, improving performance in research and assignments, easy access to information, and find relevant information for academic activities. The findings are in line with UTAUT Model which explains through a construct of performance expectancy, that when users find e-library services useful, they are more likely to use them. In this study, most postgraduate students found e-library services useful and were motivated to use them because of the benefits they found from in using the e-library services.

### **6.4 Level of postgraduate students' satisfaction with e-library services**

The study sought to find out the level of postgraduate students' satisfaction with e-library services offered at Mzuzu University Library focussing on understanding perceived usefulness, ease of use or difficulty, how significant others influenced satisfaction and determining postgraduate students' satisfaction of each e-library service.

#### **6.4.1 Postgraduate students' perception of value (performance expectancy) of e-library services**

The findings have revealed that postgraduate students perceived e-library services as very useful and performed to their expectation. According to Awwad and Al-Majali (2015), when users feel that a system or a service is useful, they tend to get satisfied. The findings of this study are in tandem with a study conducted by Marinković et al. (2020) in Serbia who found that perceived usefulness of services influenced satisfaction amongst users and inspired them to continuously use the services. The findings are also similar to Islam and Sheikh (2019) who also found that perceived usefulness helped to determine satisfaction among postgraduate students in Pakistan (a developing country) academic libraries.

#### **6.4.2 Postgraduate students' perception of the level of difficulty (Effort expectancy) of e-library services**

The findings of this study show that most postgraduate students perceive e-library services as easily accessible. However, less than half of respondents perceived that their skills for accessing e-library services were satisfactory. In other words, above half of respondents found e-library services difficult to use. This perhaps can explain why most of the e-library services did not satisfy postgraduate students. This is in line with UTAUT Model construct of effort expectancy which is defined as the degree of ease associated with the use of the system. In other words, when users find the system to be user friendly, they are more likely to use it hence, being satisfied with them (Venkatesh et al., 2003). On the other hand, when users find the e-library services difficult they will not use them hence not showing satisfaction. This is in contrast with the findings of Chan et al. (2010) who reported that effort expectancy influenced user satisfaction. The difference can be attributed to difference in computer literacy among respondents. For instance, in Malawi, most postgraduate students have challenges in using computers unlike in Hongkong where Chan et al. (2010) reported users who are proficient in using computers respectively.

#### **6.4.3 Postgraduate students' perception of the significant others (Social influence) influencing the use the of e-library services**

In UTAUT model, social influence construct explains the degree to which an individual perceives that important others believe he or she should use the system (Venkatesh et al., 2003). The findings revealed that very few respondents perceived that the significant others like lecturers, librarians, and friends referred them to the use of e-library services. This is similar with the findings of Chan et al. (2010), who found that few respondents agreed that social influence motivated the use and satisfaction of mobile services. However, the findings in this study are in tandem with the explanation of Venkatesh (2003) model which explained that in non-mandatory environments social influence does not apply because users may not expect a reward or punishment if they cannot perform the task at hand. Similarly, at Mzuzu University use of e-library services is not mandatory among postgraduate students since they can opt to use other online services without any problem.

#### **6.4.4 Postgraduate students' satisfaction with e-library services offered at Mzuzu University Library**

The findings show that most postgraduate students were satisfied with the internet and e-journal services while e-books, Online Databases, Online Public Access Catalogue (OPAC), web tutorials, e-current awareness, institutional repository, remotex, online reference service and online search services did not satisfy most postgraduate students in the current study. These findings are in contrast with the findings by Tyler and Hastings (2011) in USA at Joint Special forces University, where they found that the users were highly satisfied with all e-library services that were offered. The findings further revealed that the users found e-library services useful and easy to use because of their high experience in computer use. This is in contrast with the current study where users' perceptions indicate that only two e-library services, internet and e-journals, satisfied them. On the other hand, most postgraduate students were not satisfied with most of e-library services offered by Mzuzu University Library. Furthermore, most users in this study perceived that their skills for searching e-library services were not satisfactory.

#### **6.5 Factors influencing the use and discouraging the effective use of e-library services**

The study sought to determine factors that influence the use and discourage the effective use among postgraduate students at the Mzuzu University Library.

