Establishing a library portal for integrated e-resources at Modibbo Adama University of Technology, Yola, Adamawa State, Nigeria.

DAUDA JOSHUA

3580238

Submitted in fulfilment of the requirements of the degree of

Doctor of Philosophy

Department of Library and Information Science

University of the Western Cape, Bellville, South Africa

Supervisor: Dr Lizette King

August 2018

DECLARATION

I declare that the thesis, *Establishing a library portal for integrated e-resources at Modibbo Adama University of Technology, Yola, Adamawa State, Nigeria,* is my own work, that it has not been submitted before for any other degree or assessment in any other university, and that all the sources I have used or quoted have been indicated and acknowledged by means of complete references.

Full name: DAUDA JOSHUA.

Signature ....

Date ....28/05/2018.........................

UNIVERSITY *of the*
WESTERN CAPE

i

DEDICATION

I dedicate this research work to One God in three Divine Persons - the Father, the Son and the

Holy Spirit for being gracious to me throughout my study period (2015 - 2018), and to my

late mother, Mrs Lydia Edube Joshua, who encouraged me to study while I work.

UNIVERSITY *of the*
WESTERN CAPE

ACKNOWLEDGMENTS

iii

Lastly, my sincere appreciation goes to my family: Dad Joshua Edube for his unending love and support. My dearest Delight, Mrs Promise N.D. Joshua, for your overwhelming support; without you I would not have been the person that I am today! I am very proud of you, my God's given sweetest companion. To my beloved children: Anointing, Purity, Gospel, Praise and Gift, I appreciate your understanding, ceaseless prayers and support having been absent from home to ensure that I complete the doctoral research. May you and your seed be greatly blessed! Many thanks to my entire household, the Delight family; let there be God's release of unstoppable blessings!

ABSTRACT

The study examined the availability of e-resources in the Ibrahim Babangida Library at Modibbo Adama University of Technology, Yola (MAUTECH) focusing to integrate e-resources in a dedicated portal for easy access. The study was motivated by the Nigerian vision 20:2020 and the trend in 21st century academic libraries to offer electronic resources and services to meet users' demands and use of technology. Mixed methods were sequential, concurrent, conversion and integrated approaches used. A descriptive case study approach was employed. The Technology Acceptance Model (TAM) and Diffusion of Innovation (DoI) theories framed the study. Based on these, a conceptual framework was constructed. To achieve triangulation, questionnaires, interviews and scanning of library portals were used to gather both quantitative and qualitative data. Academics, students, academic librarians, and information and communication technology experts acted as participants. Findings reflected low use of the Ibrahim Babangida Library, dissatisfaction with the quality and quantity of the library collection, insufficient and unreliable Internet access on campus, limited information literacy education, familiarity and utilization of e-resources due to flexibility and easy access to academic information, need for digitisation of library resources and the need for a dedicated library portal. The study recommends, amongst others, information literacy education for students and academics, subscription to full-text databases, provision of sufficient and free Internet access, e-resource and e-services policies, and establishing a consortium with other Nigerian academic libraries. The outcome of the study was a designed, established and functioning library portal based on the input of all the stakeholders of the MAUTECH community.

KEYWORDS

E-resources, academic libraries, Modibbo Adama University of Technology, Yola, ICT, Ibrahim Babangida Library, library portals

LIST OF ACRONYMS AND ABBREVIATIONS

AUN	American University in Nigeria
DCL	Digital Communications Librarian
DoI	Diffusion of Innovation
IBL	Ibrahim Babangida Library
ICT	Information and Communications Technology
ICTs	Information and Communication Technologies
IFLA	International Federation of Library Associations and Institutions
IT	Information Technology
LAN	Local Area Network
MAUTECH	Modibbo Adama University of Technology
NASIG	North American Serials Interest Group
OPAC	Online Public Access Catalogue
PDDM	Portal Development and Deployment Model
SAAT	School of Agriculture and Agricultural Technology, MAUTECH
SEET	School of Engineering and Engineering Technology, MAUTECH
SES	School of Environmental Sciences, MAUTECH
SMIT	School of Management and Information Technology, MAUTECH
SPAS	School of Pure and Applied Sciences, MAUTECH
SPGS	School of Postgraduate Studies, MAUTECH
STSE	School of Technology and Science Education
TAM	Technology Acceptance Model
UWC	University of the Western Cape
WAN	Wide Area Network

TABLE OF CONTENTS

xi

UNIVERSITY *of the*
WESTERN CAPE

LIST OF TABLES

xviii

UNIVERSITY *of the*

WESTERN CAPE

LIST OF FIGURES

UNIVERSITY *of the*

WESTERN CAPE

1 INTRODUCTION

1.1 Introduction

The study was purported to the design and implementation of a library portal access for the Modibbo Adama University of Technology (MAUTECH). The need for a computerized system is accentuated in the central Ibrahim Babangida Library in assisting academics, researchers and students of the university to increasingly utilize electronic information resources. Currently the library resources (both printed and soft copies) are in disarray without a dedicated access point or portal. This study aimed at making the Ibrahim Babangida Library an Information and Communications Technology (ICT) - driven library capable of managing and disseminating electronic resources to its esteemed clientele more efficiently.

1.2 Rationale of the study

Woody, Daniel and Baker (2010: 947) have suggested that more research is needed to determine the suitability of e-resources as learning tools. On this premise, this research aimed at designing a library portal to integrate e-resources by exploring ways of making e-resources more available at MAUTECH. When academics, researchers and students have access to a variety of resources, it enhances their potential and adds value to the higher institution of learning (Rao & Mulloth 2017: 12).

Mallaiah, Kumbar and Mudhol (2008: 154) have opined that university libraries play a primary role in teaching and research. Adetimirin (2007) has reiterated that it is the responsibility of the library to acquire, organize and make accessible both print and e-

1

resources to its clients. Olajide and Folayan (2014: 1) have noted that user satisfaction with the library collection is a measure of the library's effectiveness. Their argument supports that of Nwalo (2001: 44) who explains that periodic measuring of user satisfaction should be explored to determine how well library objectives, policies and operations meet the needs of the users.

MAUTECH is situated in the capital city Yola, in one of the 21 local government areas called Girei, in the Adamawa State. According to City Population (2017), the state's projected population, consisting of 80 different ethnic groups, is 4 248 400. Apart from colleges and polytechnics, the state has three universities, namely the privately owned American University of Nigeria, the state-owned Adamawa State University, Mubi, and the federal-owned MAUTECH. The National Universities Commission, a body under the Federal Ministry of Education, supervises the Nigerian university system. MAUTECH is among the accredited Nigerian universities (National Universities Commission 2015).

MAUTECH has been established by the Federal Government of Nigeria in 1981 and is one of the few technological universities in the country. As the university's vision is to become a world-class university in science and technology, most of the programmes of the university are science-based. On campus, a cybercafé, computer centres, a geo-informatics unit, an Ericsson GSM training centre and an ICT unit with ICT equipment are found. Internet access on campus is available via Wi-Fi. Both students and academics pay an hourly rate of ₦100 (R5,50) for Wi-Fi access. The university has a website and a portal for student registration (Modibbo Adama University of Technology Website 2015).

Rohatgi, Scherer and Hatlevik (2016: 103-104) postulate that the application of ICTs in diverse locations like schools or homes, for purposes of recreation, work and school-related activities may provide enormous opportunities for students to master and acquire experience in computer and information literacy. Scholars like Vijayakumar and Vijayan (2011: 146) explain that in a library setting, ICT is used for the collection, processing, storage, retrieval and dissemination of recorded information to users.

Adeoye, Oluwole and Blessing (2013: 177) emphasize the role of ICTs in Nigerian tertiary education, as it is an inseparable and indispensable part of the contemporary world. ICTs have impacted on the quality and quantity of learning and research, and are catalysts of the information revolution in the 21st century.

ICT, as a tool for educational development in Nigeria, was launched by the Federal Ministry of Education as well as the Computer Professionals Registration Council of Nigeria in the year 2000 leading to the approval of the National Policy for Information Technology in the year 2001 by the Federal Government of Nigeria (Nwankwoala 2014: 743-745). Various policies and laws guiding the ICT sector were developed after that (National ICT Policy 2012: 13-14).

One of the blueprints of Vision 20:2020 is to have Nigeria among the twenty biggest economies in the world using different developmental strategies (Nigerian Vision 20:2020 2009: 5; Thomas & Brycz 2014: 162). The three transformation policy plans are to plan a platform for Nigeria's success and growth, diversifying an industrialized economy and providing evidence-based decisions on policies. A more recent update put the Nigerian

3

economy as steadily growing due to the policy implementation targeted toward Vision 20:2020 (Thomas & Brycz 2014).

Thus, ICT in Nigeria is presently administered under three policy plans:

1) The Mass Communication Policy of 1990;

2) The National Telecommunications Policy of 2000; and

3) The National Policy for Information Technology of 2000 (Odufuwa 2012: 3).

The ICT policy of 2012 (Ministerial Committee on ICT Policy Harmonization 2012: 12) has proposed changes and the design of centralized ICT policy-making regulations. One of the objectives of ICT in Nigeria is to provide a "knowledge-based globally competitive society" by 2020. Regardless of these developmental changes, MAUTECH still has limited ICTs, Internet access and e-resources. As there is no platform or dedicated portal, the e-resources available are not accessible.
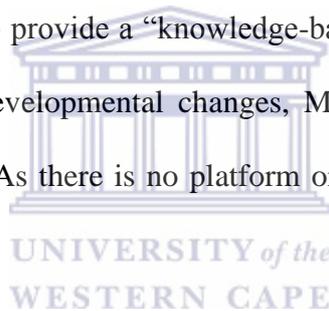
The National Universities Commission accredits academic libraries in Nigerian universities. In June 2014, the Librarians' Registration Council of Nigeria with the Federal Ministry of Education designed minimum standards and guidelines for academic libraries in Nigeria. Staffing, accommodation, furniture and equipment, collection management and services, budgeting and funding, ICT, governance and administration were taken into consideration (Librarians' Registration Council of Nigeria 2015a).

The Librarians' Registration Council of Nigeria (2015b: 5) itemized academic library standards as:

i) Articulate the goal for library programme, services and staffing;

4

ii) Determine the criteria for quantity, quality, extent and level of suitability;

iii) Support the qualitative and quantitative criteria, both of which are amenable to review as the needs arise;

iv) Serve as a tool for decisions and actions by the authorities of the institution with regard to planning and administration of library programmes and services; and

v) Predict outcomes to be achieved by academic libraries.

While the function of academic libraries is to support the parent institution, the evolving job of modern academic librarians has, due to the impact of technology, experienced many changes. In order to remain the custodians of information gathering and sharing, academic libraries need to adopt 21st century technological developments to meet changing user needs (Breeding 2015; Raju 2017). Breeding's (2015) investigations have revealed that academic libraries are shifting their collections towards electronic resources and providing online library services. This paradigm shift is helping users discover modern innovations of library services and resources.

In the light of Abubakar (2011: 4) describing academic libraries in Nigeria as the hubs of academic activity, comparing the Ibrahim Babangida Library with other academic libraries, the library needs a library website as well as a portal providing access to the library collection and services. No study on the establishment of a library portal for integrated e-resources at MAUTECH has been done so far. Therefore, this study holds its originality and authenticity.

Library portals are designed frameworks or tools used to achieve aggregation where library resources are disjointed to provide a window of information resources from a single access point of entry to channel users towards preferred resources. A library portal links library

5

information resources, services, research output and intellectual subject content in the information managing and distribution environment (Pandey & Sukula 2017). In other words, the library portal becomes a repository for information where library resources are consistently updated.

1.3   Ibrahim Babangida Library

1.3.1   Brief history of MAUTECH and the academic library

As promulgated from the university's website and from Joshua (2012: 3-5), the Modibbo Adama University of Technology was formerly known as the Federal University of Technology, Yola. The Federal Republic of Nigeria created it in 1981 along with six other universities. The university had its first batch of students in 1983 with 214 candidates in the Remedial Science programmes for the academic year of 1982/83. In 1984, the university merged with the University of Maiduguri and became the Modibbo Adama College. In 1986, the federal government enacted and formed some technological universities in the country to promote self-reliance and oriented work force in the country under Decree No. 13 of 1986. The Modibbo Adama College was separated from the University of Maiduguri and became a full-fledged technological university known as the Federal University of Technology, Yola. In October 2011, the university was renamed MAUTECH, supposedly after Modibbo Adama Ibn Hassan, a great scholar, an erudite educationist and outstanding leader. The university experienced growth due to an increase in admission from 214 in 1983 (Joshua 2012: 3) to 12 223 in 2016 (MAUTECH MIS) enrolment and academic activities. At the moment the university has seven schools, namely:

1)   School of Agriculture and Agricultural Technology (SAAT);

2)   School of Engineering and Engineering Technology (SEET);

6

3) School of Environmental Sciences (SES);

4) School of Management and Information Technology (SMIT);

5) School of Pure and Applied Sciences (SPAS);

6) School of Technology and Science Education (STSE); and

7) School of Postgraduate Studies (SPGS).

Presently, the university grants admission into undergraduate, graduate, postgraduate and consultancy programmes in certificate, higher certificate, diploma, distance learning and Sandwich (part-time degree with internship) programmes. Advertising is done on television, radio and the university website. Admissions into the university are carried out through remedial (pre-degree) or university matriculation examination, direct entry and the Joint Admissions Matriculation Board. The Senate manages all academic matters of the university and the chair of the Senate is also the vice-chancellor of the university. All academic matters fall under his jurisdiction and the deputy vice-chancellors (Academics and Administration) support him. In the Senate, all professors, deans of schools, the university librarian, representatives of school boards and some appointed by the vice-chancellor are members.

The main university library of MAUTECH is called the Ibrahim Babangida Library. According to the Library Guide (2006), the library began in a temporary building until October 1990 when it moved to the completed new building. The library can accommodate more than 50 000 volumes of books and 100 titles of journals, 750 readers and offices for 50 staff members.

1.3.2 Mission and vision

To provide quality library and information resources and services in support of teaching, learning, research and creative work, and to supply access to recorded knowledge in print and electronic formats.

1.3.3 Goals

These goals are supported by the mission of the library and summarized as follows:

1. liberalize and democratize access to recorded knowledge both in print and electronic formats;

2. provide the right book to the right reader at the right time;

3. keep the resources up-to-date and adequate in terms of quantity and quality;

4. provide equitable circulation and dissemination of the resources through a short-term loan, a long-turn lending system and special overnight lending; and

5. support teaching, learning and creative and research activities of the university via systematic acquisition and organization of books and journals covering all academic programmes.

1.3.4 Objectives

To fully implement its aims and objectives, the Ibrahim Babangida Library sought to:

1. provide adequate materials in support of the learning process for students;

2. provide relevant resources to meet the requirements of academics and postgraduate students;

3. provide core resources to assist the library user; and

4. Collaborate with other academic libraries to share library resources.

1.3.5 Structure

The library is operationally divided into six divisions with so many units and sections.

1. *Administrative Division.* Headed by the University Librarian, the division has an administrative office and a clerical unit. The university librarian is answerable to the vice-chancellor of the university for the daily smooth operation of the entire library.

2. *Collection Development Division.* Headed by the Collection Development Librarian, the division is responsible for selecting and acquiring library resources recommended by students, academics and librarians in order to develop a qualitative collection.

3. *Technical Services Division.* Headed by the Technical Services Division Librarian, the division is responsible for the classification, cataloguing and selective dissemination of information. They are also producing catalogue cards, manually filed into a card catalogue.

4. *Readers' Services Division.* Headed by the Readers' Services Librarian, the division is responsible for the library collection and for circulation, referencing, short-loan, reserving and public relations services. It is also responsible for registering and clearing (ensuring all library material is returned on graduation) of students and staff members. The division is considered as the image of the library.

5. *Serials Services Division.* Headed by a Serial Librarian, the unit is responsible for displaying the most recent issues of serial publications as well as storing and managing older issues.

6. *Cybercafé Division.* Headed by the IT Librarian, the division is responsible for audio-visual material, the virtual library, printing and a number of computer workstations with payable Internet access.

1.3.6 Personnel

The library has 39 staff members consisting of the acting university librarian, nine academic librarians, 26 supporting staff members and four administrative support members. The divisions have computers, but lack interconnectivity or LAN access and Internet access resulting in all library operations being conducted manual.

1.3.7 Library collections in comparison with academic libraries globally

The library has a collection of 35 651 books and subscribes to 12 630 journal titles of which 9 713 are foreign and 2 917 are local journals. The reference unit provides printed reference sources like indexes, dictionaries, encyclopaedias, bibliographies and yearbooks. Printed theses and undergraduate research reports are housed in a separate room.
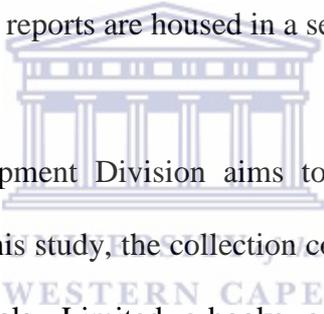
Although the Collection Development Division aims to have 40% of the collection in electronic format, at the time of this study, the collection contained no databases, e-theses, e-newspapers, e-books or e-journals. Limited e-books on CD ROMs were kept at the Cybercafé. In the past, the MAUTECH library management has subscribed to the full text databases ScienceDirect and EbscoHost, but these were accessible only on a few computers at the Cybercafé. Library users had to ask for usernames and passwords every time they wanted to access the databases. Because of low utilization due to unawareness and difficult accessibility, the subscriptions were cancelled. Since 2014, students were required to submit both a printed and electronic copy of theses. Printed copies are shelved while the Cybercafé archives electronic versions. Without an Integrated Library Management System or an Online Public Access Catalogue (OPAC), administration, services and functions are performed manually.

In contrast to this, many scholars have predicted that, for academic libraries to remain vibrant enterprises, they must migrate from print to electronic collections, and embed library tools, resources and expertise into teaching, learning and research using computer-mediated systems (Lewis 2007: 4), adopt new services based on technological advances in the commercial space (Raju and Schoombee 2013: 27), support open access (Pietersen 2015: 89), increase the capacity of the institutional repository (Pietersen 2015: 89), employ networked technologies and social technology (Michalak 2012: 413), supply electronic resources, allow utilization from outside the library (Pietersen 2015: 89) as well as respond to users' use of technology and current technology-oriented user behaviour (Michalak 2012: 414; Pietersen 2015: 92). The concepts regarding e-resources availability and access (Ibrahim & Lakshmi 2017: 81), its impact on users in the academic community (Hossaini 2017: 25-26) and providing a library portal (Zabicka 2017: 3-4) as a platform for digital content and library functions and services are yet to be addressed by the Ibrahim Babangida Library.

1.4 Research problem statement

The 21st century library user quest for e-resources is on the increase and they expect a Google like search experience with a single point of entry to all information resources in the library (Chilimo 2014). A suitable platform to ensure timely and efficient information services is the adoption of library portal access. At the time of the study, Ibrahim Babangida Library had no library portal. The design and implementation of a responsive library portal for the library is therefore an original concept and does not infringe upon anyone's copyright nor violate any proprietary rights. The research sought to resolve the need for implementing a library portal to integrate the existing and future e-resources and library services. The cardinal focus of this research was to capture the input of all role players regarding the need, requirements and contents of a library portal. The establishment of a responsive library portal will integrate

both printed and e-resources, at the beginning of the study, disjointed and largely inaccessible and will provide a single point of entry to all library resources and services for ease of use and wider accessibility.

It has been observed that without a library portal, readers will find it difficult to access and utilise library resource effectively. The impact of ICTs on library e-resources is supposed to be prevalent in today's academic library setting. As noted by Joshua (2012: 1-2), the impact of ICTs is visible in the educational arena as it enhances the learning process of the academics and students in information gathering, research and knowledge sharing. With e-resources, networking and e-learning the learning environment should become more user-friendly and affordable, and should reflect positively on research output. If a library portal is established, it will provide opportunity to supply a single domain or point of entry with multiple access points for e-resources, for the library to be integrated into the university community, to promote the library resources and services, and to allow access from outside the library for maximal utilisation. Therefore, the significance of this research cannot be overemphasised having noted that a library portal with integrated e-resources can impact immensely on students and academics in research and collaborations.

1.5   Research objectives

The objectives of this study are to evaluate the e-resources currently available at MAUTECH and their adoption and utilization, to investigate the need for and establishment of an integrated library portal to provide an efficient information service to the university community as well as to contribute to creating an ICT-driven library. Specifically, the study sought to determine the following:

12

a) the extent of e-resources available in the academic library as well as those provided separately by the university management;

b) how students and academics utilize printed as well as e-resources;

c) the techniques of designing and establishing an integrated customized library portal with databases, subscribed e-resources and open-access sources.

1.6   Research questions

Academics and students expect adequate resources in an academic library to satisfy their continuous research and educational demands. Therefore, this study has critically investigated and evaluated the availability and utilization of the e-resources in the Ibrahim Babangida Library as well as those supplied by the university management at MAUTECH. The study has also investigated the design and establishment of a library portal in order to facilitate library services and the utilization of all library resources. Based on this premise, the research work aims to answer the following research questions:

1. What role does the university management play in providing e-resources to academics and students at MAUTECH?

2. To what extent are academics and students satisfied with the Ibrahim Babangida's Library collection?

3. To what extent are students and academics accessing and utilizing the e-resources?

4. What challenges can be encountered in providing, accessing and using e-resources?

5. How can the Ibrahim Babangida Library establish a library portal?

6. To what extent will a library portal enhance the information services of the Ibrahim Babangida Library?

1.7 Significance of the study

The researcher is convinced that e-resources incorporated into a library portal for access have numerous benefits and are an essential part of the 21st century academic library. The pragmatic impact of a library portal are, amongst others, access to multiple library resources, quick response by librarians to queries from users, 24/7 access to e-resources, improved research collaborations, enhanced users patronage and effective communication and marketing of library resources and services. It was expected that this study would provide insight amongst all the role players at MAUTECH to embrace the concept of e-resources. The findings of the study should also provide insight into the needs, expectations and input from the end-users of e-resources and potential users of the library portal.

1.8 Delimitation of the study

In this empirical study, the researcher surveyed the students, academics, librarians and ICT staff at MAUTECH and the UWC Digital Communication Librarian. The research did not include other users like the non-teaching staff, casual and temporal staff, certificate or diploma students or the departmental librarians.

1.9 Limitations of the study

Both internal and external factors beyond the researcher's control were experienced. These influences had affected the quality of design, results and data analysis of this study. The factors were lack of response from students and academics on the Google forms sent to them via emails, lack of cooperation from some Principal Officers of MAUTECH, AUN and UNIMAID, cost of administering physical questionnaires to students and academics, capricious feedback from students and academics, scanty feedback to the email interviews and insecurity issues which hindered conducting personal interviews.

14

1.10 Ethics statement

The researcher maintained ethical guidelines governing research policies from the Research Committee of the University of the Western Cape, South Africa. The rights and privacy of respondents and all parties involved in the study were duly kept and respected. Names, location, gender and identity of participants were not disclosed. The research participation was voluntary, confidential and anonymous, especially for non-users of emails. Official consent to embark on the study was gained from both the University of the Western Cape (Appendix A) and MAUTECH (Appendix B). An information letter (Appendix C) and consent letter (Appendix D) accompanied the questionnaires and e-mail interviews.

1.11 Definition of key terms

1.11.1 E-Resource

Reitz (2004) defined e-resource as "Material consisting of data and/or computer program(s) encoded for reading and manipulation by a computer by the use of a peripheral device directly connected to the computer or remotely via a network such as the Internet. The category includes software like applications, electronic texts and bibliographic databases". Dhanavandan and Tamizhchelvan (2012) defined e-resources as resources which require computer access or any electronic product that delivers a collection of data, be it text referring to full-text databases, electronic journals, image collections, other multi-media products and numerical, graphical or time based as a commercially available title that has been published with an aim to be marketed.

15

1.11.2 Library portal

A library portal is also referred to as an information hub; an entry point to information resources; a density of resources and services on the network; a 'portfolio' of resources, potentially customized to specific role or individual interests; an aggregation or collection of resources organized to assist particular categories of users (Wada 2014: 166 in citing Dempsey 2003: 3). However, Das and Saha (2015: 111-112) defined a library portal as an entry or access point to the world of resources designed to save the users' time and cost in gaining access to multiple resources of the library.

1.11.3 Academic library

An academic library is a library that is attached to a higher education institution which serves two complementary purposes to support the school's curriculum, and to support the research of the university faculty and students (Curzon & Skinner 2009).
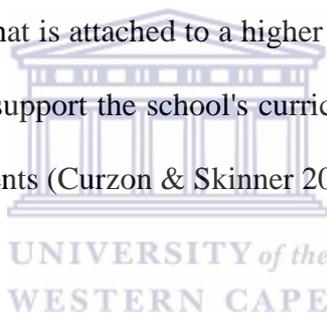
1.12 Brief outline of chapters

Chapter 1 provides the background to the research and explains the rationale behind the study being investigated. It also discusses the research problem, objectives and questions. Chapter 2 reviews works of literature and studies previously done in connection with providing and utilizing e-resources in academic libraries as well as designing and establishing a library portal providing access to library resources and services. Chapter 3 discusses the theoretical and conceptual frameworks of the Technology Acceptance Model (TAM) and the Diffusion of Innovation (DoI) theory with different approaches adaptable for the availability of e-resources and the design of library portals. Chapter 4 focuses on the research design and methodology of the study, the population, sampling technique and the data-gathering instruments used. Chapter 5 presents the research findings derived from the responses of

students, while chapter 6 presents the findings from academics. Chapter 7 presents the qualitative data received from interviews with academic librarians, the acting university librarian and various ICT staff members as well as from scanning other library portals. Chapter 8 interprets the research findings linking it to the literature review and conceptual theory and frameworks of the study. Chapter 9 answers the research questions, concludes the study and presents recommendations.

1.13 Concluding summary

This chapter served to explain the rationale, motivation for and the context of the study. It provided the background of the study leading to the research problem and research questions. As proof of ethical conduct, an ethics statement was provided. To conclude the chapter, the significance, limitations and outline of the whole study were discussed. The next chapter provides a review of research done aligned to this study.
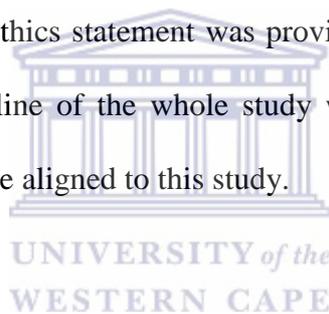
<center>**CHAPTER TWO**</center>

<center>**2   LITERATURE REVIEW**</center>

2.1   Introduction

A literature review is crucial for effective research. Studies on library portals and e-resources need to draw from the existing body of knowledge to validate theoretical and conceptual inferences. The review of literature is categorised into the following: e-resources definition, need for e-resources via ICTs, benefits of using e-resources, e-resources in academic libraries, challenges of using e-resources, utilization of e-resources, need for training in the use of e-resources and library portal for e-resources.

Kumar (2013: 279) defines library automation as "a process of mechanization of library operations, which are of a routine and repetitive nature, which usually covers all the housekeeping operations of the library and information centre". In other words, the computerization of all library activities into an integrated system.

Many authorities have written in support of library automation. Scholars like Adepoju (2015), Boateng, Agyemang and Dzandu (2014), Leeder (2013), Lippincott (2015: 284), Patil (2013) and Singh (2015) have shown that academic libraries need automation and networking in order to enhance services, to deliver quality electronic information resources and fulfill the expectations and demands of their users. The traditional print-based library cannot provide these services any more. Reasons for embracing automation are multifold, but the main being that the 21st century users' demands are multifaceted and dynamic which require collaboration far beyond the physical building of the library (Manjunath 1998; Ogunsola 2011; Sindhave & Patel 2014; UNESCO 2015).

<center>18</center>

E-resources have diverse definitions and explanations as a generic term. It may be defined as information stored in electronic format, any document in digital form, a range of electronic items accessed online or offline, or resources stored electronically through systems and networks (Ani 2013: 20; Appleton 2006: 620; Bashorun & Isah 2011: 555; Haridasan & Khan 2009: 118; IFLA (2012); Natarajan 2012: 193). Simply stated, e-resources are library materials that are not in a physical format. The versatility of e-resources plays a pivotal role in the collection and capacity building of libraries. It has two mediums, namely direct access or fixed media (for example, memory cards, flashes, disks, CDs and DVDs) and remote access (for example, e-journals, e-theses and e-books). It might require the use of a handheld mobile device, mainframe or personal computer (Johnson, Evensen, Gelfand, Lammers, Sipe & Zilper 2012: 3).
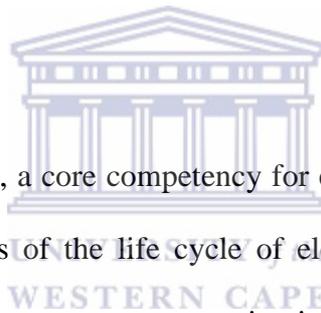
According to NASIG (2013: 1-3), a core competency for e-resource librarians is an in-depth understanding of the components of the life cycle of electronic resources (Figure 2.1) to intermediate between users of e-resources, to organize information more effectively and to sustain the core values of acquiring, accessing, administering, supporting and evaluating resources.

E-resource life cycle
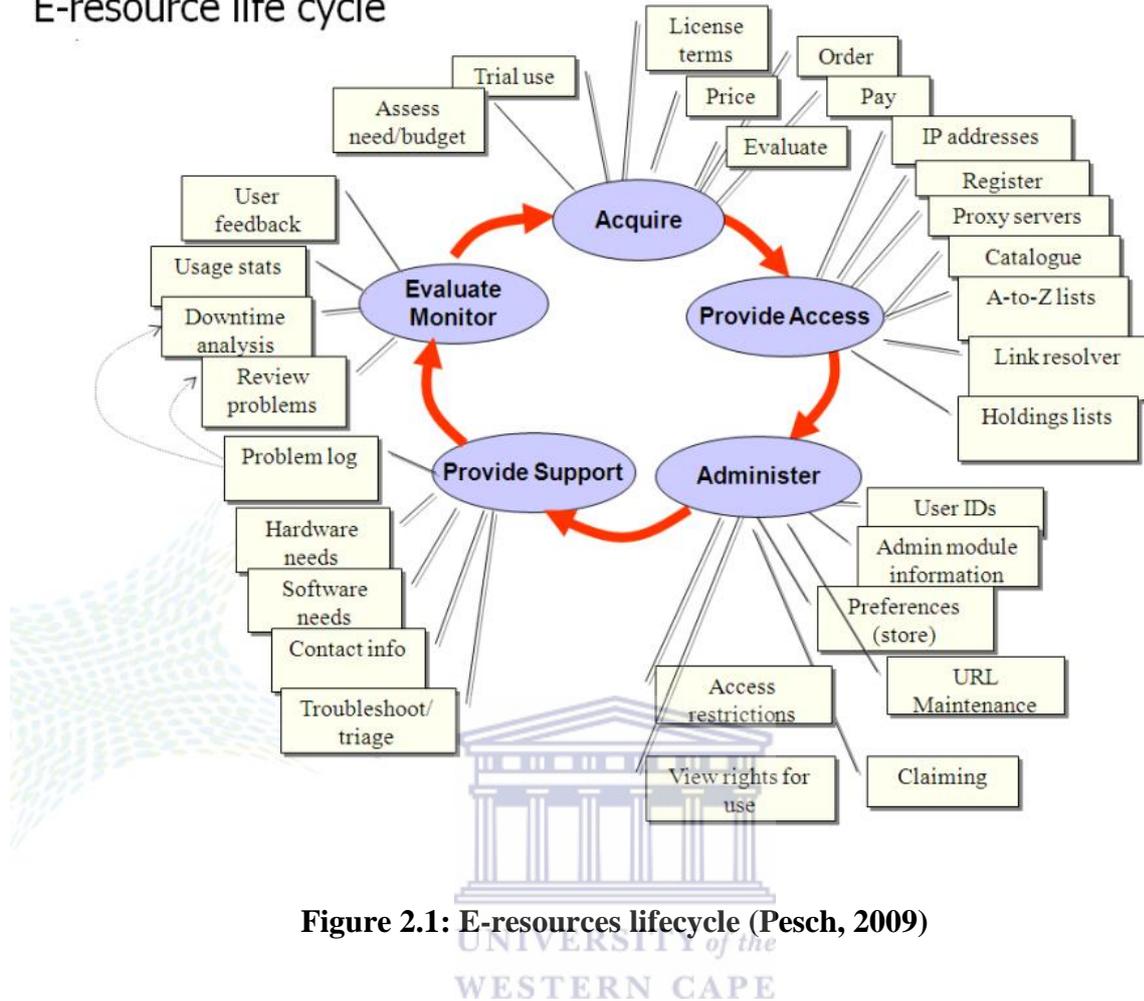
Figure 2.1: E-resources lifecycle (Pesch, 2009)

This literature review focuses on studies done on the architecture and application of e-resources in academic libraries as well as in designing and implementing a library portal. The following sub-themes will be addressed:

1) Need for e-resources via ICTs;

2) Benefits of using e-resources;

3) E-resources in academic libraries;

4) Challenges of using e-resources;

5) Utilization of e-resources;

6) Need for training in the use of e-resources; and

7) Library portal for e-resources.

20

2.2   Need for e-resources via ICTs

The Carnegie Corporation (2012) reported that the automation projects in universities in Ghana, Nigeria, Tanzania and Uganda had revealed improvement in library automation processes as well. Isah (2014: 1-2) explained that the Nigerian government and private sector supported the application of ICTs for learning and teaching in universities. However, compared to other developing countries, the level at which Nigerian academic libraries are making use of ICTs is still very low (Fati & Adetimirin 2017: 28).

Khan, Bhatti and Khan (2011: 1-2) opine that ICT proficiency is crucial to the participation in and engagement of modern information society, to retrieve information effectively in a short time, and to access and share knowledge using search engines, websites, databases, the Internet and Web2.0 technologies. Joshua (2012: 2) supports their findings regarding the influence of ICTs in the educational arena, emphasizing that students and academics are encouraged to use e-resources and computer-related devices and tools to enhance learning and collaboration. Oduwole and Akpati (2003) in their Nigerian study of electronic services enlisting CD-ROMs, databases, e-mail, OPAC and Internet browsing, have concluded that electronic services are geared towards the writing of articles, theses and dissertations.

2.3   Benefits of using e-resources

Quadri, Adetimirin and Idowu (2014: 28, 31) emphasize that e-resources have enamours influence on information services provided to students. Their examination of two private universities (Babcock and Redeemer) has revealed that most of the students use e-resources for assignments, research and projects, and this has resulted in improved class activities and collaboration. This reflects the statement by Olofinniyi, Fashiku, Fashiku and Owombo (2012) that mobile phones, tablets and i-pads affect the study pattern of students all over the

world. With the use of these devices, students now easily connect to the Internet, e-learning platforms as well as to social media platforms.

In a later study, Edem and Egbe (2016: 61) have maintained that e-resources offer postgraduate students at the University of Calabar, Nigeria the chance to access relevant and current information from different subject areas. E-resources are available at any time of the day, provide hyperlinks to other resources (for example, inter-library lending), have huge information reservoirs, provide quick information and various search options for easy retrieval, are easy to cite, can easily be uploaded, stored, archived, disseminated, shared and updated, and have flexibility features. For the physical library, it has the benefit of not requiring any physical space, and because they do not wear and tear, they are cost-effective in the long run (Tekale 2016: 15; Tekale & Dalve 2012).
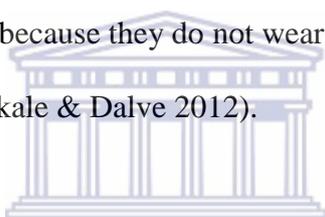
E-resources are used to supplement printed resources as they can be accessed remotely without a physical presence in the university library building and are becoming popular with students and academics. Thanuskodi's (2012: 1-7) study on e-resource usage by students has revealed that e-resources are used to supplement printed resources but because they can be accessed remotely without a physical presence in the academic library, they are popular with students and are seen as disseminated data for research.

Jonathan and Udo (2015: 8, 11) purport that electronic resources are not made publicly available unless subscribed and authenticated. Their study has revealed that the open-access movement ensures that countless e-resources are currently available to library users free of charge on various open-source platforms. Lippincott (2015: 286) goes further to state that "in support of education, some academic libraries are bringing their open access principles into

22

the realm of e-textbooks" and that libraries can design learning laboratories and provide hardware, tools, facilities and expertise to assist students to develop new skills in producing new information products.

A study by Adeniran (2013) revealed that the use of e-resources had an enormous positive impact on the academic performance of undergraduate students at Redeemer's University. In line with this, Siddike and Islam (2014: 1) described e-resources to have increasingly become the most popular tools for researchers and academia. The medical research scholars at International Centre for Diarrhoeal Disease Research, Bangladesh (ICDDR,B) used the OPAC (100%), e-journals (78.1%), e-mails (76.6%), Internet resources (60.4%), e-books (52.1%), and e-newspapers (51%). Conversely, 37.5% of researchers used e-research reports, 32.3% e-bibliographic databases, 30.2% full-text databases, 26% e-theses and 16.7% e-maps. When asked about the usefulness of e-resources, the majority (69%) confirmed the extreme usefulness of e-resources to accomplish assignments, theses and academic papers. If compared to Zinn and Langdown's (2011) study three years earlier, which concluded that e-resources adoption is a gradual trend among academic librarians in South Africa and that librarians preferred both printed and electronic resources, e-resource utilization is increasing.

2.4   E-resources in academic libraries

Because of the potential advantages of e-resources, it is rapidly becoming a norm for academic libraries to provide e-resources and ICTs for access and utilization thereof (Ajala & Ayankola 2017: 9, 13; Fagan 2017: 34-35; Hussain & Lavanya 2014: 2, 3, 7; Hussain & Singh 2017: 175-176; Namhila 2017: 142, 143). Ocholla, Mutsvunuma and Hadebe (2016: 17-18) argue that universities should improve information services to support research,

teaching and learning with a focused approach on user needs; in other words, meeting the information needs of students.

The study by Agaba, Bukenya and Nyumba (2004: 25-27) on the utilization of electronic information resources by academic staff at the Makerere University in Uganda revealed that 91.1% of the respondents used e-resources for research purposes and had benefitted from the utilization thereof. In a correlated study, Snyman (2007: 2-3) reflected on how the University of South Africa Library had adapted to using e-resources, and how they had managed and processed the life cycle thereof. The outcome of study led to the formation of an Electronic Resources Management Initiative to specifically handle needs, set data standards and define specifications and device tools for managing e-resources effectively.
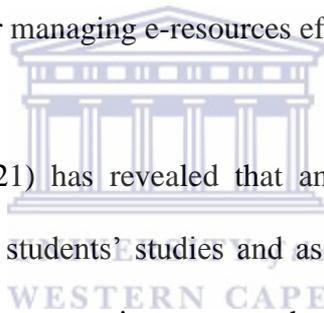
The study by Clink (2015: 20-21) has revealed that an academic library endowed with resources plays a pivotal role in students' studies and as the heart of the university, helps them shift away from their home community to an academic environment with the sole role of improving and transforming their lives. Libraries are vital to the academic activities of higher institutions. Their importance in institutions of higher learning is crucial in regards to accreditation, as providing current up-to-date library resources is a criterion. The more resources a library provides, the more information will be readily available to users (Montenegro et al. 2016: 551, 553; Omeluzor, Akibu, Dika & Ukangwa 2017: 6, 8-10, 18; Opara 2017: 3, 6, 8).

Edem and Egbe (2016: 65) have reported that digital libraries of the University of Calabar have been providing information needs of all students and staff. These libraries are equipped with computers, the Internet and e-resources which are accessed through LAN and WAN.

24

The University of South Africa, a distance education institution with the largest population of students all over the world, provides a robust and structured library system to meet the ever-increasing demands of its clients. Their academic library has adopted e-resources early and provides access to databases, e-references, e-books and more than 300 000 e-journal titles from different disciplines (Snyman 2007).

Badenhorst (2015: 3) emphasized that e-books have caused a paradigm shift in academic library services but that academic libraries are battling with integrating e-books into their library collections, budget allocation challenges and utilization of e-resources.

Coetsee and Weiner (2013: 114-115) maintain that academic libraries in South Africa are facing challenges in maintaining existing library services and that the need to implement e-services for users is crucial. In order to efficiently resolve this issue, it is suggested that the integration of a web-based, social networking and in-person experience of the library to prevent 'data loss' should be encouraged. The study stresses that South African academic libraries have had considerable success in responding to changes in the higher education system, resulting in new library collaborative consortia focused on procuring common library systems, resource sharing, joint purchasing of resources, negotiating license agreements and pricing of e-resources as well as the adoption of ICTs.

Jennings (2013: 2-6), in her contrasting view, emphasizes ways in which the academic libraries can stay up-to-date or relevant in the 21st century. Due to the emergence of the Internet and students preferring to use Google for all their information needs (Behrends 2012; Perruso 2016; Sadeh 2007), some doubt the relevance and sustainability of libraries. Many academic libraries have already gone through these changes and challenges, and have added

electronic content in their collection and have provided users with 'Google-like' experiences. Jennings (2013?) proposes three "Es" (engage, educate and empower) to overcome challenges and become a place of service. The academic library must market itself and engage library users by hosting parties, welcoming new students, hosting discussion groups and posting video clips on social media.

A similar study by Khan, Khan, Malik and Idrees (2017: 3) has revealed that library utilization is declining rapidly owing to users' preference to use search engines, which are easy and faster to use. Librarians are, therefore, saddled with the responsibility of remodelling Internet simulation training in an attempt to attract users to use library resources and services more frequently. A guide and evaluation system to assist students to acquire knowledge, information skills and self-directed learning and opportunities was suggested for academic libraries by Kiilu and Otike (2016: 11-12).
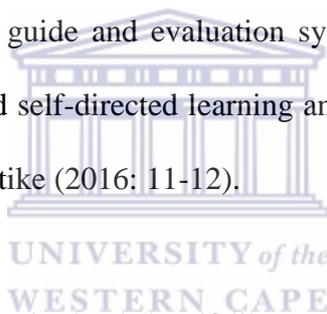
Tiemo and Ateboh (2016: 54) emphasized that if library products or services did not meet users' needs or expectations, libraries should expect dissatisfaction. The survey by Saikia and Gohain (2013) on users' satisfaction about library services, infrastructures, collection and information provided at the Federal University of Petroleum Resources Library showed that respondents were highly satisfied. Jackson (2017: 87-88) argued that the quality of library services was measured entirely by the amount of money spent on them.

Isah (2014: 2) posited that "academic libraries, being the primary hub in the network of information provision for teaching and learning in the academic environment, have continuously invested heavily on the procurement, maintenance, and management of ICTs". Academic libraries have pivotal roles to play in ensuring information provision to academics

26

and students in support of learning and teaching, but it should be in congruence with the use and application of ICTs. Kadir, Ghani, Baker, Bunawah and Seman (2016: 2) maintain that the main function of academic libraries is to provide the best service and resources to an academic community with a continued assessment and evaluation to meet the ever-growing demand of their patrons.

Jonathan and Udo (2015: 11) indicated that in South East Nigerian federal universities, the percentage of e-resources at the University of Nigeria Nsukka was 70%, at the Federal University of Technology it was 32%, at the Nnamdi Azikiwe University it was 27% and at the Michael Okpara University of Agriculture it was 15%. The head of the ICT unit at the University of Nigeria Nsukka revealed that most of the e-resources were available via their digital library. The survey by Habiba and Chowdhury (2012: 76-78) showed that large numbers of e-resources were provided by the Dhaka University Library and that academics, students and researchers were satisfied with the collection.
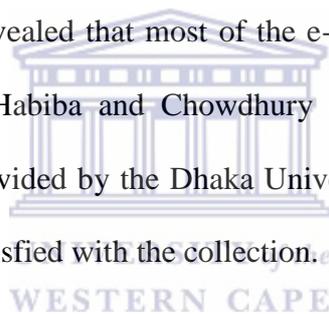
2.5   Challenges of using e-resources

Agyekum and Ossom (2015: 13) studied the extent of e-resources usage amongst academic staff and faculty members of Kumasi Polytechnic, Ghana. Investigations showed that although more than twenty databases comprising three thousand e-journals were subscribed through the Consortium of Academic and Research Libraries in Ghana, utilization was hampered by access complications, slow Internet connectivity, frequent power outages and lack of search skills.

Pricing, licensing, digital rights management, design platforms and e-book format have been discovered to hamper e-book workflow at the University of Nevada, Reno (Beisler and Kurt

2012: 97). In a similar view, Johnson et al. (2012: 12) maintain that there is no standard model for packaging and pricing electronic publications, and that libraries can best determine which best range of purchase and pricing models should be adaptable in relation to access agreements, value for money and archival privileges.

Due to the technicalities and challenges involved in acquiring, processing and accessing e-books, Beisler and Kurt (2012: 99-100) showed how their library had moved from its conventional operation to digitized extendable service inculcating e-resources and metadata onto the technical services division of the library.

Library collections today consist of printed material, electronic resources, subscription databases and open-access resources. The 21st century library user expects access to library resources and services through a single access point. Managing both electronic and traditional resources is becoming very daunting to library managers considering skewed budget, expertise needed and technical issues. Kahle (2017: 28) mentions that three major corporations, namely Google, Amazon and the Internet Archive, have digitised materials at a very large scale in order for customers to search and buy resources. The millions of archived books have the advance for libraries that many can be downloaded in an open-access domain.

Japheth and Kikelomo (2016: 1595) defined digitization as "the process of conversion of analogue educational resources present in the library into digital format for the purpose of extending access and, where appropriate, to assist with preservation" and "also referred to as the management of new materials created in digital formats". Rafiq and Ameen (2013: 37-38) enunciated that "digitization enables the creation of digital libraries by converting analogue contents into digital formats". They further explained that university libraries stored huge

amounts of valuable information resources in print and therefore digitization had become imperative for libraries around the globe. Converting print collections into digital content and providing access via OPACs promoted remote access as well. According to Obahiagbon and Otabor (2012: 82), the lack of library automation affected Physical Science students, especially undergraduate students, in utilizing the academic library, generally stunted their studies.

Stried and Blixrud (2014: 599-602) assert that license terms have become a concern in library practice and values, unlike print purchases, and have considerably challenged interlibrary loans. Their 2012 survey of 125 research libraries has revealed subscriptions from seven different publishers and issues of non-disclosure of license terms with vendors and publishers.

Devi (2015: 90) defines information architecture as "the art and science of organizing and labelling websites, intranets, online communities and software to support usability". This connotes that librarians are people who structure and reorganize information in the library portal to help patrons locate and use the resources optimally. In a contrary view, Dresselhaus (2012: 177) argues that both Utah State University Eastern and Northern libraries should prioritize their collections and resources to meet the curriculum demands of users. When negotiating with publishers and vendors, librarians should consider e-journals and other e-resources in high demand by users or for interlibrary loans as well as library collection policies and demands.

Anie (2015: 208) listed challenges confronting Internet access in Africa ranging from lack of enough skilled manpower, inadequate competition in the communication industry, an absence

of defined regulations, the high cost of satellite Internet hardware, limited funding from the government and inadequate power supply. He further noted that Internet access was grossly inadequate in academic communities and suggested that improved Internet access be would feasible only when sufficient funds were granted from African regions (Anie 2015: 205). The current trend in Internet access is wireless access with LANs at designated points for uninterrupted access everywhere on campus.

Johnson et al. (2012: 15) have suggested that, to ensure e-resource access, the following must be included in the licensing agreement: authorised users and sites, network services in different geographical locations including remote sites, access using Internet protocol authentication synchronously with different users within a given location without the use of a password or coded access, archival policy, perpetual access to back issues, open-source access and timeframes for the leasing of electronic data and self-archiving. In addition, Tawfeeq (2015: 35) has revealed that licensors are now devising licences as a legal means of controlling the use of their products; in other words, access to e-resources is gained through a licence, which may pose some restrictions. In academic libraries, issues like authorization of users, fair use, intellectual property, copyright and library consortia should be considered. Varaprasad and Madhusudhan (2010) suggest that libraries should avoid bundled packages and big deals with publishers and vendors, but can favourably subscribe to those journals that meet users' maximum interest. Librarians have identified licensing negotiation as one of their biggest challenges (Kahn & Underwood 2013: 14; Vasileiou, Rowley & Hartley 2012: 28).

Chandel and Saikia (2012: 149) have observed that one of the issues facing academic libraries is the e-resources collection development policies towards licences, management, maintenance and archiving, considering the quality of e-resources is more difficult compared

30

to printed resources because of the complexity surrounding e-resources generally. In this regard, Nwosu and Udo-Anyanwu (2015: 131) opine that collection development should be well conceived among libraries as encompassing selection, acquisition, user studies, stock evaluation, weeding and library cooperation. This aspect is in consonance with the American Library Association (ALA 2013) recommendation that library collection development incorporates the coordination of selection, collection evaluation, planning for resource-sharing, collection maintenance and weeding activities.

In a closely related study, Patel (2016: 63) enumerates steps involved in the collection development process, which include analysing the information need of library users, formulation and implementation of a selection policy to suit the objectives of the library, acquisition programmes to ensure a balanced collection, resource sharing and de-selection policies and practices. The study further expatiates on the parameters for evaluating e-resources from content, conditions of access, updatability, the convenience of cataloguing, longevity, the convenience of use, statistics of use, technical characteristics and quality of service factors of value added with a structure of price formation. Taking into consideration users' preferences, library collections have changed to a virtual structure where the reader depends more on online resources for availability, convenience and fastness.

Building on this, Ahmed (2013: 300) disclosed that, although faculty members in Bangladesh were satisfied with the current e-resources subscription, some challenges were discovered ranging from a limited number of titles, lack of access to back issues, problematic off-site access, lack of access to computers and slow Internet bandwidth. The author concluded that if these ICT related problems were resolved, it would increase the morale of faculty members and the utilization of e-resources.

In a related study, Ajayi, Shorunke and Aboyade (2014: 188) enumerate that e-resources are primarily made available for educational purposes. Students and academics who have security access codes may put some resources in closed access mode since the university has paid for the subscription and they are only accessible. The study concludes that factors hindering the effective use of e-resources in Nigeria higher institutions are lack of strategic planning, knowledgeable work force, Internet access, inconsistent training, insufficient funding, inadequate computers and unreliable electricity supply.

Similarly, Oluwaseye and Abraham (2013: 156) revealed reasons for low usage of academic digital libraries in the higher institutions in the Oyo state were, amongst others, inadequate awareness, insufficient orientation, negative attitudes, inadequate computer skills and lack of Web-searching skills. The finding of the study unravelled that 63.68% of the respondents used e-books, 94.81% used e-newspapers, 92.45% used e-journals, while 18.87% confirmed using databases. Only 0.94% of students used e-references. The lack of information retrieval skills to locate relevant information resources led to low usage of e-resources by the students, academics and researchers. Other daunting challenges were the high cost of hardware and software, which pose serious challenges in providing e-resources.

Boateng et al. (2014) have shown that lack of local experts, trained staff, epileptic power supply; non-incentives on the job and poor attitudinal behaviour were the major challenges confronting academic libraries in Ghana. Womboh and Abba (2008: 2) and Mutula (2012: 292-293) point out challenges confronting the sub-Saharan African universities towards library automation stating from adverse economic conditions, budgetary constraints, economic conditions and government apathy, the high cost of ICT facilities, lack of ICT

skills, lack of ICT strategies and policies, and lack of electricity and telecommunication infrastructures.

Dhanavandan (2014: 95) reflected on findings from a questionnaire-based survey of faculty members at the Annamalai University library in India on e-resources used for research and teaching, study and communication purposes. The study informed that information overload was a barrier to e-resource retrieval. A way of reducing information overload was for the library to subscribe to reputable publishers and vendors. More so, the library, as a custodian of information dissemination, should encourage users to want to search e-resources to improve the research fora of the institution.

Majapelo and Dube (2014) examined information access in some high school libraries in the Limpopo Province in South Africa. Their survey showed that lack of access to information resources by teachers and learners in the province hindered vibrant and active school libraries from realizing their objectives. They suggested that the use of e-resources by students and academics around the world, as postulated in the aforementioned articles as a new trend, could not be overemphasized. More so, the use and application of e-resources should be commensurate with the investments in acquiring and funding them (Abubakar & Cholom 2017: 22).

Michalak (2012: 412) conveyed that transforming academic libraries could be difficult due to long institutional foundation, numerous print collections, inflexible buildings and unskilled personnel who are not ICT competent. He further stressed that with proper funding, the libraries and staff teams should expect changes or reorganization that would allow the infusion of new technologies, modernize collection development and innovative services. A

paradigm shift is needed and librarians should work towards ensuring extensive and fundamental alterations in a way that would encourage a sustained and transformed library service.

The study by Okite-Amughoro, Makgahlela and Bopape (2014) on the use of e-resources by the postgraduate students at the Delta State University, Nigeria, revealed that, although the postgraduate students had access to e-resources, lack of searching skills, erratic power supply, inadequate space in the library and low bandwidth subscription proved to inhibit their utilization thereof. The researchers recommended proactive measures like the collaboration between faculties and faculty librarians to provide orientation and training and to create more awareness. The library was also advised to install generators to support electricity supply, to install an independent Internet server to supply uninterrupted Internet connection and to create an institutional repository for open access.
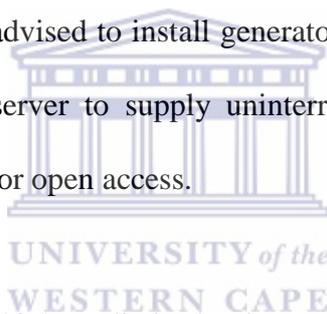
Zinn and Langdown (2011: 104-105) studied e-book usage among South African academic librarians. They used a Web-based questionnaire distributed on the Library and Information Association of South Africa mailing list. The outcome of the research showed that e-books adoption was a gradual trend among academic librarians in South Africa, and that librarians preferred both printed and electronic resources. They enumerated factors hindering sufficient e-book availability to be the high cost of subscribing to e-books and insufficient e-books in most disciplines. The cost of equipment to read e-books, the unreliability of Internet access and the lack of training in using e-books were identified as the major reasons for ineffective utilization thereof.

Zhu (2011: 51) from the Wisconsin University discussed the national site licensing of e-resources model that is used in academic institutions involving government and large-scale collaborations in America. The paper revealed that the consortia should solve many problems associated with the complexity of licensing as compared to negotiating with publishers and vendors on the individual or collaborative framework. As noted by the author, site licensing emanated from the software industry, but it reserved the legal backing to produce copies of software to some locations for educational or corporate purposes. The concept of licensing is not new to libraries. It was adopted since the 1980s when libraries leased and contracted computer equipment and accessories. Fortunately, this concept grew to information resources in electronic formats where publishers and vendors used it often in the 1990s (Zhu 2011: 52). Therefore, librarians are advised to come to terms with electronic resource vendors and publishers to reduce challenges facing licensing agreements. There is a whole lot of considerations to harness the information providers and the institution partnership to help remove access complicity and licence issues.
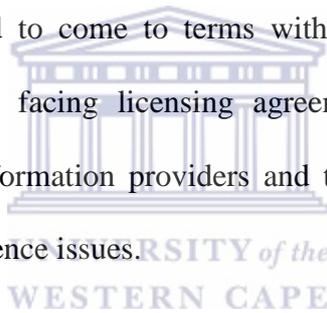
2.6 Awareness and utilization of e-resources

Adeniji, Babalola and Ajayi (2015: 57-60) examined the awareness and utilization of e-resources by librarians of the Olabisi Onabanjo University Ogun State in Nigeria. The library had CD-ROM resources, e-books, e-journals, e-magazines, an OPAC, Internet and e-mail facilities. This investigation revealed that Internet and e-mail facilities were the most used e-resources by the librarians. The e-resources were used for multipurpose reasons from in-house official duties to information services for their clientele.

In a related study, Dolo-Ndlwana (2013: 5-6) examined the use and value of library e-resources by academics and postgraduate students at the Cape Peninsula University of

Technology, South Africa. The study revealed that, although the university had significantly invested in e-resources and related computer-based technology to ensure 24/7 accessibility both on and off campus, e-resources were generally under-utilized by students.

Similarly, the study by Badenhorst (2015) at the University of Zululand, South Africa, revealed that, despite continued training, the utilization of e-books was under-utilized. Although 67% of students were aware of e-books, only 63% of them used e-books and 57% preferred using both printed and e-books. Possible constraints identified were the use of technology, lack of devices to access e-books, inadequate digital literacy, lack of infrastructure and access restriction to e-books.

Schaub (2016) stated that 92% of college students in the United States, Slovakia, Japan and Germany overwhelmingly indicated preference to reading printed books to e-books. Perhaps due to, as Orgem (2012: 33) established, that an important factor that might motivate a library patron is the ease of use of library resources.

Gakibayo, Ikoja-Odongo, and Okello-Obura (2013: 1-5) examined the e-resource utilization by students at the Mbarara University Library, Uganda. The paper anchored on the availability of e-resources in the university library, its relevance and extent of use and promoting the use of e-resources by the students. The library invested more in e-books, e-databases, e-journals, electronic current awareness services, information subject gateways and the Internet than in printed materials, resulting in a paradigm shift from print to electronic information resources and services and this resulted in students utilizing these e-resources more efficiently.

Habiba and Chowdhury's study (2012: 76-78) of the Dhaka University Library showed that e-resources were accessed daily by 44% of users, a few times every week by 27% , once a week by 17% , once a month by 9% and once a fortnight by 3% of users. The majority of users (62.0%) preferred to use e-journals, 21.0% used e-books, 11% used the library catalogue and 6% used bibliographic databases. The authors, however, indicated serious challenges in terms of infrastructure facilities to enhance the current e-resources at the university, and recommended the need for ICT-skilled personnel, user training and user input in the e-resources subscription.

A survey by Joshua (2014: 10) unfolded that students at the University of the Philippines, Diliman, were barely utilizing e-resources due to inadequate awareness and training. While the study pointed to the fact that students used both printed and electronic formats, they strongly affirmed that if enough e-resources were provided, they would like to migrate to electronic information retrieval.
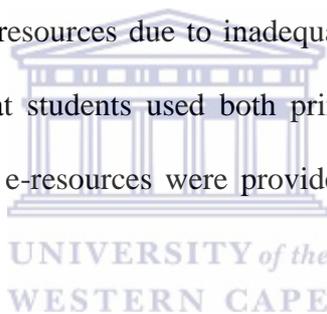
This corresponds with findings from the survey by Wiese and Du Plessis (2014: 17) of South African students' acceptance and use of e-textbooks which concludes that most students prefer both printed and e-textbooks. Although the study has revealed that 82% of students rarely use e-textbooks, the majority of the students prefer e-textbooks if these were sufficient and provided.

Nisha and Ali (2013) as well as Kwafoa, Osman and Afful-Arthur (2014) reported that over 90% of library users were aware of databases at the Indian Institute of Technology, Delhi, the Delhi University and the University of the Cape Coast, Ghana respectively. Users, if properly trained and provided with adequate e-resources, using a "Google-like" portal access approach

should ultimately affect their evaluation rating of the library system. Based on this, libraries are encouraged to take a periodic assessment of the utilization frequency of users in their domain. Akin to this assertion, the study by Owalabi, Idowu, Okocha and Ogundare (2016: 33) indicated that the undergraduate students of the University of Ibadan derived satisfaction from the use of e-resources of the university library.

More recent studies on e-resource utilization all concluded that, although most respondents had access to current and up-to-date e-resources, utilization was hampered by low bandwidth, lack of skills, unreliable Internet access, insufficient workstations, irrelevant information in databases and budgetary constraints (Adeleke & Nwalo 2017: 56; Ahmed & Al-Reyaee (2017: 6-7,11-12, 14; Aravind 2017: 85, 86, 88; Chimwaza 2017: 37; Madondo, Sithole & Chisita 2017: 6; Odunlade 2017: 1, 3; Owalabi, Idowu, Okocha & Ogundare 2016: 31, 34; Patel & Patel 2017: 61; Sajane 2017: 65).
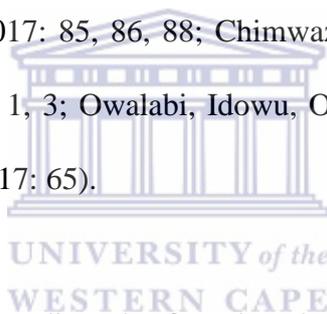
Based on the findings by these studies, the fact that the 21st century user prefers online information (Kumah 2015: 2), supported by Kahn and Underwood (2013), predict that "with a change in the way libraries operate comes the need for librarians to be willing and able to change as well". For this study, the conceptualized diagram showing the outcome of the e-resource utilization process of a typical library was used:
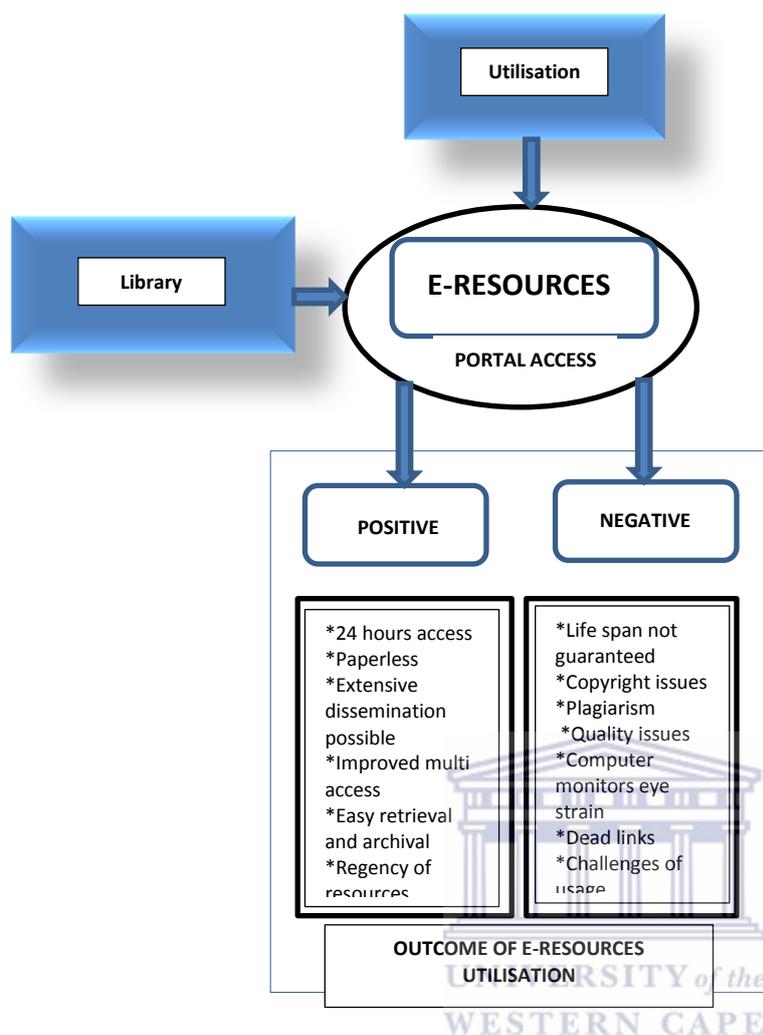
Figure 2.2: E-resources utilization process (Joshua, 2016)

2.7   Need for training in the use of e-resources

Library orientation and training in the use of e-resources are encouraged to maximize the benefits of e-resources. Vasantha, Venkatesha, Ambika and Umendra (2016: 210-211) examined reasons for students not regularly using or visiting the library at the Teresian College, Mysore. The majority of them preferred to use Internet sources and lacked time to visit the library. A similar study by Daramola (2016: 369) revealed that 75% of the undergraduate students at the University of Technology Library, Akure, Nigeria, had poor orientation and training resulting in the underutilization of electronic resources being a major challenge.

39

Other challenges hampering efficient library training were established by Daramola (2016: 369) as poor Internet connectivity, poor personnel relations, insufficient computers and lack of technical skills of the library staff. Madondo, Sithole and Chisita (2017: 2, 6) as well as Toyo (2017: 28-29) identified slow, unreliable or lack of free Internet access as reasons for insufficient training initiatives. Other complications identified by Baro, Eze and Nkanu (2013: 101), Madondo, Sithole and Chisita (2017: 2, 6) as well as Ng and Tan (2017: 32) were difficulties with reading from computer screens, complexity of searching techniques and limited librarian skills regarding aspects such as database searching, using different search engines, using social media, knowledge of relevant websites and knowledge of planning for e-libraries.
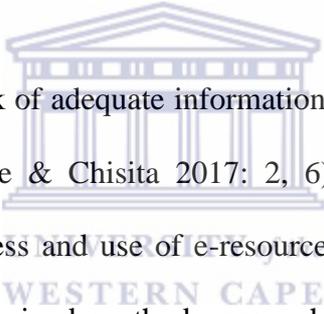
Insufficient training results in lack of adequate information retrieval skills, lack of awareness of e-resources (Madondo, Sithole & Chisita 2017: 2, 6), Masese, George, Makwae and Moenga (2016: 206) studied access and use of e-resources by postgraduate students in the Kisii County, Kenya. Using a mixed method approach, the findings indicated that all respondents observed the need for regular user training, current awareness, marketing of e-resources and stable Internet access as requisites to boost the utilization of e-resources. It was also discovered that there was a need for marketing and sensitization of library e-resources.

In a related study, Joshua (2014: 5) reported that, although students at the University of the Philippines used the e-resources of the academic library, the needs for awareness and training were envisaged for optimum e-resource utilization. Eyiolorunshe, Ayooluwa and Eluwole (2017: 119) asserted that a university library should maintain continuous contact with their clientele by training them on how to use the library internally designed databases rather than allowing them to use Google when searching for scholarly articles. Smale (2012) postulated

that, although library users preferred Google because of its flexibility and ease of use, it did not provide precise, relevant and unique scholarly articles like a library full-text database would.

In studying students' use of the Internet, Obasuyi and Otabor (2012: 12) found that it was used by 66.03% as a means of communication and by 35.8% for academic studies. The study further confirmed that, although 84.15% of the students participated in the library's orientation and user education programme as a means of imparting library and information skills to assist them in accessing and utilizing information resources more effectively, training in ICT literacy skills was needed.

A study by Rust, Schlogl and DongBack (2017: 28) indicated different levels of the information literacy of students from the University of Graz in Austria and the Chungbuk National University in the Republic of Korea. The large differences were attributed to cultural differences, and exposure to application and use of modern information gadgets and ICT skills. Jennings (2013) explained that the library should be able to educate users on accessing different resources, as many users did not know that their access to some e-resources was based on the library subscription. This was supported by Dolo-Ndlwana (2013: 5-6) who indicated that "although Cape Peninsula University of Technology Libraries pay for subscriptions or access to e-resources, this cost is hidden from users".

Many scholars emphasize as part of library training the need for empowering students with knowledge of evaluating information for authority, credibility, accuracy and authenticity (Georges 2014: 503-504; Kodama, Jean, Subramaniam, & Taylor 2017: 3; Matton 2015: 38;

Tella, Oyewole & Tella 2017: 2, 5, 6; Woods 2016: 59). Once empowered, users may become advocates for the library (Owens 2003).

2.8 Library portals

A library portal, also called the library homepage, is a gateway to access library resources and services via a single interface. Das and Saha (2015: 111-112) explained web portals as tools used to support and enhance accessibility to e-resources, and defined a library portal as an entry or access point to the world of resources designed to save the users' time and cost in gaining access to multiple resources of the library. A portal incorporates the integrated library management system to ensure interaction between different sections like acquisitions, cataloguing, circulation and the OPAC of the library. It provides a platform for effective access to library resources, information retrieval as well as awareness and marketing of library resources and services. Madhusudhan (2011: 3) defined a library portal as the "virtual public face, the quasi-equivalent of the front door, signage, pathfinders, collections or surrogates to collections, services and to an extent, its users". It can be referred to as a repository of information earmarked for dissemination.

Jones and Thorpe (2014: 2, 4, 20) stressed that a library homepage was a critical portal to library resources, even though there were alternative portals such as course management systems and Google sites. They maintained that an academic library homepage served as one access portal to many library services and that students increasingly relied on library Web services to fulfil part of their academic library needs.

The library profession strongly supports the use of ICTs to automate cataloguing, circulation and acquisition services to provide e-resources, online retrieval and library services

42

efficiently (Emezie & Nwaohiri 2014: 2), but some level of education to enable proficient management of library resources and core knowledge, skills and attributes are required (Australian Library and Information Association, 2014). Emezie and Nwaohiri (2014) posit that academic libraries are challenged to innovatively meet the needs and demands of the parent institutions and users, and suggest that "if academic libraries are to meet their objectives and effectively provide information, traditional methods and processes will have to evolve into electronic modes of service delivery. This can only be achieved with modern technologies in a computer-driven environment" (Emezie and Nwaohiri, 2014: 2). King (2007: 7, 178) asserts that ICTs facilitate, for example, more than one retrieval tool to find journal articles.
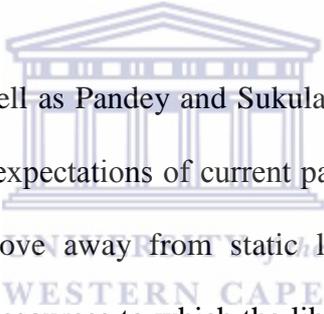
Koutropoulos (2014: 65-66) as well as Pandey and Sukula (2017) propagate the adaption of Library Portal 2.0 to address the expectations of current patrons by supplying "Google-like" experiences. Libraries should move away from static library portals and adopt portals integrating the library catalogue, resources to which the library has access, interlibrary loans, databases, staff directory, event calendars, social media and intellectual subject content in the information managing and distribution environment.

Libraries have been known to be repositories and depositories of information, having a centralized place where patrons come to locate resources to meet their needs, but the present dispensation of librarianship has changed overwhelmingly. Libraries are now repositioned to be gateways of knowledge, capable of disseminating information far beyond their physical locations. E-resourcing is one of the tools being used to go beyond the four corners of the library building. Factually, most institutions may have access to e-resources either with free

access or on subscription for its users, but unfortunately, some of these libraries have failed to organize them professionally, using a portal platform.

Supporting this assertion, Mane and Panage (2015: 110) have stressed that a "web portal is one approach to organise information resources and services in a way that supports the students' needs". This indicates how important a university's library portal is to the activities of students and academics. Afferent to this, the university has the driving force to ensure the full implementation of portal access in its domain to foster information gathering and sharing among students and academics. This will help in resuscitating or advancing the university's resources regionally, continentally and globally.

Importantly, the synergy between the university's library, the academics and students should be maintained, and the extent of their collaborations will be based on the effective utilization of the portal framework and design architecture. Figure 2.3 shows the tide between them.
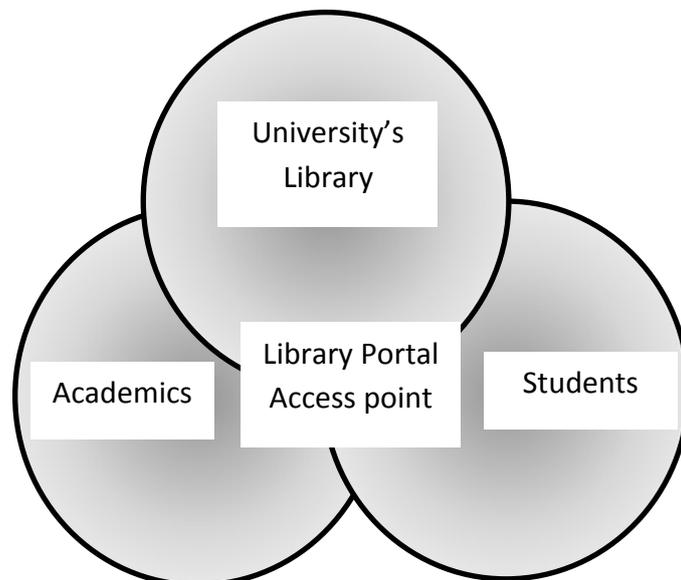
Figure 2.3: Library portal synergy between academics and students (Joshua, 2017).

44

Previously, access to university libraries was majorly mono directional in nature due to their conventional and operational functions, and being that, the resources then were mostly in physical formats. But the 21st century library portal added value to library resources with online accessibility via gateways without visiting the physical library. In some cases, a library portal in a particular university might link users to other library portals for enriched information available via interlibrary loans.

Das and Saha (2015: 111-112) have emphasized that a library portal is also a launch pad for a host of Web-based services such as e-mails, asks the librarian, news and social media. In some cases, the library portal also provides a platform for interlibrary loans, WorldCat, management of references, workspaces in cloud computing and sharing of information in a secure environment through e-mail messages, publication channels and posting.
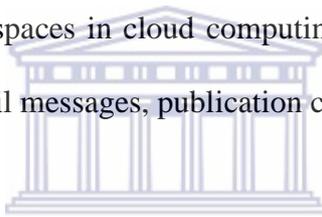
Geetha, Mamatha and Farhana (2013: 510-511) surveyed the use of the Kuvempu University library portal by research schools and faculty members to reveal that the library portal was used by 85% of the researchers and faculty members. It was accessed by 73.33% of the respondents on a daily basis and used by the majority (70%) of respondents for research activities like downloading full-text articles. Both research scholars and faculty members informed the effect of the library portal starting from efficient access to all library services and resources, improving customization of research tools, giving them more and better convenient access to e-resources. Considering the challenges of accessing library portal, 45.83% of respondents emphasized that navigating the web pages and downloading resources were difficult. The study opined that more training and orientations would be needed on the use of the library portal.

An earlier study by Fatima, Ahmad and Ahmad (2011: 170-171) assessed the use of the Aligarh Muslim University library portal by students from the Engineering and Technology Faculty. The findings indicated that 61.76% of undergraduate and 68.75% of postgraduate students were aware of the library portal. The portal was frequently used by 61.76% and 68.75% of under- and postgraduate students respectively. Slightly more than half of undergraduate (58.91%) and postgraduate (56.25%) students were positive about the relevance of the different resources available on the library portal. The minority of students valued the library portal very highly. The researchers discovered reasons for low access to the library portal were inadequate awareness, training and library orientation. They encouraged information literacy programmes to stimulate effective use of the portal.
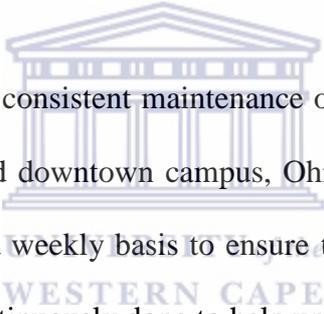
Dudley (2013: 3-4) examines the consistent maintenance of the library web portal at Bryant and Stratton College in Cleveland downtown campus, Ohio, USA. Continued examinations of content modules are done on a weekly basis to ensure that the library portal is optimally updated. Various searches are continuously done to help update descriptive metadata (Dudley 2013: 3). This culture of portal maintenance helps them to archive electronic information resources no longer needed and subsequently replacing them with editions that are more current. The library, in cooperation with the ICT centre, ensures that the web portal page template is user-friendly and is easily updated without going through the rigorous process of programming or coding. This approach should be encouraged to institutionalize a less stringent website maintenance policy.

As it is predicted that the library's digital content and resources will determine the quality of a university, the Kenyatta University Repository Policy (Agosti, Crivellary, Di Numzio & Gabrielli 2010: 2-10) has been designed to advance the university's profile in ensuring that its

research output is made available online both within the university and globally. The repository, part of the library portal, was designed to complement the traditional resource management in which researchers, academics and students have centralized e-resources placed on a permanent storage system. The Kenyatta University open access institutional repository policy covers open access, repository content, submission, metadata, research data management, preservation, selection, retention, replacement and withdrawal, intellectual property right, quality control, compliance and monitoring and compliance with publisher as well as funder policies. The university and library management ensure effective utilization of the portal and faster information sharing and communication.

Mane and Panage (2015: 109) explained the establishment, development and design features of the Jayakar library portal in India. The e-resources portal encapsulated information regarding online local and joint catalogues, free resources, open access journals and archives. The library subscribed to databases and serial publications as well as discipline orientated e-resources. Only the subscribed databases required access authorization using the proxy server. To accommodate the needs of students, the developers of the portal considered Google-like features like user-friendly terminology, attractive screen design, easy navigation, support in the form of help menus and personalization. The library established guidelines and had policies in place for the effective use of the portal.

Chen and Smith (2015) investigated elements influencing undergraduate students' use of a university library portal by using a credit-bearing course instilled with information literacy components. Framed by the Technology Acceptance (TAM) and Information Systems success models, the study observed direct influences of user satisfaction, willingness and competing resources on portal use as well as relationships among present use, user

satisfaction and continued usage. The findings revealed the positive outcome of user satisfaction on the use of web portal as well as the negative impact of unwillingness to use the web portal.

Chen and Smith (2015: 42-43) and Ukwoma and Dike (2017: 17) identified that the purposes of using the library web portals were to find research papers and projects, locate journals and articles, browse the library's online catalogue for monographs, locate quality scholarly sources, retrieve electronic reserves and find citations.

An important factor to be considered with a library portal is its extensive inclusiveness interfaces, which in most situations, incorporate repositories and links. Ukwoma and Dike (2017) have confirmed that academics download scholarly publications of their associates from institutional repositories from which they review the literature to identify new findings or gaps in knowledge. This is one of the cardinal functions of a library portal, namely to provide useful information to users for research and collaboration.

Clarke, Hui and Li (2013: 140, 147) investigated three digital platforms (Internet, television and mobile phones) aimed at providing access to as many as possible users of the Hangzbou Public Library. The portal implemented many functions with access to the OPAC and numerous tools for searching, renewal, reservation online, current awareness and live chat with reference librarians. The content of the library portal was extensive, reflecting most of the themes and activities of the library.

To design a library portal, various technical systems requirements and tools are needed. Specifications, detailed portal requirements as well as server operating systems and

48

configurations are captured in Appendix E (Beal 2017; Das and Saha 2015; Madhusudhan 2011; System Requirements Lab 2018; The Ubuntu Story 2017).

Negi (2014: 2-4) maintains that a library portal is used for dedicated content management systems to affect efficient information access and sharing, mount and manage electronic collections, and deliver integrated services. This gives the library monopoly over the network to customize and operationalize its features as well as provide institutionalized resources, capable of web services linking to other portals. The major elements of library portals aside from access to the library catalogue and users' records are, according to Koutropoulous (2014), meta-searching tools, interfaces for browsing, online referencing, full-text articles links, web pages, access to interlibrary loan and user preference services along with citation management software applications. Koutropoulous (2014) is of the opinion that there is no fixed standard for library portal design. Libraries base their design on customization and on the need of their users. The standards found in the literature are generically meant for searching and retrieving purposes, Web scripting to use, library resources to be incorporated into the portal, licences agreement of e-resources, subscription dilemmas, expertise involvement and institutional research data policy and guidance, among others. With these premises in mind, proactive steps should be taken to address the expectations of patrons in the design architecture of the library portal. It should be Google-like, responsive, versatile and user-friendly. It must not have complex interfaces, dead links or complex typology (Koutropoulous 2014). It should, therefore, allow customization and flexibility in what features and services are offered. Areas of consideration should be content, user experience, flexibility, features and capabilities, infrastructure and security, and search and discovery tools and services.

49

Yeates and Cox (2003: 157-159) listed the following portal requirements: tools for resource discovery, cross-searching, common interface, linking and support through to document delivery, authentication/authorization, profiling of users, interoperation, statistics and management information, look and feel, communication/real-time support and core technology. Peng and Jin (2009: 538) stated the requirements for a portal interface in three dimensions, namely resource-relevant, service-relevant or both. A portal with appealing design features will improve interface clarity and appeal, and will encourage the use thereof (Agosti, Crivellori, Di Nunzio & Gabrielli 2010: 233).

Designing a library portal demands programming skills and the application of high-level computer languages (Das & Saha 2015). Task teams with representatives from the library, ICT and computer centres should make decisions regarding aspects like the design, coding, customization and integration of the portal into the university website.
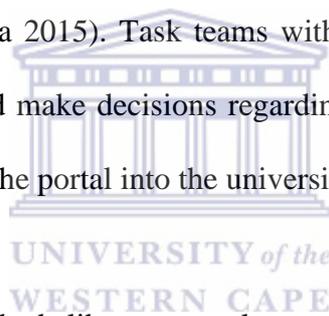
Dempsey (2003: 10-11) described library portal approach as a means of providing intermediate stratum between users, learners and resources. Figure 2.4 reflects how this approach ultimately assists in the bundling of coordinated interfaces for users' interest instead of fragmentation of the resources, and thus provides library services to targeted patrons.
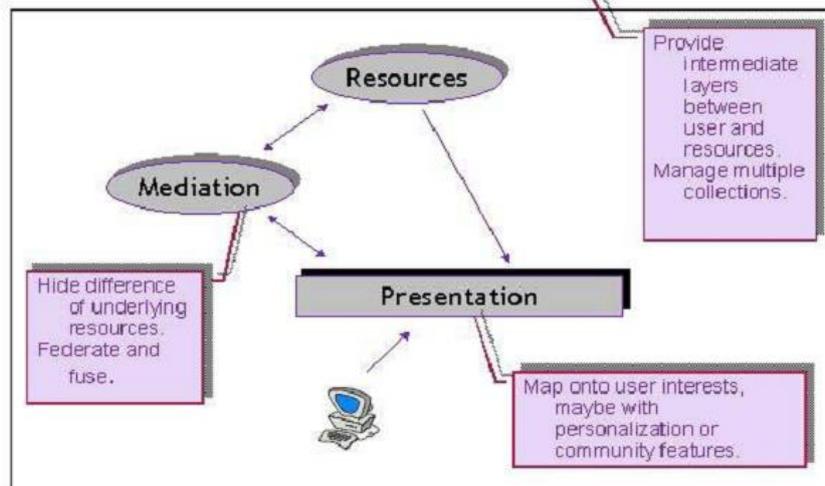
Figure 2.4: Dempsey library portal approach (Dempsey 2003)

Wada (2014: 168-169) proposed a model known as the Portal Development and Deployment Model (PDDM) (Figure 2.5) aimed at helping academic institutions, librarians and information scientists in the design of portals. The PDDM contains steps and procedures in aiding the information needs and demands of users as well as its support for the adoption of web-based applications. The model encourages the use of free open-source software, reducing the rigour of programming and facilitating easy library portal design and implementation processes.

51
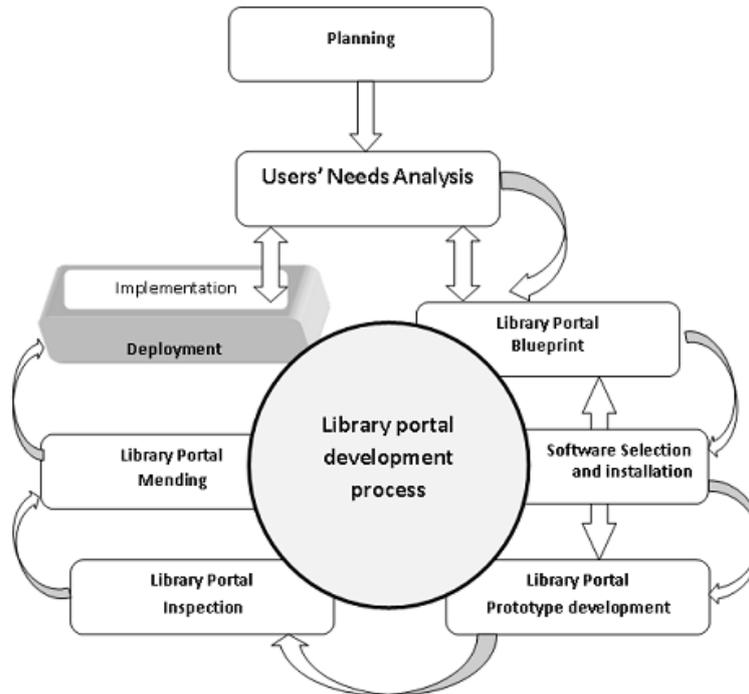
Figure 2.5: PDDM (Wada 2014).

2.9   Concluding summary

This chapter looked at related studies regarding variant definition of e-resources, the need for e-resources via ICTs, benefits of using e-resources, e-resources in academic libraries, challenges of using e-resources, the utilization of e-resources, the need for training in the use of e-resources and finally intricacies of library portal for e-resources.

From these reviews notable revelations about them are that the e-resources life cycle which is meant to assist e-resource librarians to intermediate between users of e-resources and to manage effectively. Cogent issues regarding awareness and utilization of e-resources and the resulting need for training in the use of e-resources were debated and emphasized. A platform essentially needed for the design and establishment of a library portal were examined. PDDM on library portal development process by Wada and Library Portal Approach by Dempsey

http://etd.uwc.ac.za

were applied in synthesizing and improving ways of designing an implementable and responsive library portal at Ibrahim Babangida Library.

The gap in literature which this thesis addressed is the how academic libraries in collecting useful information from library users in order to make informed decisions regarding the design of a responsive library portal and the subscription of e-resources. The trend currently is for librarians to unilaterally decide on what to project to their users. This might result in library users not being satisfied with the e-resources offered as well as the content and design architecture of the library portal. The next chapter will discuss theoretical concepts and models framing the study.

CHAPTER THREE

3   THEORETICAL AND CONCEPTUAL FRAMEWORKS

3.1   Introduction

Theories are gateways of understanding research. They show how elements and variables are used. Akang and Faculty (2012: 93) argued that "there is no academic study or research that can be undertaken without a theory". They further affirmed what established theorists are being debated by researchers (Akang and Faculty 2012: 89). In citing Rychlak (1968) they suggested that a sound theory should be descriptive, delimiting, generative and integrative. Building from this assertion, Gelso (2006) stressed that, for a theory to have scientific value, it had to go beyond the simple propositional level. That meant the theorem should be explicit with the sole aim of either generating or formulating a logically reliable and mutually dependent entity of knowledge. This coincided with Heinen (1985: 414) defining a theory as "a group of logically organized laws or relationships that constitutes explanation in a discipline".

Because researchers view theory in diverse ways and across different research disciplines (Corley & Gioia 2011; Gay & Weaver 2011), various analytical tools and theories can be used. One such a model and theory is the Theory of Administrative Behaviour (2016). The theory originated from the Critical Realism Theory by Simon (1979). Administrative behaviour is a general term used to portray the process by which people work within an organization. Activities under Administrative Behaviour are evaluated based on goals and they can be delegated to varying units in order to simplify the decision-making processes for participants. It highlights the principles organizations do to simply make decisions by way of controlling the end by which activities are being directed.

On the other hand, the Organisation Learning Theory is also applicable, as it purports that, in order to be competitive in a changing environment, organizations must change their goals and actions to reach the expected objectives. It further predicts for learning to occur, the firm must make conscious decisions for a change caused in response to a change in circumstances. Learning takes place at the individual level and cannot reach the organizational level until the information is shared, stored, accessed and used in the organizational memory. These models and theories may be useful to this study; however, their applications lack the interpolation of computer systems and information and communications technologies. They would be suitable for organisational decisions and learning processes.

The researcher has found the Technology Acceptance Model (TAM) and the Diffusion of Innovation Theory (DoI) to be suitable and ideal for this research as they have been widely tested and found useful in the area of microcomputers, software applications, design support systems, learning management systems, behavior of academics towards information technologies, adoption patterns towards computer systems amongst others. They were developed many years ago and have passed "testability" process due its extensive application in solving problems. Venkatshe, Thong and Xu (2016: 329) in citing Venkatesh, Morris, Davis and Davis (2003) emphasized that they have synthesized the TAM and Theory of Planned Behaviour to formulate the Unified Theory of Acceptance and Use of Technology. The newer theory embedded concepts of TAM and DoI in a consolidated and condensed manner. The researcher opted to use the more extensive and established TAM and DoI theories.

3.2 Technology acceptance model (TAM)

The TAM model emanates from Davis (1986: 89). The model looks at the behavioural intention and system usage of the variables involved, and is anchored in perceived usefulness and ease of use. In this study, perceived usefulness and ease of use of e-resources in teaching, learning and research activities of higher institutions for academics and students are considered critically. The TAM is an adaptation of the Theory of Reasoned Action to the field of Information Systems. Davis has reported that perceived usefulness and perceived ease of use should determine an individual's intention to use a system.

Davis, Bogozzi and Warshaw (1989) have developed a diagram to illustrate the model:
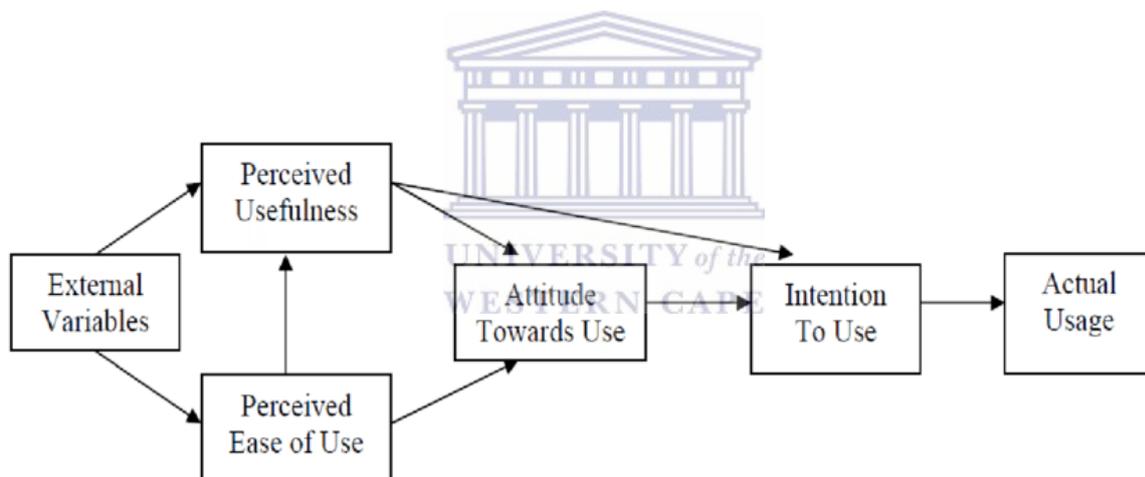
Figure 3.1: Technology Acceptance Model (Davis, Bagozzi & Warsaw 1989: 985)

Davis (1989: 320) opined that TAM seeks to "provide better measures for predicting and explaining [the] use" of ICT at universities. Therefore, in conjunction with the study of Saade, Nebebe and Mak (2009: 109), perceived usefulness will be defined in this study as the degree to which academics and students believe that access and utilization of electronic resources will enhance or increase their productivity in their studies and research at university level. In this study, perceived ease of use is explained as the degree to which academic

56

members and students believe that access and utilization of electronic resources will be free from effort. Although scholars have observed that perceived usefulness has a more significant influence on the use of ICT (e-resources) than perceived ease of use (Tibendera & Ogao, 2009: 394).