##### **6.5.1 Factors influencing the use of e-library services among postgraduate students**

The fourth objective of the study was to determine factors influencing the use of e-library services among postgraduate students.

The factors that influenced postgraduate students to use e-library services include availability of computers, Wi-Fi hotspots, integrated library management software, and website; to support access to e-library services; staff provided training to users; and the library carried out awareness about e-library services.

Computers, Wi-Fi hotspots, internet, library website, library integrated management software are crucial in contributing to the usage of e-library among postgraduate students. This is supported by other studies which reveal that infrastructure is important in providing access to e-library services.



For example, Chaputula (2016) established that in Malawian libraries, ICT infrastructure such as library management systems, tablets, computers, Wi-Fi and internet connectivity was very crucial in providing access to e-library services in Malawi Higher Education Institutions since access to information services depended on the availability of such infrastructure. When chi-square was performed by moderating factors such as discipline and gender. The findings revealed that there was significant relationship between computers, Wi-Fi hotspots, library website, and internet in influencing the use by the discipline ( $N=74$ ,  $\chi^2= 43.624$ ,  $df = 8$ ,  $P=.000$ ).

Another factor that influences the use of e-library services is training. Training is one of the major factors which was stated by students, that it influences the use of e-library resources. Chinsinde (2019) pointed out training is key in increasing access to e-library services because it enables students to search information resources from an informed perspective. In the findings of Chinsinde (2019) many students at African Bible College had agreed that training influenced the use of e-library services. In a study of Ajala (2018) training revealed strong relationship with the use of e-library services with P value of  $P<0.05$ . In the current study, training was rated as one of the key factors which was promoted. The current study found that many postgraduate students agreed that training influenced the use of e-library services at Mzuzu University. This training in library orientation introduced them to the use of different e-library services at Mzuzu University. When the chi-square test was conducted by the faculty or discipline of the respondents, the findings revealed significant relationship between training and use by discipline, with results indicating ( $P=.003$ ).

An additional factor which influences usage of e-library services is awareness. The use of e-library services solely depends on the knowledge that users have. In other words, absence of the services has a negative impact on their use. The findings of other research studies have supported this assertion. For instance, Adeleke and Emeahara (2016) also found that there was a direct relationship between user awareness through information literacy and the use of e-library services at the University of Ibadan in Nigeria. This implies that lack of awareness can significantly reduce the usage of e-library services. Similarly, this study established a high awareness with a significant relationship between creating awareness and influencing use by discipline or faculty of postgraduate students. However, awareness did not show any significant relationship by gender,

to influence the usage of e-library services. The high awareness noted in this study may be attributed to library orientation to all postgraduate students about the use of e-library services. The UTAUT model is key in emphasising the facilitating conditions such as organisational support through awareness to enhance usage among postgraduate students.

The other factors which influence use are users having resources such as data bundle, cell phones and computers to access e-library services. Chaputula (2016) findings revealed that students who had resources such as cell phones in Malawian university libraries were able to access information services. Similarly, this study established that most postgraduate students indicated that they had resources such as cell phones, data bundles and computers to access e-library services. This finding was supported by library staff who mentioned most of the factors which were collected through the questionnaire. Furthermore, Chi-square test revealed that there is significant relationship between students having resources by discipline which influence the use of e-library services.

### **6.5.2 Factors that discourage the effective use of e-library services**

These findings have shown that inadequate infrastructure to support the access of e-library services; erratic internet connection, inadequate bandwidth and slow download speed; lack of computer access; lack of skills to search e-resources; e-library services are difficult to download, inadequate library staff support through online reference services; lack of relevant materials in e-library databases, recurrent power outage, lack of awareness of the available e-library services; inability to access e-library from home and reading from online computer strain eyes as factors discourage the effective use of e-library services.

Grouping of these factors falls into five categories of infrastructure, staff related, user related factors and collection related factors.