The TAM can also be applied to this study as it examines the behavioural intention of academics and students to use e-resources as a system; meaning how both academics and students use and appropriate e-resources within the specific framework of their studies and research at university. It should be noted that e-resources need a platform driven by or relying on a computer system. In other words, one cannot use e-resources without a computer or its peripheral devices linked to a network.
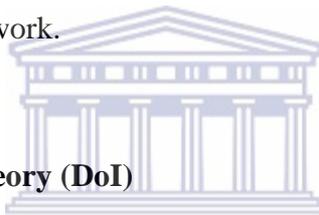
3.3 Diffusion of innovation theory (DoI)

The DoI has been developed by Rogers in 1962. He defines diffusion of innovation as "the process by which an innovation is communicated through certain channels over time among the members of a social system" (Rogers 2003: 5). For its adopter, an innovation may be any "idea, practice, or object that is perceived as new by an individual or other units of adoption" (Rogers 2003: 12). The diffusion process consists of four key elements: innovation, the social system which the innovation affects, the communication channels of that social system, and time (Rogers 2003: 20). The focus of the diffusion theory is the means by which information about an innovation is disseminated to the targeted recipient.
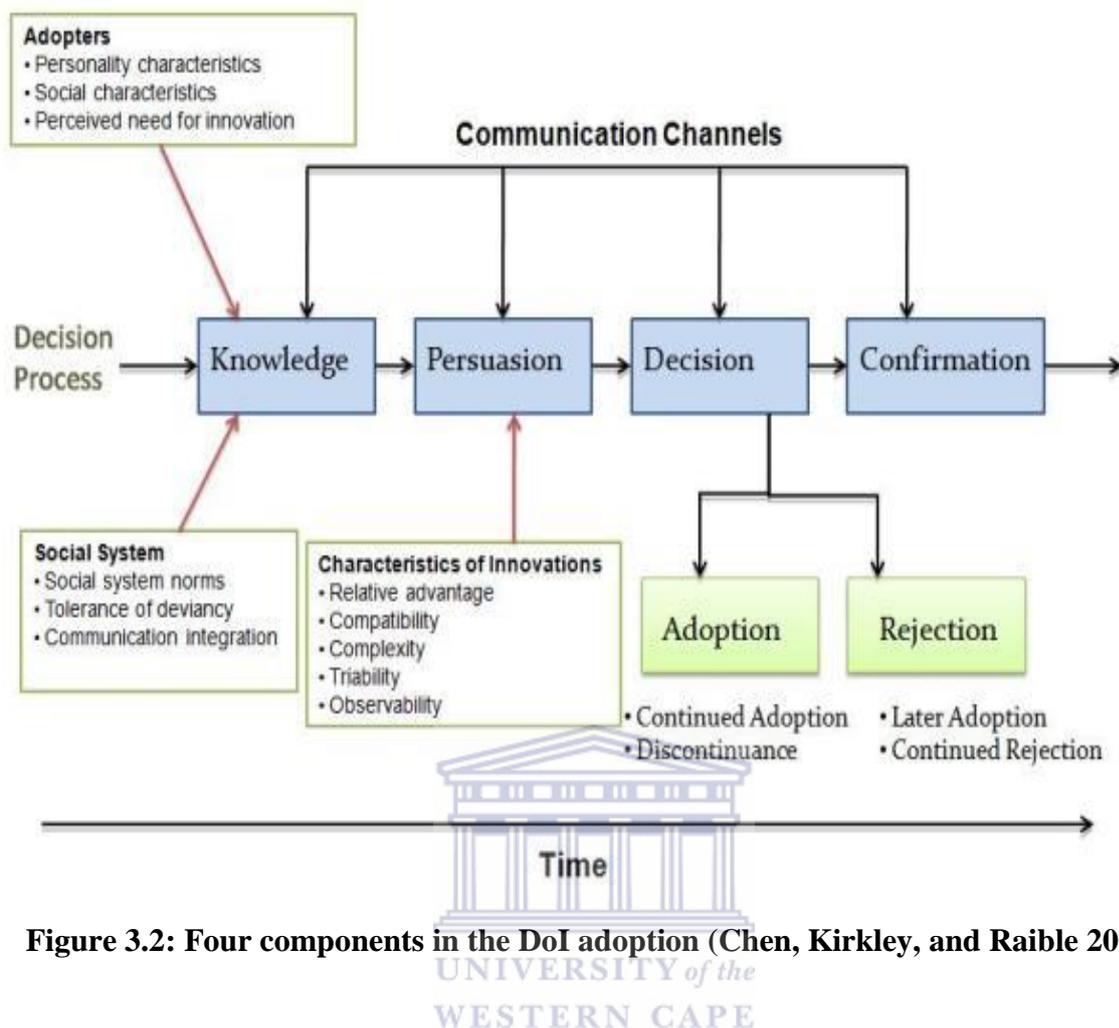
Figure 3.2: Four components in the DoI adoption (Chen, Kirkley, and Raible 2008)

The four components in the diffusion of innovation theory entail *knowledge* about the innovation concept for adopters, taking to cognisance their personal and social characteristics with the social system. Using the communication channels appropriately, the *persuasion* mechanism must check to see as well as look at the compatibility, complexity, trial ability and observability of the expected innovation to ascertain if it is doable. Still, on the line of communication channels, a *decision* has to be made whether to adopt the new ideology being passed or rejected, and this should ultimately lead to its *confirmation* through the decision process over time.

Chang (2010) explains the DoI as a theory that assists the adoption process of an innovation by modelling its entire life cycle to the aspects of communications and human information

interactions. Therefore, the diffusion theory offers valuable insights into interface design that supports e-resource usage and access. It can provide an evaluation of e-resources and portal acceptance, and offer information required for decision-making to help the university authority take proactive measures to boost access and use of e-resources.

Many disciplines extending from political science, public health, communications, history, economics, technology and education have described Rogers' theory as a widely applied theoretical framework in the aspect of technology diffusion and adoption (Dooley 1999; Stuart 2000). Research has shown that Rogers' diffusion of innovations theory is the most widely applied and appropriate model for investigating the adoption of technology in higher education and educational environments (Medlin 2001; Parisot 1995).
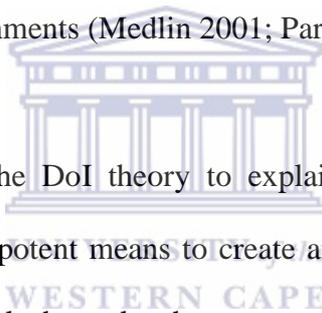
Sahin (2006: 14-15) has used the DoI theory to explain that interpersonal channels, as communication components, are potent means to create and/or change strong attitudes held by an individual. In interpersonal channels, the communication may have an attribute of 'homophily', meaning "the degree to which two or more individuals who interact are similar in certain attributes, such as beliefs, education, socioeconomic status, and the like" but the diffusion of innovations theory entails at least some degree of 'heterophily' which is "the degree to which two or more individuals who interact are different in certain attributes". Worth noting, as "one of the most distinctive problems in the diffusion of innovations is that the participants are usually quite heterophilous" (Rogers 2003: 19).

How do the theories complement each other?

3.4   Conceptual framework

The conceptual framework of this study is construed from the theoretical frameworks of TAM and DoI. The composition of the conceptual framework ranges from input, process and output levels. This is cursorily explained in figure 3.3.
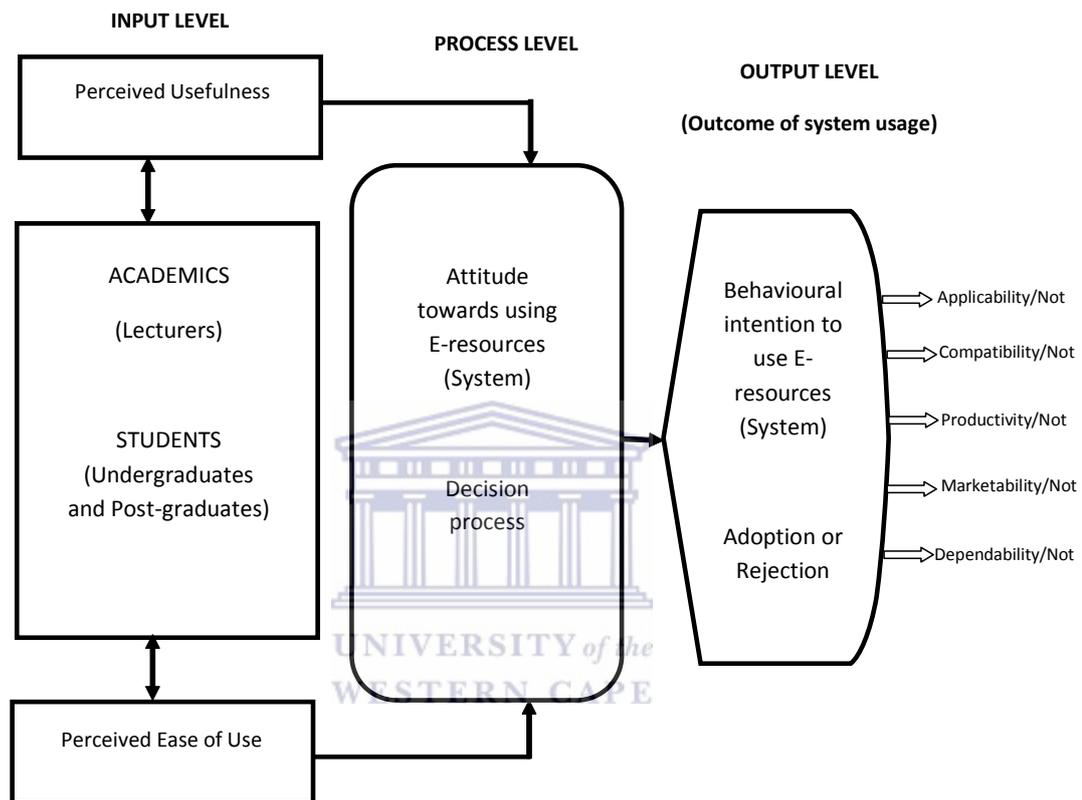
Figure 3.3: Conceptual framework

This study being empirical and investigative in nature will critically look at the various hypotheses raised in the proposed framework:

3.4.1   Input

The conceptual framework is systematized in such a way that input entails the perceived usefulness and perceived ease of use, which contain the main actors of the study. This section is where decisions and learning are carried out to the next level. For instance, academics and students interact a lot through lectures, teachings, assignments, seminars and research. Many

more activities take place within this level, like proceedings of the Senate, which constitute merely all academics, and the university authority evolves here.

3.4.2   Academics

This implies all academic staff of the university in other words, full-time, part-time as well as those on sabbatical leave. From the input level, the study will try to determine their reactions, evaluation and application of e-resources. And also, how much is being committed from their part in terms of usage and collaborations.

3.4.3   Students

This implies all undergraduate and postgraduate students of the university. Their degree of access and utilization of the e-resources will be evaluated. They have to portray their views towards the applicability of e-resources of the university main library. Their satisfaction as users with the current e-resources collection and how they would like the e-resources managed for maximum dissemination will be determined.

3.4.4   Process level

At this level, both academics and students' perceived usefulness and ease of use of e-resources will be evaluated. The attitudinal reaction towards the usage of e-resources will be ascertained. Whatever is processed here at this level will determine the outcome level which is culminated at the end.

3.4.5   Output level

This level summarizes the actions at the process level. The behavioural intention of use of the system (e-resources) is shown here. Elements like applicability or not, compatibility or not,

productivity or not, marketability or not, and dependability or not are all seen here. This is an important level since that it gives a pivotal sense and/or result of the variables being applied. To this effect, Akinyetun (2016: 117) argues that research is designed to investigate the validity and reliability of knowledge previously shared using scientific measures in problem-solving. With this permutation, knowledge, as information, becomes a benefit in areas where issues are difficult to comprehend.

3.5   Adoption of the TAM and Diffusion of Innovations Theory (DoI)

In a scholarly review, Johnson (2005: 114-118) revealed an extensive application of the TAM to studies on users' acceptance of microcomputers, the World Wide Web, software application and decision support systems in different organizations and institutions across diverse cultures and settings.
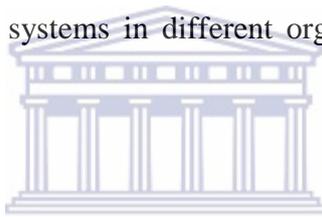
Researchers like Davis et al. (1992: 1124) have used the TAM to show that "people's intentions to use computers and e-resources are influenced mainly by their perceptions of how useful the computers are for improving their job performance". The TAM, applied by Koufaris (2002: 217) in online consumer behaviour, has also confirmed, "perceived usefulness was more an important predictor of intended system usage". The applicability of the TAM is affirmed by Klopping and McKinney (2004: 36) stressing that the TAM is one of the most effective tools to study user acceptance and use of ICT among other competitive theories and models to predict and explain the impact of the Internet on e-commerce. Originally, the TAM was designed to study technology acceptance decisions across different type of organizational settings via users' population, nevertheless, research on the TAM's application in education was limited in the past (Teo, Lee & Chai 2008).

Fathema, Shannon and Ross (2015: 210) have revealed three external variables of the TAM, "system quality; perceived self-efficacy and facilitations" which are considerable indicators of faculty behaviour towards the use of learning management systems. The study has further shown that Internet-based learning management systems such as Moodle, Blackboard, WebCT and Desire2Learn are well-known technologies that support distance and hybrid or blended learning activities. In citing Hustad and Arntzen (2013), Fathema et al. (2015: 211) have argued that most faculty members use e-learning platforms as complements to their lectures using synchronous (i.e., Chat, online discussions and live streaming) mode.

Jaschik and Lederman (2014), in their survey of faculty attitudes towards technology, showed that the majority of the faculty members were using learning management systems, but were using limited features like posting course syllabus (78%), recording grades (58%), communicate with students (52%) and recording lecture content (20%).
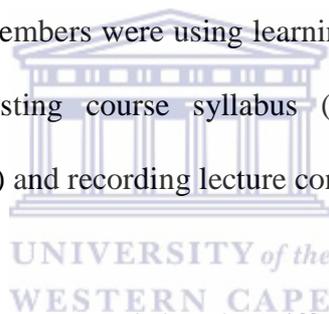
Many scholars and researchers have argued that the Diffusion of Innovations Theory is the best theory for learning and teaching, educational model and educational change studies conducted in higher education and educational environments (Medlin 2001; Parisot 1995; Sahin & Thompson 2006).

Rogers (2003) suggested that the factors affecting diffusion were investigated in terms of individuals' perceptions and how those innovations would diffuse within the social system through communicative processes. Roman (2003: 53) explained the application of diffusion innovation theory in local information and communication resource centres. He used perceived attributes of innovations, communication aspects and consequences of innovation

adoption. The research provided a conceptual framework for telecentre research and practices in the developing countries.

The World Health Organization's strategy for spreading of effective HIV/AIDS treatment and care (World Health Organization, 2004) and the Institute for Healthcare Improvement's model for system-wide change (Massoud, Nielsen, Nolan, Schall, & Sevin 2006: 1) developed change models based on the innovation theory to treat and manage diseases. Fisher (2005: 1) in a qualitative study examined how teachers implement strategies towards innovations through staff development in teaching and learning using diffusion theory to verify improved reading strategies. The DoI theory was used as a conceptual model to determine how teachers understood the innovation they had learned through the acquisition of the new knowledge and its application.
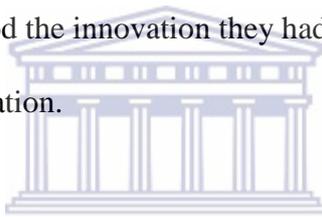
Anderson, Varnhagen and Campbell (1998) studied the attitudes, skills and behaviours of faculty members linked to their information technologies usage at a large Canadian research university. Using Roger's (1995) two major adopter categories, they defined the faculty members as "earlier adopters" and "mainstream faculty" and delivered strategies for reducing the gap between these two groups.

Jacobsen (1998) applied Rogers' (1995) DoI theory to decide the adoption patterns and applicability of faculty members who integrated computer system and other related technologies for teaching and learning in higher education. A blended mixed method was used to analyze the characteristics of early adopters (users) and the difference between early adopters and mainstream (ordinarily) faculty. The results of this study looked at the need for campus-wide planning and investment in the "human infrastructure" by providing training

and support, encouraging heterophilous communication channels as well as providing a technological infrastructure and capitalizing on the opinion leadership and evangelistic qualities of early adopters to promote further adoption by the mainstream. Some strategies were needed to promote more widespread dissemination of learned lessons, successful strategies, and ways to improve teaching and learning using technology (Jacobsen 1998: 199).

Less (2003) used Rogers' (1995) diffusion of innovations theory to quantitatively investigate faculty acceptance of technology and its peripherals for teaching in the North Carolina community college system. Whereas a substantial relationship emerged between Rogers' adopter categories and their years of teaching experience and highest degrees reached, the output did not show essential difference between faculty adopter categories on age, gender, race and ethnicity under demographic variables.
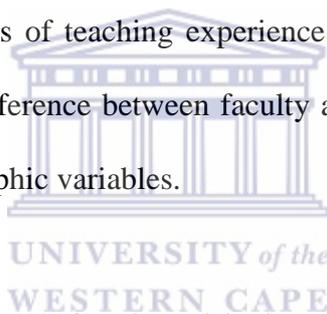
In a related survey, Blankenship (1998) adopted both qualitative and quantitative research methods in evaluating factors related to the use of computer in teaching. Findings revealed that 'grade level' and 'curriculum area' must be considered for successful training. More so, 'attitude', 'support', 'access' and 'age' were statistically relevant predictors of computer application in classroom teaching and collaborations. Blankenship concluded that 'grade and curriculum', 'targeted computer training', 'technical support' and 'provision of computer labs in every building' would be essential for adoption. Zakaria (2001) investigated the Malaysian Ministry of Education Polytechnic faculty members' 'attitudes toward information technology (IT)', their 'IT use in teaching' and 'the availability of IT' using the attributes of DoI.

65

Minishi-Majanja and Kiplangat (2005: 211) have indicated that, although the DoI theory provides a good tool for descriptive research, the theory has some flaws. It does not sufficiently provide predictable outcomes or adequate guidance for accelerating adoption rates. The extent to which the theory can give rise to readily refutable hypotheses is also uncertain.

Another pertinent issue is that many of the elements of the theory are detailed to the culture in which it was derived, for example, North America in the I950s and 1960s. Looking at the theory on "social system", it focuses particularly on the socio-economic issues which are quite different from the challenging concerns that are continually posed from the developing countries ranging from under-funding, expertise, politics and cultural setting.

Surry (1997) established the fact that the DoI theory is not one well defined, unified and comprehensive in nature, but a large number of theories, from a wide variety of disciplines, each focusing on different elements of the innovation process applied DoI.

Minishi-Majanja and Kiplangat (2005: 213-214), in discussing the relevance of the DoI theory to ICT, cited researchers who had addressed the theoretical concept in their survey. Clarke (1999) noted that the DoI theory has an efficient application to information technology ideas, products and techniques, and has been applied and used as the theoretical framework for a number of research tasks on information systems. More so, Surry (1997) examined the theory of innovation diffusion which had been adopted into the field of instructional technology in an effort to increase the acceptance of instructional technologies because of a growing need arising from the innovative instructional products and of which its utilisation has suffered a setback.

Larsen (1997) discussed the applicability of the DoI theory using the perspectives of mechanic and organic organizational settings, arriving at the conclusion that the diffusion theory had only limited rationality. Larsen (1997) argued that no suitable theory of diffusion of Information Science and Technology had been developed so far; therefore, the DoI theory was an authority for the strategy, innovation, network theory, social structural theory and a host of other approaches to understanding ICT-related change in organisational settings.

3.6   Concluding summary

This chapter considered potentially suitable theories for the study. After discussing the intricacies as well as strengths and weaknesses, the suitability and the adaption of the Technology Acceptance Model (TAM) and Diffusion of Innovation Theory (DoI), these were found the most suitable theory and model to frame this research. The chapter then presented the conceptual framework based on the TAM and DoI theory developed by the researcher.

You needed to take a more critical approach on the theories that you highlighted. There was need for more detail on the TAM.

CHAPTER FOUR

4 RESEARCH METHODOLOGY

4.1 Introduction

This chapter predicates the methodological preferences chosen for the research and chronicles how the research has been carried out. It discusses the research design, methodology, population, sampling method and the design of data-gathering tools employed to gather data to answer the identified research questions.

4.2 Purpose of the study

The purpose of a study is mediated by protocol, theory as well as methods, and will shape the research questions and, in turn, the methods and design of the research (Tashakkori & Creswell 2007: 207). In order to contextualize the research methodology, the study's main objectives have been to investigate the provision and utilization of e-resources as well as the need of and the establishment of an integrated library portal to provide efficient and effective access to e-resources at MAUTECH.

4.3 Research paradigm

This study adopted a mixed paradigm approach by using positivism (a means of social reality through observation to understand human behaviour), post-positivism (attesting the fact that theories, knowledge, background of the researcher can affect what is under observation), interpretivism (using a qualitative methodology to collect data), and pragmatism (advances the use of mixed methods in research which states the reality of what works based on truth concerning the research questions) (Tashakkori & Teddlie 2003). This research has used paradigms on application of TAM and DoI theories (regarded as post-positivism or

pragmatism), the collection of qualitative data by use of interviews (interpretivism approach) and the use of positivism approach (observing the research participants which includes students, academics, acting university librarian, librarians and ICT experts).

4.4   Research design and methodology

This section aims to operationalize the research design and methodology of the study as well as to validate and justify the choices made. The research design is applied to ensure that suitable research methods are used to validate and eventually attain the goals as well as objectives of the study. It provides the strategy or blueprint for the research. In adopting the appropriate research design, the authenticity of the final results of the study is ensured. Albeit, any research design should be grounded systematically and scientifically as well as trustworthy and reliably (Cooper & Schindler 2011: 33-34). The research design is concerned with the necessary steps involving how a suitable outcome of a research will be achieved. It is a fundamental process in which research methods and their procedures are connected together to provide reliable data which may culminate to empirical research, theory formulation or conclusions. A good research design should provide a plan, guide or blueprint on how it will be undertaken. Sequential, concurrent, conversion, and fully integrated mixed methods were used. This falls under methods-strands matrix typology of designs (Teddlie & Tashakkori 2006: 12, 20).

Researchers have defined research design as a framework to guide methods of interpretation and approaches that provide specific direction and procedure and a blueprint for data collection and generation (Babbie & Mouton 2008: 74; Creswell 2014: 41; Denzin & Lincoln 2011). The research design can also be referred to as a methodology and approach used to manage the different apparatuses of the research logically and coherently in making sure that

the research problem is addressed efficiently, considering the collection process, measurement and data analysis.

There are various ways of doing research. This research used a descriptive casa study. A case study is regarded as a form of qualitative inquiry or empirical investigation where a phenomenon is studied in-depth at a specific time in order to gain new knowledge. It can be exploratory or descriptive and explanatory in nature (Yin 2014). The one most fitting for this study is the descriptive research design.

The descriptive case study aims at providing an accurate and valid representation of variables relevant to the research questions. It is a structured design. According to McNabb (2009), the merits of a descriptive study are that participants are observed in a natural and unchanged environment, it can be helpful in identifying variables that can be tested, the data collection allows for gathering in-depth data that may be either quantitative (surveys like questionnaires) or qualitative (interviews, observations or case studies) in nature and results can be used for future studies.

However, a descriptive study has some flaws and limitations as well. Participants may not be truthful; then it cannot be used to correlate variables or determine cause and effect, confidentiality is an issue, researcher bias may play a role in many ways and no variables are manipulated. Therefore, a statistical analysis is not possible. Noting this, some scientists regard descriptive studies as unreliable and unscientific, since the results are not repeatable and typically the study cannot be replicated while findings may be open to interpretation. Since the descriptive study is structured to integrate or engage with participants, it is best suited with the Technology Acceptance Model (TAM) and the Diffusion of Innovation (DoI)

70

theory proposed in the current study. These theories emphasise the engagement and participation of people in accepting a new phenomenon and having the ease to use technology and related devices to advance research and teaching among academics and students of MAUTECH.

The study also adopted a mixed methods approach which comprises both qualitative and quantitative elements. This correlates researchers like Anaf and Sheppard (2007), McNabb (2009), Onwuegbuzie and Leech (2006) and Onwuegbuzie and Leech (2007) who explain that a mixed method provides in-depth information to facilitate efficient measurement and analysis of a study which this study seeks to apply. This approach has been adopted to enhance the scope, range and intensity of the research so as to address the penitent research problems raised in relation to the research questions, design and survey.
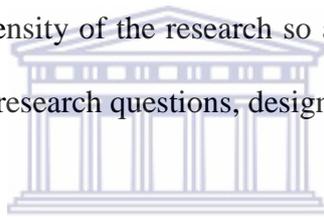
Mixed methods are used to overcome daunting challenges of the single design approach. Creswell (2013: 211) enlisted six mixed methods design strategies, namely sequential explanatory, sequential exploratory, sequential transformative, concurrent triangulation, concurrent nested and concurrent transformative. This study has used more than one design method, namely a combination of the sequential transformative (through a quantitative or qualitative data collection and analysis), concurrent triangulation (using more than one method to authenticate collection within a study) and concurrent transformative (via the use of theoretical perspective) approaches. Therefore, these components are combined to form what is commonly referred to as multiphase or iterative mixed methods design through the use of series of a qualitative and quantitative survey. Bazeley (2006: 71) explained that blending or merging of diverse data sources can be used to create new composite variables which are then fed back into the analysis is another. In this study blending of quantitative and

qualitative method was done by the use of pre-testing of questionnaires to small number of participants before the formulation of interview questions. Secondly, library portals were scanned and concepts gathered therein formed interview questions for ICT experts.

Research methodology refers to the steps taken in gathering and analysing data. Creswell (2014: 45) describes research methodology as a means by which it "involves the forms of data collection, analysis, and interpretation that researchers propose for their studies". Babbie and Mouton (2008: 74) maintain that the research methodology is the researcher's general approach to carrying out the research project. This study has adopted questionnaires, semi-structured interviews, scanning of library websites and document analysis to gather data.

A mixed methods research approach deploys multiple forms of data collection, and according to Zinn (2012: 42), "the strength of mixed methods research rests on the triangulation of data". Triangulation refers to the method used by researchers to validate data by analysing the research question from different multiple perspectives. Zinn (2012: 117) refers to triangulation as "a means to strengthening a study by combining methods" while Leedy and Ormrod (2005: 99) define it as the use of multiple methods of data collection with the hope they will all converge to support a particular theory (Leedy & Ormrod 2005: 99). This study has adopted a type of triangulation known as "methodological triangulation" (Bowden & Williams 2013: 1133), as it captured and compared findings from questionnaires, interviews and scanning of library portals to determine if similar results were feasible and if the same conclusions could be drawn from different methods to establish validity. MAUTECH, and in particular the Ibrahim Babangida Library, served as research site.

4.5   Research instruments, validity and reliability of the study

The research instruments used in this study were questionnaires, email interviews and scanning of library portals. They were used to describe, collect data as well as facilitate measurement of variables in the study. The validity and reliability of this study implies the use of consistency in the descriptive analytic presentation of data throughout this research. The reliability test for academics showed that Cronbach's Alpha was 0.867 and 95% Confidence Interval of the Cronbach's Alpha, ranging from the lower bound of 0.817 to the upper of 0.909. For students the reliability test indicated that Cronbach's Alpha was 0.934 and 95% Confidence Interval ranging from the lower bound of 0.915 to the upper of 0.950. These tests were positive showing that the values were more than 0.7.

4.6   Credibility and trustworthiness of selected respondents

Trustworthiness and credibility of respondents purposefully selected in this study were based on the overall significance of the study. The selected few (Acting University Librarian, Librarians and ICT experts) were achieved on the premise of applicability and consistency. The selected respondents for interviews were pre-tested quantitatively and later formulated into structured and semi-structured interviews which provided credibility, dependability and transferability.

4.7   Population

A research population is a collection of objects noted to have similar characteristics, traits and binding (Explorable 2018). The current study on academics and students of MAUTECH is a cogent example. This study has used two major data-gathering instruments; hence, the need for two populations.

For administration of questionnaires, this study used as target population the MAUTECH academic staff and registered students for the 2016 academic year consisting of 617 academics, 872 postgraduate and 11 351 undergraduate students (MAUTECH, Management Information System (MIS). The total population was therefore 12 840.

Two population groups were used for the conducting of interviews. The first group considered was the librarians employed by the Ibrahim Babagida Library. The nine academic librarians were chosen as they carry postgraduate qualifications and one acted as the acting university librarian while eight headed different divisions and units in the library (thus also called division librarians). There are two categories of library staff, namely academic librarians (with degrees: first class, second class – upper/lower divisions) and non-academic library staff including library officers and support staff (with third class or pass degrees and without). Academic librarians were purposively sampled considering their role in the overall objective of the study as custodian of information dissemination. The 26 non-academic staff members who did not carry postgraduate qualifications did not partake in the decision-making processes of the library and therefore were not included in the study. They population for the interviews was the acting university librarian and eight academic librarians. The second group considered for interviews were the three ICT staff members employed by MAUTECH and the Digital Communication Librarian at UWC. The Digital Communication Librarian was later interviewed because information received as a result of the email interview from ICT staff at MAUTECH was inadequate to formulate a research hypothesis as only one of the three responded to the email interview.

4.8   Sampling method

Neuman (2006: 241) asserts that "we sample to open up new theoretical insights, reveal distinctive aspects of people or social settings or deepen understanding of complex situations, events, or relationships".

To determine the participants receiving the questionnaire, the researcher adopted the probability sampling and simple random sampling. The probability sampling techniques provide all the individuals in the population the equal chances of being selected. Each respondent has the probability of being chosen and with the appropriate technique one is assured of representative and this sometimes reduces errors within the sampling process. This case study included a large total population where the sample is of different layers but having the same uniformity (Neuman 2006: 241-245). Random sampling technique was used for the large population of students and academics from the six different schools to ensure that every participant in the population had equal chance of being included in the sample. To ensure that both undergraduate and postgraduate students as well as all the schools were represented, 204 questionnaires were randomly distributed in each school ensuring that students from levels 1 to 5 were targeted. The total number of questionnaires was 1 223 divided by six schools which resulted in 204 questionnaires for each school since the subpopulation of each school was uncertain. Thirty one questionnaires were distributed to academics in each school.

The purposive sampling technique has been applied to choose respondents for interviews. This sampling method relies on the researcher who selects the sample representative based on his opinion or intention, having considered participants characteristics.   Therefore, the sampling representation is subjective in nature. This subjective sampling will go *pari passu*

75

with the primary data collected and analysed from the different divisions of the Ibrahim Babangida Library (Barreiro and Albandoz, 2001: 4-8). The researcher has chosen the following interviewees for their professionalism:

Librarians **-** The Acting University Librarian and six librarians of which four responded.

ICT experts - Three MAUTECH ICT staff members of which only one responded as well as one Digital Communication Librarian from UWC, South Africa.

4.9   Sample size

According to the Raosoft sample size calculator, for a population size of 12 223 with a 5% margin of error and a 95% confidence level, a sample size of 377 is needed. To allow for questionnaires not to be returned, a sample is to be large enough and accurate (Neuman 2006: 241), 1 223 questionnaires were distributed to students in all six schools.
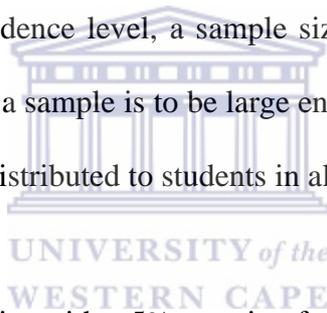
For the population of 617 academics with a 5% margin of error and a 95% confidence level, a sample size of 237 is needed. To allow for non-responses, 479 questionnaires were distributed to academics in all six schools. As the populations of the academic librarians as well as the ICT staff were small, no sampling was done and e-mail interviews were sent to everybody identified part of the population.

4.10 Information-gathering tools

Information-gathering tools are techniques used to collect data. These tools may emanate from different sources ranging from written surveys, group interviews, group discussions, existing documents or observations. For this study, questionnaires, semi-structured interviews and scanning of library portals were used to gather data. Data collected from different

categories of respondents will be presented in separate chapters namely: data presentation and analysis - students, data presentation and analysis - academics and data presentation: interviews and scanning of library portals. All figures will be rounded off to one decimal point.

4.10.1 Questionnaires

Giesen, Meertens, Vis-vissches and Beukenhorst (2012: 7, 18) define a questionnaire as "the set of questions put to a respondent" or "an instrument in which the researcher has a conversation of sorts with the respondent". It is an instrument designed to collect data to answer a research problem or question in a format deemed fit for statistical measurement (Brancato et al. 2006: 11). The University of Portsmouth (2012) enumerates the following as the advantages of questionnaires:
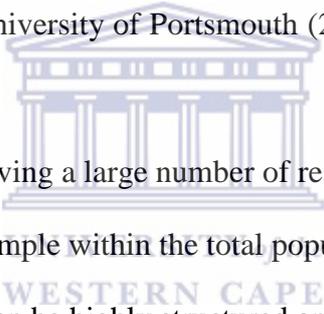
1) There is a possibility of having a large number of respondents

2) Getting a representative sample within the total population is feasible

3) Questions and responses can be highly structured and easily codeable

4) Depending on the data being collected, the statistical testing is possible

5) Respondents have time to reconsider questions

6) It is a cheaper way of covering a large geographical area

7) Questions can be repeated, replicable and re-used in some other studies

8) Comparing a sample questionnaire is easier because standardised questionnaires have already been designed

Questionnaires are categorized into structured (questions with predefined answers), semi-structured (mixture of open-ended and predefined questions) or unstructured (open-ended questions). As academics might have different experiences, two questionnaires, both using a

semi-structured design, were created – one for students and one for academics. Questions included were informed by views of potential users of e-resources and the envisaged library portal as well as the DoI theory and TAM as theoretical conceptions.

Google Forms, a web-based form which participants could complete and submit online was used to create the questionnaires. Reasons why an online web-based questionnaires were used were to reduce costs of administering, provide high levels of anonymity, allow participants to complete them in their own time, keep track of the responses, allow sending of reminders and capture responses automatically (O'Leary 2004: 116). As a setback the web-based questionnaires took too long to respond and mostly no respond at all (Marsden & Wright 2010: 539). As both students and academics have e-mail addresses, the researcher deemed online questionnaires a suitable platform for administering them.

4.10.1.1 Questionnaires for students

A questionnaire with 35 different questions was designed using structured as well as open-ended questions. Questions included were aimed at determining what students studied, where they resided, their use and rating of the library, their use of e-resources, training received and their opinions on digitization of library resources and the envisaged library portal. The reasons for including individual questions were incorporated in the data presentation chapter. An example of the questionnaire appears in Appendix F.

4.10.1.2 Questionnaire for academics

A questionnaire with 40 different questions was designed using structured as well as open-ended questions. Questions included were aimed at determining teaching experience, use and rating of the library, use of e-resources, training received and opinions on digitization library

78

resources and on the envisaged library portal. The reasons for including individual questions were incorporated in the data presentation chapter. An example of the questionnaire appears in Appendix G.

4.10.1.3 Pre-testing the information-gathering tools

To validate the research hypothesis, provide an established protocol for data collection and ensure that the data is suitable and clear to the participants, pre-testing of the questionnaire was needed. A questionnaire may go through several iterations and pre-testing before the final version is administered. The researcher pre-tested the draft questionnaires by requesting nineteen selected academics and 27 students of MAUTECH to complete them. The academics targeted were the heads of departments and the deans of schools. The targeted students were random representatives from the six MAUTECH schools. A total number of 46 questionnaires were administered. This was a pilot test of questionnaire it was not a part of the sample research. It was used to test the accuracy of the supposed questionnaire. The pilot pre-test resulted in thirteen questionnaires being completed by academics and 24 completed by students. Although respondents complained about the length of the questionnaire, the completed questionnaires did not reflect any unclear or ambiguous instructions or questions.

4.10.1.4 Administering the questionnaires

Poudyal (2016: 31) postulates that the different ways of administering questionnaires are face-to-face, self-administered, telephone interviews and web-based surveys. For this study, initially only a web-based self-administered method was used but due to low response rates the researcher had to revert to face-to-face and self-administered questionnaires as well.

4.10.1.4.1 Administering questionnaire to students

E-mail addresses for undergraduate students were received from Socket Works (a company contracted to register undergraduate students through the university application portal) and the MAUTECH Information Technology Center, while e-mail addresses for postgraduate students were received from the Post Graduate Office. Initially the questionnaire as a Google Forms survey was emailed to 5 918 students. Many of the emails were returned as undeliverable due to wrong addresses. After allowing a month for students to submit the completed form, only 56 were received. Reasons for the weak response might be because of no Internet access, students not checking their incoming e-mails, the questionnaire being too lengthy to complete and Internet access was interrupted while students were completing the form. This motivated the administration of physical printed questionnaires to the students. A total number of 1 200 questionnaires were administered to both undergraduates and postgraduate students with the help of student tutors during lecture times negotiated with lecturers. Tutors waited in the lecture venues and collected the completed forms. Nine hundred and ten (910) questionnaires were retrieved, resulting in a response rate of 76%.

4.10.1.4.2 Administering questionnaire to academics

E-mail addresses were retrieved from the Academic Staff Union of Universities and the questionnaire was initially e-mailed as a Google Forms survey to 479 academics. Some of the e-mails were returned as undeliverable due to wrong addresses. After allowing a month for academics to submit the completed form, only 28 (6%) responses were received. The researcher then had to administer physical printed questionnaires to academics in six schools of the university. With the help of twelve student tutors (two from each of the six school), 185 printed questionnaires were given to academics with the request to complete. After allowing a month to complete, the tutors collected the completed questionnaires. Only 64

80

completed questionnaires were collected, resulting in a response rate of 35%. After enquiring, the academicians complained that they are too busy to complete the questionnaire, the questionnaire was too lengthy, some refused to complete the questionnaire since the researcher did not present it personally, their presence on campus was unpredictable and some indicated that they had lost the questionnaire. The low response rate of 35% was an indication that some academics were not interested in the project and resulted in the findings not to be generalized or being representative of the population.

4.10.2 Semi-structured interviews

An interview has been proven as one of the best instruments for collecting qualitative research data. Seidman (2012: 8-9) defines an interview as "a basic mode of inquiry with an interest in other individuals' stories because they are of worth". Mann (2011) opines that qualitative interviews explore participants' experiences, beliefs or identities.

Alsaawi (2014: 150-151) identified different types of interviews as structured, unstructured, semi-structured or focus group interviews. The researcher deemed it appropriate to use the semi-structured interview for this study, as the interviewer pre-planned his interview questions before conducting the interviews, but also allowed opportunity to the interviewees to elaborate on open-ended questions. The objectives of the interviews were to collect rich, in-depth data to ascertain the acceptability and applicability of e-resources and a library portal.

Interview sessions were pre-planned and appointments made, but due to the sudden change in the MAUTECH academic calendar, the researcher having to return to the UWC campus and the geographical distance, it was decided to conduct e-mail interviews. An e-mail interview

was used instead of a face-to-face interview. Scholars have shown that an e-mail interview is an effective interview technique similar to most traditional interview techniques. It is considered one of the most reliable methods of data collection because it allows access to individuals often difficult to reach, provides access to diverse research subjects, allows interviewing more than one participant at a time, provides flexibility for interviewees to answer questions, eliminates transcription errors, responses are more thought through before sending and more focused questions can be asked. Notwithstanding, it limitations amongst others are unreliable technological environment, synchronous connections may be difficult, flexibility on asynchronous dialogue may be difficult to achieve, collecting data poses challenge to the interviewer, lack of physical/visual contact hampered communication and interactivity, interviewees may decide to select which question to answer and drop out some against their interest and limited probing capabilities (Creswell 2007; Elmir, Schmied, Jackson & Wilkes 2011; Fritz & Vandermause 2017: 1-3; Hamilton & Bowers 2006; Meho 2006).
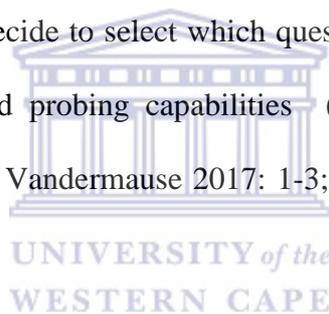
4.10.2.1 Interviews with librarians

The e-mail interview of the Acting University Library had fourteen questions, while those of the division librarians contained seven questions. Questions in the e-mail interviews schedules were aimed at determining computer literacy proficiency, the need for a library to portal for information retrieval and dissemination, envisaged challenges regarding the proposed portal, roles in fostering growth in the information-based community, needed training and the need for digitising library resources. The reasons for including individual questions were incorporated in the data presentation chapter. An example of the interview schedules for the division librarians appears in Appendix H, while that of the acting librarian appears in Appendix I.

4.10.2.2 Interviews with ICT staff

The e-mail interview with the ICT coordinator contained eleven questions, while the ICT staff at MAUTECH were asked to answer seven questions. The UWC Digital Librarian had ten questions to answer. Questions in the e-mail interview schedules were aimed at familiarity of library portals, technical challenges, portal typology and available software. The reasons for including individual questions were incorporated in the data presentation chapter. An example of the interview schedules for the ICT staff at MAUTECH and the UWC Digital Librarian appears in Appendix J and Appendix K.

4.10.2.3 Conducting the interviews

E-mail interviews were sent to interviewees in the academic year of 2016 and 2017 respectively. One month was given to allow enough time for them to react to the survey questions and return the survey to the researcher. Two librarians responded timeously within the month of request, but other two librarians responded after a month. The Digital Communications Librarian responded promptly, the Acting University Librarian had to be followed up after one month of e-mailing; perhaps he was reacting to the questions as expected. The ICT staff responded after much follow-up as well.

The returned e-mail interviews were captured, synthesized and analysed into a coherent rapporteur as qualitative data discussed in chapter seven.

4.10.3 Scanning of library portals

The researcher planned to visit both the University of Maiduguri (UNIMAID) in Borno State and the American University of Nigeria (AUN). Because of sudden notorious terrorist groups annihilating people on daily basis at the time of the planned visit, the visit to the first

83

mentioned did not realize. Their library portal was however scanned. The privately owned American University of Nigeria as well as the UWC library was visited and some library staff met to observe and gain more insight into their migrating process from a collection containing both print and e-resources to a digital library with only e-resources. Useful information was received from the both AUN and UWC. Details about the software used to create and manage the library portal and the features of a portal was gained and summarised in the presentation of data chapters. Section 7.6 presents full contextualisation on how portals were gathered, scanned and analysed.

4.11 Data capturing, analysis and presentation

Data from questionnaires was captured on spreadsheets and the statistical analysis was done using SPSS (Statistical Package for the Social Science) Version 24.0.0.0. Responses from interview sessions and document analyses were transcribed and coded to identify themes and patterns (Zinn 2012: 19) by means of ATLAS.ti 7.0, computer software used in qualitative research data analysis. Data was presented in tables, graphics and textual narratives using descriptive and exploratory analyses.

4.12 Concluding summary

This chapter motivated the adopted descriptive research design, approach, method and methodology. It described the methods used to gather and analyse data needed to suit the purpose of the research. The detailed description of the different data-gathering instruments and how they were used to collect both quantitative and qualitative data were provided. The chapter also reflected on data analysis methods employed to present the collected data. The following chapter presents the captured data gathered from the questionnaire administered to students.

5   DATA PRESENTATION AND ANALYSIS – STUDENTS

5.1   Introduction

Chapter 4 described the research design, the instruments for data collection, the pre-test as well as the applicability of the information gathering tools to the study. Due to the large quantity of data collected from students and academics the data presentation and analysis have been divided into two sections. The first section presents and analyses results derived from the responses of students, while the second presents and analyses results based on the responses of academic staff.
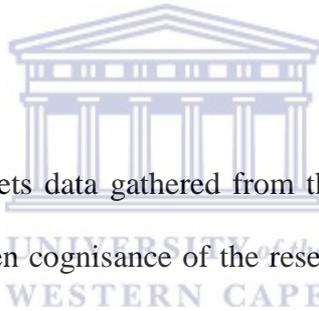
This chapter presents and interprets data gathered from the MAUTECH undergraduate and postgraduate students having taken cognisance of the research objectives and questionnaires posed before students. It is noted that the number of respondents who reacted to questions and sub-questions varied, especially with the open-ended questions. Data will be presented in the order questions appeared on the questionnaire.

5.2   Schools of enrolment

The first question requested the students to indicate the schools where they were enrolled. The different schools at MAUTECH were the School of Agriculture and Agricultural Technology (SAAT), the School of Engineering and Engineering Technology (SEET), the School of Environmental Sciences (SES), the School of Management and Information Technology (SMIT), the School of Pure and Applied Sciences (SPAS), the School of Technology and Science Education (STSE) and the School of Postgraduate Studies (SPGS).

Unlike the other six schools, the School of Postgraduate Studies is set up for administrative purposes, postgraduate course allocations and for coordinating the postgraduate admissions of the university.

From the total respondents of 918, only 792 respondents responded to this question. The most students (25.8%) were registered at the School of Pure and Applied Sciences, while the least (8.8%) respondents were enrolled for programmes at the School of Engineering and Engineering Technology. Figure 5.1 presents detailed results on the number of students registered in the various schools at MAUTECH:
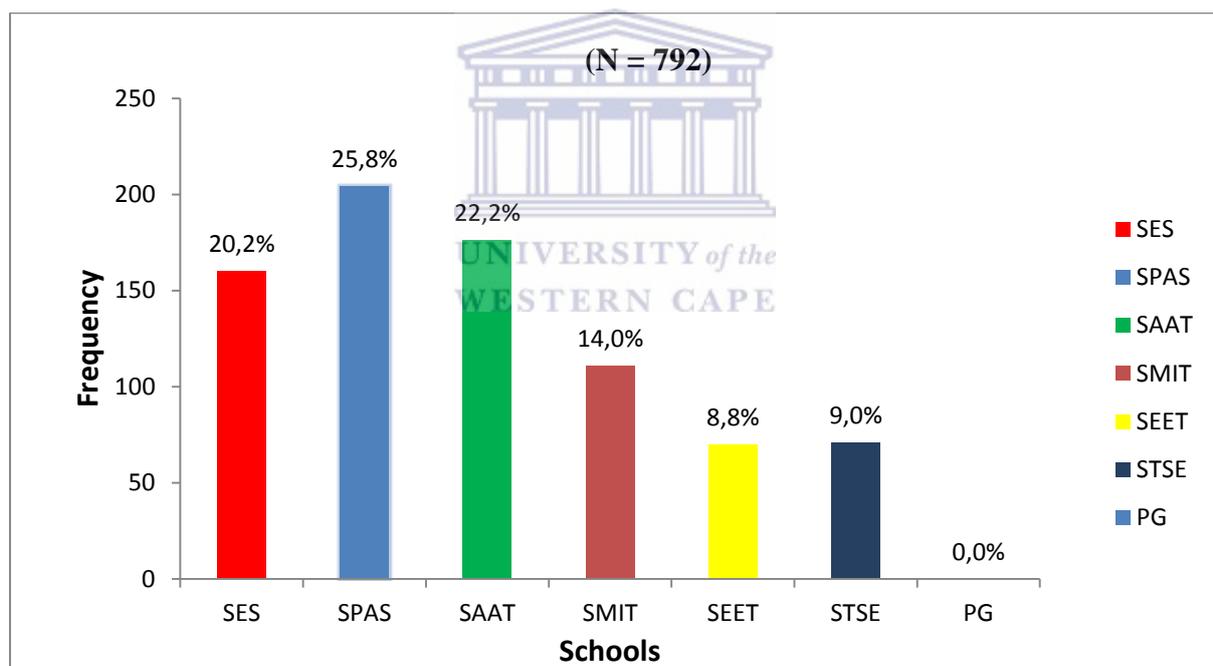
Figure 5.1: Schools of enrolment

Despite the fact that the School of Management and Information Technology had the largest number of students, the School of Pure and Applied Sciences (SPAS), probably being one of the oldest schools in the university, had the highest frequency of 25.8% of enrolment. Interestingly no postgraduate students were enrolled at this school.

86

5.3 Year of enrolment

The students were also asked to indicate their enrolment year. Figure 5.2 presents results based on year and level of schooling.
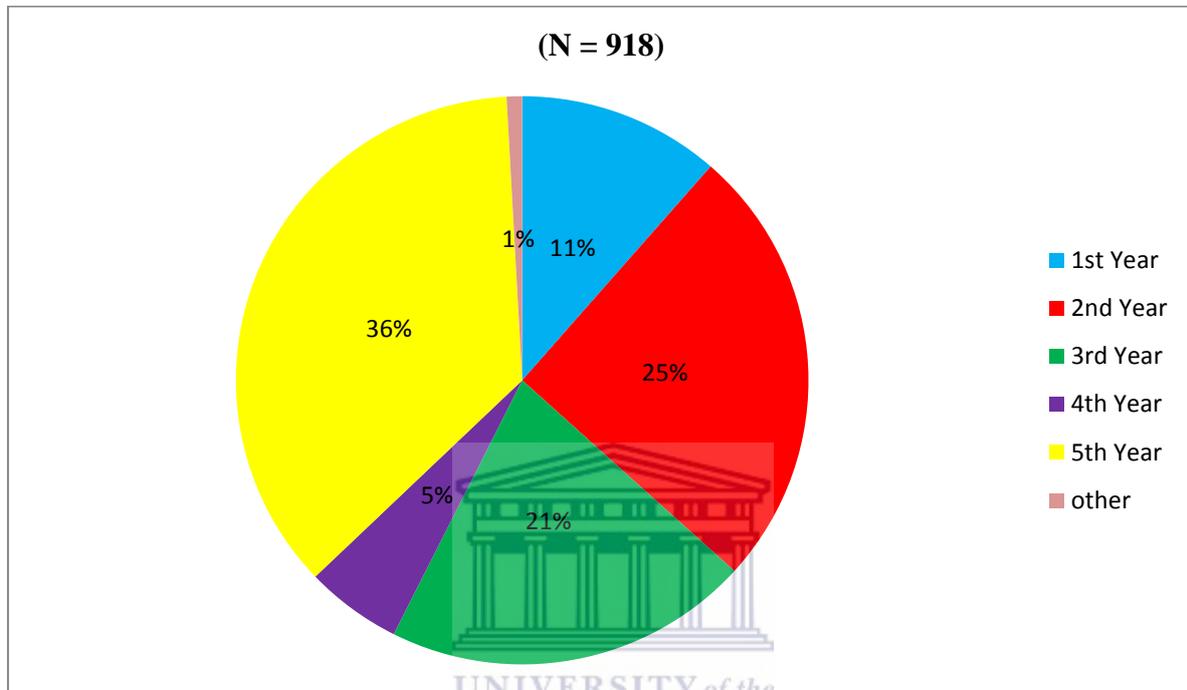
Figure 5.2: Year of enrolment

From Figure 5.2 it is clear that most students (36%) were in their 5th year of study. This connotes that they were final year students. Students who indicated "Others" were those who were supposed to have graduated in their 5th year of study, but were still repeating failed courses to enable them to graduate.

5.4 Student residences

To determine where they resided, students were requested to indicate whether they resided off campus or in the university residences. This information was requested because proximity to university location is vital to Internet access. Figure 5.3 presents results from 912 students.

87
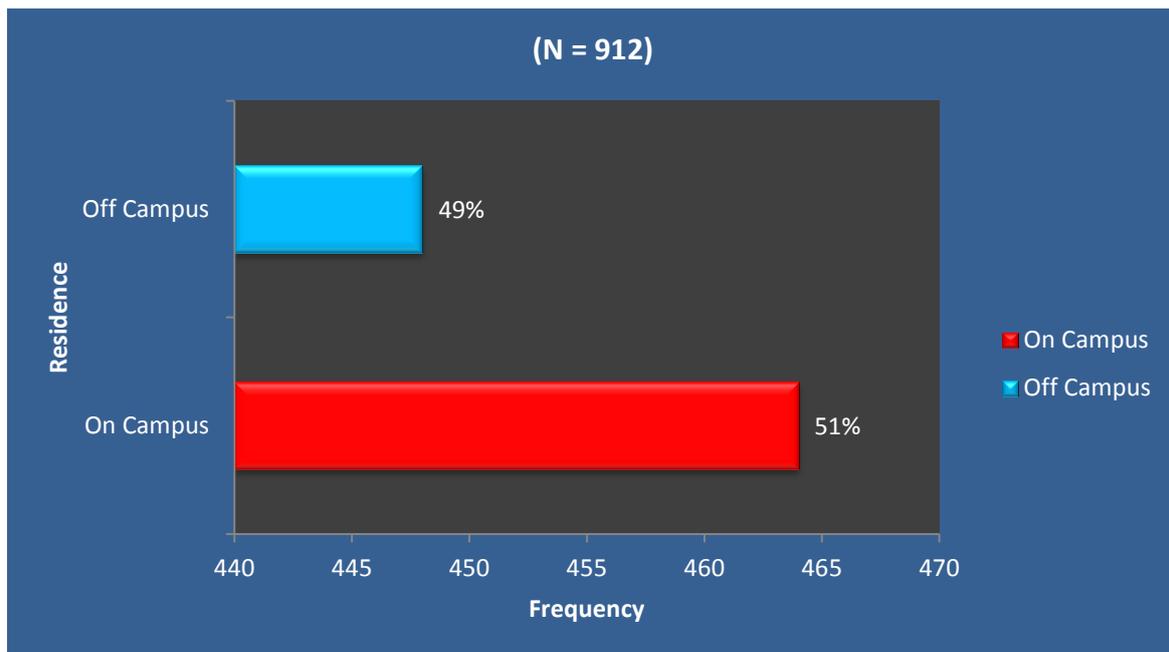
Figure 5.3: Student residences

The majority, 464 (51%), of students resided on campus while 448 (49%) resided off campus, indicating that almost half of the students were not accommodated in the university-owned residences. This might pose security threats as well as challenges using the internet, as off-campus residence facilities did not provide sufficient Wi-Fi, as connectivity might result in higher rent.

5.5   Possession of computers and laptops

Respondents were subsequently asked if they owned personal computers or laptops or alternatively, used the university-provided equipment for academic purposes. Results of the responses of 918 students to the questions are presented in Figure 5.4.
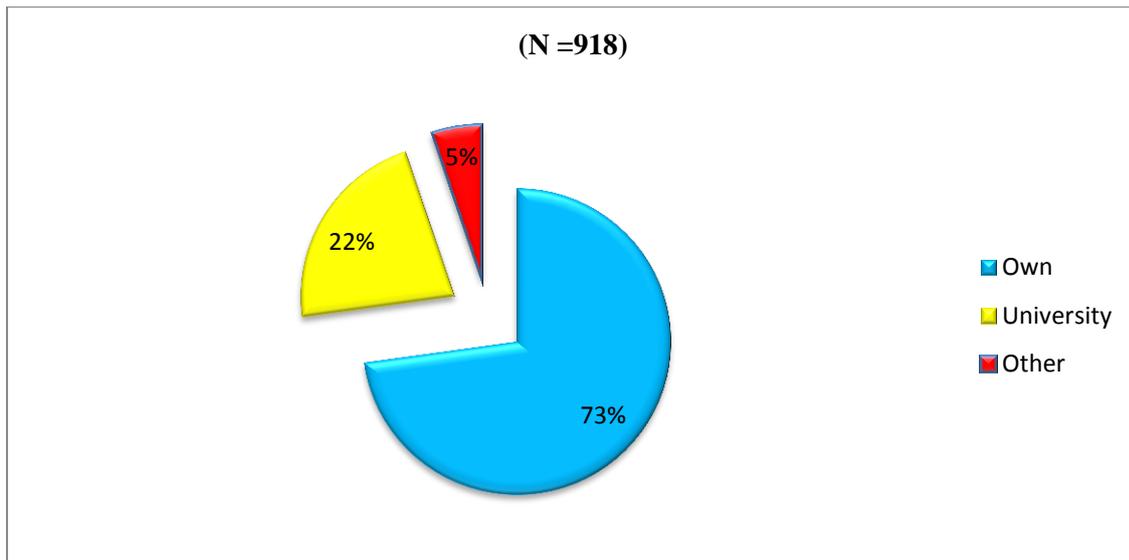
Figure 5.4: Possession of computers

Most (73%) of the students had personal computers or laptops and 22% relied on the university laboratories or computer centres. Five percent of students indicated ownership of other devices like tablets, smartphones and i-Pads.
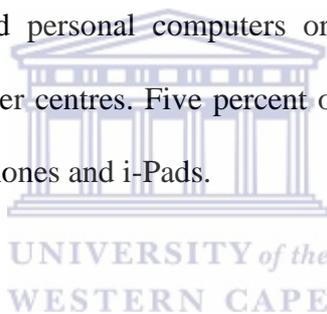
5.6   Internet access on campus

This question sought to determine whether the students had sufficient access to the Internet on campus, including the residences. Figure 5.5 provides results of the 894 students who responded. According to the report on Internet users in Nigeria (Internet Live stats 2016), during July 2016 86 219 965 Nigerians used the Internet. This represented 46.1% of the population of about 200 million people. Compared to previous years 2015 (45.1%), 2014 (42.7%) and 2013 (38%) this proved that Internet access in Nigeria is growing exponentially. It is, therefore, worrisome that 70% of students residing on campus indicated that they did not have sufficient access to the Internet.
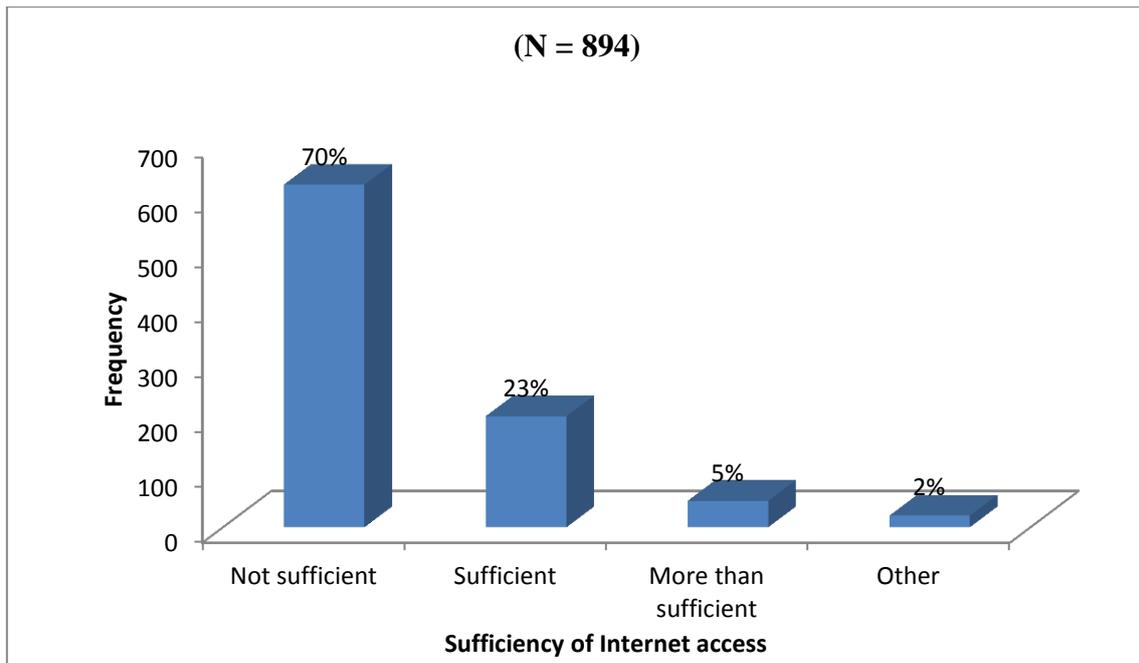
Figure 5.5: Internet access of campus

Perhaps this could be a result of the network used. Only 23% of students indicated sufficient access to the Internet, perhaps through modems and smartphones (mobile access), while as few as 5% indicated more than enough access. The 21 respondents (2%) indicated by choosing the 'other' option explained that they accessed the Internet through other means, mainly shared mobile Internet and cybercafés. For students to perform well academically, 24/7 access to Wi-Fi and full Internet connection should be provided, as these facilities enhance productivity and academic proficiency. For example, at the University of the Western Cape, South Africa, all residences are fully equipped with Wi-Fi and LAN devices, increasing academic interactivity via online services from the university's website.

5.7   Searching for information

Tertiary education is characterised by academic activities requiring the ability to search for and find information to meet daily information needs for assignments, proposal writings or literature reviews. In order to determine how students meet their information needs an open-

ended question requesting respondents to explain how they found information for academic pursuits the 36 responses received were categorised into three themes: printed resources, e-resources and alternate resources.

Table 5.1: Finding information (N=36)

Theme	Responses	Score	Percentage
Print resources	Lecture reviews	1	2.8%
	Consult books, magazines, newspapers, dictionaries, textbooks	5	13.9%
	Journals	1	2.8%
Alternate resources	Asking friends, consult colleagues, inquire from my lecturers	3	8.3%
	University's Information & Communication Centre (ICT), training, seminars, conventions	4	11.1%
E-resources	MAUTECH website, other websites	2	5.6%
	Internet sources, Google, e-journals, through search engines, I find information through e-newspapers, downloaded materials, video materials, through e-books, e-magazines, through e-textbooks, recorded information, slides, through e-groups	14	38.9%
	Using social media via cell phone, e-mails, Facebook, WhatsApp	4	11.1%
	Through commercial café, use of modems (data bundle)	2	5.6%
	Total	**36**	**100%**

From Table 5.1 it can be seen that the majority of students (61.1%) used electronic resources. They used the Internet (38.9%), social media (11.1%), websites (5.6%) and other sources by using alternative means to connect to the Internet (5.6%). Seven students (19.4%) preferred to use printed sources like books, journals and lecturer reviews. The 36 students who responded to the question were not representative of all the respondents; therefore, no generalisation could be made. However, these findings confirmed trends in the literature that most students preferred to use Google to search for information (Behrends 2012; Perruso 2016; Sadeh 2007).

91

5.8   Frequency of library visits

Question 7 asked students how frequently they visited the university library. Students were given a list of options ranging from not at all, seldom, monthly, weekly, daily or other to choose from. Results received from 918 students are presented in Figure 5.6.
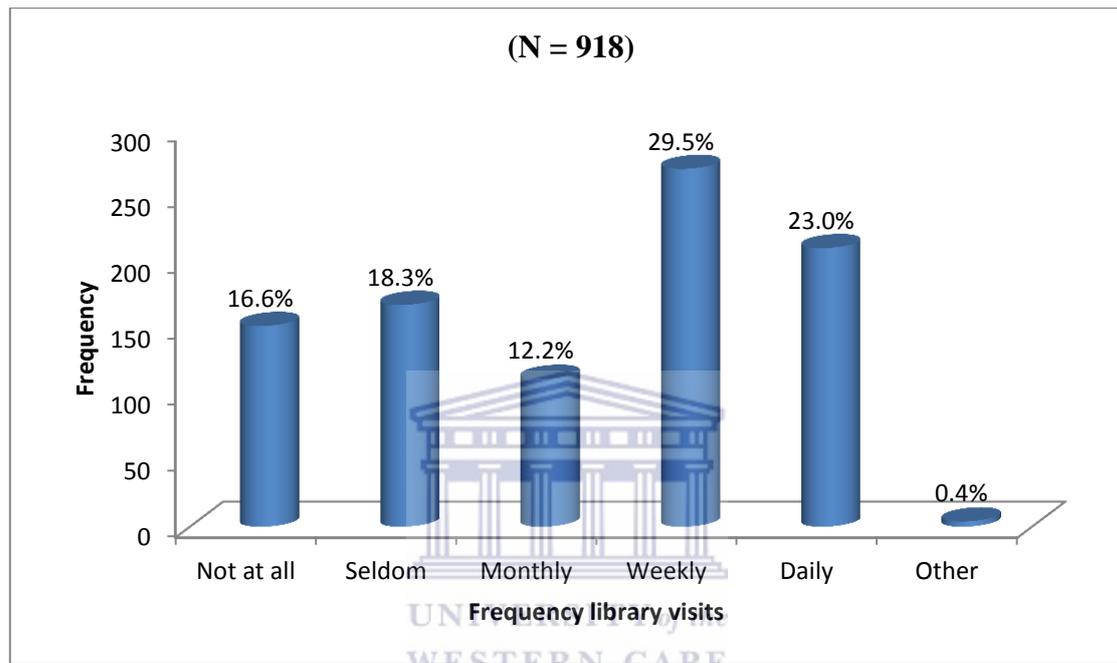
Figure 5.6: Frequency of library visits

Results show that the majority of students (271 or 29.5%) visited the library on a weekly basis, whereas 211 (23.0%) visited it on a daily basis, and 168 (18.3%) seldom visited the university library. Notably, 152 (16.6%) of the students did not visit the library at all. By ratio, those who hardly or not at all visited the library were high in percentage. This finding is in coherence with the decline in patronage of academic libraries (Vasantha, Venkatesha, Ambika & Umendra 2016: 210-211). The students who opted for the 'other' option indicated different times as those listed.

5.9   Reasons for visiting the library

A subsequent question demanded students to state reasons for visiting the university's main library, as this should provide an indication of the overall assessment of the services being rendered. Only 44 students responded to this open-ended question and provided reasons for visiting the library. These responses received were subdivided into four themes, namely for reading and research purposes, consultation, Internet access and leisure purposes. Responses are summarised in Table 5.2.

Table 5.2: Reasons for library visits (N = 44)

Theme	Responses	Score	Percentage
Reading and research	For reading, research, for my assignments, to read newspapers, to get information, to add more experience, to consult textbooks, to learn more, to read my handouts, to get information on theses, for studies, for projects, to read journals	23	52%
	To consult books, materials, referred reading, to consult past questions	4	9%
	To get current materials, academic activities	3	6%
Consultation	For my clearance before graduation	1	2%
Internet access	Internet services, to access Wi-Fi	3	6%
For leisure and recreation	For recreation, games, for socialization, for leisure, for quietness, personal reasons	11	25%
Total		**44**	**100%**

Twenty-three students (52%) indicated going to the library primarily for reading and research purposes, eleven (25%) visited the library for leisure and recreation while three (6%) visited to gain Internet access. The least respondents were those who visited the library for consultation on clearance purposes (2%). It is practice that any graduating student from the university must seek clearance from the library to indicate that he/she does not have library resources in his/her possession. The finding on low patronage of library by graduating students is to be expected because library clearance is a yearly exercise for graduating

93

students. No respondent mentioned registration as one of the reasons for visiting the library. The Ibrahim Babangida Library guide encourages students and academics to register with the library in order to have full access to its resources.

5.10 Library divisions visited

In order to meet the information needs of users, the Ibrahim Babangida Library has different divisions, sections and units. Question 9 listed seven of these divisions and requested students to indicate which divisions they visited.
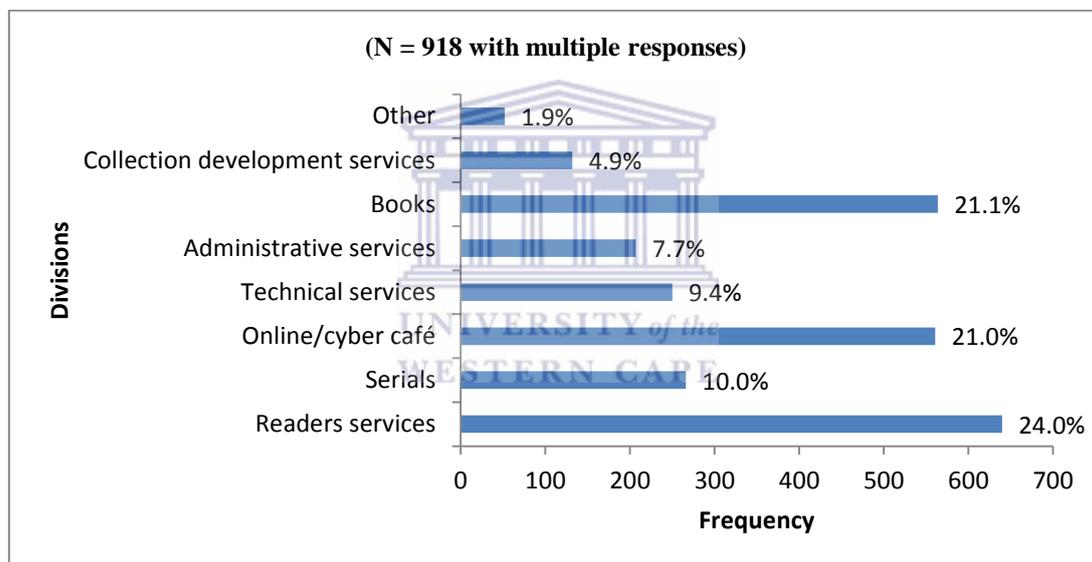
Figure 5.7: Library divisions visited

The 918 respondents provided a total of 2 672 responses indicating that many respondents visited more than one library division. From the results presented in Figure 5.7, it can be deduced that the most students (24%) visited the Readers Services division. The Readers Services division is known as the hub of the library where activities like reading, registration, clearance, circulation and referencing are carried out. Both the Books and Cybercafé divisions were visited by 564 and 561 (21%) of the respondents respectively, while the Serials division was visited by 266 (10%) patrons. The 1.9% of respondents who had chosen

94

the 'Other' option might have referred to units and sections within the divisions, like the postgraduate reading room, reserve and theses units.

5.11 Rating of Cybercafé

The function of the Cybercafé division is paramount to the library because it is from this division that all electronic information-sharing takes place. The division in the library has recently been upgraded with new equipment and facilities. Students were asked to rate the status of the division using very poor, poor, adequate, good, very good or other as options. Figure 5.8 presents the responses received from 793 respondents and shows that 309 (39.0%) students rated the division as adequate, while 232 (29.3%) rated it to be very poor. The reason for the majority of students (45.9%) rating the division negatively (poor and very poor) may be because of the lack of IT professional experts and an operationalized library portal to provide access to all library services and resources.
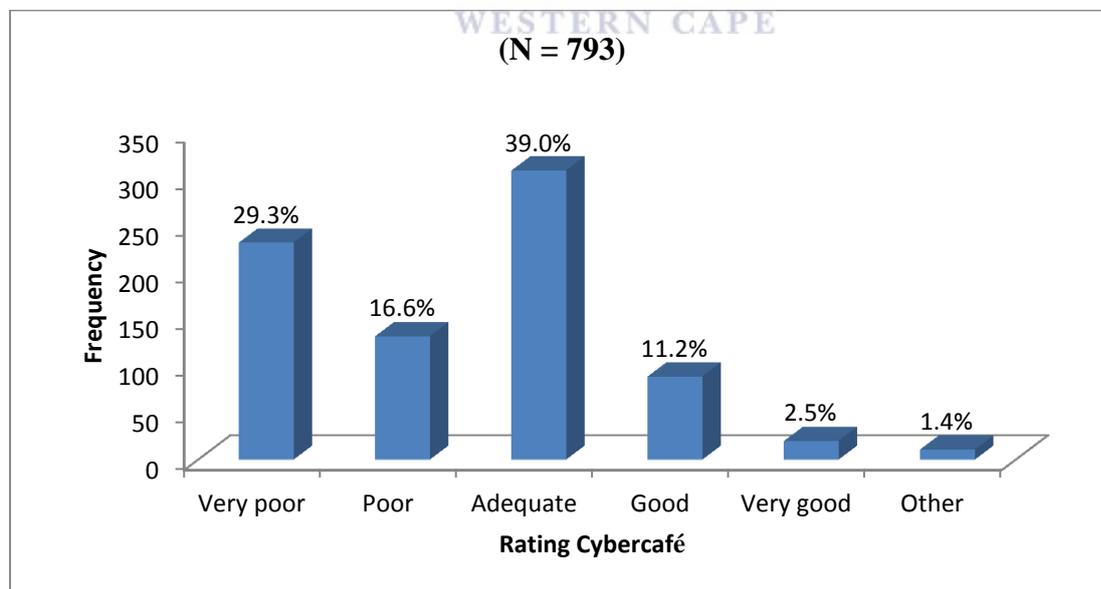
Figure 5.8: Rating of Cybercafé

5.12 Library resources used

As highlighted in Chapter Two, Kumah (2015: 4) opined that researchers and students are comfortable with using a wide variety of resources to satisfy their information needs. Users, depending on their technical knowledge and skills, utilize search engines, full-text databases, electronic journals and print resources to some extent. An open-ended question asked students to indicate library resources used. Only 21 respondents responded to this question. Resources listed were journals articles and textbooks (9), newspapers (3), undergraduate projects (2), encyclopaedias (2), dictionaries (2), governmental publications (1), novels (1) and multimedia like DVDs and CDs (1).

Some of these resources are for consultation purposes as reference materials inside the library while others are available for circulation. Journal articles and newspapers located in the Serials division are for consultation and room use only. Undergraduate projects are designated in the Theses unit, part of the Reader Services division, where students can only consult past projects. When it is required to circulate projects, students need to write an undertaking seeking the consent of the author.

5.13 Frequency of library resources used

It is expedient that library users use the resources subscribed and procured by the library management. Thus, students were asked to identify how often they used the resources listed in question 12. Table 5.3 presents the results on the frequency of library resources used.

Table 5.3: Frequency of library resources used

Responses	Never	Seldom	Monthly	Weekly	Daily	Total
Newspaper articles	225 (27.2%)	88 (10.7%)	76 (9.2%)	120 (14.5%)	317 (38.4%)	826
Journal articles	152 (22.9%)	144 (21.7%)	149 (22.5%)	143 (21.6%)	73 (11.0%)	661
Books	73 (10.3%)	134 (19.0%)	75 (10.6%)	189 (26.8%)	233 (33.0%)	704
Textbooks	53 (7.5%)	161 (22.8%)	105 (14.8%)	168 (23.7%)	219 (31.01%)	706
Journal and abstracting indexes	142 (20.8%)	175 (25.6%)	132 (19.3%)	129 (18.9%)	103 (15.1%)	681
Undergraduate projects	173 (26.6%)	118 (18.2%)	144 (22.2%)	130 (20.1%)	83 (12.8%)	648
Master's dissertations	199 (29.1%)	150 (21.9%)	118 (17.2%)	120 (17.5%)	98 (14.3%)	685
Doctoral theses	180 (25.6%)	114 (16.3%)	145 (20.7%)	155 (22.1%)	107 (15.3%)	701
Dictionaries	65 (8.8%)	115 (15.5%)	126 (17.0%)	184 (24.8%)	251 (33.9%)	741
Encyclopaedias	112 (14.9%)	135 (17.9%)	181 (24.0%)	166 (22.0%)	160 (21.2%)	754
Governmental publications	143 (20.8%)	192 (27.9%)	123 (17.9%)	120 (17.5%)	109 (15.9%)	687
Directories	170 (22.3%)	167 (21.9%)	163 (21.4%)	148 (19.5%)	112 (14.7%)	760
Yearbooks	221 (30.0%)	112 (15.2%)	135 (18.3%)	91 (12.4%)	176 (23.9%)	735
Multimedia e.g. CD, DVD	231 (29.1%)	144 (18.2%)	96 (12.1%)	136 (17.1%)	185 (23.4%)	792

From the results it can be deducted that daily use of newspaper articles were the most frequently (38.4%) used resource, followed by dictionaries (33.9%) and books (33%). At the Ibrahim Babangida Library subscription to daily newspapers attribute to a huge percentage of the annual library budget. Library resources never used were yearbooks (30%), master's

97

dissertations (29.1%) and multimedia (29.1%). Results showed a heavy use of books and handbooks.

5.14 Satisfaction with quantity of library resources

Although quantity is of less importance in terms of library resources, question 13 asked students to express their opinion of the quantity of library resources housed in the Ibrahim Babangida Library by choosing from four options, namely not satisfied, to some extent satisfied, satisfied or very satisfied. Figure 5.9 presents the level of satisfaction with the quantity of resources in the library.

Figure 5.9 shows that 356 (42%) from 857 respondents indicated that they were not satisfied with the resources provided by the library, while 344 (40%) rated their satisfaction as to some extent. Only 145 respondents (17%) confessed to being satisfied and 12 (1%) of respondents were very satisfied; in other words, their needs were met.
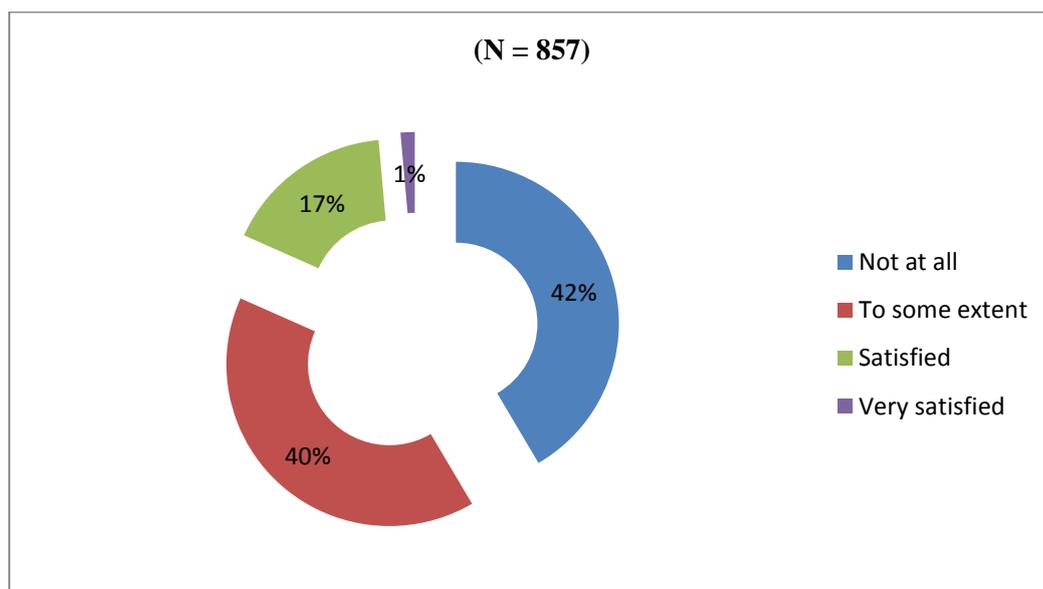
Figure 5.9: Satisfaction with quantity of library resources

Kiilu and Otike (2016: 11-12) suggested that academic libraries provide a guide and evaluation system to assist students to acquire knowledge, information skills and self-directed learning opportunities. With enhanced skills, they will be able to evaluate the library collections critically.

5.15 Reasons for dissatisfaction with quantity of library resources

Students were requested to state reasons for being satisfied or dissatisfied with the quantity of resources provided by the university library. As only reasons for dissatisfaction were received, the 45 responses were summarised in categories, namely resources not relevant, resources not current, library has inadequate resources, library resources are not organised and the library lacks Wi-Fi and power supply.

Table 5.4: Reasons for dissatisfaction with quantity of library resources (N = 45)

Theme	Responses	Score	Percentage
Resources not relevant	Lack of standard and relevant books, I do not get what I am looking for there, many books are not found in my course.	8	18%
Resources not current	Library resources are dated, the books and material are very dated and fail to compliment the current happenings, some of the books are too old and damaged, the little books they have are not current, I am not satisfied because all the books in the library are not current, they are ancient books	6	13%
Library has inadequate resources	They lack resources, I am not satisfied because the resources are not as many as I expected, at times reference materials are not available, the needed resources are sometimes used by other users, because most needed books are not found there, I am not satisfied because the library is not up to standard, some books are not available, the library has limited journals and magazines, very scanty books	25	55%
Library resources are not	The library is not organized, it is not well equipped,	4	9%

99

organized	poor arrangement of resources, poor arrangement of books and poor management		
The library lacks Wi-Fi and power supply	Unstable power supply, no standard Internet service to satisfy students and researchers	2	5%
TOTAL		**45**	**100%**

The 45 different responses received from students were categorised into five reasons why students were not satisfied with library resources. Most students (55%) indicated inadequate resources as the reason for their dissatisfaction. The disorganized nature of the library (9%), dated resources (13%) and lack of relevant resources (18%) also contributed to students rating library resources as unsatisfactory. Two respondents rated the unstable power supply as another reason for dissatisfaction with library resources – perhaps because it influenced Internet connectivity. User responses implied that the library needed to acquire more, relevant and newer resources, should organize existing resources better, and acquire facilities to ensure Internet access and stable power supply.
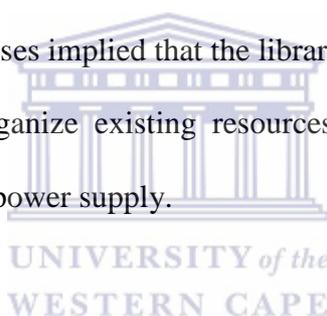
5.16 Satisfaction with quality of library resources

Lack of quality resources could discourage users from visiting the library. Considering this factor, students were issued a question to ascertain their satisfaction with the quality of resources in the university library from a range of options, namely not at all satisfied, to some extent satisfied, satisfied or very satisfied. Figure 5.10 summarizes 863 responses received.

Of the total respondents who indicated their level of satisfaction with the quality of resources in the library, 393 (46%) indicated not being satisfied, while 314 (36%) indicated being satisfied to some extent. Sixteen percent of respondents (142) indicated being satisfied, while only 14 (2%) indicated being very satisfied. User satisfaction towards library resources is paramount.
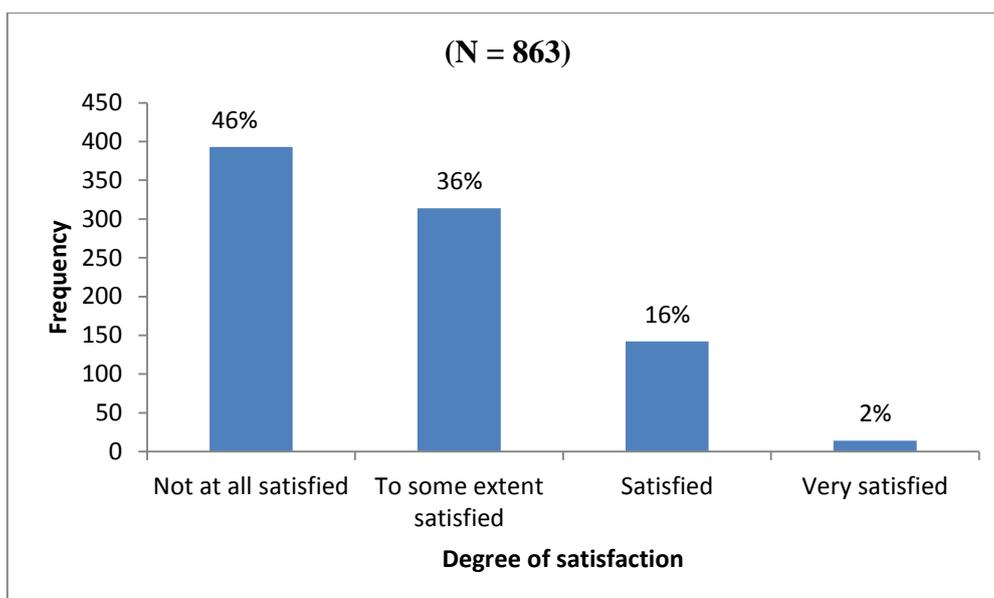
Figure 5.10: Satisfaction with quality of library resources

According to Kadir, Ghani, Bakar, Bunawan and Seman (2016: 2), the main function of an academic library is to provide the best service and resources to the academic community with a continued assessment and evaluation to meet the ever growing demand of their patrons.
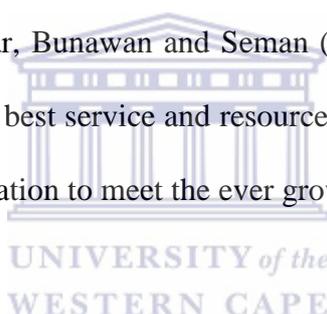
5.17 Reasons for dissatisfaction with quality of library resources

The subsequent question sought to determine the perception of students on reasons for rating the quality of the library resources. Reasons might assist the Collection Development division in procuring current and qualitative resources for students. Furthermore, collection development policy may be enhanced by including students with at least 15% input into the selection process for books acquisition as supported by the Library User's Guide (2016: 4).

Although 21 responses were received, only twelve thereof were relevant to the quality of library resources. These twelve were categorized into two themes, namely library resources are not accessible and library resources are dated.

101

Table 5.5: Reasons for dissatisfaction with quality of library resources

Theme	Responses	Score	Percentage
Resources are dated	Dated materials, most of the materials are dated, the books and journals are most times in poor quality	5	41.6%
Resources not accessible	Relevant resource/e-resources cannot be found, the books are good but sometimes you can't find the book and the topic you want to use, books are not easily found	7	58.4%
	Total	**12**	**100%**

Responses depicted that respondents perceived the lack of accessibility to library resources (58.4%), perhaps due to lack of automated catalogues, databases and a dedicated library portal, while lack of recent relevant resources (41.6%) hampered the quality of library resources. Tiemo and Ateboh (2016: 54) emphasized that if library products or services did not meet users' needs or expectations, dissatisfaction with the products or services were assumed. Users' satisfaction comes from the different information resources and services the library provides. The availability of qualitative resources and services has a significant impact on users' satisfaction in the library.

5.18 Familiarity with e-resources

Question 17 was an open-ended question which requested students to state with which e-resources they were familiar. As only nineteen students responded, no generalization could be made. The nineteen responses received are reflected in Table 5.6 and show that students have been most familiar with the university website, other websites, e-books and e-documents.

Table 5.6: Familiarity with e-resources

Responses	Score
Website (MAUTECH), MAUTECH portal, website	3
E-books	3
E-documents (projects, dissertations, theses)	3
E-journals	2
Wikipedia, encyclopaedias	2
Google Books	1
Databases	1
E-newspapers	1
Ask.com	1
E-dictionaries	1
E-materials (slides, memos, letters)	1
Total	**19**

5.19 Frequency of e-resource usage

To verify data collected from the previous question, a list of e-resources was provided and students were requested to indicate how often (never, seldom, monthly, weekly or daily) they used them. Knowledge of the frequency of e-resources usage might assist the university library and librarians to prioritise desired resources. The frequencies of e-resources usage are summarized in Table 5.7.

Table 5.7: Frequency of e-resource usage

Resources	Never	Seldom	Monthly	Weekly	Daily	Total
E-newspapers	182 (23.5%)	60 (7.7%)	101 (13%)	125 (16.1%)	308 (39.7%)	776
E-journals	203 (30.7%)	114 (17.3%)	104 (15.7%)	156 (23.6%)	83 (12.6%)	660
Database with journal articles	189 (31.3%)	119 (19.6%)	104 (17.1%)	114 (18.9%)	82 (13.5%)	608
Research databases	187 (28.9%)	106 (16.4%)	109 (16.9%)	137 (21.2%)	107 (16.6%)	646
Indexing and abstracting databases	161 (25.3%)	154 (24.2%)	130 (20.4%)	90 (14.2%)	101 (15.9%)	636

Repositories	201 (33.0%)	105 (17.2%)	106 (17.4%)	108 (17.7%)	89 (14.6%)	609
E-books	165 (24.3%)	77 (11.3%)	116 (17.1%)	148 (21.8%)	174 (25.6%)	680
Websites	123 (18.1%)	87 (12.8%)	97 (14.3%)	141 (20.8%)	231 (34.0%)	679
Google Books	93 (13.2%)	113 (16.1%)	131 (18.6%)	158 (22.4%)	209 (29.7%)	704
Google Scholar	103 (15.6%)	115 (17.4%)	163 (24.7%)	142 (21.5%)	137 (20.8%)	660
E-dictionaries	123 (18.5%)	137 (20.6%)	122 (18.3%)	147 (22.1%)	136 (20.5%)	665
E-encyclopaedias	86 (13.9%)	103 (16.6%)	134 (21.6%)	138 (22.3%)	158 (25.5%)	619
E-official publications	124 (18.8%)	116 (17.6%)	176 (26.7%)	152 (23.1%)	90 (13.7%)	658
E-yearbooks	148 (22.5%)	104 (15.8%)	136 (20.7%)	147 (22.3%)	123 (18.7%)	658
Libguides	171 (27.2%)	136 (18.4%)	179 (24.3%)	114 (15.4%)	136 (18.4%)	738
E-theses	150 (27.7%)	92 (16.9%)	111 (20.5%)	94 (17.3%)	95 (17.5%)	542
E-textbooks	196 (31.2%)	67 (10.7%)	46 (7.3%)	150 (23.9%)	169 (26.9%)	628

In correspondence with results from question 12 (5.1%) on the use of resources, daily use of e-newspapers drew the most responses (308). Contrary to this, many respondents (182) never used the said e-newspapers. The same trend can be seen with e-journals, as 203 students have never used e-journals, but 156 respondents used the resources on a weekly basis. A high number of respondents (189 or 31.3%) did not use databases while 201 did not use repositories to find journal articles or research publications. In contrast, websites were used daily by 231 respondents. Google Books usage was also popular, as 209 respondents used it daily. In general, it can be seen from Table 5.7 that respondents used predominantly e-newspapers, websites, e-textbooks and Google Books.

5.20 Accessing e-resources

It is imperative for students to have access to the Internet all hours of all days of the week to perform well academically. That is why Joshua, Obille, John and Shuaibu (2016: 65-66) recommended that various e-learning platforms be provided at MAUTECH. These platforms should facilitate collaborations between academics and students when a robust Internet access environment is provided. Against this backdrop, students were asked to indicate where e-resources were accessed. The variation in totals for each e-resource was due to respondents responding only to the e-resources known to them. Results related to accessibility to e-resources are presented in Table 5.8.

Table 5.8: Accessing e-resources (N = 7 849 with multiple responses)

Resources	Ibrahim Babandiga Library	At my department	In my school/faculty	At home	Not applicable	Other	Total
E-newspapers	357 (51.8%)	119 (17.3%)	76 (11.0%)	60 (8.7%)	14 (2.0%)	63 (9.1%)	689
E-journals	109 (22.9%)	162 (33.9%)	98 (20.5%)	66 (13.8%)	18 (3.8%)	24 (5.0%)	477
Databases with journal articles	118 (17.3%)	144 (21.1%)	177 (25.9%)	77 (11.3%)	21 (3.1%)	145 (21.3%)	682
Research databases	142 (27.2%)	84 (16.1%)	138 (26.4%)	88 (16.9%)	31 (5.9%)	39 (7.5%)	522
Indexing & abstracting databases	137 (24.8%)	140 (25.3%)	113 (20.4%)	97 (17.5%)	38 (6.9%)	28 (5.0%)	553
Repositories	121 (24.2%)	111 (22.2%)	94 (18.8%)	92 (18.4%)	38 (7.6%)	43 (8.6%)	499
E-books	133 (22.9%)	149 (25.7%)	92 (15.9%)	95 (16.4%)	46 (7.9%)	64 (11.0%)	579
e-theses / dissertations	103 (20.6%)	100 (20.0%)	109 (21.8%)	100 (20.0%)	33 (6.6%)	54 (10.8%)	499
E-dictionaries	164 (29.8%)	96 (17.4%)	128 (23.2%)	70 (12.7%)	52 (9.4%)	41 (7.4%)	551

105

E-encyclopaedias	72 (15.3%)	123 (26.0%)	98 (20.8%)	71 (15.0%)	57 (12.1%)	51 (10.8%)	472
E-governmental publications	122 (20.2%)	103 (17.0%)	152 (25.1%)	105 (17.4%)	55 (9.1%)	68 (11.2%)	605
E-yearbooks	88 (16.9%)	84 (16.2%)	129 (24.8%)	101 (19.4%)	60 (11.5%)	58 (11.2%)	520
Libguides	119 (23.9%)	73 (14.7%)	91 (18.3%)	88 (17.7%)	70 (14.1%)	56 (11.3%)	497
E-textbooks	257 (36.5%)	121 (17.2%)	95 (13.5%)	71 (10.1%)	46 (6.5%)	114 (16.2%)	704
Total	**2042 (26.0%)**	**1609 (20.5%)**	**1590 (20.3%)**	**1181 (15.1%)**	**579 (7.4%)**	**848 (10.8%)**	**7849 (100%)**

Results indicated that respondents used the MAUTECH library the most (26.0%) to access e-resources, especially e-newspapers (51.8%) and e-textbooks (36.5%). E-resources of faculties and departments were utilized by 20.3% and 20.5% of students respectively. On the other hand, 579 (7.4%) respondents did not access e-resources at all. Quite a number of students opted for the 'Other' option, indicating that other places outside of the university or their homes were used to access e-resources.

5.21 Impact of e-resources

Determining the impact of e-resources on respondents is crucial because research and academic pursuits in the universities generally depend on e-resources utilisation, considering the numerous benefits of e-resources over conventional sources of information such as the convenience of accessing resources, portability, timeliness of searching and sending articles, and the high level of interactivity. Table 5.9 displays the impact of e-resources used by the respondents. The variation in totals for each e-resource is perhaps due to respondents responding only to the e-resources known to them.