#### **6.5.2.1 Inadequate infrastructure**

Infrastructure related factors include erratic internet connectivity, inadequate bandwidth and slow download speed, lack of computer access, and recurrent power outages. These factors namely inadequate computers, challenge of power supply, and slow internet were noted as key challenges discouraging effective the use of e-library services (Katabalwa, 2016; Lwoga & Sife, 2018). In the current study, the findings show that the university has a genset but power black outs appear when

the university fails to procure fuel for the generator, in time. This was explained by one assistant librarian who said *“Usually we do not have power when sometimes the genset does not have fuel. We wait up to the time they buy the fuel. Furthermore, the capacity of the generator is limited because it covers few sections of the University and leaving large part without electricity”*. Furthermore, the computer technician was given a follow-up question regarding the adequacy of computers in the e-library room. The response from the technician indicated that *“We have shortage of computers in most computer laboratories to assist users to access e-library services”*. A further follow-up question was given to the computer technician regarding the availability of Wi-Fi in the campus. The response was *“Wi-Fi coverage is not enough in the University and in some instances, where there is Wi-Fi, the signal is not strong”*.

#### **6.5.2.2 Staff related challenges**

Venkatesh (2003) propounded in the UTAUT model that if facilitating conditions in form of support is provided to users, they are likely to use the technology or e-library service. In contrast to the model, the findings of this study revealed that users faced inadequate support when accessing e-library services. Availability of staff who can assist users to access e-library services is always important. Umaru et al. (2018) observed that there is need for qualified library personnel to support online users of e-library services. In a study that Katabalwa (2016) conducted at the University of Dar es salaam, it was noted that inadequate staff in the library affected access to e-library services offered at the University. In a study which was conducted at Mzuzu University, Chaputula et al. (2020) also reported that adequate staff affected access to the provision of online reference services at Mzuzu University.

#### **6.5.2.3 User related challenges**

The findings also revealed that users face some challenges which affect their use of e-library services; these include lack of awareness, lack of search skills, and straining eyes when reading from the computer screen. User related challenges have also been reported by (Bhat & Ganaie, 2016) who noted that lack of awareness and search skills were some of the impediments which discouraged the effective use of e-library services at the Parmar University of Horticulture and Forestry in India. Similar findings were reported by (Okogwu, 2019) in Nigeria when it was discovered in a study that postgraduate students in South East Nigeria had challenges to find

information from e-library services because they were complicated to use and required more user skills.

#### **6.5.2.4 Collection related challenges**

The UTAUT Model highlights that when e-library services are useful or perform to the expectation of the users, they are more likely to use them. On the contrary, the findings in this study show that the users had challenges to find materials which are relevant to their academic needs, hence affecting their use. This can be attributed to the fact that Mzuzu university Library does not subscribe to the databases of users' choice due to shortage of funding. It may also be attributed to the fact that the University Library fails to direct the users to available relevant materials which can help these postgraduate students in their studies. Similar findings were reported by Omete (2016) who also found that academic staff did not find relevant materials from the electronic library services which were offered at the University of Eldoret in Kenya. This therefore, calls for university libraries to make sure that they subscribe to relevant databases which provide journal articles or e-books that meet the needs of the users.

### **6.6 Summary of findings**

The summary of the key findings has been presented following the objectives of the study.

#### **6.6.1 Level of awareness of e-library services by postgraduate students at Mzuzu University Library**

The study found that there is high awareness of e-library services among postgraduate students at Mzuzu University Library. The most common e-library services postgraduate students were aware of include internet services and e-journals. Only few respondents were aware of e-books, OPAC, online search databases, institutional repository, online search services, remotex and e-current awareness. Most users new these e-library services through library orientation; only few learnt through colleagues, library website, librarians, leaflets, posters, and e-mail. On the other hand, less than half of the respondents were aware that they can access e-library services from different points such as library, e-library room, homes, classroom and their offices.