Table 5.9: Impact of e-resources

Resources	Easier to find relevant information	Easier to keep up to date with developments in my discipline	Broadened the focus of my studies/ research	Reduced my study time	Reduced time spent browsing for information	Not applicable	Other	Total
E-newspapers	451 (60.4%)	107 (14.3%)	86 (11.5%)	50 (6.7%)	29 (3.9%)	12 (1.6%)	12 (1.6%)	747
E-journals	112 (26.2%)	120 (28.0%)	114 (26.6%)	20 (4.7%)	32 (7.5%)	23 (5.4%)	7 (1.6%)	428
Databases with journal articles	101 (20.9%)	103 (21.3%)	130 (26.9%)	78 (16.1%)	32 (6.6%)	26 (5.4%)	14 (2.9%)	484
Research databases	107 (19.5%)	132 (24.1%)	131 (23.9%)	73 (13.3%)	69 (12.6%)	25 (4.6%)	11 (2.0%)	548
Indexing and abstracting databases	107 (16.6%)	170 (26.4%)	173 (26.9%)	83 (12.9%)	64 (9.9%)	29 (4.5%)	18 (2.8%)	644
Repositories	106 (19.9%)	115 (21.5%)	118 (22.1%)	89 (16.7%)	43 (8.1%)	46 (8.6%)	17 (3.2%)	534
E-books	104 (20.1%)	101 (19.5%)	124 (23.9%)	86 (16.6%)	47 (9.1%)	32 (6.2%)	23 (4.4%)	517
E-dissertations / theses	89 (15.2%)	135 (22.9%)	140 (23.9%)	94 (16.0%)	56 (9.5%)	45 (7.7%)	28 (4.8%)	587
E-dictionaries	103 (19.6%)	89 (16.9%)	129 (24.6%)	100 (19.0%)	61 (11.6%)	25 (4.8%)	18 (3.4%)	525
E-encyclopae-dias	90 (17.4%)	90 (17.4%)	118 (22.9%)	80 (15.5%)	84 (16.3%)	36 (6.9%)	18 (3.5%)	516
E-governmental publications	114 (19.6%)	103 (17.7%)	154 (26.5%)	88 (15.1%)	52 (8.9%)	45 (7.7%)	25 (4.3%)	581
E-yearbooks	95 (18.1%)	98 (18.7%)	104 (19.9%)	81 (15.5%)	62 (11.9%)	49 (9.4%)	34 (6.5%)	523
Libguides	89 (18.7%)	81 (16.9%)	84 (17.6%)	84 (17.6%)	51 (10.7%)	51 (10.7%)	37 (7.8%)	477
E-textbooks	264 (38.9%)	94 (13.9%)	93 (13.7%)	40 (5.9%)	52 (7.7%)	57 (8.4%)	78 (11.5%)	678

107

Total	1932	1538	1698	1046	734	501	340	7789
	(24.8%)	(19.7%)	(21.8%)	(13.4%)	(9.4%)	(6.4%)	(4.4%)	(100 %)

Results presented show that most students (24.8%) acknowledge that by using e-resources it is "easier to find relevant information". The impact of e-resources is also reflected by 21.8% of students indicating that "e-resources have broadened the focus of their studies/research" and by 19.7% that "e-resources made it easier for them to keep up to date with developments in their discipline". These findings indicate that students find it easy to search for e-resources. Findings, however, again indicate that 501 students are either not aware of or are not utilizing e-resources, pointing perhaps to the need of awareness campaigns or training needed. In general, the results are indicative that e-resources have made information retrieval easier and broadened research activities at the university. This corresponds with other studies on e-resources utilization (Ahmed and Al-Reyaee 2017: 6-7, 11-12, 14; Aravind 2017: 85, 86, 88; Odunlade 2017: 1, 3; Owolabi, Idowu, Okocha & Ogundare 2016: 30; Patel and Patel 2017: 61). 'Other' connotes other reasons for e-resource impact beside the ones mentioned earlier, such as access, searchability, speed, interaction and flexibility.

5.22 Training in accessing library resources

Information literacy programmes enhance the information retrieval skills of library users and equip them with the ability to navigate e-resources provided by libraries. To determine the extent of training received, respondents were asked if they had been trained in using both printed and e-resources. Respondents were given the option to agree or disagree to the assertion. Figure 5.11 presents results related to the responses of students on training in accessing resources.
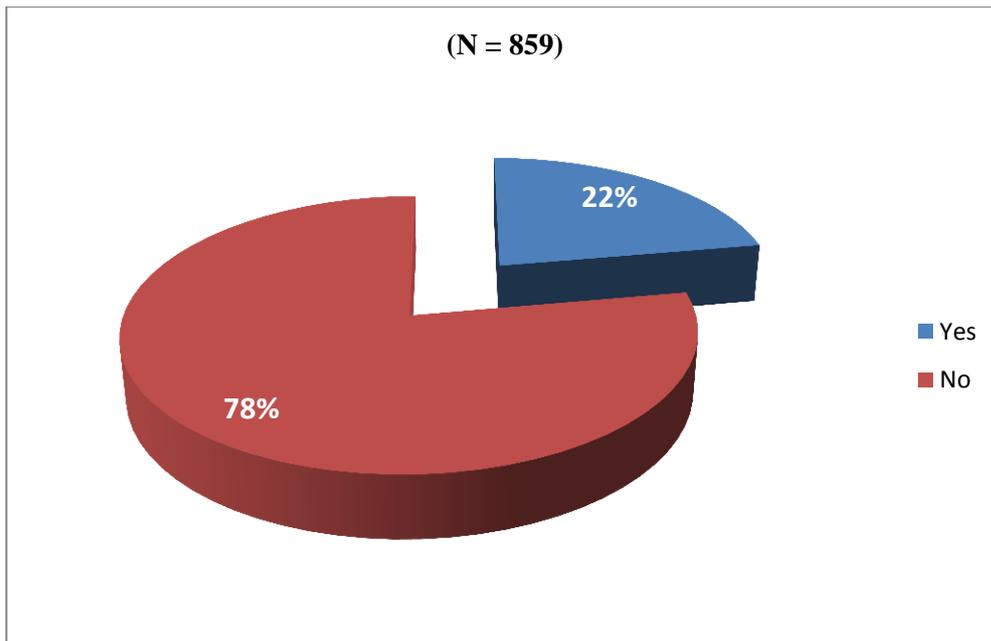
Figure 5.11: Training in accessing library resources

Figure 5.11 shows that the majority (668) of respondents did not have any training or orientation to equip them with the requisite skills in searching for resources proficiently. In other words, most students access e-resources based on a trial and error basis. Regardless of training offered by librarians to both under- and postgraduate students every semester, only 191 (22%) of the respondents acknowledged to receiving training in accessing resources. This trend corresponded with findings, among others, by Daramola (2016) who confirmed that undergraduate students from the University of Technology Library, Akure, Nigeria had inadequate orientation and training in using electronic resources.

5.23 Places of training

An open-ended question was posed to the 191 respondents who had received training. They were asked to specify where these training sessions were held. The nine responses received are summarised in Table 5.10.

Table 5.10: Places of training (N = 9)

Theme	Responses	Score	Percentage
Commercial training centres	Computer training centre, Servicecom, telecommunications centre, Guru Computer Centre Hong LGA, Outside the university	5	55.6%
Cybercafé	At the cybercafés	1	11.1%
University campus	Through lecturers and colleagues, at the university ICT centre, Department of General Studies (GST 107)	3	33.3%
Total		**9**	**100%**

Five students had training at computer training centres and one at a cybercafé. Three respondents received training from lecturers or colleagues on campus. Responses of the students indicated that training was not library-based but computer-based. In line with this reasoning, Rohatgi, Scherer and Hatlevik (2016: 103-104) postulated that the application of ICTs in diverse locations like schools or homes, for purposes of recreation, work and school-related activities, might provide enormous opportunities for students to acquire mastery experience in computer and information literacy. Although one of the missions of academic libraries is providing innovative information literacy training, their credence as providers of information literacy training has been often overlooked and neglected (McDonald 2015: 505-506).

5.24 Reasons for no training

Information and library literacy are very important to equip students with skills to efficiently use various information retrieval tools to acquire relevant information. Being an open-ended question, the respondents were allowed to react freely as to why they were not trained. Of the 918 respondents, only 22 respondents commented on this question. The responses received were divided into categories and presented in the following themes: not aware of any training initiatives, had some training, lack interest in the training in Table 5.11.

Table 5.11: Reasons for no training (N = 22)

Theme	Responses	Score	Percentage
Not aware of any training initiatives	I am not aware of any training, no unity design for such training in the library, I have never been invited even for ones, no training class was organized, not participating in any library activities, I wasn't informed if there is any, there was no publication within the university and many don't know if there was any such training in the library.	13	59%
Had some training	I rely on my personal experience, I learn on my own, I was taught in class, I used my experienced.	4	18.2%
Lack interest in the training	I am not interested in training, I have no time, because am not interested, I am not available, I don't visit the library at all, Am not interested in the library	5	22.7%
Total		**22**	**100%**

Results revealed that the majority of students (13) were interested in library training but were unaware of training initiatives due to not being invited or not seeing invitations to attend. Five (22.7%) students showed no interest while four students relied on their personal experience or built further on training received during a lecture. Research by scholars like Singh, Malik and Singh (2016: 176) showed that if students did not get marks or credits for it, they would not attend training initiatives. The Ibrahim Babangida library should, therefore, consider gaining the cooperation of the MAUTECH Senate to embed information literacy training in the curriculum.

5.25 Journal articles read during the previous semester

Journal article reading should be part of a student's academic activities. Students read articles in order to write assignments, proposals, seminars, research projects, dissertations or theses.

111

Taking this into cognizance, respondents were asked to record the number of scholarly journals they had read during the previous semester of study. Options provided were 0, 1-5 and more than five journal articles. Figure 5.12 provides details of the responses.
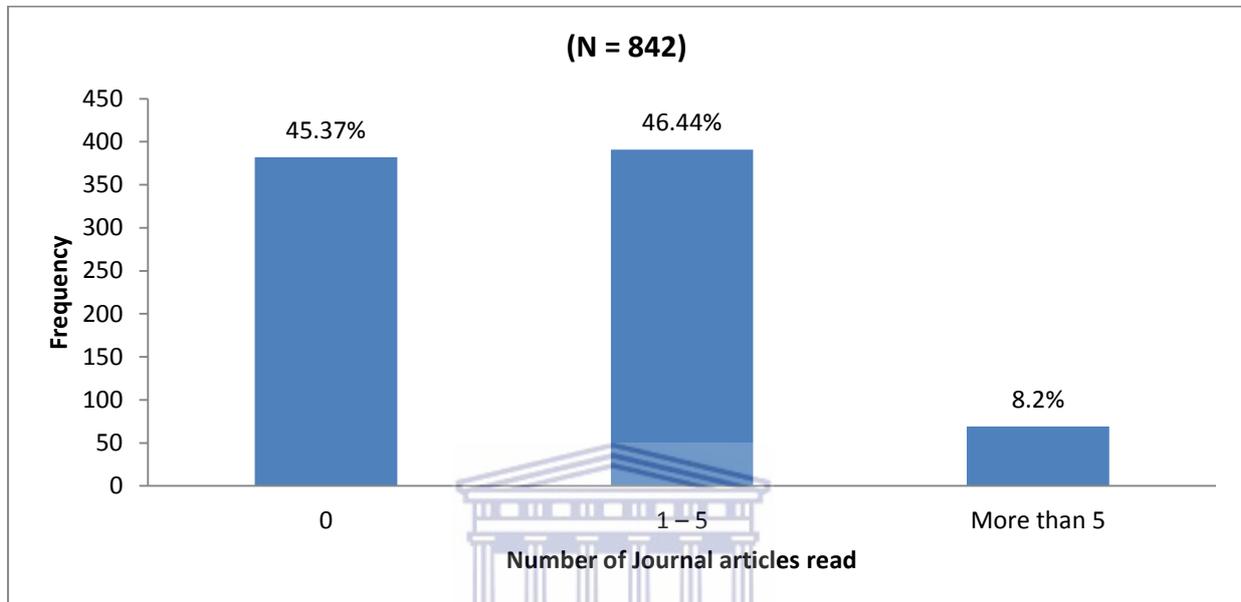
Figure 5.12: Journal articles read previous semester

Figure 5.12 reflects that almost the same number of students either read none or 1-5 journal articles during the previous semester. Only 69 (8,2%) students read more than five journal articles. In contrast, 382 respondents (45,37%), did not read any journal articles. These findings corresponded with those of Oluwaseye and Abraham (2013: 156) who explained that respondents lacked search skills and did not know how to find relevant articles.

5.26 Retrieving journals articles

Respondents were asked to indicate how journal articles were retrieved by choosing one or more from the following options: photocopies from printed journals, e-journals, Google, Open Access journals, Refworks or other. Results are summarised in Figure 5.13.

112
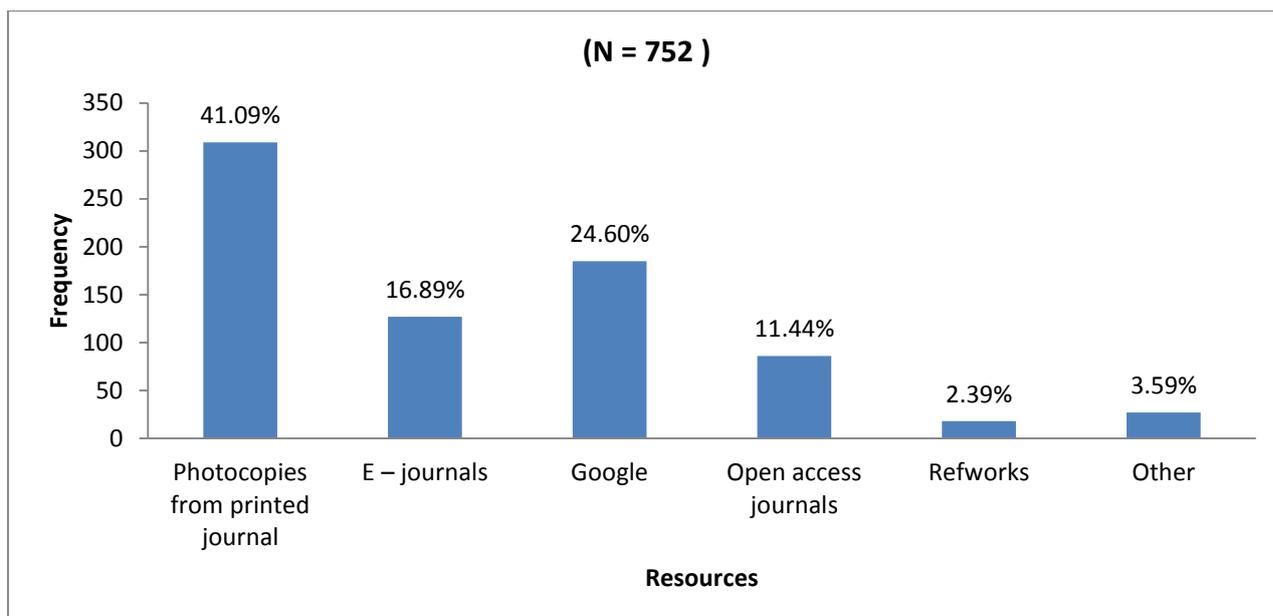
Figure 5.13: Retrieving journal articles

Results from the 752 respondents indicate the majority 309 (41%) of respondents access journal articles by obtaining photocopies from a printed journal. The reason is probably because it is normal practice for lecturers at MAUTECH to provide printed copies of copyrighted journal articles to students. The fact that Google has been used by 185 (24.6%) students to find journal articles corresponds with a number of studies concluding that students do not want to waste time trying to locate information and therefore, prefer to use Google for all their academic information needs (Behrends 2012; Perruso 2016; Sadeh 2007). The low percentage of students (11.4%) using open-access directories may be because of students not knowing about the directories or not knowing how to access them. The reason for Refworks to be used by only eighteen students may be because the university does not subscribe to it.

5.27 Ease of journal article retrieval

To determine ease of accessing journals, respondents were asked an open-ended question to find out whether they found the retrieval process technically difficult. Table 5.12 summarises the twelve respondents reflecting both ease of and difficulty in retrieving journal articles.

113

Table 5.12: Ease of journal article retrieval (N = 12)

Easy retrieval	*I find it easy with the help of e-materials*
	Sometimes I find it easy
	It is easy because I search on Google
	I find it easy and soft because am up dated and current with modern technologies
	No, because Google is easy to use
Difficult retrieval	*I find it difficult because I don't have access to such things before*
	Well, to some extent it is difficult
	I find it difficult because of unstable network
	Sometimes I find it difficult due to the un-stability of their network
	Difficult because no fund to purchase the materials online
	I find it difficult to do so because there is no adequate Internet service and power supply
	I didn't find it easy because there are no free Wi-Fi services

Noteworthy is that lack of free access to the Internet was the dominate reason for students finding the retrieval process difficult.
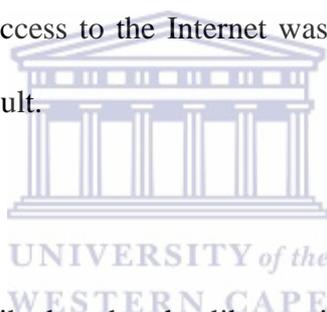
5.28 ScienceDirect usage

ScienceDirect, previously subscribed to by the library, is a database providing access to international scientific and technical journals. Question 27 was asked to ascertain whether the students were aware of and using the ScienceDirect database. Figure 5.14 presents results according to never, seldom, often or other.

114
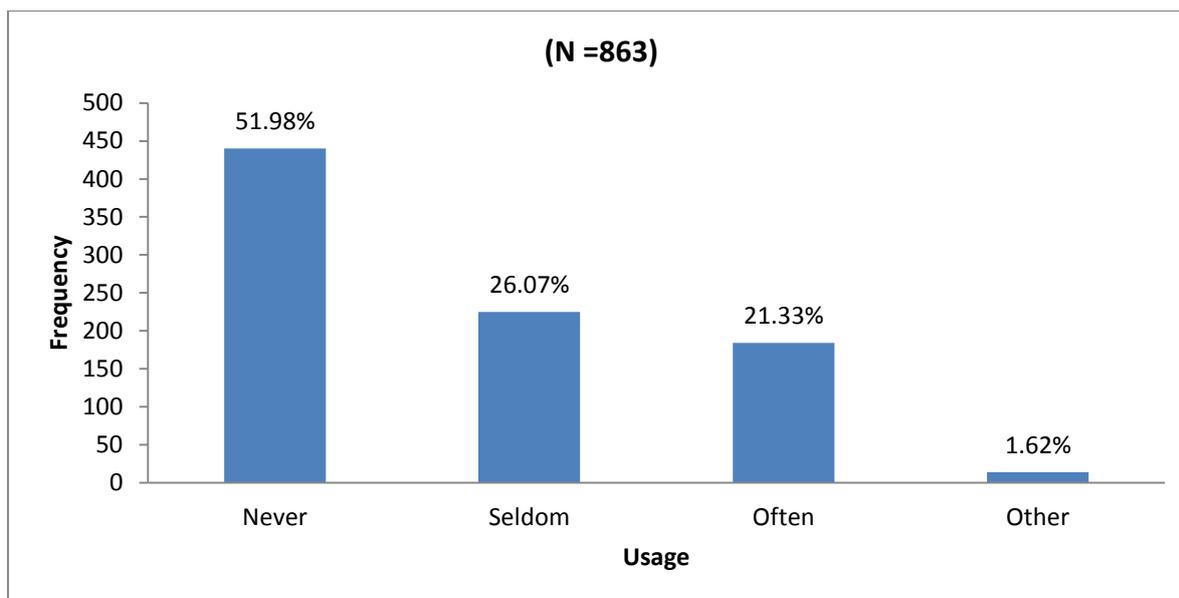
Figure 5.14: ScienceDirect usage

Results show that the majority of students (52%) have never used the ScienceDirect database, 26% seldom use it, while the minority (21.3%) often use this database. The reason why 14 respondents indicate the "Other" option may be that they use other databases instead of ScienceDirect.
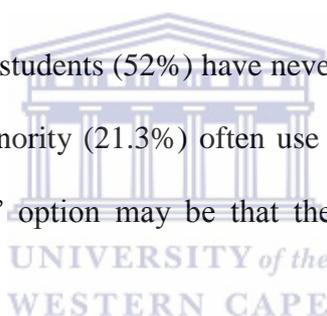
5.29 Reasons for utilizing ScienceDirect

Respondents were asked in the subsequent open-ended question to supply reasons for using ScienceDirect. Although 33 responses were received, interestingly 22 reflected reasons for not using the database. Those reasons can be divided into eight categories: no training to use it (6 responses), not relevant to field of study (4 responses), unawareness (3 responses), insufficient network (2 responses), no time to use it (2 responses), not licensed in the library (2 responses), database not trustworthy (2 responses) and not enough computers (1 response). This is contrary to Kwafoa, Osman and Afful-Arthur (2014) as well as Nisha and Ali (2013) reporting that over 90% of users are aware of databases in their institutions (Indian Institute of Technology, Delhi and Delhi University and University of Cape Coast, Ghana). Reasons

115

for using ScienceDirect have been divided into four main themes, namely the database is easy to use, supplies relevant and additional information, supplies up-to-date information and that students prefer using e-resources.

Table 5.13: Reasons for utilizing ScienceDirect (N = 11)

Theme	Responses
Easy to use	*Because it is easier and faster to use;*
	Easy and accessible
Supplies relevant and additional information	*The database ScienceDirect makes it easy for me to source relevant information;*
	I get what I want there;
	It is very vital and potential for students and researchers;
	It broadened my brain;
	It is good and help;
	That is the only place where I can get access to more books.
Supplies up-to-date information	*It provide me with the latest happening;*
	It is good for students because it provide them with latest and more information.
Prefers using e-resources	*I love using e-materials.*

5.30 Bibliographic details of journal articles

At MAUTECH, journal articles can be retrieved by using the library card catalogue cabinet. Respondents were asked to indicate if they would be able to find a journal article if the bibliographical details thereof were supplied. The options provided were never, seldom, often, always and other. Figure 5.15 presents results on the use of bibliographic details to find journal articles by 737 students.

116
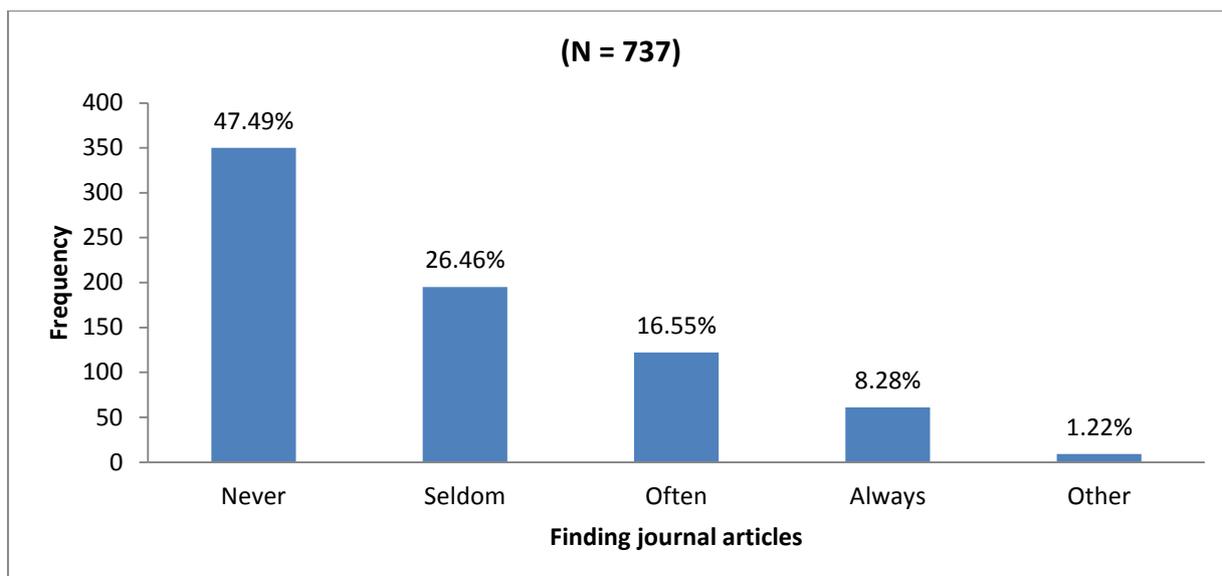
Figure 5.15: Finding journal articles using bibliographic details

The majority of students (47.49%) indicated that they would never find journal articles. One hundred and ninety-five (26.46%) students rated themselves as only seldom being able to find the articles. Of the 737 students who answered the question, 24,83% responded positively by indicating that they would often or always respectively be able to find the required journal articles. Nine respondents (1.22%) opted for the 'other' option, like never at all, don't use library articles and I don't visit the library.

5.31 Preference of e-resources versus printed formats

In the last couple of years libraries moved away from printed journals and books to e-resources. E-resources are cheaper in the end, released before the printed version, more current and more convenient because of their flexibility and interactivity. In order to determine e-resource preference students were requested to indicate whether they would like to migrate from printed to e-resources.

(N = 754)

40.% Yes
60%   No
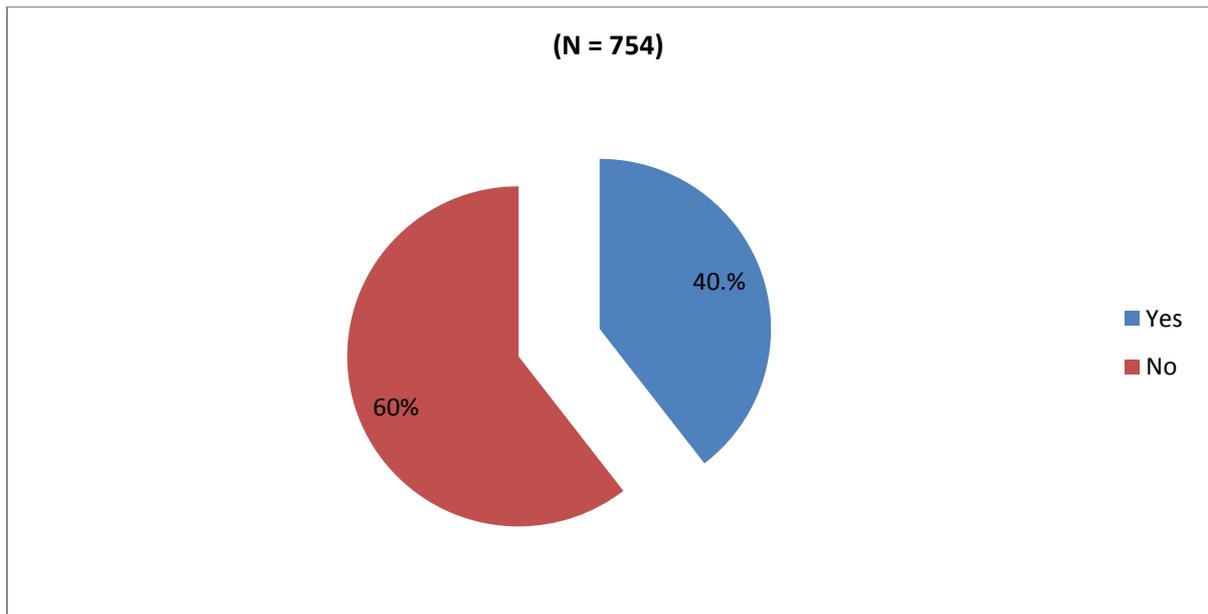
Figure 5.16: Preference printed versus e-resources

Results revealed that students were not ready to forgo the use of traditional and conventional printed resources completely, as the minority (40%) were prepared for the change from printed to e-resources. In support of this, Schaub (2016) stated that the overwhelming majority (92%) of college students in the United States, Slovakia, Japan and Germany expressed preference to reading printed books. Among other reasons for the preference were lack of distractions associated with computers, headaches and eye strain from staring at screens.

5.32 Reasons for preference printed or e-resources

The subsequent open-ended question tried to ascertain reasons for preference of either printed or e-resources. It was interesting that twelve of the 45 respondents stressed that both printed and e-resources should be adopted. The mixed nature of this finding is a fitting paradigm for MAUTECH, since Nigeria is still a developing country. The 45 reasons received could be divided into three categories, namely exclusive preference for printed books, exclusive

118

preference for e-books and willingness to use both versions. Results are reflected in Table
5.14.

Table 5.14: Reasons for preference printed or e-resources (N = 45)

Theme	Responses
Exclusively e-resources	*Because it will be easy to access them; It will help me to have advance reading; Everything is at my disposal in the Internet; For future use*
	I love dealing with soft copies; If they adjust their network setting and management; They (e-resources) will be used in the future
	For easy reading; I hate reading printed and I love and enjoy reading softcopies
	It save time and energy
	Because the Internet browsing and research is easier
	Soft copies made reading and studies easy
	I like e-books for easy accessibility; Because I find e-materials more satisfying
	Portability of e-resources
	It improve studies and easier to access e-books
	They are easily gotten and read again
	Because it will be interested with the e-materials
	Because the world is turning into a global village
	Why not, nobody want to suffer again
Solely printed resources	*Because printed books are very easy to access*
	Because I am more familiar with them (books)
	Due to time and financial
	Because e-books gets one tired easily
	I don't trust MAUTECH management
	I still like printed material
	Some of the books have more information than the e-books
	Because the printed books have reference
	Because it is preferable to read a printed books than the e-materials easily without being affected by the screen
	Printed books are still the best for reading
	Because hard copies encourage student to read hard and it make the student to see any reality
	I doubt the reliability
	Due to virus and other relevant cases may affect the e-materials
Both printed and e-resources	*No, but they will be used for future used*
	Because it will help me in my academic training
	Because it is easier to find reference there

119

Why because I would like to carry out research on a Specific topic given

Because not every person will have access to it

I suggest it should be both printed and e-books; For assignments;

Hard copies are hard to get and costly

It can be prepared to get hard copies

It is very easy sir, because I have the knowledge

You will have access to download as many books as you want; To help those
that do not have soft copies

Nigerian never say and do ... they only say and continue to say another thing
else

5.33 Rating e-resources

Considering the importance of e-resources to the academic advancement of students, a need for them to rate issues regarding their proficiency and their readiness to utilize e-resources was vital. Results reflecting respondents rating eleven statements describing their attitude to e-resources as either strongly disagree, disagree, undecided, agree or strongly agree are presented in Table 5.15.

Table 5.15: Rating e-resources

Responses	Strongly disagree	Disagree	Undecided	Agree	Strongly agree	Total
I am not sufficiently familiar with e-resources	494 (63.8%)	84 (10.9%)	31 (4.0%)	130 (16.8%)	35 (4.5%)	774
I am not confident in using e-resources	312 (41.9%)	232 (31.2%)	86 (11.6%)	62 (8.3%)	52 (6.9%)	744
Materials I need are not available	225 (34.1%)	176 (26.7%)	109 (16.5%)	76 (11.5%)	73 (11.1%)	659
I doubt the permanence of e-resources	88 (13.0%)	156 (23.1%)	155 (22.9%)	180 (26.7%)	96 (14.2%)	675
I doubt the reliability of service providers	87 (12.4%)	148 (21.1%)	155 (22.1%)	190 (27.1%)	121 (17.3%)	701
I don't have the computer skills to retrieve resources	212 (29.0%)	173 (23.7%)	145 (19.8%)	97 (13.3%)	104 (14.2%)	731
MAUTECH experiences too many technical	64 (8.8%)	145 (19.9%)	135 (18.5%)	170 (23.3%)	216 (29.6%)	730

120

problems

Slow internet connections	66	146	146	158	239	
will cause problems	(8.7%)	(19.3%)	(19.3%)	(20.9%)	(31.7%)	755
Quality of e-resources are	201	179	96	137	114	
doubtful	(27.6%)	(24.6%)	(13.2%)	(18.8%)	(15.7%)	727
I will need additional						
software to access	296	147	105	129	84	
e-resources	(38.9%)	(19.3%)	(13.8%)	(16.9%)	(11.0%)	761
I don't know how to save	413	98	58	97	96	
e-resources	(54.2%)	(12.9%)	(7.6%)	(12.7%)	(12.6%)	762

Results revealed that the majority of students strongly disagreed that they were not sufficiently familiar with e-resources (63.8%), did not know how to save e-resources (54.2%) and were not confident in using e-resources (41.9%). These findings affirm that respondents are familiar with e-resources, know how to save them, are confident in using e-resources and will need additional software to access e-resources (38.9%). This implies that most students are able to perform some basic tasks regarding e-resource utilization.
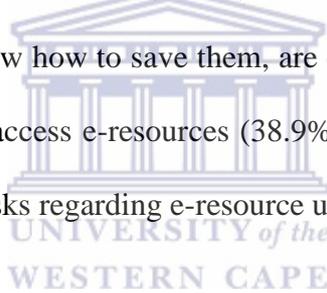
5.34 Need for digitizing library resources

This question listed seven types of library resources and requested respondents to indicate their perception on the need for digitizing these. Results presented in Table 5.16 revealed whether respondents strongly disagreed, disagreed, were undecided, agreed or strongly agreed about digitization of some resources in the library. It could be deducted from the results presented in Table 5.16 that the majority of respondents were of the opinion (agree and strongly agree) that all the resources listed should be digitized.

121

Table 5.16: Digitization of library resources

Resources	Strongly disagree	Disagree	Undecided	Agree	Strongly agree	Total
Local newspaper/ magazine clippings	62 (7.3%)	41 (4.9%)	39 (4.6%)	452 (53.4%)	252 (29.8%)	846
Undergraduate projects	18 (2.2%)	67 (8.1%)	117 (14.2%)	284 (34.5%)	338 (41.0%)	824
Master's dissertations	36 (4.4%)	45 (5.5%)	53 (6.5%)	351 (42.8%)	335 (40.9%)	820
Doctoral theses	32 (3.9%)	59 (7.3%)	40 (4.9%)	209 (25.7%)	472 (58.1%)	812
Rare books	31 (3.7%)	37 (4.5%)	50 (6.1%)	218 (25.9%)	505 (60.0%)	841
Rare documents	22 (2.6%)	48 (5.7%)	46 (5.5%)	216 (25.8%)	506 (60.4%)	838
Research data	28 (3.3%)	30 (3.6%)	30 (3.6%)	197 (23.5%)	555 (66.1%)	840

The fact that students agreed (53.4%) and strongly agreed (29.8%) that "local newspaper/magazine clippings" had to be digitized corresponded with previous findings (5.18, 5.19 and 5.20) indicating that newspapers were important information sources to them. Noteworthy is that students valued the digitization of research data by strongly agreeing (66%) to the process. The majority of the respondents (60% and 60.4%) were of the opinion that rare books and documents respectively should be digitized, indicating that higher education institutions like MAUTECH should ensure that rare resources were treated with reservations and preserved for future generations. The majority of the respondents were very positive toward the library digitization project. The process of digitization would hugely affect the Readers and Serials Services divisions of the library.

5.35 Implementing a library portal

To determine attitudes towards a possible library portal being implemented, respondents had to choose strongly disagree, disagree, undecided, agree and strongly agree. Figure 5.17 reflects the ratings.
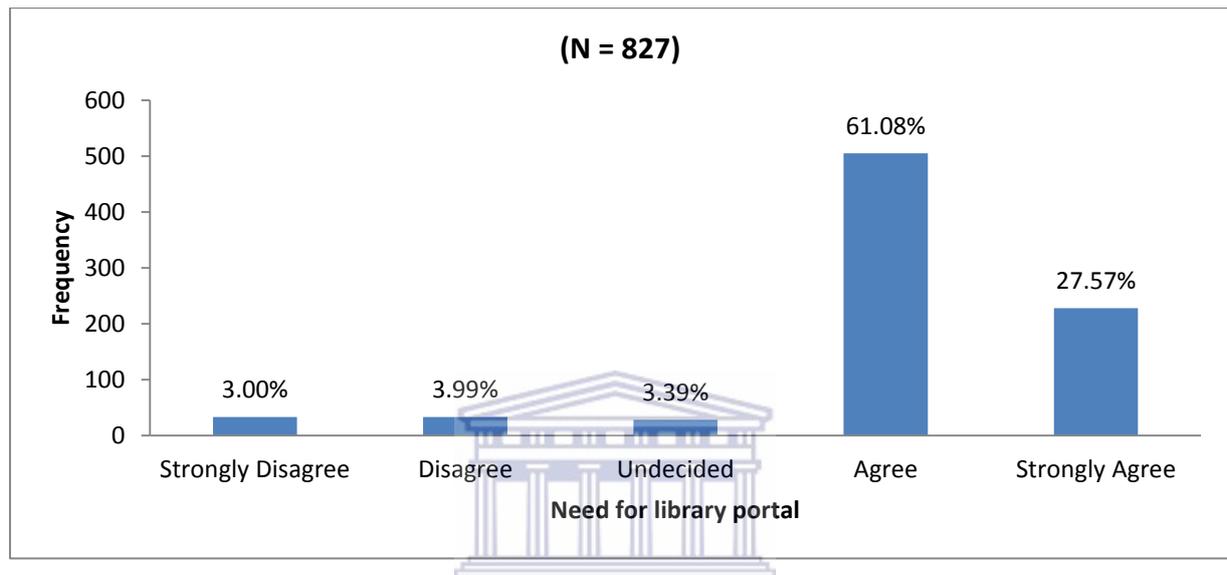
Figure 5.17: Implementing a library portal

Results indicated that of the 827 respondents the majority strongly agreed (27.57%) or agreed (61.08%) that a library portal would provide enhanced sharing and dissemination of resources to the university. Geetha, Mamatha and Farhana (2013: 510-511) explained that 85% of students, researchers and faculty members at the Kuvempu University preferred and used the library portal often. It could be deducted that a conglomerate gateway that provided access to variant resources and services for library users was desired by the respondents.

5.36 Requirements of a library portal

The final question was an open-ended question requiring the respondents to state if a library portal were established, what should be added to the portal design interfaces. Table 5.17

summarises the 34 responses received into the following themes: academic resources, teaching information, general library information, training and orientation, results and access.

Table 5.17: Requirements of a library portal (N = 34)

Theme	Responses
Academic resources	*Updated textbooks*
	More journals
	All the necessary materials should be there, so as to make an appropriate e-library portal
	Text books and materials from different departments, magazine, reference materials
	A lot of e-resources;
	Books relevant to my discipline and many others associated to my academic pursuit
	I will like to see any e-resources that are supposed to be seen there
	All departments e-books including mine
	Everything starting from the history background through all research conducted by staff and students to the very least
	Free and open access to e-books and materials
	Accountancy relevant books
	A good and easy access to books
	Newspapers and research data
	Engineering mathematics books
	Strength of material text books
	All engineering text books and it relevant
	Browse different sorts of academic relevant information
	Academic materials should be provided for researchers and authors
	I want to see the products (portal access and e-resources) whom the university has produced since its establishment
Teaching information	*Students Industrial Work Experience Scheme (SIWES) guidelines*
	Course outlines and relevant textbooks for the course taking by me
	Project samples
	Project site
General library information	*Welcome to MAUTECH e-library*
	MAUTECH email address and their password for login
	The list of all the necessary things (e-resources) in the library
	The progress of MAUTECH
Training & orientation	*Orientation on how to use the resources*

124

Results	*I will like to see my result and other updated information*
	To check result of external exams
Access	*Internet services should be standardized*
	There should be constant electricity to boost access to portal
	There should be Free WIFI on campus to access portal
	Free and open access to e-books and materials
	Availability of Internet to access portal

It is evident that respondents wanted access to books, journals, newspapers, general library information, information on training, academic information and results via the envisaged library portal. It is important to note that several respondents have indicated that for a library portal to be efficient, Internet access and stable electricity supply will be needed.

5.37 Concluding summary

This chapter presented findings from a web-based questionnaire with 35 questions completed by undergraduate and postgraduate students at MAUTECH on ICT proficiency, access to Internet, e-resources adaption, quality and quantity of library resources, information retrieval tools, library digitization processes and the feasibility of establishing a library portal to enhance information access and library services in the institution. Findings can be summarized as follows:

- Most students read below five articles in a semester.

- Flexibility and access to academic information were considered as reasons for using e-resources.

- Students were dissatisfied with the quality and quantity of library resources.

- Students need training on ICT and the utilization of e-resources.

- Current e-resources are insufficient and a reason for users' dissatisfaction with the quantity and quality of library resources.

- The majority of the students preferred printed books to e-books.

125

- The majority of students agreed with digitization of library resources.

- The majority of students agreed to the establishment of a dedicated library portal.

The next chapter will present and interpret data gathered from questionnaires administered to academics at MAUTECH.

CHAPTER SIX

6 DATA PRESENTATION AND ANALYSIS - ACADEMICS

6.1 Introduction

Chapter five presented extensive data collected and analysed from questionnaires completed by students. Chapter six presents, discusses and analyses responses from academics at MAUTECH on e-resources, the implementation and integration of a library portal thereof.

6.2 Academic status

The first question aimed at determining the academic status of the respondents. An understanding of academic status should provide clarity as to titles and ranks of the academic staff who participated in the study. Academic ranking at MAUTECH varies from Graduate Assistant / Lecturer (1), Assistant Lecturer (2), Lecturer II (3), Lecturer I (4), Senior Lecturer (5), Associate Professor (6) and Professor (7). Figure 6.1 presents details of academic statuses.
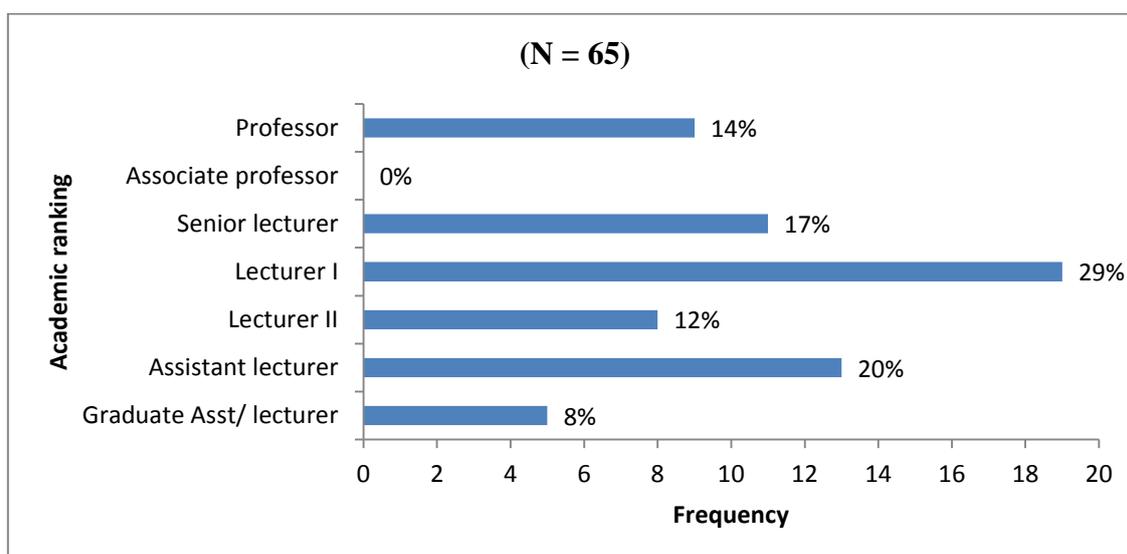
Figure 6.1: Academic status

127

Figure 6.1 shows that the rank of the majority (19) of the academic staff was that of Lecturer I (29%). This was followed by thirteen assistant lecturers and eleven senior lecturers. Most academics in the posts from Graduate Assistant/Lecturer, Assistant Lecturer, Lecturer II and Lecturer I were generally teaching more courses, especially year one to three which had more students in attendance. Although qualification, time in rank and publications were considered for promotion, training and mentorship will be needed to move the majority of the academics from Lecturer I to professor. This analysis concurred with Curtin, Malley and Stewart (2016) who stressed that institutions were to provide the capacity for academics to enhance their career skills through continued training and mentorship programmes.

6.3   Teaching experience

Academic teaching experience is closely related to status. The more experienced, the better the quality of teaching should be. In support of this, Elstad and Christophersen (2017: 2) argue that the sense of mastery increases with experience and that the number of years of teaching experience has a positive influence on performance. Table 6.1 depicts details of the working years of MAUTECH academics.

Table 6.1: Teaching experience (N = 65)

Years	Frequency	Percentage
1-5 years	25	38%
6-10 years	10	15%
11-15 years	14	22%
16-20 years	6	9%
21-25 years	1	2%
25 years and above	9	14%
Total	**65**	**100%**

128

The most participants (38%) had between one to five years of experience and were therefore not seasoned lecturers.

6.4   Schools and departments

To determine if the respondents were representative of the entire university they were requested to indicate the schools to which they belonged.
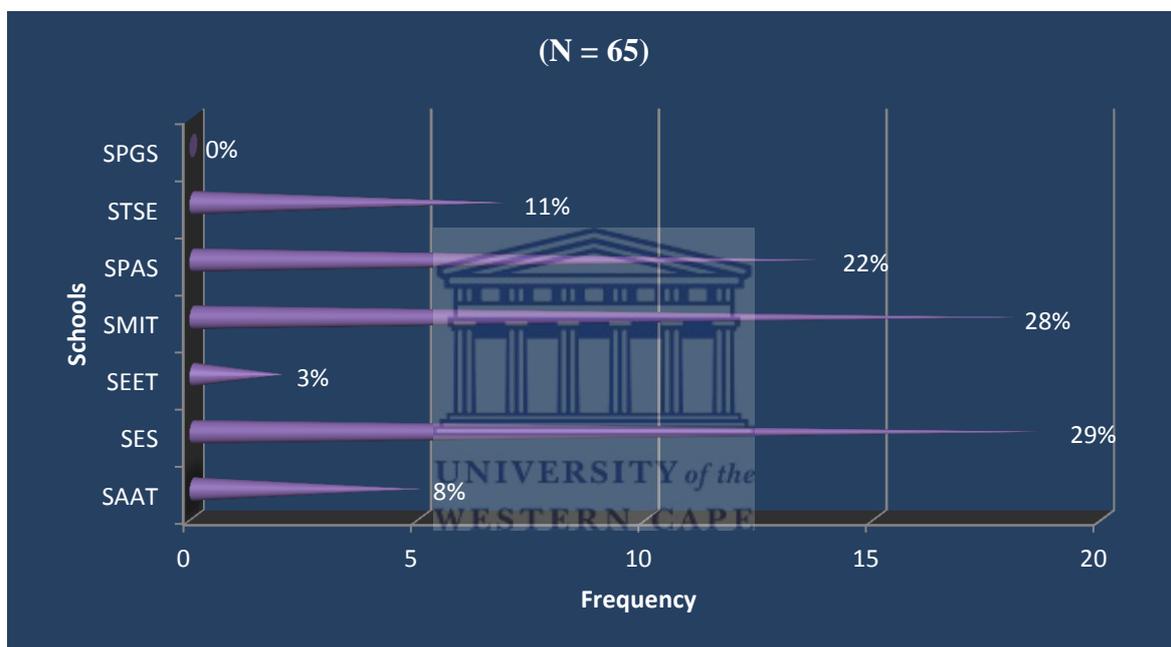
Figure 6.2: Schools

Figure 6.2 indicated nineteen (29%) of the respondents came from the School of Environmental Sciences (SES), eighteen (28%) from the School of Management and Information Technology (SMIT) and fourteen (22%) from the School of Pure and Applied Sciences (SPAS). Although not equal in numbers, all schools were represented with the exception of the School of Postgraduate Studies (SPGS) which is an administrative office for postgraduate programmes of the university.

129

Table 6.2 enlists the departments within the schools listed in Figure 6.2. From the twenty-one departments listed, the most academics (7) were from the Department of Economics in the School of Management and Information Technology, while five belonged to the departments of Survey and Geo Informatics, Industrial Design and Physics departments. The respondents represented 21 of the total number of 42 departments.