### **6.6.2 Level of use of e-library services by postgraduate students at Mzuzu University Library**

The most used e-library services included internet services and e-journals, while the least used ones include OPAC, e-books, Online Databases, institutional repository, online search services, online reference services, remotex and current awareness. Many users used the internet many times on daily and weekly basis, while the rest of the services were less frequently used. Additionally, the study established that there is no relationship between the age of respondents and the extent of use of e-library services. Furthermore, it was shown that users used e-library services for research purposes. Finally, the study revealed various benefits associated with the use of e-library services.

### **6.6.3 Level of satisfaction of postgraduate students with e-library services offered at Mzuzu University Library**

The findings revealed that postgraduate students perceived that e-library services were valuable (performed to their expectation). On the other hand, postgraduate students perceived that e-library services are easy to find and indicated that they perceive their skills were not satisfactory when they use e-library services. On social influence, respondents perceived that their significant others such as lecturers, librarians and colleagues, did not influence them to use e-library services. In addition, most respondents were satisfied with internet and e-journals services only.

### **6.6.4 Factors influencing the use and discouraging the effective use of e-library services by postgraduate students at Mzuzu University Library**

The findings revealed that the key factors contributing to the use of e-library service availability of infrastructure such as computer, Wi-Fi, integrated library management software; inadequate staff; awareness; training; postgraduate students having computers, cell phones and data bundles, were some of the factors that influenced use of e-library services. However, the study also uncovered factors which discouraged effective use of e-library services such as inadequate computers, Wi-Fi, integrated library management software; inadequate staff; user related challenges and collection related challenges.

## **6.7 Conclusion**

This section provides conclusions based on the major findings of the study. The conclusions were drawn from the research objectives presented in Chapter One. The general conclusion is that

postgraduate students are aware of e-library services which are offered at Mzuzu University Library. The study established that most postgraduate students are aware of internet services and e-journals. The majority of postgraduate students become aware of e-library services mainly through library orientation. This implies that there is need for more awareness about e-library services, increase of the means for creating awareness, and also, where postgraduate students can access e-library services.

It has also been established that the e-library services used by the majority of postgraduates are internet and e-journals, while the rest of the e-library services are used by less than half of the postgraduate students. Furthermore, the study found that most postgraduate students use e-library services to conduct research and benefit through easy access to information 24/7. The implication of the findings is that there is need for increasing the use of e-library services so that the university can increase research output.

The study also determined that postgraduate students perceived e-library services as valuable and also that they can easily access them. However, the findings reveal that the majority perceived that their skills were not satisfactory when they use e-library services. Additionally, the study also established that postgraduate students perceived that lecturers, librarians, colleagues did not influence them to use e-library services. Furthermore, most postgraduate students were satisfied with internet and e-journals, while most of e-library services offered least satisfied postgraduate students.

Finally, the study established that the availability of computers, Wi-Fi hotspot; bandwidth, training awareness; and the availability of staff, as some of the factors which influence the use of e-library services. On the other hand, inadequate computers, inadequate Wi-Fi hotspots, slow internet; inadequate staff to support postgraduate students when accessing e-library services; user challenges; and collection of related challenges that discourage the effective use of e-library services. The implication is that the Mzuzu University Management and Library Management need to continue the improvement of infrastructure, training of users and creating collection development policies that puts postgraduate students' needs first.

## **6.8 Recommendations**

Based on the findings and interpretation of the study, and conclusion arrived at, the recommendations are presented in sections 6.8.1 and 6.8.2.

### **6.8.1 Recommendations on students' challenges**

- Mzuzu University Library should increase awareness through using methods like library website, brochures, e-mail, social media, newsletters, and training early students' adopters of technology to promote awareness that will reach all postgraduate students which shall be as follows:
  - Library website will help postgraduate students to access e-library services online and will promote interactive question and answer sessions for all online information seekers.
  - Social media accounts such as twitter, Facebook, WhatsApp should be supported in order to enhance access to information 24 hours a week.
  - Newsletters in the library should be published on quarterly basis to disseminate information about new e-library services to postgraduate students.
  - Students' early innovation adopters should be trained on how to use e-library services so that they can assist other students who have apathy about technology.
- Mzuzu University ICT Directorate should install Wi-Fi hotspots for students in order to facilitate easy access to the e-library services in areas around Mzuzu University Campus as follows:
  - Around off-campus shed
  - Library
  - Wi-Fi hotspots in the classroom area
  - Hotspots around house-office area
  - Academic Office block
  - Nora Hostel area
  - TCRET laboratories
- Mzuzu University Library should increase collaboration with faculties and departments to encourage student visits to the library so that postgraduate students are attracted from using e-library services as opposed to other web resources