Table 6.2: Departments (N = 65)

Departments	Score	Percentages
Economics	7	4.6%
Survey and Geo-informatics	5	3.3%
Industrial Design	5	3.3%
Physics	5	3.3%
Agric. Economics and Extension	4	2.6%
Science Education	4	2.6%
Statistic and Operational Research	4	2.6%
Chemistry	4	2.6%
Accountancy	4	2.6%
Library Science and Information Science	4	2.6%
Management Technology	3	1.9%
Building	3	1.9%
Geography	3	1.9%
U.R.P.	2	1.3%
Agricultural and Environmental Engineering	2	1.3%
Civil Engineering	1	0.7%
Animal Science	1	0.7%
Electrical Technology	1	0.7%
Biochemistry	1	0.7%
Computer Science	1	0.7%
Forestry and Wildlife Management	1	0.7%

6.5   Courses taught

The primary responsibilities of academics are teaching and supervision. Table 6.3 indicates the results of a question presented to academics to indicate the courses they teach.

130

Table 6.3: Courses currently taught (N = 65)

Departments	Academics	Number of courses
Civil Engineering	1	2
Agric. Economics and Extension	4	15
Electrical Technology	1	3
Science Education	4	12
U.R.P.	2	16
Building	3	3
Survey and Geo-informatics	5	19
Geography	3	11
Industrial Design	5	23
Physics	5	20
Chemistry	4	24
Statistics and Operational Research	4	12
Library Science and Information Science	4	4
Economics	7	11
Management Technology	3	6

Table 6.3 confirmed the number of courses taught by the academics. Chemistry had the highest course points with 24 courses taught by four academics. This was closely followed by Industrial Design with 23 courses taught by five academics. This analysis revealed that most departments had accredited programmes and courses approved by the National Universities Commission, Nigeria (2017: 13).

6.6   Places of Internet access

The next question was asked to determine where academics accessed the Internet. Respondents were allowed to choose more than one from the options: access in my office, access in the university quarters, access at home, access in the library and access in other places.

Table 6.4: Places of Internet access (N = 98 with multiple response)

Theme	Responses	Frequency	Percentage
Access in office	*In my office*	30	30.6%
Access in the university quarters	*In the university quarters where I stay*	6	6.1%
Access at home	*At home*	38	38.8%
Access to the library	*In the university library*	7	7.1%
Access in other places	*On the way* *Business centres* *Personal computer through mobile device*	17	17.4%
Total		**98**	**100%**

Table 6.4 revealed that from the 98 responses received, the majority (38.8%) accessed the Internet at home compared to the 30.6% who accessed it in their offices. With the advent of technology, this accessibility could be attributed to the use of modems and mobile phones for the data subscription. Only 7.1% of academics used the university library to access the Internet. The relatively low (17.4%) accessibility in other places can be contributed to the lack of extensive Wi-Fi installation at the university. In support of this assertion, Anie (2015) has confirmed that, due to insufficient funds, Internet access is grossly inadequate in academic communities.

6.7 Internet access

In order to determine the quality of Internet connection in their offices, in the university quarters, at home and at the university library, academics were asked to evaluate it as excellent, adequate or inadequate. Responses are reflected in Figure 6.3.

132
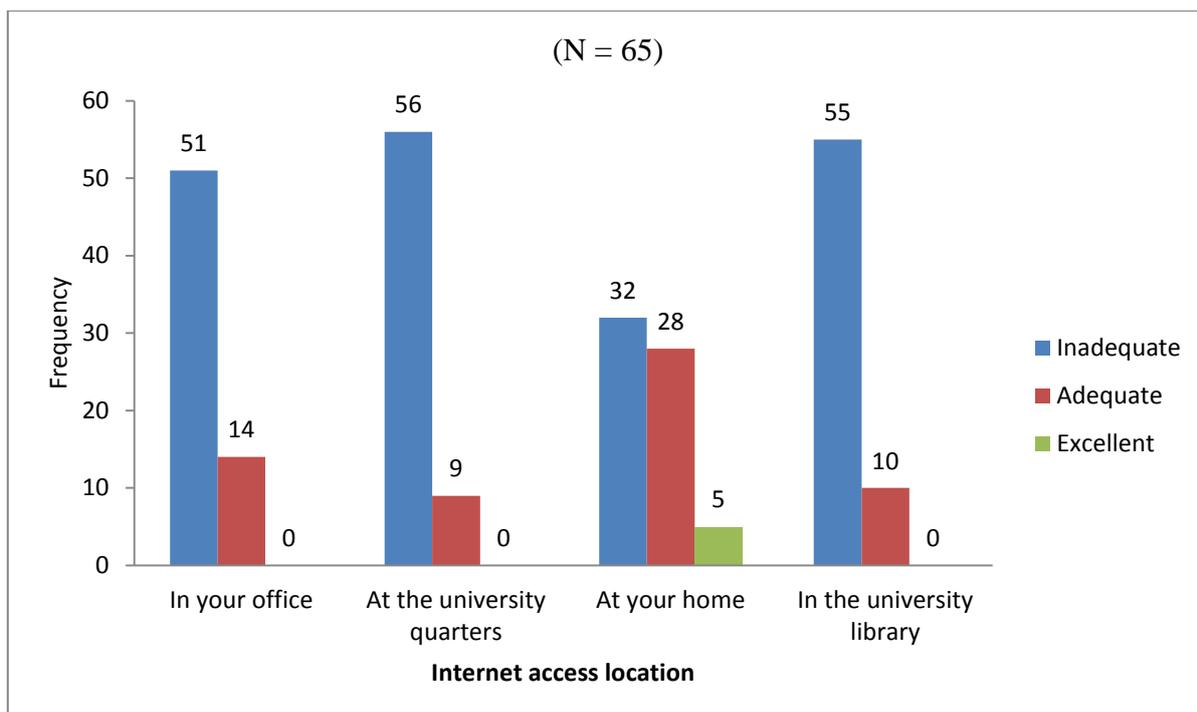
Figure 6.3: Internet access

Figure 6.3 indicates that academics rated the Internet access on campus as insufficient, as access was rated inadequate by 56 in the university quarters, 55 in the university library, and 51 in offices. These results correspond with those of a related study by Ajayi, Shorunke and Aboyade (2014) who have identified lack of Internet access to provide information services to users as a factor hindering the effective use of e-resources in Nigerian higher institutions.

6.8   Possession of computers and laptops

The question was posed to determine if academics owned laptops or computers or used those of the university. Figure 6.4 supplies more details.

http://etd.uwc.ac.za
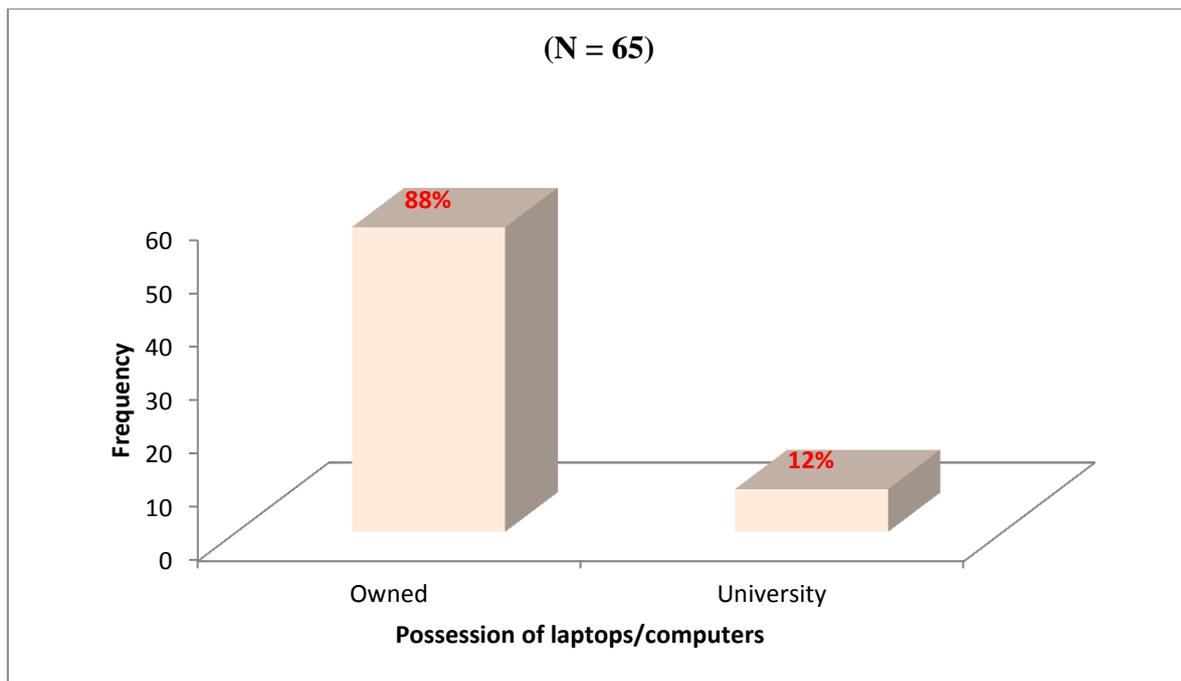
Figure 6.4: Possession of computers

The majority of academics (57) owned personal computers or laptops, while eight used university-owned computers.
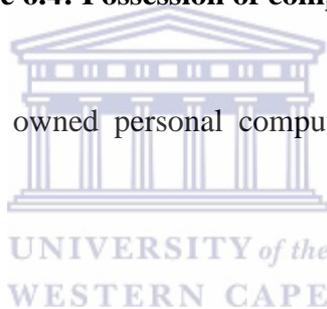
6.9 Finding information

Rao and Mulloth (2017: 12) emphasized that academics with access to a variety of resources have the potential to add value to the higher education institution. To test this statement, an open-ended question requested academics to indicate how they searched for relevant information to compile lecture notes, prepare lectures, do research and progress academically. The seventeen responses received were categorised into three themes, namely online sources, printed sources, and both Internet and printed sources are captured in Table 6.5.

Table 6.5: Finding information

Theme	Responses
Online sources	*I obtained my lecture through browsing i.e. from the Internet*
	Through online materials
	Through Google searching
Printed sources	*Through magazines, current text books and encyclopedia*
	From personal books and book from my colleagues
	From the university library
Both Internet and printed sources	*Internet and the department library (SLIS)*
	Books and internet
	Journal publications (online), textbooks and previous materials related to course taught
	Conferences and seminars
	Owned books, books from the library and Internet materials
	Visiting Cyber café and reading textbooks
	Referral materials, books and the Internet
	Through hard copies and the Internet
	Research journals and relevant websites
	From printed as well as online material.
	Buying textbooks and recharging my modem in other to access the Internet

Table 6.5 shows that the majority of academics adopted a mixed approach to information searching, as they used both printed sources and the Internet. As noted in chapter two, Sarimanah (2016: 52) revealed that technology provided helpful links and devices for improved competence in handling materials and teaching aids.

6.10 Frequency of library visits

This question sought to determine if academics visited the university library to use its resources on a regular basis. Table 6:6 articulates how often academics visit the university library.

Table 6.6: Frequency of library visits (N = 65)

Responses	Frequency	Percentage
Not at all	10	15%
Seldom	39	60%
Monthly	7	11%
Daily	5	8%
Other	4	6%
Total	**65**	**100%**

Table 6.6 informs that the majority of academics who have responded to the question visited the library seldom (60%) or not at all (15%). The four respondents who opted for the "Other" option, all indicated that they visited the library only once in a semester because it was very far away. The low usage corresponded with findings by Ocholla, Mutsvunguma and Hadebe (2016: 12) and might call for library orientation and training to encourage better utilization of library resources and services.

6.11 Reasons for visiting the library

This open-ended question targeted those who acknowledged to visiting the university library and requested them to supply reasons for visiting. The 29 responses received were categorised into the following themes: information for lectures, current awareness, information for publishing, consulting books/journals/newspapers and other reasons.

Table 6.7: Reasons for library visits

Theme	Responses
Information for lectures	*To seek for lecture materials*
	Lecture material
	To get information from there.
	To enhance my career
	To prepare lecture notes and to make research for publication
	In order to get books that I will read in other to deliver lectures to my students
	Get information
Current awareness	*To get latest material*
	To look for new journal articles or current text book.
	To see new books and new development towards research and teaching
	New journal articles & new books
Information for publishing	*To prepared lecture notes and to make research for publication*
	Research for publishing
Consulting books/journals/newspapers	*To read newspapers*
	To have my hand on journal and books related to my field
	To consult books
	Because it has books that are not available in the departmental library
Other reasons	*Because I work there. Enhance my career*
	To send and receive emails
	To see friends
	To see colleagues and other official duties

Those who visited the library did so to consult books, journals and newspapers in search of information for lectures and publishing. Noteworthy was that academics identified using the library for current awareness as well as to see friends and colleagues. This contradicted the study of Eyiolorunshe, Ayooluwa and Eluwole (2017: 119) who asserted that a university library should be robust in its collections and should cater for the information needs of users of the university community to save their time.

6.12 Reasons for not visiting the library

In answering the questions on reasons for visiting the library, academics also provided reasons for not visiting the Ibrahim Babangida Library. The ten responses were:

137

> *The books there are outdated.*

> *The internet service is very poor.*

> *Because it is not adequate in my area of study.*

> *The electricity is also not adequate too.*

> *They lack resources there.*

> *I seldom visit the university library because of inadequate Internet facilities.*

> *Very rare because of poor network around there and at times I go on official task.*

> *Due to limited current materials and this makes my visit highly limited too.*

> *I may not get useful needed information for my research.*

> *Not well equipped.*

The reasons for not visiting the library were because the library has inadequate material (4), Internet access (3), dated resources (2) and inadequate electricity (1).
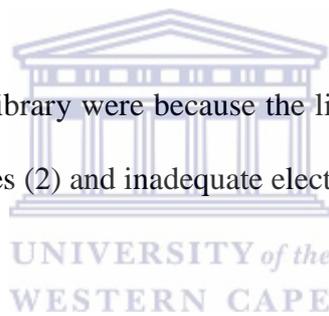
6.13 Library divisions visited

The subsequent question requested respondents to identify which divisions of the university library they frequently visited. Responses are reflected in Figure 6.5.

(N = 65 with multiple responses)
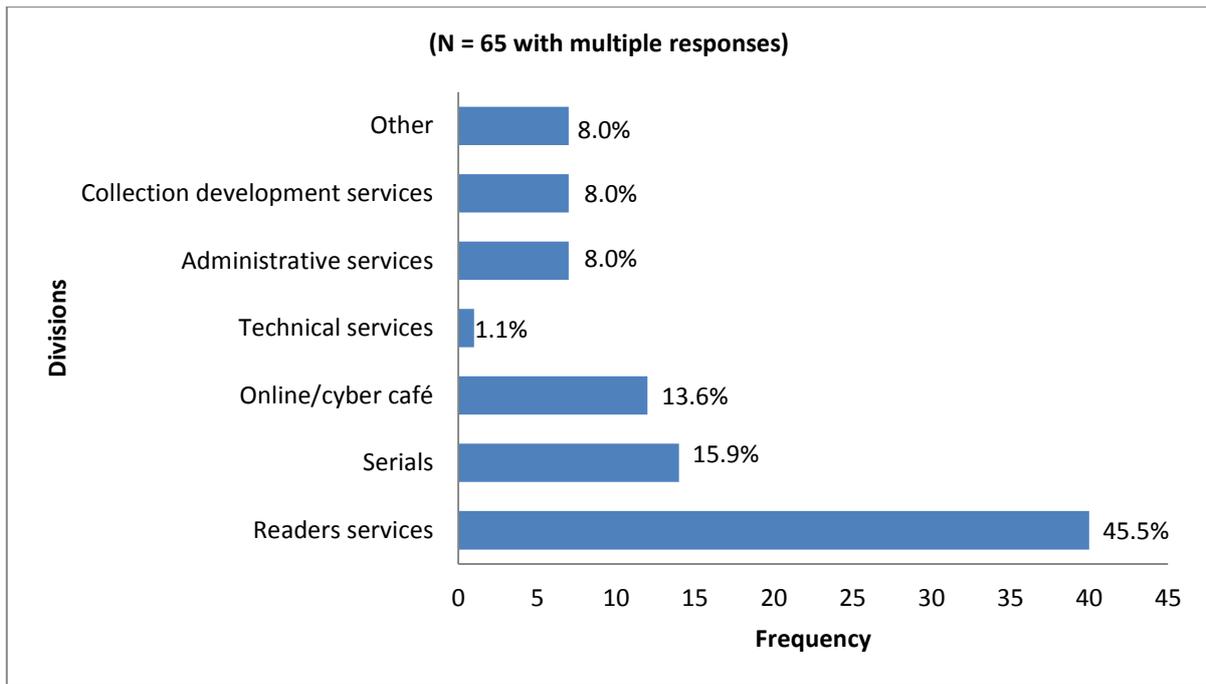
Figure 6.5: Library divisions visited

From Figure 6.5 it can be seen that academics visited more than one division. The division most visited was Reader's Services (45.5%), followed by Serials (15.9%) and the Cybercafé (13.6%). The "Other" was supposed to be any other arena in the library aside from the divisions mentioned. Seven academics opted for this option and explained the reasons as either that they used their departmental libraries or did not visit the library at all. Perhaps respondents might have been ignorant of the fact that the school or departmental libraries were subsets of the university library with library staff designated to work there. As expected, the least visited division was Technical Services, as this division is used by library staff to classify and catalogue resources.

6.14 Rating of Cybercafé

As the Cybercafé is considered the hub of the library, controls the overall electronic operations and is therefore crucial for the access to electronic information, academics were

requested to rate this library division using either very poor, poor, adequate, good, very good or other. Results are reflected in Figure 6.6.
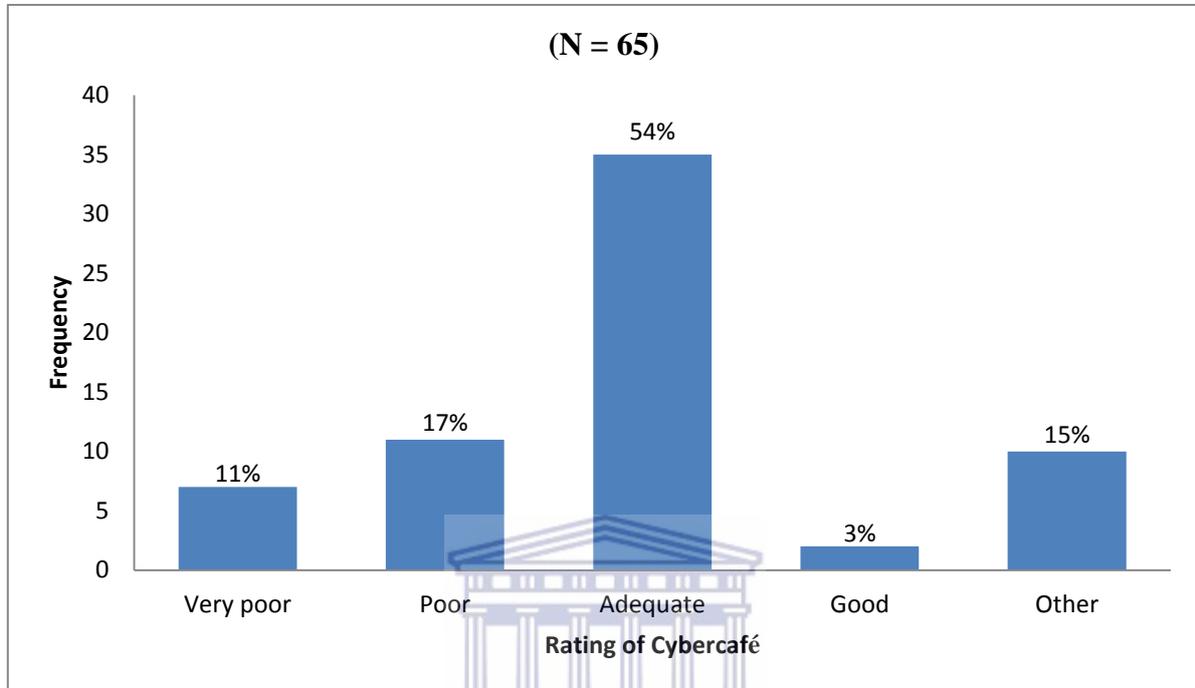
Figure 6.6: Rating of Cybercafé

Although the Cybercafé was recently updated with new equipment, Figure 6.6 showed that the division was rated as good by only two academics. Although the majority (35) of the respondents rated it as adequate, eleven rated it as poor and seven as very poor. The ten respondents who chose "Other" supplied the following reasons: *I do not use it; undecided; not sure; I am using my personal data; I have never visited it; not aware of the existence of the facilities; never use online division; I have not tried it; can't state since I seldom use the library.* Lack of library awareness corresponded with the argument Joshua (2014) made that users underutilised e-resources in the University of the Philippines due to lack of sufficient awareness and training.

140

6.15 Library resources used

An open-ended question was presented to academics to establish which types of resources were utilised. The fourteen responses received are presented in Table 6.8.

Table 6.8: Library resources used (N = 14)

Theme	Responses
Journals and books	*Journal articles and books*
Books	*Text books (hard copies)*
	Books from the shelves
	Books/electronic reference
Newspapers	*Newspapers*
Dissertations	*Students' thesis*
E-resources	*Abstracts and indexes*
	E-resources
Internet access	*Wi-Fi*
	I use the Internet for my resource.
Others	*I don't visit it*
	The ones related to me and relevant the course I taught
	I seldom use the library
	The library is far and is ill equipped

Table 6.8 depicts that academics have made used of journal articles, books, newspapers, e-resources, and have used the library to access the Internet. Three respondents stress that they do not visit the library because it is too far and ill equipped. This is in line with the argument of Oluwaseye and Abraham (2013) stressing that for effective teaching, learning and research in the university, the library is expected to provide standard information resources to its users. Library services provided should be able to motivate academics to want to visit the library for resources to help facilitate teaching and research.

141

6.16 Frequency of library resources usage

Results to the question to determine the frequency (never, seldom, monthly, weekly or daily) at which academics use different library resources are reflected in Table 6.9.

Table 6.9 Frequency of library resources used (N = 65)

Resources	Frequency of use					
	Never	**Seldom**	**Monthly**	**Weekly**	**Daily**	**Total**
Newspapers	12 (18%)	30 (47%)	4 (6%)	6 (9%)	13 (20%)	65 (100%)
Journal articles	4 (6%)	28 (44%)	12 (18%)	12 (18%)	9 (14%)	65 (100%)
Books	5 (8%)	20 (31%)	12 (18%)	6 (9%)	22 (34%)	65 (100%)
Textbooks	4 (6%)	25 (38%)	9 (14%)	5 (8%)	22 (34%)	65 (100%)
Journal abstracts	11 (17%)	30 (47%)	6 (9%)	8 (12%)	10 (15%)	65 (100%)
Undergraduate projects	22 (34%)	34 (52%)	5 (8%)	4 (6%)	0	65 (100%)
Master dissertations	16 (25%)	36 (55%)	8 (12%)	4 (6%)	1 (2%)	65 (100%)
Doctoral theses	13 (20%)	37 (57%)	11 (17%)	4 (6%)	0	65 (100%)
Dictionaries	9 (14%)	34 (52%)	2 (3%)	6 (9%)	14 (22%)	65 (100%)
Encyclopedias	10 (15%)	40 (62%)	3 (5%)	4 (6%)	8 (12%)	65 (100%)
Government publications	13 (20%)	37 (56%)	9 (14%)	5 (8%)	1 (2%)	65 (100%)
Directories	19 (29%)	37 (57%)	5 (8%)	4 (6%)	0	65 (100%)
Yearbooks	18 (28%)	38 (58%)	7 (11%)	2 (3%)	0	65 (100%)
Multimedia	23 (35%)	30 (46%)	4 (6%)	1 (2%)	7 (11%)	65 (100%)

142

The analysis revealed that encyclopaedias, (62%), yearbooks (58%), directories (57%) and doctoral theses (57%) were seldom utilised. Most used on a daily basis were books and textbooks (34%). Noteworthy is that all the sources were to a certain extent (6-35%) not used at all. The reasons for inadequate utilisation might be availability and currency of these resources. Gakibayo, Ikoja-Odongo and Okello-Obura (2013: 1-5) examined the e-resources utilization by students at the Mbarara University Library, Uganda. They looked at the availability of e-resources in the university library, their relevance and extent of use, as well as proffering ways and methods of promoting the use of e-resources by the students. The library invested more in e-resources like e-books, e-databases, e-journals, electronic current awareness services, information subject gateways and the Internet than in printed materials, resulting in a paradigm shift from print to electronic information resources and services and students utilizing these e-resources efficiently.
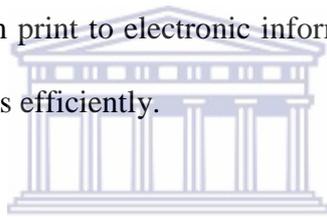
6.17 Information retrieval tools

An open-ended question was asked requesting academics to indicate how they retrieved needed information in the library. The 21 responses received were categorized into the following themes: online, library catalogue and shelves, books/journal articles, photocopies, assistance from the library staff and other sources. Table 6.10 provides details on how academics find needed information in the library.

Table 6.10 Information retrieval tools (N = 21)

Theme	Responses
Online	*By googling online and by using advance textbooks*
	Through googling
	Downloading
	Use of catalogues for books or shelves and also use of computer for online resources
	Downloading and photocopy.
Library catalogue and shelves	*Use of library catalogues and shelf to shelf approach*
	Check books on the subject matters
	Check contents of the text books/journals
	Borrow or read the books there in the library or the journal
	Use of catalogues
	Use of catalogues for books or shelves and also use of computer for online resources
	Checking on the shelves
	Go to the shelves that stocks textbooks relating to any academic department with this/find always the materials needed
Books/Journal articles	*By checking the serials*
	Check contents of the text books/journals
	Borrow or read the books there in the library or the journal
	References, tag, indexes
Photocopiers	*Photocopy*
	Downloading and photocopy
	By photocopying the selected section
Library staff	*Consulting with library staff*
	With the assistance of the library staff
Other sources	*I don't use the library*
	I don't use the university library
	I don't believe that I can find any useful material for my research

The table shows that eight respondents used the library catalogue and checked the library shelve, five used the Internet and four used journal articles and books to retrieve information.

144

6.18 Satisfaction with quantity of library resources

To determine how satisfied academics were with the quantity of library resources, they were requested to rate the collection according to not satisfied, to some extent satisfied or satisfied. Figure 6.7 provides details of their responses.
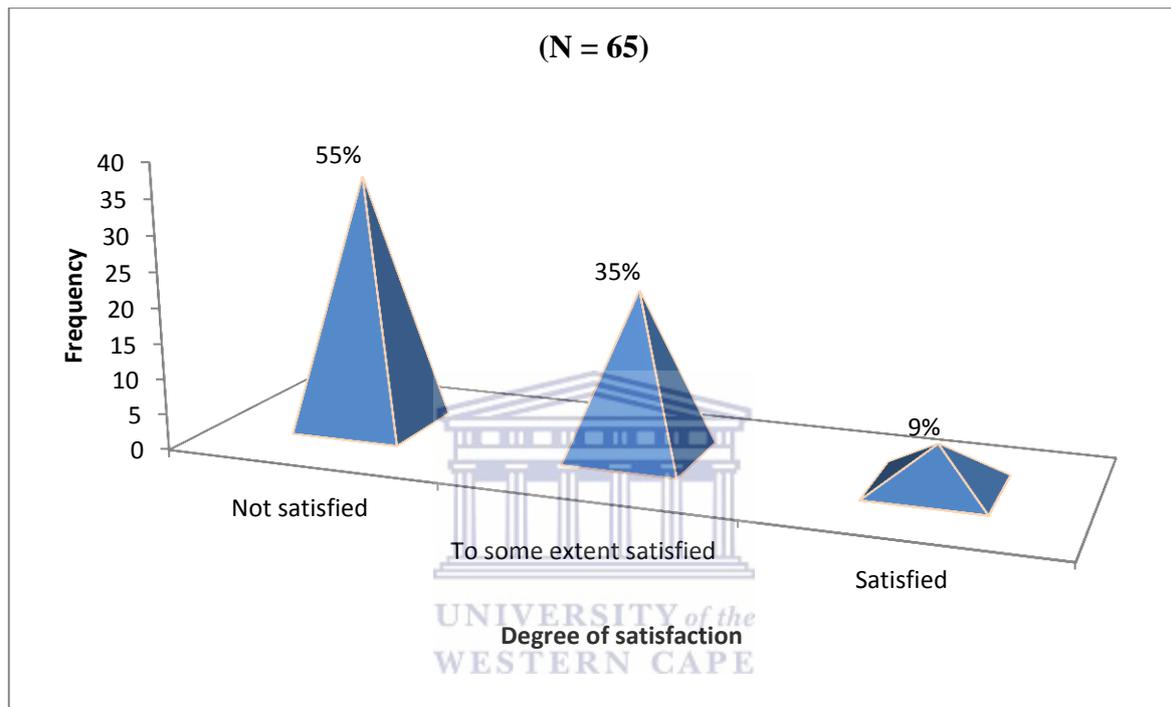
Figure 6.7: Satisfaction with quantity of library resources

The majority of respondents (36 or 55%) were not satisfied, 23 (35%) were relatively satisfied and six (9%) were satisfied with the quantity of library resources provided for them. This is a sign that the library needs to address its collection development in order to prevent discouraging patronage. This finding correlates with the result of students in chapter five where it is stated that 42% of the respondents have not been satisfied with the quantity of resources provided by the library.

6.19 Reasons for satisfaction with quantity of library resources

The subsequent open-ended question requested respondents to provide reasons as to why they were either satisfied or dissatisfied with the quantity of resources provided by the university library. The 27 responses received were first divided into reasons for satisfaction and dissatisfaction. Table 6.11 reflects reasons for satisfaction.

Table 6.11: Reasons for satisfaction with quantity of library resources (N = 5)

Theme	Responses
Satisfaction with library resources	*They are trying but they can still improve on contemporary books*
	At least some of the resources can be seen or accessed
	Am ok with the provided resources
	Have never been disappointed or found not available the books ever wanted
	Because there is enough textbooks on my field of study

Responses reflecting dissatisfaction are reflected in Table 6.12 and grouped into three themes, namely lack of adequate resources, dated resources and other reasons.
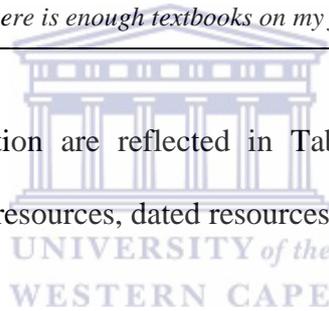
Table 6.12: Reasons for dissatisfaction with quantity of library resources (N = 22)

Theme	Responses
Lack of adequate resources	*Lack of adequate materials*
	What is looking for; is not always available
	Because they are not adequate as compare to people using them
	Because there is inadequate resources
	Yet to meet the expected global standard
	Because most time you don't find resources
	They books are not useful for any purpose; that is why I stop going there
	Materials/books related to my profession are not available
	Most of text books in my area of discipline are unavailable
	Not well equipped
	My research area is not considered by the library when it comes to research material/resource.
Resources dated	*There is room to improve the library in terms of current books and journals*
	No current books and the cyber always fluctuate

146

	Books out dated
	The collections are too old and very few in numbers
	No latest collection in my field
	I have my personal books and we also have our departmental library; so, I have nothing look
	for in the university library more over most of the books there are not current
Other reasons	*Poor Internet service*
	Library spaces are inadequate
	The new journals are not displayed
	At times there is no network or service at the time needed

6.20 Satisfaction with quality of library resources

This question sought to know how satisfied academics were with the quality of library resources.
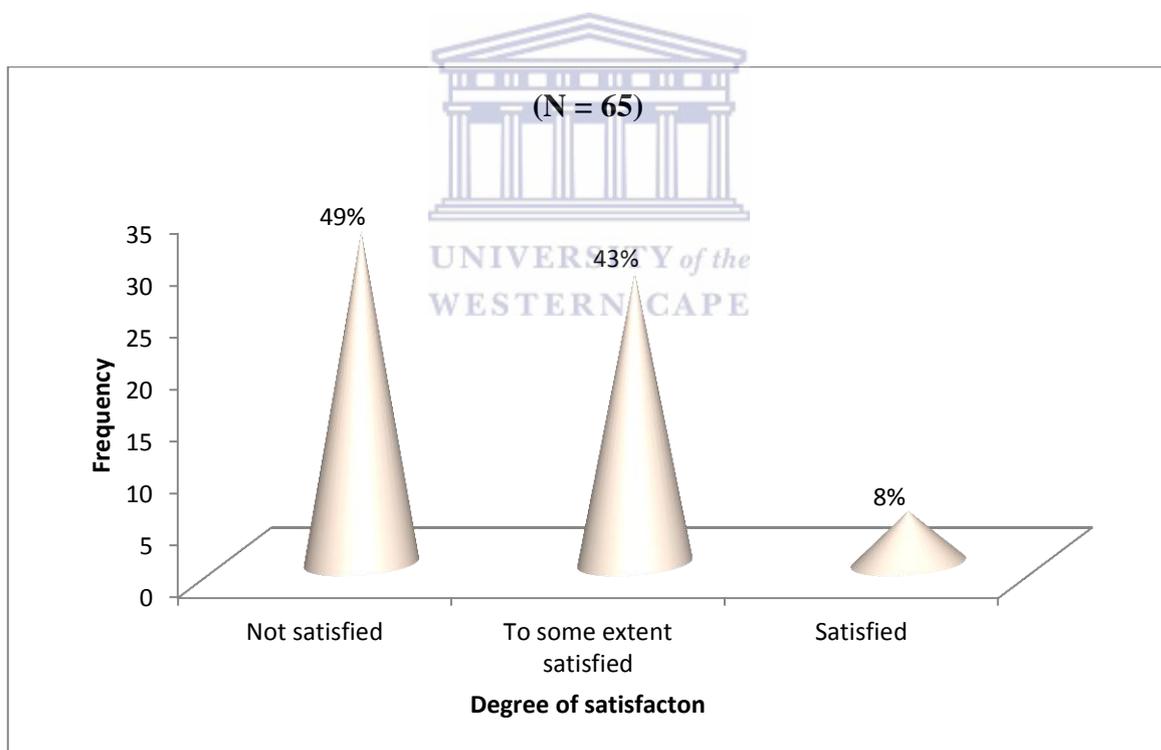
Figure 6.8: Satisfaction with quality of library resources

Figure 6.8 indicates that 32 (49%) of the respondents were not satisfied, 28 (43%) were to some extent satisfied, and 5 (8%) of the respondents were satisfied with the quality of resources provided by the university library. This shows that the majority of academics were

147

not content with the quality library resources. This finding coincides with 46% of MAUTECH students indicating dissatisfaction with the quality of library resources.

6.21 Reasons for satisfaction/dissatisfaction with quality of library resources

The subsequent open-ended question provided an opportunity for academics to state reasons why they were satisfied or not satisfied with the quality of library resources provided. The 24 responses were grouped into reasons for being satisfied and then reasons for being dissatisfied. Table 6.13 reflects the reasons for satisfaction.

Table 6.13 Reasons for satisfaction with the quality of library resources (N = 6)

Theme	Responses
Satisfaction with quality of library resources	*The quality of resources in the library are okay but could cater for the level of resources in limited field*
	Some important books are found there; which can aid learning
	Because of some journals that are up to date
	Some of the resources address parts of information needed
	At least most of the books and other resources in most of the courses are available in the library
	The editions are always not too far from current therefore acceptable for referencing

Table 6.13 reflects the reasons for dissatisfaction which were grouped into four themes, namely inadequate resources, dated resources, no e-resources, poor communication.

148

Table 6.14 Reasons for academics' dissatisfaction with the quality of library resources

(N = 18)

Theme	Responses
The library has inadequate resources	*The quality of resources in the library is okay but could cater for the level of resources in limited field*
	Because there is no enough text books on my field of study
	Yet to meet the expected global standard
	Difficult to find adequate materials
	Because not all the information you need you can get it from the library especially the current information from the internet
	Sometime the materials are not enough both in quantity and quality
	Not well equipped
	My research area is not considered by the library when it comes to research material
	Failure of library leadership to improve it services and materials
Dated resources	*No current books and the cyber always fluctuate*
	Because sometimes they are not current publication
	Because not all the information you need you can get it from the library especially the current information from the internet
	There is room to improve the library in terms of current books and journals
	I have my personal books and we also have our departmental library; so, I have nothing look for in the university library more over most of the books there are not current
	Because Internet facilities are scarce and books out dated
No Internet and e-resources	*Because Internet facilities are scarce and books out dated*
	The ICT section housing e-resources not functional
	At times there is no network or service at the time needed
	To acquire more e-books
	No current books and the cyber always fluctuate
Poor communication	*Poor communication between library and the university community about available material/services in the library over the years*

6.22 Referring students to the library to consult resources

This question was asked to investigate if academics at MAUTECH referred students to the library to consult resources. Respondents had to choose one of the options provided: never, once a semester, once a term, monthly, weekly, daily and other.

149

(N = 65)
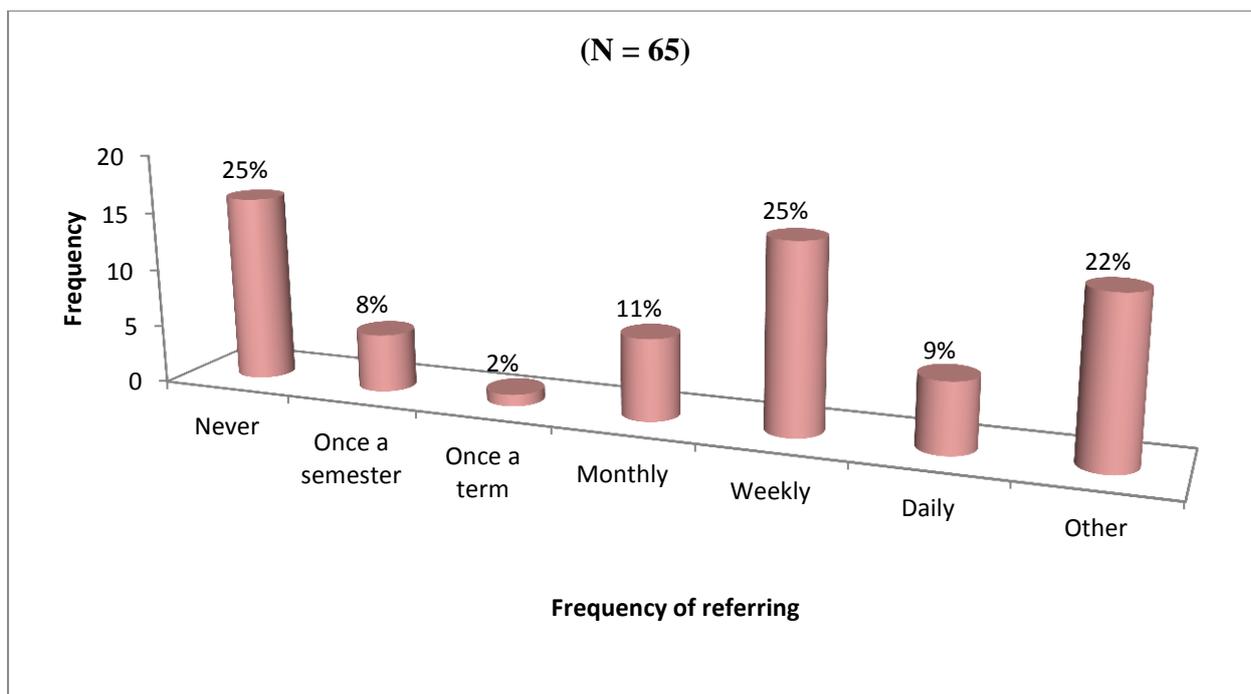
Figure 6.9: Academic referring students to library resources

From Figure 6.9 it can be seen that the majority of academics (25%) refer students to the library on a weekly basis, while 11% referred students on a monthly basis, 9% daily, 8% once a semester and 2% once a term respectively. The respondents who had chosen the 'other' option provided the following explanations: i) during each of my lectures ii) any time we meet iii) as occasion warrants iv) it depends on the topic of teaching v) as much as the need arises vi) occasionally vii) sometimes viii) after each lecture class ix) as often as possible x) always xi) during assignment and personal study. The reason why 25% of academics never referred their students to the university library to consult resources might be because they distributed to students a reading list at the beginning of each semester.

6.23 Familiarity with e-resources

This question was asked to determine to what degree academics were familiar with and had adopted e-resources. Respondents were requested to select all the e-resources they were familiar with. Figure 6.10 provides details of the 366 responses received and discloses that

the e-resources with which academics were most familiar were e-journals (63%), followed by e-books (57%) and e-newspapers (52%). Academics were not familiar with Libguides, repositories, Indexing and abstracting databases. This analysis indicated that most academics were to a certain extent familiar with e-resources and should be able to cope well with the envisaged library portal.
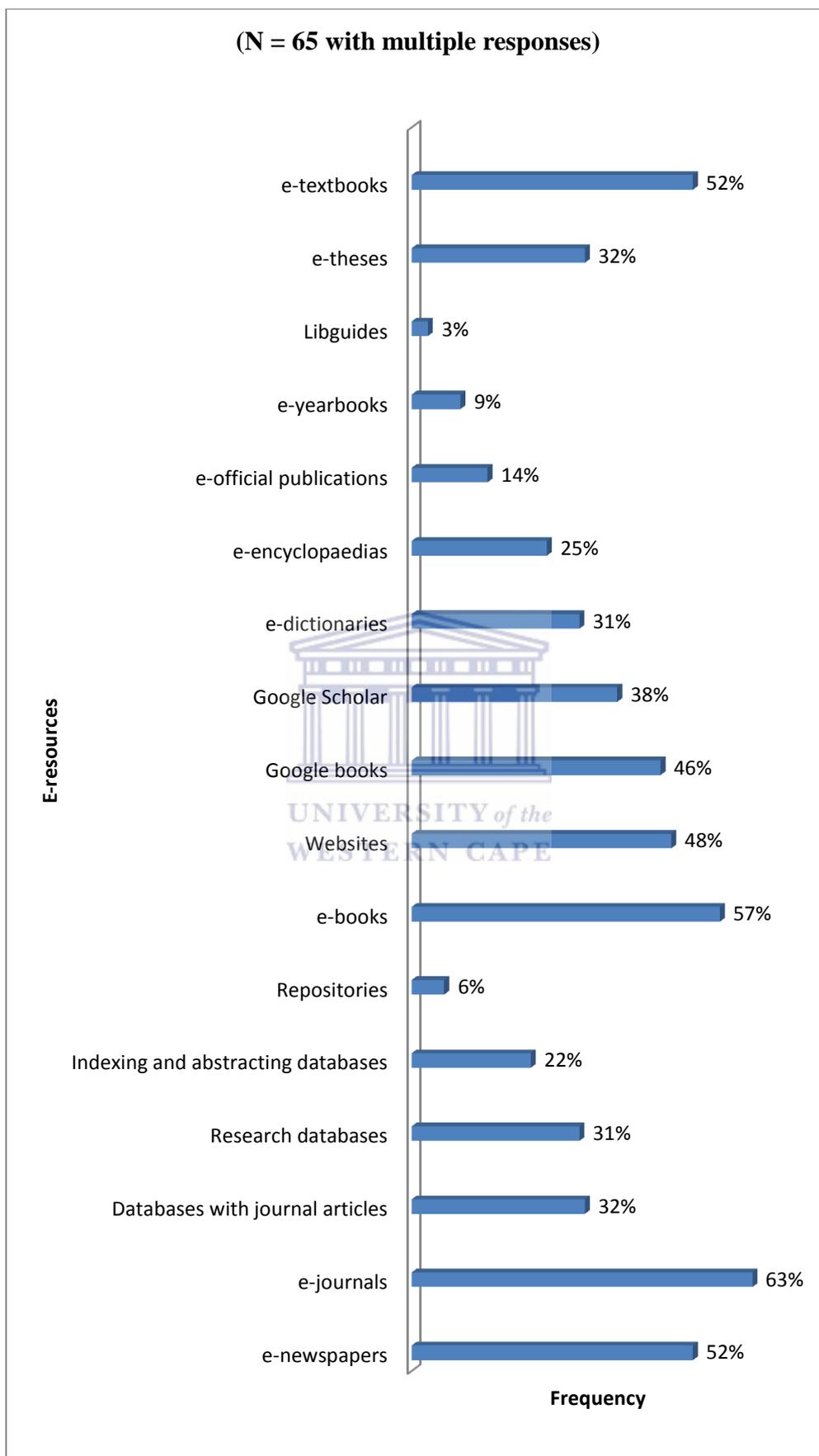
Figure 6.10: Familiarity with e-resources

6.24 Frequency of e-resource utilisation

This multiple question allowed the academics to choose how frequent they utilised the e-resources listed. Table 6.15 reflects the responses received in the frequency categories of never, seldom, monthly, weekly and daily.

Table 6.15: Frequency of e-resource utilisation (N = 65)

Resources	Frequency of use					
	Never	**Seldom**	**Monthly**	**Weekly**	**Daily**	**Total**
E-newspapers	33	8	4	7	13	65
	(51%)	(12%)	(6%)	(11%)	(20%)	(100%)
E-journals	23	11	11	10	10	65
	(35%)	(17%)	(17%)	(15%)	(15%)	(100%)
Databases with journal articles	34	14	5	8	4	65
	(52%)	(22%)	(8%)	(12%)	(6%)	(100%)
Research databases	34	15	9	4	3	65
	(52%)	(23%)	(14%)	(6%)	(5%)	(100%)
Abstracting databases	43	12	6	3	1	65
	(66%)	(18%)	(9%)	(5%)	(2%)	(100%)
Repositories	50	10	2	1	2	65
	(77%)	(15%)	(3%)	(2%)	(3%)	(100%)
E-books	35	8	6	8	8	65
	(54%)	(12%)	(9%)	(12%)	(12%)	(100%)
Websites	30	10	4	4	17	65
	(46%)	(15%)	(6%)	(6%)	(26%)	(100%)
Google Books	36	6	5	5	13	65
	(55%)	(9%)	(8%)	(8%)	(20%)	(100%)
Google Scholar	40	7	3	8	7	65
	(62%)	(11%)	(5%)	(12%)	(11%)	(100%)
E-dictionaries	37	14	1	7	6	65
	(57%)	(22%)	(2%)	(11%)	(9%)	(100%)
E-encyclopedias	42	14	4	4	1	65
	(65%)	(22%)	(6%)	(6%)	(2%)	(100%)
E-governmental	47	10	4	4	0	65
	(72%)	(15%)	(6%)	(6%)		(100%)
E-yearbooks	48	14	2	1	0	65
	(74%)	(22%)	(3%)	(2%)		(100%)

153

Libguides	53	8	2	1	1	65
	(83%)	(12%)	(3%)	(2%)	(2%)	(100%)
E-theses	38	10	9	2	6	65
	(58%)	(15%)	(14%)	(3%)	(9%)	(100%)
E-textbooks	30	10	5	8	12	65
	(46%)	(15%)	(8%)	(12%)	(18%)	(100%)

The results indicated that websites (26%), e-newspapers (20%) and Google Books (20%) were utilized daily by the academics. E-resources never used by academics were Libguides (82%), e-governmental publications (72%), repositories (77%), indexing and abstracting databases (66%), and Google Scholar (62%). The low usage of Google Scholar, which provides scholarly journals articles free of charge, is worrisome. Twenty-two (34%) academics consulted e-books and e-textbooks on a daily basis. The reasons for inadequate utilisation might be availability and currency of these resources. From these analyses it is obvious that academics of MAUTECH are not utilising Google Scholar, indexing and abstracting databases, repositories and e-governmental publications sufficiently. This result tallies with the assertion of Siddike and Islam (2014) that e-resources have increasingly become the most popular information resources researchers and academia are using frequently.