- Mzuzu University Library needs to encourage students to use mobile phones to access e-library services, and the implication is that it will reduce heavy reliance on computers in laboratories to access information services.
- Mzuzu University Library should introduce full information literacy course for all postgraduate students which shall be implemented as a semester compulsory course for postgraduate students so that they acquire the necessary skills for accessing e-library services.
- Mzuzu University Library should provide printing and photocopying facilities at a reasonable cost which will lessen the challenges that postgraduate students face when reading e-library services on the computer screen. These facilities can make e-library services easily accessible to postgraduate students.
- Mzuzu University Library should aggressively market e-library services to lecturers who will in turn inform students about e-library services offered at Mzuzu University.
- Mzuzu University Library should make its website accessible to students so that they access e-library services online without contacting the library.

### **6.8.2 Recommendations on staff challenges**

- Mzuzu University Library should introduce a marketing section to be responsible for marketing library resources including e-library services.
- Mzuzu University Library should train library staff marketing skills so that they are able to use different methods of disseminating information about e-library services to postgraduate students.

### **6.9 Areas for further study**

- There should be a study to compare the use of e-library services between postgraduate students and undergraduate students at Mzuzu University.
- Conducting a similar study in other public universities in Malawi.
- Use mobile phones to access e-library services among postgraduate students at Mzuzu University Library



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## **LIST OF APPENDICES**

## **Appendix 1: Mzuzu University Research Ethics Committee Informed Consent Form**



### **Mzuzu University Research Ethics Committee (MZUNIREC)**

#### **Informed Consent Form for Research in Library and Information Science**

##### **Introduction**

I am **Hamis Lack Abdullah** from the **Department of Information Science in the Faculty of Humanities and Social Sciences at Mzuzu University**. We are doing research on the use of e-library by postgraduate students at Mzuzu University. This consent form may contain words that you do not understand. Please ask me to stop as we go through the information and I will take time to explain. If you have questions later, you can ask them of me or of another researcher.

##### **Purpose of the research**

This research aims to investigate the use of e-library by postgraduate students at Mzuzu University.

##### **Type of Research Intervention**

This research will involve your participation in answering a questionnaire and/or individual interview.

##### **Participant Selection**

You are being invited to take part in this research because of your capacity as a **post graduate student**.

##### **Voluntary Participation**

Your participation in this research is entirely voluntary. It is your choice whether to participate or not. If you choose not to participate nothing will change. You may skip any question and move on to the next question.



**Duration**

The research takes place for a period of two months from September to October.

**Risks**

You do not have to answer any question or take part in the discussion/interview/survey if you feel the question(s) are too personal or if talking about them makes you uncomfortable.)

**Reimbursements**

You will not be provided with any incentive to take part in the research.

**Sharing the Results**

The knowledge that we get from this research will be shared with you and your community before it is made widely available to the public. Following, we will publish the results so that other interested people may learn from the research.

**Who to Contact**

If you have any questions, you can ask them now or later. If you wish to ask questions later, you may contact: Dr Winner Chawinga. (Senior Lecturer, Mzuzu University, Private Bag 201, Luwingu, Mzuzu Phone: 0993 50 92 95)

This proposal has been reviewed and approved by Mzuzu University Research Ethics Committee (MZUNIREC) which is a committee whose task is to make sure that research participants are protected from harm. If you wish to find out about more about the Committee, contact Mr. Gift Mbwele, Mzuzu University Research Ethics (MZUNIREC) Administrator, Mzuzu University, P/Bag 201, Luwingu, Mzuzu 2, Phone: 0999404008/0888641486

Do you have any questions?

**Part II: Certificate of Consent**



*I have been invited to participate in research about the use of e-library by postgraduate students at Mzuzu University.*

I have read the foregoing information, or it has been read to me. I have had the opportunity to ask questions about it and any questions I have been asked have been answered to my satisfaction. I consent voluntarily to be a participant in this study.

Statement by the researcher/person taking consent

I have accurately read out the information sheet to the potential participant, and to the best of my ability made sure that the participant understands the research project. I confirm the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and the consent has been given freely and voluntarily.

Signature of Researcher /person taking the consent \_\_\_\_\_

Date \_\_\_\_\_

Day/month/year

## Appendix 2: Questionnaire for postgraduate students



**MZUZU UNIVERSITY**

**FACULTY OF HUMANITIES AND SOCIAL SCIENCES**

**DEPARTMENT OF INFORMATION SCIENCES**

### **QUESTIONNAIRE FOR POSTGRADUATE STUDENTS**

#### SECTION A: BACKGROUND INFORMATION

1. What is your gender? (Tick in the box where appropriate)

Male

Female

2. What is the level of your study? (Tick in the box where appropriate)

Masters

PhD

3. What is your age group? (Tick in the box where appropriate)

0-25  26-35  36-44  45-50  Above 50yrs

4. What is your programme of study?

.....

5. What is your Faculty?

Education  Environmental Sciences  Humanities and Social Sciences

Science Technology and Innovation  Health Sciences

Hospitality and Tourism

#### SECTION B: LEVEL OF AWARENESS OF POSTGRADUATE STUDENTS ABOUT E-LIBRARY AT MZUZU UNIVERSITY LIBRARY

6. Are you aware of e-library which are offered at Mzuzu University Library?

Yes  No

7. For each of the following e-library, tick the ones you are you aware of from Mzuzu University Library?

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Internet service    | <input type="checkbox"/> OPAC                     | <input type="checkbox"/> Online databases |
| <input type="checkbox"/> E-journals          | <input type="checkbox"/> Web tutorials            | <input type="checkbox"/> E-books          |
| <input type="checkbox"/> Remote X            | <input type="checkbox"/> Online reference         |   |
| <input type="checkbox"/> E-current awareness | <input type="checkbox"/> Institutional repository |   |

9. How did you come to know about e-library at Mzuzu University Library?

- |  |   |
|--|---|
| <input type="checkbox"/> Leaflets/Newsletters/Flyers | <input type="checkbox"/> Posters                          |
| <input type="checkbox"/> Library Website             | <input type="checkbox"/> Told by a librarian              |
| <input type="checkbox"/> Through library orientation | <input type="checkbox"/> Told by a colleague              |
| <input type="checkbox"/> Library online catalogue    | <input type="checkbox"/> Targeted e-mail from the library |
- Other (please specify).....

9. Where do you normally access and use your e-library from?

- |                                |                                    |
|--------------------------------|------------------------------------|
| <input type="checkbox"/> Class | <input type="checkbox"/> Library   |
| <input type="checkbox"/> Home  | <input type="checkbox"/> E-library |
- Others (please specify).....

#### SECTION C: USE OF E-LIBRARY BY POSTGRADUATE STUDENTS

10. For each of the following e-library, tick the ones that you have used before?

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Internet services   | <input type="checkbox"/> OPAC             | <input type="checkbox"/> Online databases         |
| <input type="checkbox"/> E-journals          | <input type="checkbox"/> E-books          | <input type="checkbox"/> Institutional repository |
| <input type="checkbox"/> Remote X            | <input type="checkbox"/> Online reference |   |
| <input type="checkbox"/> E-current awareness | <input type="checkbox"/> Web tutorials    |   |

11. What is your frequency of use of the following e-library?

E-library	Daily	Weekly	Monthly	Occasionally	Never
Internet access					
Online Public Access Catalogue (OPAC)					
E-journals					
E-books					
Institutional repository					
Online reference					
Web tutorials					
E-current awareness					
Remotex					

12. For what purpose do you use e-library?

- Research only                       Assignment  
 To further my knowledge         Research and Assignments  
 All the above

Others (please specify).....