6.25 Impact of e-resources

This question sought to find out how e-resources listed had impacted on academics' research and teaching responsibilities. Table 6.16 enumerated responses received in the following themes: easier to find relevant information, easier to keep up to date with developments by discipline, broadens the focus of my studies/research, reduces my study time, reduces time spent browsing for information, not applicable and other.

Prominent high scores were Libguides under "Other" (73%), indexing databases (73%), e-government publications (68%) and e-yearbooks (65%). Very low rating falls under "reduces time spent browsing for information" between 0 to 2% only for the entire resource category. A careful perusal of these e-resources indicated that e-resources did not impact on research and teaching of academics; rather, they used "other" reasons for research and teaching in the university.

Table: 6.16 Impact of e-resources (N = 65)

Resources	Easier to find	Easier to keep up to date	Broaden focus	Reduce focus	Reduce time	Not applic able	Other	Total
E-newspapers	15 (23%)	5 (1%)	1 (2%)	2 (3%)	1 (2%)	4 (6%)	37 (56%)	65 (100%)
E-journals	12 (18%)	10 (15%)	8 (12%)	8 (12%)	3 (5%)	0	31 (48%)	65 (100%)
Databases with journal articles	10 (15%)	8 (12%)	8 (12%)	2 (3%)	1 (2%)	1 (2%)	35 (54%)	65 (100%)
Research databases	8 (12%)	9 (14%)	4 (6%)	1 (2%)	0	1 (2%)	42 (64%)	65 (100%)
Indexing databases	6 (9%)	4 (6%)	4 (6%)	1 (2%)	1 (2%)	1 (2%)	48 (73%)	65 (100%)
Repositories	5 (8%)	7 (11%)	2 (3%)	2 (3%)	0	3 (5%)	46 (70%)	65 (100%)
E-books	12 (18%)	6 (9%)	8 (12%)	2 (3%)	0	1 (2%)	36 (56%)	65 (100%)
E- dissertations/ theses	8 (12%)	6 (9%)	10 (15%)	1 (2%)	0	1 (2%)	39 (60%)	65 (100%)
E-dictionaries	12 (18%)	3 (5%)	5 (8%)	1 (2%)	1 (2%)	2 (3%)	41 (62%)	65 (100%)
E-encyclopedias	12 (18%)	3 (5%)	4 (6%)	3 (5%)	1 (2%)	1 (2%)	41 (62%)	65 (100%)
E-governmental publications	5 (8%)	5 (8%)	5 (8%)	2 (3%)	1 (2%)	2 (3%)	45 (68%)	65 (100%)
e-year books	7 (11%)	4 (6%)	5 (8%)	1 (2%)	0	5 (8%)	43 (65%)	65 (100%)

155

Libguides	3	4	5	0	0	5	48	65
	(5%)	(6%)	(8%)			(8%)	(73%)	(100%)

6.26 Training in accessing library resources

Figure 6.11 provides responses on whether academics have received training in accessing both print and e-resources.
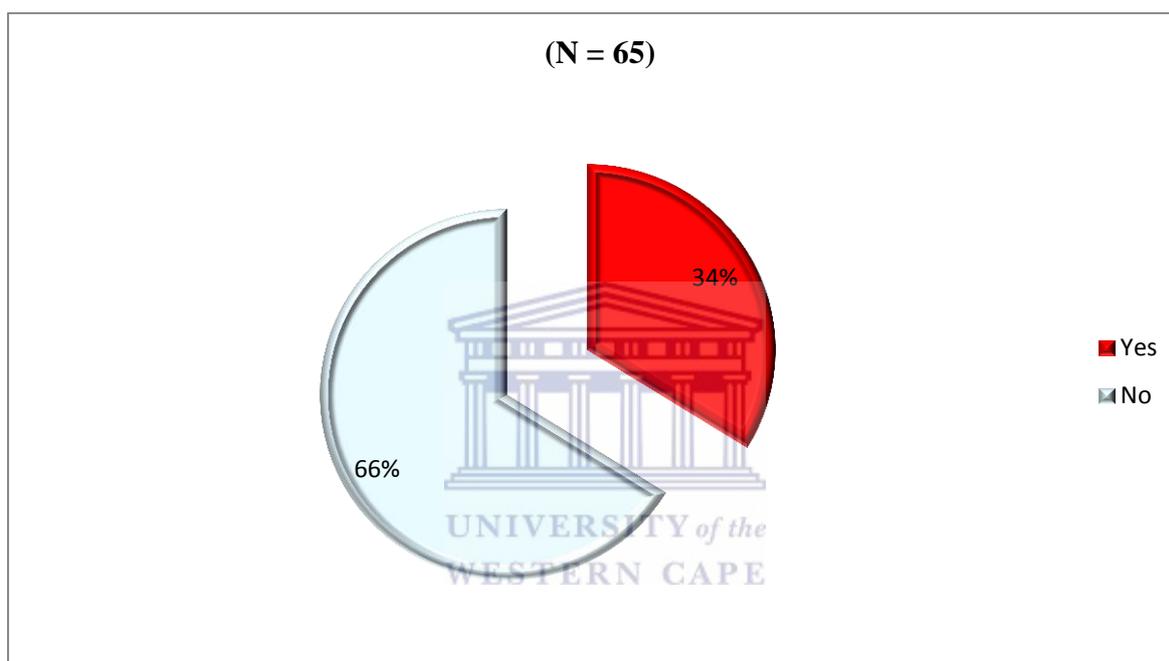
Figure 6.11: Training in accessing library resources

The majority (66%) of the respondents have not received any training by the university library. In-house training, therefore, becomes imperative for the Ibrahim Babangida Library to reinvigorate academics' interest for utilizing library resources.

6.27 Training details

For those who responded to have been trained, a subsequent open-ended question asked them to provide details about the received orientation and training. The sixteen responses received

156

were grouped into themes as follows: university/departmental training, private training and library/consultant. Table 6.17 reveals the intricacies of the training received by academics.

Table: 6.17 Training details (N = 16)

Theme	*Responses*
University/departmental training	*School's (SES) board meeting*
	During my PhD Programme
	Departmental training
	School of General Studies
	American University of Nigeria
	American University of Nigeria
	Adamawa State University
	Afrihub Nnamdi Azikiwe University
	ICT experts in Adamawa State University
	Obafemi Awolowo University, Ile Ife Post Graduate Library Unit.
Private training	*Private arrangement*
	Through a Friend of min.
	When I was studying abroad
Library/consultant	*A consultant engaged by the university*
	Online cybercafé division
	Reference Unit during undergraduate level
	Certificate course

Most of the respondents received training through the university and/or departmental training, while others had received training while studying at other institutions.

6.28 Reasons for not attending training

The next question reverted to the respondents who had acknowledged to not having received training in accessing library resources. It requested them with an open-ended question to supply reasons for not attending training initiatives. Nineteen respondents reacted to this question, but only sixteen responses were relevant. Responses were categorised into two themes, namely no opportunity and there was no time.

157

Table: 6.18 Reasons for lack of training (N = 16)

Theme	Responses
No opportunity	*There has never been training opportunity for me*
	So far, the opportunity has not been available
	I wasn't invited
	Not given the chance
	No available platform to provide the training
	Unaware of library access training workshop at MAUTECH
	Never though they exist
	I wasn't invited; I don't know of any training
	I appreciate it there will be training
	Not even invited even for once
	No access to the library training
	Because the school do not have the program
	No opportunity was provided or created by the university library
	I learnt it on my own and such training is not provided by the university
	There is no opportunity for such training yet
There was no time	*There was no time*
	No time for training

The table reveals that the majority of the respondents had no opportunity for training, as no invitation to training had been received. Only two had no time for any training. A notable example is the University of the Western Cape, South Africa, where every semester official invitations for training are announced through the library web page. This corresponds with Joshua (2014) who has surveyed that users at University Library, University of The Philippines, Diliman are barely utilising the e-resources of the library due to inadequate awareness and training.

6.29 Journal articles read previous semester

This question sought to determine how many scholarly journal articles had been read by academics during the previous semester. Figure 6.12 shows that 39 (60%) of academics have read more than five articles compared to 15 (23%) who have read one to five journal articles

158

per a semester. This result shows that the majority of academics keep up-to-date by reading discipline-related articles.

(N = 65)
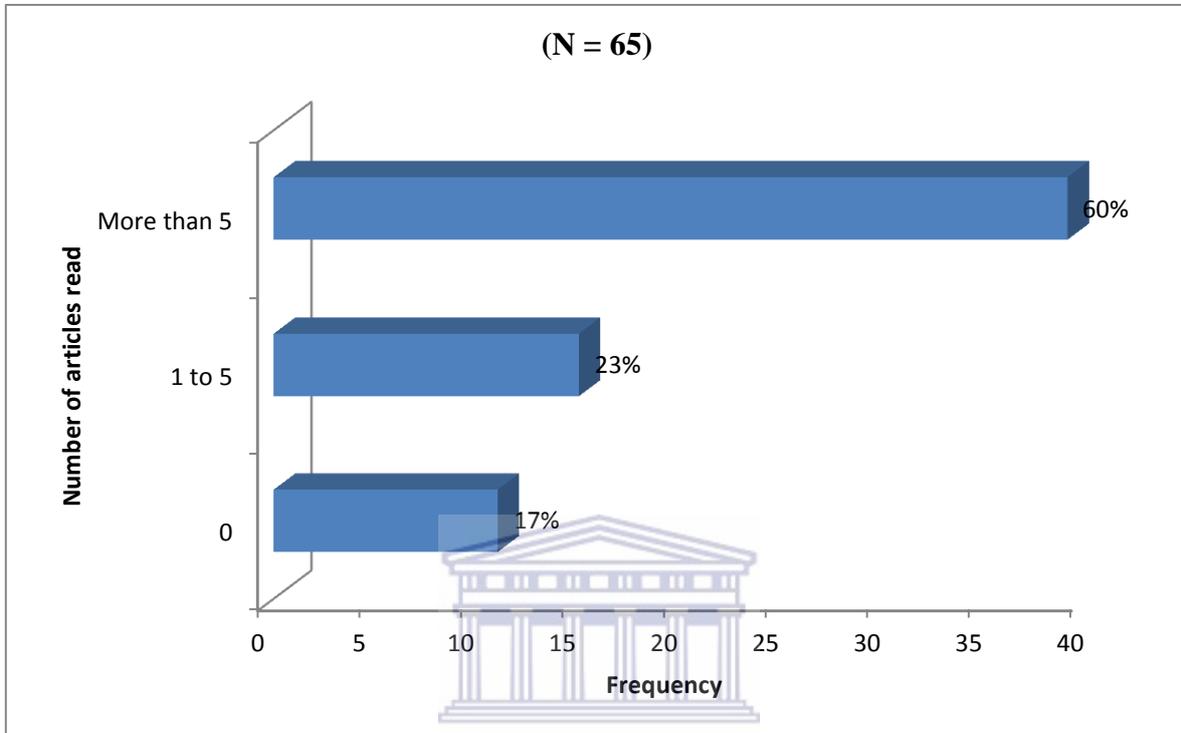
Figure 6.12: Journal articles read previous semester

6.30 Retrieving journal articles

The subsequent question requested academics to indicate how those journal articles had been retrieved by choosing either photocopies from a printed journal, e-journals, Google/Google Scholar, Open Access journals, RefWorks or other.

159
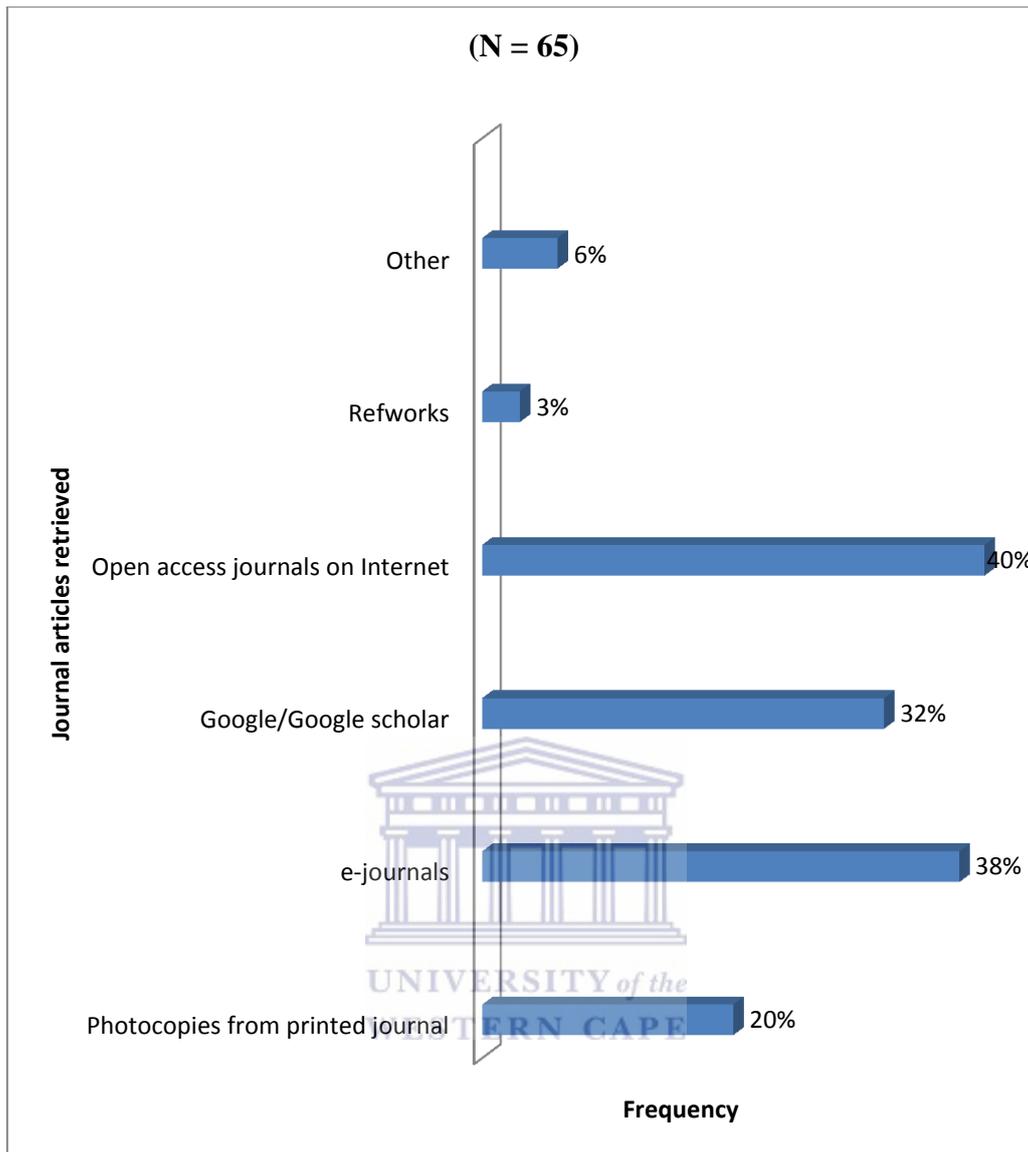
Figure 6.13: Retrieving journal articles

Respondents were allowed to select more than one method of retrieving journal articles. From Figure 6.13 it is clear that 26 academics (40%) retrieved journal articles through open access journals, while 25 (38%) retrieved them using the e-journals platform and 21 (32%) via Google/Google Scholar. Only two academics (3%) used the reference management tool RefWorks to retrieved stored journal articles. The "Other" represented the following statements: *other media of information retrieval like CDs, web pages, links, databases, all of the above, while I was abroad* and *by buying them*. Noticeable is that web pages and not

160

Google or Google Scholar was mentioned as well as databases, but not e-journals. Twenty percent of academics were still making use of photocopies from printed journals.

6.31 Ease of journal article retrieval

Academics were asked, using an open-ended question, to indicate challenges faced when retrieving relevant and current journal articles. Responses received were categorised into themes: no difficulties in retrieving journal articles, poor Internet access, don't know and the university not subscribing to needed journal titles. There were 30 respondents who reacted to this question, but only 28 responses related to this question. Table 6.19 provides more detailed information on the retrieval challenges.

Table 6.19: Ease of journal articles retrieval (N = 28)

Theme	Responses
No difficulties in retrieving journal articles	*No*
	Not at all
	No, because I use to search the Internet and I use to get it
	No, but sometimes it is very difficult to retrieve the cover page of a journal online
	No, Google made it easy
	No, not difficult with Internet, typing in a few relevant words from the author or title gives a perfect guide
	I don't find any difficulty in finding current relevant journal
	No, but involves going on the net and some articles are locked or have security on the ne.
	Not always, I have friends who access difficult journals so I request the articles from them
	No, I travelled a lot to Ibadan Ife, port, etc. for workshop and seminar
	I use my modem to access them at any time I want
	No, it's easy but expensive
	No, the Internet is always providing updated information
	No, with help of Internet I get facilities on my own
	No, I was opportune to have training workshops during the course of my graduate studies
	No, because I use to buy bundle for service in my hand set
	No, through the use of Google it is easy to get
	It's difficult in the library but easy on the Internet
	Yes, research & Academic journal are fee based

Poor network/Internet access	*All the time is difficult because of network failure*
	I find it a bit difficult to find current, relevant journal articles on the Internet because of poor network especially on the campus
	No, it's not any time since I cannot locate web admin
Don't know how	*Yes, I have limited knowledge*
University not subscribing to needed journal titles	*Yes, at times you have to subscribe*
	The university did not subscribe for access
	Yes, the university may need to be subscribing for them
	Sometime especially when it is to be purchased
	*Yes, sometimes you have to subscrib*e

Table 6.19 indicated some of the challenges academics encounter in retrieving journal articles. The majority of the academics showed that they had no challenges in finding journal articles. In contrast, academics indicated that MAUTECH was not subscribing to needed journal titles, that the network situation on campus was poor or that they did not know how to retrieve journal articles. This analysis indicated that most academics were capable of finding relevant and journals articles for their research and lectures.
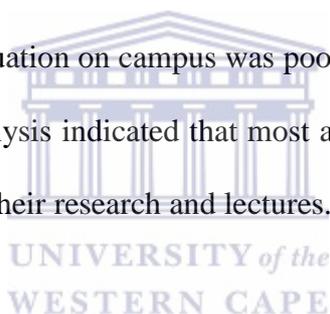
6.32 ScienceDirect usage

The Ibrahim Babangida Library subscribed to the database ScienceDirect through an independent platform. A question was posed to determine academics' awareness and usage of the indexing database. Figure 6.14 presents the responses.
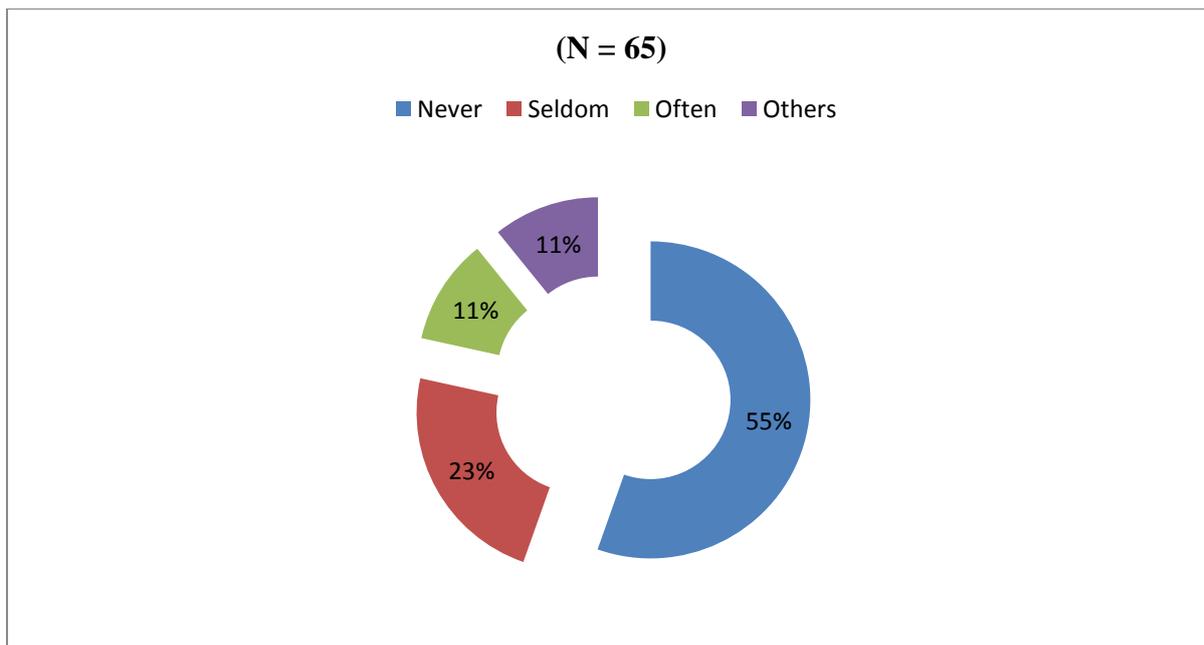
Figure 6.14: ScienceDirect usage

Figure 6.14 indicates the majority of academic are either not using (55%) or have seldom (23%) used ScienceDirect. The "Other" option supplied the following responses: *twice, personal subscription, no awareness created, five times, on learning it* and *does it work?*

Poor utilisation confirms findings by Oluwaseye and Abraham (2013) on low usage or patronage of academic digital libraries in the higher institutions in the Oyo state. Reasons, among others, are inadequate awareness, insufficient orientation for users and the attitude of patrons. Library orientation and training cannot be overemphasised. It is a platform to be used to catch the attention of users to get to know the resources subscribed to by the library.

6.33 Reasons for utilizing ScienceDirect

Although the majority of the respondents were not using ScienceDirect, 36 respondents reacted to an open-ended question asking the rationale behind the utilisation of this database. Only 33 were incorporated into the analysis because they tallied with the question after the

http://etd.uwc.ac.za

following themes were identified: lack of access to, not familiar with and access to other databases.

Table 6.20: Reasons for utilizing ScienceDirect (N = 33)

Theme	Responses
Lack of access to	*No access to the subscription*
	Inefficiency of services
	I have tried accessing it before but it didn't work
	I don't access it from the library
	Poor Internet service and I have busy schedules
	Every time I tried using few resources I could not get anything (not registered by your institution)
	No functional Internet facility on the campus
	It is not rich with current scientific research
	Some time, the password provided may not work
	I wanted to frequent but most times the network for the database was not fast
	Internet not adequate
	Generally, weak Internet access
	Network is not always available
	The facilities are inadequate
	Relevant journals and e-books not subscribes by the university
	Service not fully available
	No registration with science direct
	Find difficulty trying to access
	Not sure if the library subscribe
Not familiar	*Not familiar with the use and importance*
	Still in the learning process of it some difficult in accessibility
	Not! Never visit the university library
	Because I don't know they have it at the library
	I am not aware of what databases the library subscribes to
	I don't go to the library. May be I may start now because of (Question 31)
	Because I don't use to go regularly
	Time and other commitment
	Lack of people awareness
Access to other databases	*I have personal access to many*
	I get my information on personal source
	I have personal access to e-books, e-journals

164

Table 6.20 shows that the majority of the respondents had no access to ScienceDirect because of inadequate facilities and Internet connectivity, or were not aware of the database. This confirmed challenges identified by Okite-Amughoro, Makgahlela and Bopape (2014) that erratic power supply, inadequate space in the library and low bandwidth subscription proved to inhibit utilisation of library resources.

6.34 Retrieving journal articles

Bibliographic information of every resource in the Ibrahim Babangida Library is available through the card catalogue cabinet. A question was asked to determine if academics were able to find journal articles.
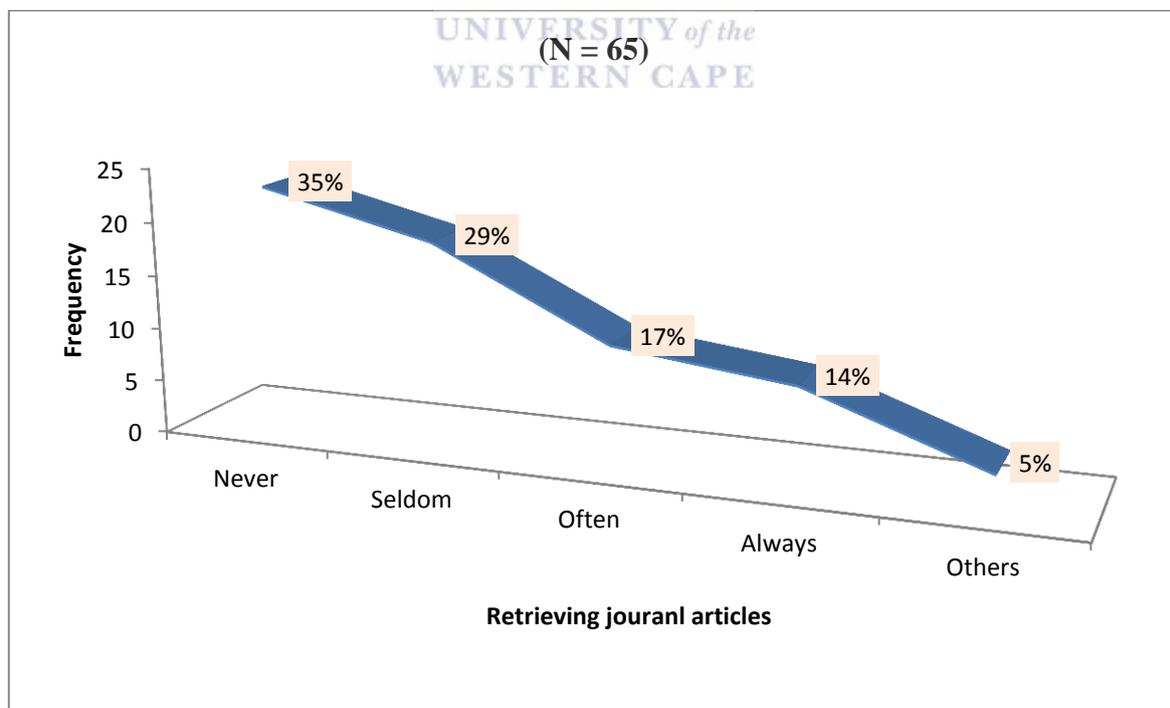
Figure 6.15: Retrieving journal articles using bibliographical details

Twenty-three (35%) of academics had never retrieved bibliographic details of journal articles. Nineteen academics (29%) seldom did so, while 11 (17%) often retrieved bibliographic details of journal articles. Only nine (14%) respondents always found bibliographic information. The five respondents choosing "Others" might be using other channels not provided by the library. This analysis depicts that the majority of respondents have never found complete bibliographic details of the journal articles perhaps due to the absence of an automated catalogue in the Serial Division of the library although a manual with bibliographic information is captured at the Serial Division.

6.35 Preference e-resources versus printed resources

This question was presented in order to determine if academics would be prepared to migrate from printed to e-versions of library resources.
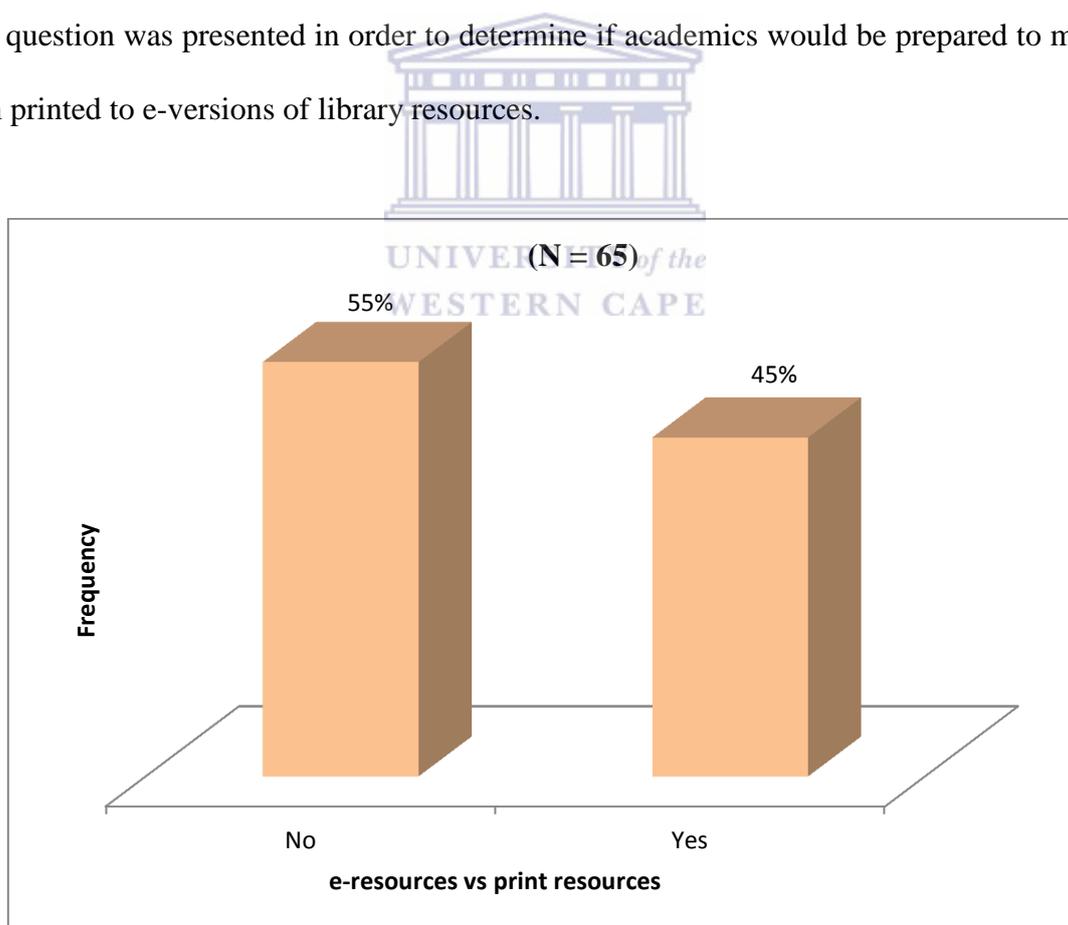
Figure 6.16: Preference printed versus e-resources

Figure 6.16 indicates that 55% compared to 45% of the respondents do not prefer a complete e-content of library resources. This analysis is in contrast with the findings of Joshua (2014) at the University of the Philippines Library where users have confirmed that they can migrate to complete electronic retrieval of e-resources if the library would provide sufficient e-resources thereof.

6.36 Reasons for preference printed versus e-resources

The subsequent open-ended question allowed respondents to provide reasons for their willingness to migrate to e-resources. Factors like the provision of an e-resource environment and facilities would militate feasible migration from printed to e-version. For instance, the Library of the University of the Western Cape, South Africa, stopped subscribing to printed versions of journal articles because of cost implications, convenience to users, ease of retrieval, currency and speedy accessibility. The question yielded 38 responses but only 37 were considered relevant. Table 6.21 provides more details.

Table 6.21: Reasons for preference printed versus e-resources (N = 37)

Theme	Responses
E-formats are easy and faster to retrieve	*Easier and quicker to access and use information saves from the formats*
	It's part of my cognitive structure already caused just get it off easily
	It will be easier for my work
	Easier to have access to so many books and materials for research, teaching and general knowledge
	E-resources are not physically bulky
	It is more durable reliable and easy to use
	I always try to reduce the overall time I spent looking at the computer screen due to eye strum
	All you need will be at your hand always
	E-resources are easier to use and does not get spoil on time
	Relevant information easier to access in less time consumed and much information access in short time
	It makes the job more convenience and faster

	It is easier to use
	It is the latest technology
	Because it will be more easy to access the information which I may need in other to teach my students
	It is in line with the trend
	It is going to be easy to access material and also to download bulky materials
	It cause improvement in the teaching and also improves the students
	E-resources not consumed space
Cost of printing and stationary	*Reduce paper work and cost of printing*
	I'm a climate activist, so no trees, no paper e-resources only
Current technology	*Updated and current*
	Order of the day
	Current materials can easily be obtained
	Because the world is going e-
Printed formats are still relevant	*Some printed materials are essential and needed to be available in hard copies because of the content*
	Before the change, it must be ensured that the connectivity to the Internet works otherwise lets allow what is possible i.e. the present status
	Printed format are equally important in teaching research
	Not all information are on net
	Printed format will be used to compliment e-materials
	The library may not be able to get all what I need
	To be able to have printed format which you can be able to lay your hands on any time you need
	Because it is not always that you can access those online resources due to the facts that; no electricity and Internet access always
	I grew up with printed format; it is difficult to adjust 100% to e-resources.
	Printed formats are always hardy, you could read them even lying on back.
	E-resource is not always in easy substitute in a situation where internet access is slow
	Not always available and expensive
	Printed materials have less damage to the eyes
	Printed format is still relevant and can be access with or without electricity
	You always need a hard copies backup because virus and related incidents
	E-resources have problem of accessibility due to their electronic nature and it always relied on electricity supply regime
	Not possible to give up on the printed format completely

From the above table it is clear that the majority of academics state that e-formats are easy and faster to retrieve; yet a lot of them say the printed formats are still relevant although a

168

few of them have indicated interest in current technology and the cost of printing and stationary as some of the rationale for preferring e-resources over printed resources. Reasons for the mixed reactions were the uncertainty and reliability of the Internet and electricity to keep e-resources in a permanent format for ease of access by the academics. Toyo (2017: 28-29) supported their views on factors hindering the effective utilisation of e-resources due to lack of strategic planning and free Internet services to users as well as inadequate or unreliable funding.

6.37 Rating e-resources

Eleven statements were given to evaluate different e-resources by ticking either the (1) Strongly Agree, (2) Disagree, (3) Undecided, (4) Strongly Agree and (5) Agree options. Responses are reflected in Table 6.22.
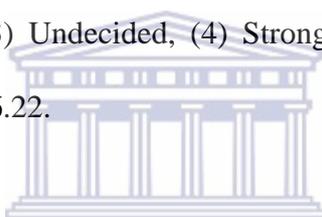
Table 6.22: Rating e-resources (N = 65)

Statements	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Total
I am not sufficiently familiar with e-resources	27 (42%)	9 (1%)	16 (25%)	10 (15%)	3 (5%)	65 (100%)
I am not confident in using e-resources	27 (42%)	13 (20%)	15 (23%)	7 (11%)	3 (5%)	65 (100%)
Materials I need are not available	16 (25%)	16 (25%)	20 (31%)	10 (15%)	3 (5%)	65 (100%)
I doubt the permanence of e-resources	15 (23%)	13 (20%)	23 (35%)	10 (15%)	4 (6%)	65 (100%)
I doubt the reliability of service providers	14 (22%)	12 (18%)	23 (35%)	11 (17%)	5 (8%)	65 (100%)
I don't have the computer skills to retrieve e-resources	29 (45%)	7 (11%)	21 (32%)	5 (8%)	3 (5%)	65 (100%)
MAUTECH experiences too many technical problems	3 (5%)	4 (6%)	24 (37%)	23 (35%)	11 (17%)	65 (100%)

169

Slow Internet connections will cause problems	3 (5%)	2 (3%)	19 (29%)	24 (37%)	17 (26%)	65 (100%)
Quality of e-resources are doubtful	14 (22%)	13 (20%)	20 (31%)	15 (23%)	3 (5%)	65 (100%)
I will need additional software to access e-resources	9 (14%)	13 (20%)	26 (40%)	10 (15%)	7 (11%)	65 (100%)
I don't know how to save e-resources	23 (35%)	17 (26%)	19 (29%)	3 (5%)	3 (5%)	65 (100%)

Table 6.22 revealed that the statement regarding e-resource retrieval that "I don't have the computer skills to retrieve e-resources" had the highest response rate with 45% of academics who opted for "Strongly disagree". This is closely followed by 42% indicating "I am not sufficiently familiar with e-resources". "I will need additional software to access e-resources" drew a response rate of 40%. In general, it could be concluded that academics were familiar with e-resources and the majority were confident in utilising them.
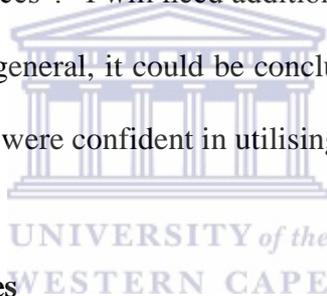
6.38 Digitizing library resources

This question listed various types of library resources, and requested academics to indicate their opinion on the need for digitising the resources by rating each type according to (1) Strongly Agree, (2) Disagree, (3) Undecided, (4) Strongly Agree and (5) Agree.

Table 6.23: Digitizing library resources (N = 65)

Resources	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Total
Local newspaper clippings	2 (3%)	1 (2%)	24 (37%)	22 (34%)	16 (25%)	65 (100%)
Undergraduate projects	4 (6%)	1 (2%)	20 (31%)	23 (35%)	17 (26%)	65 (100%)
Master's dissertations	3 (5%)	1 (2%)	19 (29%)	22 (34%)	20 (31%)	65 (100%)
Doctoral	2	1	15	24	23	65

170

theses	(3%)	(2%)	(23%)	(37%)	(35%)	(100%)
Rare books	2	2	23	15	23	65
	(3%)	(3%)	(35%)	(23%)	(35%)	(100%)
Rare documents	2	2	24	15	22	65
	(3%)	(3%)	(37%)	(23%)	(34%)	(100%)
Research data	2	1	21	18	23	65
	(3%)	(2%)	(32%)	(28%)	(35%)	(100%)

From Table 6.23 it can be seen that respondents have affirmed the need for the digitisation of undergraduate projects (35%), newspaper/magazine clippings (34%) and doctoral theses (37%), with the majority either agreeing or strongly agreeing with the statements. A number of the respondents were undecided about digitising of local newspaper/magazine clippings (37%), rare documents (37%) and rare books (35%). The reason for academics being undecided or negative might be because digitisation could only be achieved successfully when facilities, equipment and manpower were deployed.
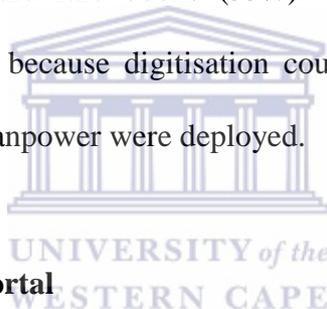
6.39 Implementing a library portal

A pivotal reason for this research was to eventually design a responsive library portal for MAUTECH. Academics were asked to supply an opinion regarding the implementation of a library portal to improve academic research and teaching by either strongly disagreeing, disagreeing, being undecided, agreeing or strongly agreeing.

Figure 6.17 showed that the majority of the respondents were positive about the envisaged design and implementation of a library portal by either strongly agreeing (25%) or agreeing (34%). Some academics (5%) were not convinced that a library portal would be beneficial while a large percentage (37%) were doubtful or undecided about the idea of a library portal.

171
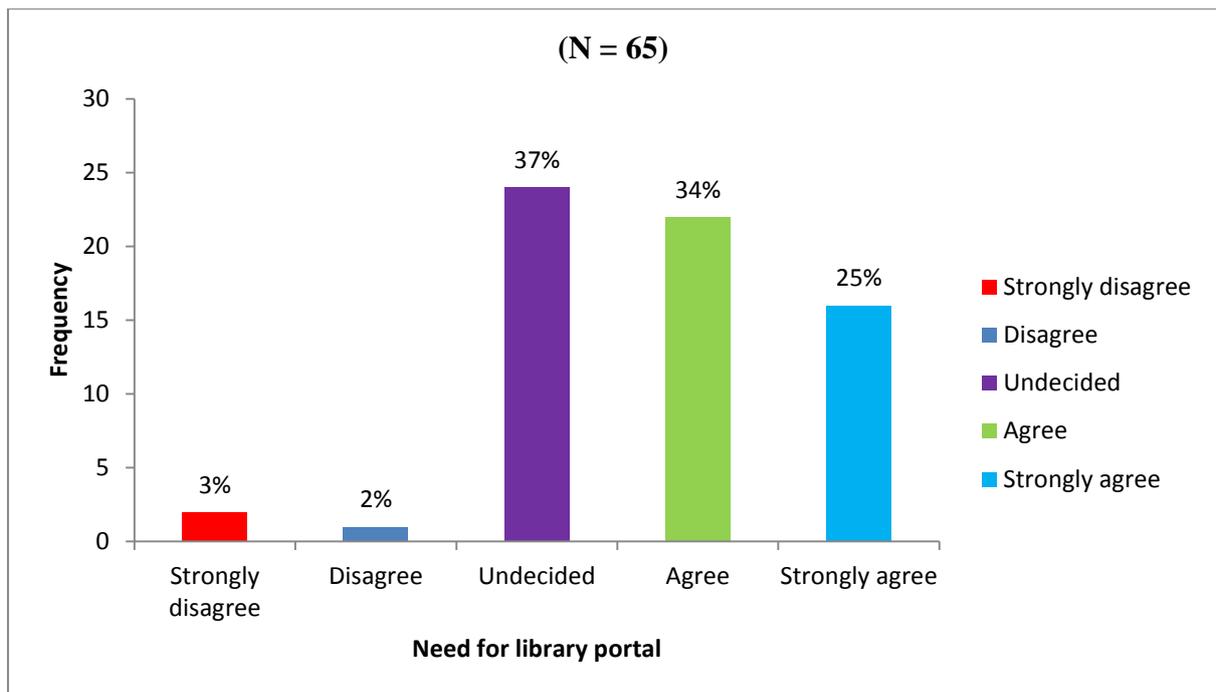
Figure 6.17: Implementing a library portal

6.40 Reasons for implementing a library portal

This question was asked to capture academics' perceptions on the rationale behind the design and implementation of the envisaged library portal. Academics were invited to provide reasons for their answers to the previous question. Being an open-ended question, 30 respondents reacted to this question, but only 29 were found logical and used for the analysis. The responses were categorised into the following themes: enhanced access to e-resources, benefit the university community, improve research collaborations and teaching, and improve morale. Table 6.24 provides the actual responses.

Table 6.24: Reasons for implementing a library portal (N = 29)

Theme	Responses
Enhanced access to e-resources	*The basic thing in e-library is accessibility, it accessibility is adequate no doubt the utilisation will be high*
	People/staff/students can then access materials /e-resources from anywhere on campus without migrating to the computer centre where one may often times find the best occasional network services
	Enhanced utilization will be subject to provision of efficient Internet services
	It will be easier to access the materials on net
	Efficiency is necessary
	Network problem will be reduced, accessibility will be enhanced, and less money will be spent on the net due to efficient and effective network
	Yes, because when that is done accessing information on different area will be made easy and will attract users.
	Many people will access the library.
	Must students usually complained about lack of access to several database (online) due to subscription restriction.
	It will enhance quick access to learning resources
	Integration enhanced accessibility to resources
	One can get what he/she want
	An integrated library portal will work in the university intranet, with efficient and dedicated library staff operating the system may help to minimize stress for all library users
	Enhance Internet browsing with regular power supply
Benefit the university community	*Strongly agree but after a conduct of the usage and orientation across the university staff and students*
	It will be beneficial to the university community
	It will contain a lot
	Definitely people will utilise
	Yes, it has happened in private universities in Nigeria
	The world has become electronically driven and to keep pace with time we need e-resources
	Provided there is constant power supply and modification inhuman resources
Improve research collaborations and teaching	*The world is becoming a global village*
	We are in an IT World. MAUTECH shouldn't be exempted
	We have capable researcher who want access to expensive journals but finance is a major constraints
	Because I will have access to all the information that I will be in need to teach my students effectively
	Yes, it will make easy access to materials and information for teaching and research and it will motivate people use it

173

	It will improve the work and the students will also benefits from it
Increase morale	*Confidence will be made.*

From Table 6.24 it can be seen that the majority of the respondents were of the opinion that the implementation of a library portal would facilitate access to e-resources and should enhance research and teaching, not only in the university community but also beyond the borders of the university.

6.41 Requirements of a library portal

The last question requested academics to state the features and interfaces they would like to see in the envisaged library portal. Being an open-ended question, 34 responses were received and recorded in Table 6.25 under the following themes: an integrated platform for research repository, current resources to facilitate teaching and research, current issues, e-resources, availability of Wi-Fi/Internet access as well as adequate power supply and equipment.