13. What benefits do you get from using e-library?

- Access to information 24/7         Passing assignments  
 Performing well in research       Gaining knowledge

Others (Please specify) .....

SECTION C: SATISFACTION WITH THE E-LIBRARY

14. For each of the following e-library services you have used in this library, how much are you satisfied with these services?

E-library	Extremely satisfied	Satisfied	Neutral	Dissatisfied	Extremely dissatisfied
Internet service					
E-current awareness					
Online Public Access Catalogue (OPAC)					
E-journals					
E-books					
Institutional repository					
Online reference					
Web tutorials					
Online databases					
Remotex					

15. For the following questions, rate your satisfaction about usefulness of e-library services in each statement using the scale Strongly Satisfied (5) Satisfied (4) Neutral (3) Dissatisfied (2) Strongly Dissatisfied (1)

<b>Performance expectancy</b>					
<b>Usefulness</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
Using e-library services increases my research productivity.					
Using e-library provides me with the latest information on particular areas of research					
Using e-library enhances my knowledge and research skill					
Using the e-library improves the quality of my work					

16. For the following questions, rate your satisfaction about your effort in using e-library services with each statement using the following scale: Strongly Satisfied (5) Satisfied (4) Neutral (3) Dissatisfied (2) Strongly Dissatisfied (1)

<b>Effort expectancy</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>4</b>	<b>1</b>
It is easy to become skilful at using e-library.					
It is easy to remember how to search journals/ articles using the e-library.					
I find it easy to get e-library services to help me do my research.					
My interaction with e-library is within my comprehension.					
Interacting with the online database system is very stimulating for me					

17. For the following questions, rate your satisfaction about how other influence you to use e-library services in each of statement using the scale: Strongly Satisfied (5) Satisfied (4) Neutral (3) Dissatisfied (2) Strongly Dissatisfied (1)

<b>Social Influence</b>	<b>5</b>	<b>4</b>	<b>3</b>	<b>2</b>	<b>1</b>
I think people who are important to me recommend me to use e-library					
I think the use of e-library will elevate my class					

I think my peers expect to see me use e-library					
I think people who influence my academic behaviour encourage me to use e-library services					

#### SECTION D: FACTORS FOR USE AND NON-USE OF E-LIBRARY

18. What are the facilitating conditions that encourage your use of e-library services at Mzuzu University Library? Please tick using this scale: Strongly Agree (5) Agree (4) Neutral (3) Disagree (2) Strongly Disagree (1)

Facilitating conditions	5	4	3	4	1
The University Library has Wi-Fi, hotspots, computers and website required for the use of e-library.					
Mzuzu University Library has members of staff who train users the use of e-library					
Mzuzu University Library creates awareness about e-library services.					
I have a computer, cell phone, data bundle to access e-library services at Mzuzu University Library.					
Mzuzu University has a policy that encourage the use of e-library.					

19. Which of the following statements would you say are barriers that discourage your access and use of e-library at Mzuzu University Library? Please tick using the scale Strongly Agree (5) Agree (4) Neutral (3) Disagree (2) Strongly Disagree (1)

Barrier	5	4	3	2	1
Inadequate computers and hotspots to support access.					
Erratic Internet connection.					

Inadequate bandwidth and slow download speed.					
Inadequate computer access.					
Inadequate skills to search e-library services.					
E-library are difficult to search and download.					
Inadequate staff to support access of online information					
Inadequate information that meets research needs.					
Recurrent power outage					
Inadequate awareness of the available e-library services					
Inability to access e-library from home					
My eyes are strained when reading electronic documents online					

**END OF QUESTIONNAIRE**



## Appendix 3: Interview guide for librarians



**MZUZU UNIVERSITY**  
**FACULTY OF HUMANITIES AND SOCIAL SCIENCES**  
**DEPARTMENT OF INFORMATION SCIENCES**

### Interview Guide for Librarians and Computer Technician

#### SECTION A: Characteristics of Respondents

1. What is your Gender?
2. What is your position?

#### SECTION B: Level of awareness of postgraduate students about e-library at Mzuzu University Library

3. What e-library do you offer to postgraduate students in your library?
4. What is the awareness level of postgraduate students about e-library services that you offer in your library?
5. What are the methods of awareness that help postgraduate students to be aware of the e-library services that you offer in your library?

#### SECTION C: Postgraduate students use of e-library at Mzuzu University Library

6. In your opinion, do postgraduate students use the e-library services that you offer in your library?
7. How can you describe the frequency of postgraduate students using the e-library services that are offered in your library?
8. What are the purposes for postgraduate students use of the e-library that you offer in your library?
9. What are the benefits that postgraduate students get from using e-library services?

#### SECTION D: Satisfaction with the E-library

10. What is your comment about postgraduate students satisfaction with the e-library services which are offered in your library?
11. How can you describe the rate of your user's satisfaction in terms of performance expectancy and effort expectancy?

**SECTION E: Factors contributing to use and non -use of e-library**

12. What are the factors that motivate students to use e-library services at Mzuzu Library?
13. What are the factors hinder postgraduate students use of e-library services in your library?

## Appendix 4: Application letter for Clearance to MZUNIREC

Mzuzu University  
Private Bag 201  
Luwinga  
Mzuzu

27th November 2020

To: The Chairman  
Research Ethics Committee  
Mzuzu University  
Private Bag 201  
Luwinga  
Mzuzu

Dear Sir,

### **Application for research ethics clearance**

I would like to apply as indicated in the subject in order to be allowed to conduct a study about THE use of e-library services at Mzuzu University Library by postgraduate students. This study will be carried out in partial fulfilment of the requirement for the award of a Master of Library and Information Science.

Your favourable consideration will be highly appreciated.



Hamis Lack Abdullah  
Master Library and Information Science Student

## Appendix 5: Letter of Approval from Mzuzu University Research Ethics Committee



**MZUZU UNIVERSITY**

**DIRECTORATE OF RESEARCH**

Mzuzu University  
Private Bag 201  
Luwinga  
Mzuzu 2  
MALAWI  
TEL: 01 320 722  
FAX: 01 320 648

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### MZUZU UNIVERSITY RESEARCH ETHICS COMMITTEE (MZUNIREC)

Ref No: MZUNIREC/DOR/20/12

14<sup>th</sup> Dec, 2020.

Mr. Hamis Lack Abdullar,  
Mzuzu University,  
P/Bag 201,  
Luwinga,  
Mzuzu 2.

Email: [hamislack@gmail.com](mailto:hamislack@gmail.com)

Dear Mr. Hamis Lack,

**RESEARCH ETHICS AND REGULATORY APPROVAL AND PERMIT FOR PROTOCOL REF NO: MZUNIREC/DOR/20/12: USE OF E-LIBRARY SERVICES AT MZUZU UNIVERSITY LIBRARY BY POSTGRADUATE STUDENTS.**

Having satisfied all the relevant ethical and regulatory requirements, I am pleased to inform you that the above referred research protocol has officially been approved. You are now permitted to proceed with its implementation. Should there be any amendments to the approved protocol in the course of implementing it, you shall be required to seek approval of such amendments before implementation of the same.

This approval is valid for one year from the date of issuance of this approval. If the study goes beyond one year, an annual approval for continuation shall be required to be sought from the Mzuzu University Research Ethics Committee (MZUNIREC) in a format that is available at the Secretariat. Once the study is finalised, you are required to furnish the Committee with a final report of the study. The Committee reserves the right to carry out compliance inspection of this approved protocol at any time as may be deemed by it. As such, you are expected to properly maintain all study documents including consent forms.

**Committee Address:**

*Secretariat, Mzuzu University Research Ethics Committee, P/Bag 201, Luwinga, Mzuzu 2; E-mail address: [mzunirec@mzuni.ac.mw](mailto:mzunirec@mzuni.ac.mw)*

Wishing you a successful implementation of your study.

Yours Sincerely,



**Gift Mbwele**

**MZUNIREC ADMINISTRATOR**

**For: CHAIRMAN OF MZUNIREC**