Table 6.25: Requirements of library portal (N = 34)

Theme	Responses
Integrated platform for research repository	*Yes. I do agree*
	Research forum
	Anything
	Improved service in all respect
	Access to most databases to enhance research in the university community
	Many things
	Space and time
	Whatever is available for any work
Current resources to facilitate teaching and research	*Information that will improve teaching, research and other relevant academic information to staff students and researchers*
	The necessary facilities for all departments to enhanced effective teaching and learning

174

	All that one mentioned above
	Card catalogues of physical resources
	Yes, because it will enhance the level of my access to information that will make me effective teacher
	Guide and demonstration of access to journals, abstract, theses, dissertations but what will happen with the epileptic energy supply
	The portal should contain relevant materials to enhance teaching and research, community service
	Everything of information required of teaching, research
	Anything contribution to knowledge made by its staff and any other achievement intellectually so as to compete with the world
	To see educating things public publications All the possible available resources
	All the items listed in (22) above
Current issues	*Newspapers*
	Innovations
	Current and relevant academic resources
	Relevant, current and related materials
	Current text and journals
	Up dated research journals, especially in the field of educational research
E-resources	*E-books, e-journal, e-newspapers, e-magazine*
	E-books readers
	E-journals and research publications
Availability of Wi-Fi/Internet access	*Local area networking that can be accessible in offices on campus*
	Improvement and sustainability of services provision
	Efficient easy access and un-interrupted service
	Prompt information retrieval
	Cyber and 24 hours services
Adequate power supply, equipment/ computers	*There should be no epileptic power supply*
	Adequate service and uninterrupted power supply
	Enough systems connected to the Internet, fast

Table 6.25 indicates that the majority of the respondents need current resources to facilitate teaching and research. They suggest different e-resources, namely e-books, e-journals, e-newspapers, e-magazines and e-resource publications be encapsulated into the library portal to improve research. An integrated platform for research repository was requested as well as

175

sufficient Wi-Fi and Internet access. These are positive indicators that the implementation of a library portal will supply access to needed resources.

6.42 Cross-tabulation of students and academics

In order to analyse the relationships between responses from students and academics, cross-tabulation of their responses regarding the quantity and quality of the library collection as well as their options regarding a library portal to provide access to e-resources were performed.

6.42.1 Academics and students satisfaction with the quantity of the library resources

From the comparative data in Table 6.26, it can be seen that of the academics 44.2% were not satisfied and 44.2% were to some extent satisfied. Whereas 41.4% of students were not satisfied and the same number (41.4%) were to some extent satisfied. The opinion of academics and students towards satisfaction with the quantity of library resources had no significance variations, since the Chi-square P = 0.687. This implies that more library resources are needed to meet user's needs.

Table 6.26: Academics and students satisfaction on the quantity of library resource

			Please indicate how satisfied you are with the quantity of resources provided by the library				Total
			Not satisfied	To some extent satisfied	Satisfied	Very satisfied	
Library users	Academic	N	23	23	6	0	52
		%	44.2%	44.2%	11.5%	0.0%	100.0%
	Student	N	359	359	137	12	867
		%	41.4%	41.4%	15.8%	1.4%	100.0%
Total		N	382	382	143	12	919
		%	41.6%	41.6%	15.6%	1.3%	100.0%

176

6.42.2 Academics and students satisfaction with the quality of the library resources

Table 6.27 highlights that of the academics 32.7% were not satisfied and 57.1% were to some extent satisfied with the quality of library resources. On the other hand, 45% of students expressed not being satisfied and 39.6% satisfied to some extent with the quality of library resources. The cross tabulation indicates that academics and students of MAUTECH did not have significant difference on the quality of library resources resulting in the Chi-square P = 0.107. This denotes that an improvement on the quality of library resources is needed.

Table 6.27: Academics and students satisfaction on the quality of library resource

			Please indicate how satisfied you are with the quality of resources provided by the library.				Total
			Not satisfied	To some extent satisfied	Satisfied	Very satisfied	
Library users	Academic	n	16	28	5	0	49
		%	32.7%	57.1%	10.2%	0.0%	100.0%
	Student	n	390	343	127	6	866
		%	45.0%	39.6%	14.7%	0.7%	100.0%
Total		n	406	371	132	6	915
		%	44.4%	40.5%	14.4%	0.7%	100.0%

6.42.3 MAUTECH library portal as provider of e-resource access

Responses from students and academics regarding whether a library portal at MAUTECH will provide sufficient access to available e-resources were analysed. The result indicates significant variation between students and academics resulting in P = 0.30. Table 6.28 confirms that academics agreed (45.3%) and strongly agreed (45.3%) while 59.6% of students agreed and 26.8% strongly agreed that MAUTECH library portal access will enhance and provide access to e-resources.

177

Table 6.28: MAUTECH library portal will provide access to e-resources

			Please rate the statement below If the MAUTECH library implements a library portal that will integrate and provide access to all available e-resources, the utilization thereof will be enhanced					Total
			Strongly disagree	Disagree	Undecided	Agree	Strongly agree	
Library users	Academic	n	4	0	1	24	24	53
		%	7.5%	0.0%	1.9%	45.3%	45.3%	100.0%
	Student	n	51	43	19	495	223	831
		%	6.1%	5.2%	2.3%	59.6%	26.8%	100.0%
Total		n	55	43	20	519	247	884
		%	6.2%	4.9%	2.3%	58.7%	27.9%	100.0%

6.43 Concluding summary

Based on the findings in this chapter, the results are summarised as follows:

- Academics need mentorship and training.

- The majority of academics have been working for between one and five years.

- All MAUTECH schools and departments are represented in the study.

- Most departments had accredited programmes and courses approved by the National Universities Commission, Nigeria.

- Eighty-eight percent of respondents have personal computers.

- Academics observe that Internet connection has been very poor for MAUTECH.

- Sixty percent of the respondents seldom visit the library.

- The few who do visit the library, visit the Readers Services and Serials Divisions.

- Proximity and lack of adequate facilities and equipment hamper library patronage.

- Some utilise the library catalogue and shelves for resources needed for research and teaching.

178

- Fifty-five percent of the respondents are not satisfied with the quantity of library resources.

- Forty-nine percent show dissatisfaction with the quality of library resources.

- Most academics are familiar with e-resources.

- A large number (66%) have not received any training from the university library.

- Sixty percent of the academics read more than five articles per semester.

- Some academics are capable of finding and retrieving needed journal articles.

- ScienceDirect has accessibility issues.

- The majority rated library resources as grossly inadequate.

- The majority have never found the complete bibliographic details of the journal articles they need.

- There is a strong indication that academics are positive toward the implementation of a library portal and lastly

- A cross tabulation which compare the relationship of variables between students and academics has been achieved.
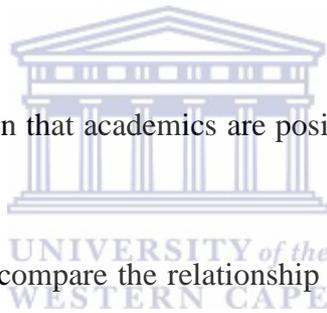
Chapter seven will present qualitative data from interviews received from Academic Librarians, the Acting University Librarian, Computer Centre/ICT staff at MAUTECH and the Digital Communications Librarian at the UWC Library.

7 DATA PRESENTATION: INTERVIEWS AND SCANNING OF LIBRARY PORTALS

7.1 Introduction

Chapter seven supplies a summary and analysis of the qualitative data received from the various participants of the semi-structured interviews. Findings were presented according to Division librarians and the Acting University Librarian at the Ibrahim Bahangida Library, ICT staff at MAUTECH and the Digital Communications Librarian at UWC, South Africa. The chapter will conclude with findings from the visit to observe the AUN library portal and the analysis of the documents and the Library Guide of 2006 and 2016.

7.2 Division librarians at the Ibrahim Babangida Library

This segment presents the data analysis of interview sessions with the academic librarians. An e-mail interview was sent to the six academic librarians during July 2016. Most were heads of divisions with many years of working experience at the Ibrahim Bababida Library. Respondents were allowed time to complete the e-mail interview before returning it. From the six librarians, only four responded to the email interview. For the sake of anonymity, responses from librarians are tagged as Librarian 1, Librarian 2, Librarian 3 and Librarian 4.

7.2.1 Familiarisation with the computer system

The 21st century requires computer literates in all strata of life and a necessary requirement in the workplace (Manowaluilon 2008; Owens 2003). When asked about computer competency skills, the four librarians provided the following feedback:

Researcher: Question 1 - Are you computer skilled? If No why not? If yes, what area of computerisation are you familiar with?

Librarian (1): Yes Internet, Microsoft word, Excel, Dreamweaver etc.

Librarian (2): Yes. Word Processing and DBMS.

Librarian (3): Yes. Microsoft Office Specialist and general computer application.

Librarian (4): Yes, Data processing Cloud computing.

This indicates that librarians at the Ibrahim Babangida Library regard themselves as computer literate although it is sometimes difficult to determine competent skills unless they are put to a pragmatic test.

7.2.2   The necessity of a library portal

Library portals are gateways of information where library users have access to all the resources and services of the library. In most academic libraries, the proprietary library portal is incorporated into the library home page which is part of the university website. Alternatively, some academic libraries prefer customised portal access. The latter is an internally designed library portal using open source software whereas the former is a trademarked library portal with commercial products.

When asked whether the librarians would prefer a library portal, the following feedback was provided:

181

Researcher: Question 2 - Do you want the library to design its own library portal for information gathering and dissemination to academics and student of MAUTECH?

Librarian (1): Yes, Definitely.

Librarian (2): Yes.

Librarian (3): Yes.

Librarian (4): Yes.

The four librarians responded affirmatively to the need for a dedicated library portal.

7.2.3 Library portal design, complications and challenges

Designing a customised library portal is a new innovation and therefore challenges as discussed in chapter two can be expected. When asked about envisaged challenges regarding the library portal, three of the librarians indicated that they expect challenges. Only two, however, have listed envisaged challenges.

Researcher: Question 3 - Do you envisage challenges with the design and implementation of the library portal?

Librarian (1): Yes.

Librarian (2): Yes. Insufficient proficient Internet access and Speed.

Librarian (3): No, if properly implemented, funded and maintained with adequate and skilled manpower.
Yes, if idea is not handled skilfully and better managed.

Librarian (4): Yes.

Librarians 2 and 3 envisaged the challenges of insufficient Internet access and speed and the implementation process, if not properly funded, being maintained. These opinions are centred on managerial competency. An active library committee geared with a vivified policy document engaging the process prudently might be needed to ensure successful implementation. Doubts about sufficient Internet access were also expressed by students and academics.

7.2.4 Librarians' roles in the library portal design

In this information age, librarians are expected to manage and market library resources to ensure the utilization thereof. As motivated in chapter two, a library portal will supply an effective platform. Kahn and Underwood (2013) indicate that library operations have changed considerably and call for a paradigm shift by librarians to accept innovations and change as well.

> *Researcher: Question 4 - As a professional librarian when the portal access is designed it should serve the academic community. How would you add value to the whole process?*
>
> *Librarian (1): We design all possible procedures that may lead to our clientele to have direct access to our available resources efficiently and effectively.*
>
> *Librarian (2): In audit and supervision to make sure it meets the standard requirements of an E-Library.*
>
> *Librarian (3): Through marketing of the library services and resources for prospective clientele, current awareness service, selective dissemination of information to target audience and extension services.*

183

Librarian (4): Through Selective Dissemination of Information (SDI).

From the responses of the librarians, a responsive library portal is expected, a standardised e-library will be needed, marketing of library products and tools, and resources being used to keep library users informed should be utilised.

7.2.5   Prerequisites for training librarians

As initial training in the use of the library portal to manage and access information resources and services will be needed, librarians were asked to air their opinions on the need for training.

> *Researcher: Question 5 - Do you think librarians in the library would need training to assist them manage the portal access well? How would you suggest the best training be adopted?*
>
> *Librarian (1): Yes, formal training is required and they should be sent to workshop/conference to update their skills on current trends of ICTs.*
>
> *Librarian (2): Yes. Training can be sectioned according to the various office departments profile and duties according to rank of officers.*
>
> *Librarian (3): Training and retraining of library staff on different software application and use in different areas of concern.*
>
> *Librarian (4): Yes, in-house and intensive.*

From the responses it can be deducted that all the librarians have acknowledged the need for training. Forms of training highlighted by the librarians are workshops and conferences on

ICT skills, training on software application, and in-house and intensive training, perhaps because they realize that they need to be trained first in order to offer a better service to users as well as to educate and empower library users with the needed skills. To avoid intellectual truncation, porous management, proper use of the proposed library portal training and mentorship programmes should be organized in the library (Curtin, Malley and Stewart 2016: 730).

7.2.6 Digitization of library resources

The Ibrahim Babangida Library has many resources that need to be digitized and archived in a repository. Theses, dissertations, books, journals, magazines and newspapers are not yet digitised. The librarians' opinions were sought on this matter.

> *Researcher: Question 6 - How do you want the digitisation process to start? From all the divisions of the library or from a particular section/unit of the library?*
>
> *Librarian (1): If possible from all Division because the divisions are interdependent.*
>
> *Librarian (2): It should start with head of departments and supervisor down the chain of command.*
>
> *Librarian (3): If the manpower and capital is there, starting from all the divisions is a better option, but if no capital to start in all divisions, I suggest starting from the bibliographic control unit (library catalogue, authority file, indexing and abstracting services unit) and Public access unit otherwise Readers service unit (circulation and reference units) will be fine.*
>
> *Librarian (4): All Units.*
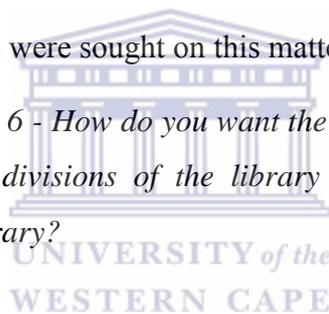
185

Librarians suggested that the digitisation project be implemented by all divisions. Librarian 3 emphasised that if funds were limited, preference should be given to the Bibliographic Control Unit, as well as the Public Access and Readers' Service Divisions, which are the circulation and reference units, should be digitised in that order. The proposed library portal needs to include these features into the design interfaces.

7.2.7 Implementable suggestions to accomplish the project

As librarians will be managing and showcasing the library portal, their input towards achieving success in the end is crucial. The researcher has tried to gather input from all stakeholders regarding the portal; therefore, the librarians have been asked for suggestions to ensure an implementable library portal. The following suggestions have been provided:

Researcher: Question 7 - What advice will you give the library committee and MAUTECH management towards this laudable project?
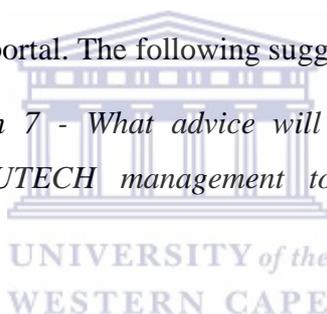
Librarian (1): They should expedite action and declare state of emergency on equipping the I. B. Library with ICTs and Library Management Software if the university want to remain relevant in 21st century. Thanks for putting me part of this research interview.

Librarian (2): After implementation there also be people trained to manage the technical backbone of the portal so as to avoid stagnation in the moving trend of ICT development.

Librarian (3): Only if the library still wants to remain relevant and for what purpose it was created as the hub of academic activities in the era of new technology platforms, information exploration, organization and retrieval. It is timely and inevitable for MAUTECH Management Committee of Library to implement.

Librarian (4): Support, funding.

Professional librarians who are heading different divisions have different suggestions to the Library Committee and the University Management. It is suggested that more ICT equipment and library management software will be needed, technical staff need to be trained to manage the proposed library portal well, the timeliness of the project is now and finally, a strong support, partnership as well as adequate funding will be needed.

7.3   Acting University Librarian at the Ibrahim Babangida Library

Interview questions were emailed to the Acting University Librarian, inviting his views on the status of e-resources and the need for a library portal for the Ibrahim Babangida Library. The email interview was sent during July 2016. Being one of the principal officers of the university his input was sought as he was to defend any project that should be implemented in the university library. After various follow-ups, the following responses were received:
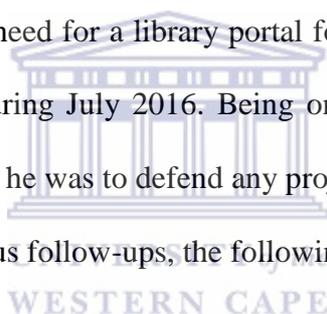
7.3.1   Subscription of e-resources

In the past, the university library used to subscribe to ScienceDirect and EbscoHost on an independent platform to be accessed with usernames and passwords. The subscription has since expired as funds are unavailable. Looking at challenges with the subscription of e-resources due to funds and technical issues, the Acting University Librarian has been asked to react to question 1.

> *Researcher: Question 1 - Does the university main library subscribe to e-resources and inform its patrons on a regular basis? What platform does the library use in communicating with its users?*
>
> *Acting University Librarian: Yes/Library Portal.*

187

From this indication, what he is insinuating is that the library has portal access where it places its announcements to the university community and that the university subscribes to e-resources although there is no evidence at the time of this research to prove how the university library subscribes to e-resources and the library portal as he claims.

7.3.2   Provision of e-resources by the academic library

Since 2000, the university has been receiving e-resources like e-books, e-journals, brochures and other scientific materials on CDs but has not yet designed a repository or database to store and manage these resources with a single access point.

> *Researcher: Question 2 - What roles does the university main library play in providing sufficient e-resources to academics and students?*
>
> *Acting University Librarian: Constant issuing of memo on new arrivals of e-resources and the subscription of databases by the university.*

If a library portal had already been established, as claimed, new e-resources arrivals should have been announced there in order for academics, students and the entire academic community to see immediately.

7.3.3   ICT tools to support sharing of e-resources

In today's information world, ICTs are needed to enhance library management and to render the required information services. When asked about ICT support, the Acting University Librarian's reaction was:

> *Researcher: Question 3 - Are there ICT tools and devices to support e-resource gathering and sharing in the university?*

Acting University Librarian: Yes.

This affirmative response, implying sufficient ICT tools and devices in the Ibrahim Babangida Library to support e-resource sharing, contradicts the responses received from librarians as recorded in the previous section. No evidence of enough ICT tools and devices has been noticed in the Ibrahim Babangida Library.

7.3.4   Problems anticipated in the availability and utilization of e-resources

Research has shown that libraries face challenges in providing adequate e-resources to users. Among others, there are lack of library acquisition policies and of technical support, underfunding, unnecessary bureaucracies and politics as well as licensing negotiations (Kahn and Underwood 2013: 14; Vasileiou, Rowley and Hartley 2012: 286). To gain more insight, the Acting University Librarian was asked about envisaged problems.

> *Researcher: Question 4 - Are there problems envisaged by academics and students of MAUTECH toward e-resources availability and utilization?*

> *Acting University Librarian: No.*

The negative response implies that no challenges in the availability and utilization of e-resources are anticipated. This is contrary to reactions by students, academics as well as librarians recorded in earlier chapters. Perhaps the Acting University Librarian is not aware of some challenges facing the library.

189

7.3.5 Availability of a library portal

When asked whether a library portal is available, the Acting University Librarian has answered in the affirmative. Unfortunately, no site or platform to authenticate the feasibility of the said library portal has been found.

> *Researcher: Question 5 - Is there a library portal designed to integrate the pre-supposed e-resources for academics and students utilization?*

> *Acting University Librarian: Yes.*

7.3.6 Availability of e-dissertations and e-theses

The Ibrahim Babangida Library has numerous paper copy projects (undergraduate degrees), dissertations (master's degrees) and theses (PhD degrees) shelved in the Theses Section under the Readers' Services Division of the library. The need for the digitisation thereof has been expressed by many. When asked about it, the Acting University Librarian has indicated that the digitisation process is already in progress.

> *Researcher: Question 6 - Does the library provide e-theses and e-dissertations to academics and students to enhance their studies, research work and teachings? If no, why not?*

> *Acting University Librarian: Through the portal and other means like constant issuing of memo's.*

The process of digitising library resources is usually carried out in segments. If a library portal existed, the university community should see some of these digitised sources there. Responses from students, academics and librarians have revealed that there is no access to and provision of e-resources.

7.3.7 Media to reach their patrons timeously

The information age demands proactive steps from the library management in ensuring that relevant information is passed to users on time and accurately. Therefore, a well-organised and functional platform for communication is needed. The reaction of the Acting University Librarian is captured thus:

> *Researcher: Question 7 - Is there a library portal designed to integrate the pre-supposed e-resources for academics' and students' utilization?*
>
> *Acting University Librarian: Yes conversion of the e-thesis is ongoing.*

7.3.8 Readiness to migrate to electronic and digitized library resources

To migrate from a physical collection to a collection containing both printed electronic and digitised sources usually brings about technical challenges, inadequate funding and lack of equipment and expertise. The Acting University Librarian's response to this is stated below.

> *Researcher: Question 8 - Libraries are migrating from storage houses to information gateways. What effort is the library making to ensure that information sharing and dissemination get to patrons timeously?*
>
> *Acting University Librarian: Yes, with the recent offer of devices from NITDA and with anticipation from TetFund.*

Although external funding is anticipated to assist the computerization process of the library, the researcher is worried about when it will actualise, and feels that the library should innovate and design a portal access by utilizing available portal specifications and tools.

7.3.9 Policies to guide the library portal and utilization of e-resources

A comprehensive library portal and e-resources policy guidelines are needed, as these will guide the proper use of e-resources in the university.

> *Researcher: Question 9 - If the concepts of a library portal and e-resources are fully utilized, will there be policies to guide the usage and implementation process? If yes, how?*
> *Acting University Librarian: Yes, if all get registered.*

It is unclear what is meant by the Acting University Librarian's response "… if all get registered". This question is regarded important, as the longetivity of a portal and e-resource platform is dependent on and guided by policies.

7.3.10 Plans towards the implementation of a library portal

Although the Acting University Librarian indicated that a library portal already existed (see below), no evidence of its existence was observed by the researcher or the academic librarians interviewed. Perhaps it was meant that plans for implementing a library portal had been made.

> *Researcher: Question 10 - What are your plans towards the implementation of a library portal, website and e-resources?*
>
> *Acting University Librarian: The portal is already available.*

7.3.11 Libguide to be adopted as a library portal in IBL/design its own

A library portal interface may be customised or proprietary (purchase from vendors) to suit the in-house design. Some libraries have customised their portal by adding some proprietary elements into the customised platform to make it more comprehensive, responsive and dynamic. Libguide is a content management system to create and manage websites. It is often

192

used to create web pages within websites; for example, faculty pages within an academic library website. It is used to curate, organise and share information in order for users to find what they need easily and to extend services to scholars, researchers and students of the university.

> *Researcher: Question 11 - Can the library adopt Libguide portals as one of its access points to provide information on e-resources to its patrons? Or design its own portal access?*
>
> *Acting University Librarian: Design its [own] portal.*

In response to whether the library should adopt Libguide portals or design its own, the Acting University Librarian indicated that the library should design its own portal access.

7.3.12 Subscription to more databases and e-resources

Subscription to more databases and e-resources would be determined by the availability of funds provided by the university management and external sponsors.

> *Researcher: Question 12 - When the portal access is designed, would the library subscribe to more databases? If yes, how?*
>
> *Acting University Librarian: Yes, through the budget and by inter-university corporation.*

The Acting University Librarian has indicated that the library will subscribe to more databases if a library portal were available and that it will be paid for by the library budget as well as by means of inter-university cooperation and collaboration. As the Acting Librarian has rightly posited, inter-university library collaboration and the resulting sharing of e-resources will provide access to a wider range of information sources.

7.3.13 University ICT support towards library digitization

Although the Ibrahim Babangida Library has technical IT staff, collaboration of IT experts from the university computer and/or ICT centre may be needed in actualizing all the facets of a digitization project.

> *Researcher: Question 13 - Would you like to liaise with ICT experts, especially the university ICT committee, to provide technical assistance in the actualization of the digitization process?*

> *Acting University Librarian: Yes, It is not a one man show, there is a need for various field, Network administration, system administration.*

The Acting University Librarian has acknowledged that collaborations of all stakeholders will be considered and harmonised to ensure that the Ibrahim Babangida Library is fully automated and digitised.
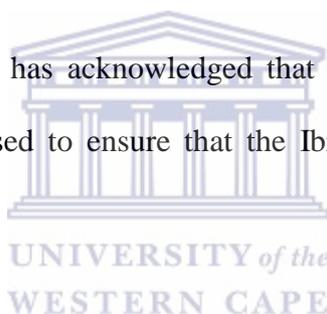
7.4 IT staff at MAUTECH

It would be difficult to design, implement and maintain a robust library portal without the support and technical expertise of IT staff. This section of the email interview was intended to provide clarity as to how the portal would be designed and what its technical interfaces would be. Although the e-mail interviews were sent to three IT staff members, only one returned the completed interview.

7.4.1 Familiarity with library portal designs

> *Researcher: Question 1 - Are you familiar with library portal designs?*

> *IT Staff: Yes.*

http://etd.uwc.ac.za

The IT staff member acknowledged being knowledgeable about designing library portals. As noted earlier, the ICT department of MAUTECH is responsible for hosting and maintaining the university website, the local area network and the portal registration of all students.

7.4.2 Collaboration with the Ibrahim Babangida Library staff to design a library portal

As the attributes of librarianship as a profession have to be shared with other professions as an integration of knowledge-sharing in a different field (Australian Library and Information Association 2014), the IT staff member has been asked the following question:

> *Researcher: Question 2 - Would you cooperate with the university main library and its professional staff to design the library portal? If yes, how?*

> *IT Staff: Yes, I was able to host the e-library application portal on the university website.*

The IT staff confirmed hosting an e-library portal into the university website. This showed some level of collaboration he had with the Ibrahim Babangida Library but at the time of this research there was no e-library link to the university website. The willingness to cooperate will be exploited during the process of establishing a responsive and dynamic library portal.

7.4.3 Handling of technical challenges of portal design

One of the challenges of any technical project is its maintenance process. This handling of technical challenges has been noted by one of the librarians during the interview sessions. There has to be a holistic approach to handling technical issues like the renewal of hosting charges, consistent upgrading, improvement of the library web pages and links, increased

subscription of e-resources, procurement of more server systems to cater for digital archival resources and so on. When asked about it, the IT staff member reacted this way:

> *Researcher: Question 3 - Would you be able to handle all the technical challenges that will arise in the design of the library portal?*

> *IT Staff: Yes, to some level.*

Noteworthy the IT staff acknowledged providing technical support only to a certain degree. It is envisaged that the ICT Centre and the proposed Library Portal Committee, with the approval of the University Library Committee, must ensure that a synergy is maintained on the continued maintenance of the library portal.

7.4.4   Appropriate web scripting or high-level language for the design of the library portal
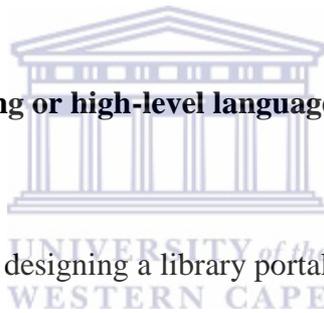
Different web scripting is used in designing a library portal. When asked about it, the IT staff member mentioned the application of PHP (Hypertext Preprocessor) and MySQL (My Sequence Query Language) as high-level languages used for web publishing languages and web pages.

> *Researcher: Question 4 - What high-level language or web scripting will be appropriate for the design and coding of the library portal?*

> *IT Staff: Web scripting language used for the project is PHP with MySQL database.*

7.4.5 User-friendliness of the portal design

Research has shown that library users easily become discouraged when they have to go through rigorous coded library portals in order to obtain information. They prefer Google-like access which provides enamours resources with one search (Mane and Panage 2015).

> *Researcher: Question 5 - Would the portal access design be user-friendly with different interfaces, just like google and google scholar, etc.?*

> *IT Staff: Yes.*

The IT staff member has acknowledged that a library portal must be user-friendly. A library portal is regarded as user-friendly if it has navigational interfaces, provides access to different databases and resources, is flexible, has feedback pointers and enough links to other non-library, and provides contact information to guide users.
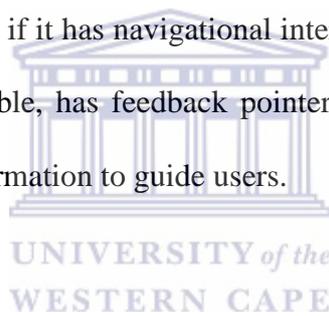
7.4.6 Suitable portal typology

Designing a library portal may require an appropriate typology. The ICT staff member indicated preference for the Waterfall model as the adoptable typology.

> *Researcher: Question 6 - What type of portal typology design would you suggest to the university main library?*

> IT Staff: *Waterfall model.*

The Waterfall model, a designed approach software development that allows the flow of progress from a particular direction (in a waterfall manner) throughout other stages of conception, initiation, analysis, design, construction, testing, deployment and maintenance. There are other typologies, namely Agile (modelling precursor software systems based on

best practices which work on the collection of values and principles software to develop a project) and V-shaped models (also known as verification and validation models which are extensions of the Waterfall model used to test the phase development stage). Regardless of the type of typology used, it should be able to provide customization, personalization and integration of diverse resources for the end-user, especially in an academic community.

7.4.7   Providing access to the university website

A strong synergy between the academic library and the university is needed to promote research activities competitively. The IT staff member was asked about the feasibility of linking the library portal with the university website.

> *Researcher: Question 7 - Would the library portal design be linked to the university website for wider accessibility?*
>
> *IT Staff: Yes, because a link to the e-library can be seeing on the university website.*
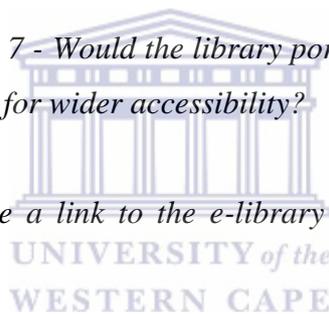
The IT staff member stated that a link could easily be established, seen and searched on the university website.

7.5   Digital Communications Librarian, UWC Library

The Digital Communications Librarian at the University of the Western Cape Library is responsible for designing and maintaining the library portal. He reacted to the email interview questions as follows:

7.5.1 Working experience

The Digital Communications Librarian from the UWC Library was asked to explain his work expertise and experience. His reaction reflected experience in both private and tertiary education institutions.

> *Researcher: Question 1 - How long have you been working in the university library as an IT librarian?*
>
> *Digital Communications Librarian: 4 years at Stellenbosch University, 3 years at the University of the Western Cape and 10 years in the private sector.*

7.5.2 Familiarization with software application or web scripting

To the question to form an idea of how familiar he is with software application or web scripting, his response was:

> *Researcher: Question 2 - What software application or web scripting are you familiar with?*
>
> *Digital Communications Librarian: a. Programming Languages: PHP, XML, Javascript, HTML & CSS, Python, Perl, Ruby, JAVA, ASP, JQuery*
> *b. Server Operating Systems: Linux (Ubuntu, Kali Linux, Debian Distros) & Windows server*
> *c. Web CMS's: DSpace, Open Journal System, Open Conference Systems, Omeka, Joomla, Drupal, WordPress, Plone, Tiki Wiki, Concrete5*

7.5.3 Designing the UWC library portal

When asked to explain how the UWC library portal was designed, and whether it was dynamic and responsive enough, his response was:

Researcher: Question 3 - How did you design the UWC's library portal? Is it responsive or static?

Digital Communications Librarian: The current UWC Portal was designed by my predecessor. I'm currently designing a more secure portal for the future. Yes it responsive.

The present library portal has not been designed by him. However, there are plans to enhance the present portal typology for maximum utilisation.

7.5.4   Consultations with stakeholders in the design of UWC library portal

As responses from students, academics and librarians indicated that they, as stakeholders, expected and required certain features to be part of the portal architectural design, the Digital Communications Librarian was asked whether he considered the input of stakeholders when decisions were made.

Researcher: Question 4 - When designing the UWC library portal, did you collaborate/consult with other librarians, academics, and students of the university? If not, why not?

Digital Communications Librarian: To my knowledge consultation was done. The new portal will be designed by me and presented for critical analysis.

It was noted that consultations were carried out and that the new portal will be presented for critical analysis before implementation.

7.5.5 Network access of UWC

Network accessibility is paramount for access to a library portal. Although this question should have been targeted at IT staff in charge of the university network, nonetheless, the Digital Communications Librarian was asked to evaluate UWC's connectivity.

> *Researcher: Question 5 - How is the network accessibility of the university generally? Are you facing any challenges?*

> *Digital Communications Librarian: UWC's network structure is very stable and is running on TENET's backbone which caters for all academic institutions in South Africa.*

It was confirmed that the university's network was very stable and robust. The TENET refers to the Tertiary Education and Research Network of South Africa which guarantees reliability.

7.5.6 Technical support in the design of MAUTECH's library portal

According to Johnson (2012) there should be a proactive support system for e-resources access, maintaining the library web page, authorisation process to users, archival policy, perpetual access and institutional archives. With this in mind, the Digital Communications Librarian was asked about willingness to supply technical support.

> *Researcher: Question 6 - Would you be willing to provide technical assistance in the design of the library portal of the Ibrahim Babangida Library? If yes, how?*

> *Digital Communications Librarian: Install local Virtual Server; Install appropriate software; Design Layout; Consultation on Design; Transfer web content to Web Hosting Service Provider.*

The respondent not only indicated willingness to provide support, but with the collaboration of the researcher had also established the virtual server, designed the portal layout and transferred the content to a web hosting service provider (WhoGoHost) for the Ibrahim Babangida Library, resulting in it already being functional. Currently input and suggestions are being received from stakeholders to improve the layout of the portal.

7.5.7 Training for onward management of the library portal

The need for training to ensure successful management and upgrading of e-resources of the university library is crucial. It prompted the researcher to enquire about the Digital Communications Librarian's willingness to provide training in this regard.

> *Researcher: Question 7 - Would you provide training for onward management of the library portal? If yes, how?*
>
> *Digital Communications Librarian: One on One Training accompanied by step by step guides.*

Areas where transfer of knowledge will be needed for the MAUTECH library portal are used by Omeka as a content management system to upload dissertations and theses, as well as past examination papers and the use of WordPress to standardize and enhance features of the library web pages.

7.5.8 Libguides with other portal typology to be linked into the portal

Most library portals have extensive links to other libraries in the form of interlibrary loans and consortiums providing professional collaboration and sharing resources. When asked, the Digital Communications Librarian indicated that Omeka would be appropriate. The portal already had so many typologies incorporated within.

Researcher: Question 8 - Can Libguide or other portal typology be linked into the portal for extensive research collaboration?

Digital Communications Librarian: Yes, Omeka a well-known repository software have also been installed for ETD's and Past Exam Papers.

7.5.9 How to handle technical challenges in the design of the IBL portal

Challenges in the management of the portal design and implementation process should be anticipated prior to their manifestation in order to provide ways to resolve them.

Researcher: Question 9 - How would you advise the Ibrahim Babangida Library to handle all technical challenges
Digital Communications Librarian: Appoint or contract a Web Developer to assist.

The Digital Communications Librarian recommended the appointment of a web developer to overcome some of the unforeseen challenges that might arise in the course of using the designed library portal. It is hoped that the university management would adhere to the recommendation.

7.5.10 Recommendation to the University Management of MAUTECH to support the design of the library portal and automate its collections

The following advice was provided in the design of a library portal:

Researcher: Question 10 - How would you advise university management (MAUTECH, Yola) to support the design of the library portal and automate its collections?

Digital Communications Librarian: Globally libraries are moving away from being "traditional", they have become the hub for

203

research abroad. International libraries have adopted hosting of University Research Outputs and Research Datasets (Big Data) in repositories which give the university a global ranking status. Universities are ranked globally on how their research is presented, archived, etc. and this is where libraries play an intricate part. They have to have a well presented presence, because indirectly the library is a university's marketing tool. They market the university's research and quality of teaching methods. The Southern African Universities currently have a policy with their universities where graduating postgraduates, Professors, lectures have to submit a copy of their publications whether it is a chapter in a book or conference proceeding to their academic library for archiving and as a showcase of their institutions research outputs.

Table 7.1: Integrated interviews (N = 7)

Theme	Summary of responses
Working experience	Both librarians and ICT experts had many years of experience in librarianship and ICT.
Computer skilled	Both librarians and ICT experts were computer literate. Some details mentioned were *Internet, Microsoft word, Excel, Dreamweaver, Word processing, DBMS, Microsoft Office Specialist, general computer application, data processing and cloud computing.*
Need for a library portal	All respondents expressed the need for a library portal.
Expected challenges with the designed portal	Both librarians and ICT experts alerted to challenges. Some mentioned were the need for - *sufficient proficient Internet access* - *Internet speed* - *proper skilled implementation, fund, management and maintenance* - *adequate and skilled manpower*
Librarian's role with the library portal	Librarians emphasised their role in designing all possible procedures - *leading to supplying direct access to all available resources efficiently and effectively* - *to ensure standards requirements of an e-Library* - *marketing of the library services and resources* - *current awareness service* - *selective dissemination of information*
Training needed to	All respondents acknowledged the need for training in different formats on different

manage library portal	software applications.
Digitising library resources	All librarians emphasised the need for digitization of all divisions especially the bibliographic control unit (library catalogue, authority file, indexing and abstracting services unit), public access, circulation and referencing.
Advice to MAUTECH leadership on library portal implementation	The following advice were given*:* - *ICTs* - *Library Management Software* - *people trained to manage the technical backbone* - *new technology platforms, information exploration, organization and retrieval. It is timely and inevitable for MAUTECH Management Committee of Library to implement and Support, funding*
Familiarity with library portal designs	*ICT experts were familiar with:* *a. Programming Languages: PHP, XML, Javascript, HTML & CSS, Python, Perl, Ruby, JAVA, ASP, JQuery* *b. Server Operating Systems: Linux (Ubuntu, Kali Linux, Debian Distros) & Windows server* *c. Web CMS's: DSpace, Open Journal System, Open Conference Systems, Omeka, Joomla, Drupal, WordPress, Plone, Tiki Wiki, Concrete5*
Handling technical challenges	Advice received: *Install local Virtual Server* *Install appropriate software* *Consultation on design* *Transfer web content to Web Hosting Service Provider* *Appoint or contract a Web Developer to assist*
Portal typology linked to the library portal	*Waterfall model* *Omeka*
Reasons for support needed from MAUTECH Management	Reasons for establishing a library portal s that academic libraries are - *moving away from traditional libraries* - *becoming the hub for research* - *hosting universities research data and output* - *showcasing research output* - *providing the university a global ranking status* - *marketing tools*

7.6 Scanning of library portals

7.6.1 American University of Nigeria

The researcher looked at the library portal of the American University of Nigeria where most resources are in electronic format. The library subscribes to e-journals only but the collection still contains 25 000 printed items. The portal supplies access to Information literacy, Reference and information services, Research and the catalogue. The library uses Koha, an open-source integrated library system, implemented internationally by all types of libraries. It is, however, only applicable to a Linus operating system that is written in Perl, a general purpose programming language used to develop web applications.

7.6.2 University of Maiduguri Library

The University of Maiduguri has an e-Library section, accessible online through the university's website (http://unimaidlibrary.com). The e-library is a division of the main university library, known as Ramat Library. It has an online repository platform that incorporates digital contents such as e-books and databases. The e-library does not contain sufficient features of a typical library portal as it has no integrated management system, e-theses or e-dissertations. However, it serves as an efficient platform for information gathering and dissemination.

7.6.3 University of the Western Cape (UWC) Library

The UWC library portal is linked to the university's home page (http://lib.uwc.ac.za). The portal interface was designed a few years ago and is changed and constantly updated. The main menu consists of "Search and find", "Services", "Research portal" and "About us".

To assist library users to search for and find information, submenus namely databases by subject, the OPAC and Google Scholar are provided. Borrowing, binding services, distance students, print and design services, information literacy, knowledge commons and the reference desk are linked to the services provided. The latest research articles are archived in the research portal to reflect the university's research output. The "About us" submenus supply contact details, library hours, and library prospects. The home page also provides many quick links. Library users can see and connect to amongst others, databases provided, e-journals, e-books, the OPAC, e-theses, the institutional repository, copyright, inter library loans, past examination papers, Refworks (a reference management service), subject guides, training calendar, library tour and the library's Youtube channel. An important feature of the library home page, is that it provides a single point of entry - refers to a single 'one stop' search window - connecting the search query or search terms typed into the search box to all library information or resources. The one search query activates a federated search engine allowing the simultaneous search of multiple searchable resources.
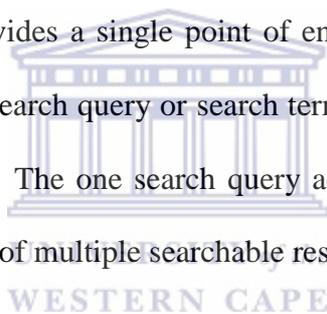
The home page also includes an interactive function allowing library users to provide feedback via social media tools like Twitter and Facebook and to with a librarian. It is also used by the library to make announcements regarding new acquisitions, services, features, news and training initiatives.

7.7   Concluding summary

This chapter presented data gathered from e-mail interview sessions with stakeholders at MAUTECH who were going to manage the portal access or provide policy favourable to the realization of the proposed portal project. It also presented data collected from interviewing the Digital Communications Librarian from the UWC and a visit to the American University

of Nigeria to gain technical advice on designing and establishing a library portal to provide access to e-resources. The next chapter provides a discussion and interpretation of the findings.

CHAPTER EIGHT

8 DISCUSSION AND INTERPRETATION OF FINDINGS

8.1 Introduction

In chapters five, six and seven, some individual interpretation of findings has been done. This chapter attempts to incorporate the findings collected from the questionnaires and interview sessions in an integrated way to identify similarities, contradictions and trends. The findings are interpreted through the lenses of the Technology Acceptance Model (TAM), the Diffusion of Innovation (DoI) theory as well as the conceptual framework which incorporates the characteristics and concepts of the two theories.

8.2 Profile of MAUTECH students

The most students were enrolled at the School of Pure and Applied Science (25.8%), followed by the School of Agriculture and Agricultural Technology (22.2%) and the School of Environmental Sciences (20.2%). Many students (36%) were already in their fifth year of study. Many MAUTECH students were interested in studying Nigeria and the country's conservation issues (42.4%), had been on campus for three to five years (62%), resided on campus (51%) and owned their own computers or laptops (73%).

8.3 Profile of MAUTECH academics

In correspondence with the students, most of the respondents from the academics section were from the School of Environmental Sciences. This is followed by the School of Management and Information Technology and the School of Pure and Applied Sciences. The majority of the teaching staff were ranked Lecturer I and had between one to five years of experience. Many academics were responsible for teaching four to six courses approved by

209

the National Universities Commission of Nigeria. The majority (88%) of them owned their own computers or laptops.

8.4   Internet access

Both students and academics are of the opinion that there is no sufficient access to the Internet on the MAUTECH campus. This is in contrast with the growing Internet use trend in Nigeria (Internet Live Stats 2016). It does, however, correspond with the study by Ajayi, Shorunke and Aboyade (2014) indicating insufficient Internet access as a factor hindering the effective information service in Nigerian higher education institutions.

The majority (56%) of academics have rated the Internet access at the university library as inadequate and therefor access the Internet from home or from their offices using data bundles. It is an indication that, although the services of the academic library in the 21st century is adduced by ICTs (Thanuskodi 2015: 20), it is not true in the case of the Ibrahim Babangda Library. Poor Internet access may be the reason why many students (45.9%) and some academics (28%) rate the Cyber Cafe as poor or very poor.

Internet also influenced access to online information resources (Majapelo & Dube 2014). As a result the insufficient access to Internet affected students residing in dormitories (70%), while a very low number of academics had access to the Internet in the university quarters (6.12%). This could be attributed to insufficient funds from the university management to help improve Internet access in the university environment (Anie 2015). This might also be one of the reasons for their not visiting the library and rating the quantity and quality of the library collection as dissatisfactory. However, a university is expected to provide 24/7 access

to the Internet to enhance academic activities (Masese, George, Makwae, & Moenga 2016: 206).

8.5   Finding information

The majority of both academics and students found information by using the Internet and by consulting printed sources. This confirmed a statement made by Rao and Mulloth (2017: 12) that access to a variety of resources had the potential to add value to the higher education institution. The trend of today's information users preferring a Google search to find information (Behrends 2012; Perruso 2016) might contribute to the high Internet usage.

The findings also conformed to the conceptual framework that academics and students perceived usefulness and perceived ease of use should result in a positive use of a system which included Internet and e-resources.
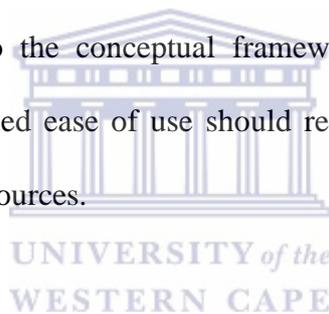
8.6   Use of the Ibrahim Babangida Library

As the academic library plays a conspicuous role in the research needs of students and academics in the institution of higher learning, it is noteworthy that most MAUTECH students visit the Ibrahim Babangida Library weekly or daily. Notable though, is that 18.3% of students and 60% of academics seldom visit the library, and some students (16.6%) and academics (15%) do not visit the library at all. This corresponds with findings by Vasantha, Venkatesha, Ambika and Umendra (2016: 2010-2011) and Khan, Khan, Malik and Idrees (2017: 3) on declining library use due to preference and time effectiveness of search engines like Google. This connects with the conceptual framework of this research that academics and students will have to decide whether to adopt or reject the concept that is introduced to them.

211

8.6.1 Reasons for visiting the library

Most students (52%) visited the library for "reading and research". Academics supplied more divergent reasons for visiting the library emanating from "search for information for lectures", "current awareness", "information for publishing" and "consult books/journals/newspapers".

Noteworthy, however, were the reasons academics gave for not visiting the library. Inadequate library resources (dated books, limited current material, inadequate subject resources, inadequate electricity, no useful research information and the library not being equipped well) were identified as major reasons for not visiting the library. This confirmed the use of the TAM applied by Koufaris (2002: 217) to online consumer behaviour that "perceived usefulness was more an important predictor of intended system usage", indicating that positive encounters related positively with satisfaction. Hence, marketability of library resources was akin to increasing more users coming to use the library more frequently.

8.6.2 Library divisions visited

Most students and the majority of academics visited the Readers' Services Division. One possible reason for the frequent visits was that the division provided books (circulation and reserved) and adequate reading space for library users. This corresponds with the study done by Orgem (2012: 33) who established that an important factor motivating a library user was the ease of use of library resources. Both students and academics visited the Cybercafé to a lesser extent. It could be concluded that both students and academics visited more than one library division, which correlated with the TAM that the "actual system use" would depend on the "behavioural intention of use" of the role players.

8.6.3 Rating of the Cybercafé

Rating of the Cybercafé was characterised by a degree of controversy. The students rated it as adequate (39.0%) and poor or very poor (45.9%), while the academics' rating reflected adequate (54%) and poor or very poor (28%). Of interest was that the minority of respondents rated the division as good or very good. The different views could be attributed to the fact that the Cybercafé division recently moved from the old library building to the new complex, and some library users might not have accessed the new division yet. Perhaps with marketing initiatives heightened awareness would result in better utilisation.

8.6.4 Information resources used

On a daily basis students used newspaper articles (38.4%), dictionaries (33.9%) and books (33.0%), while academics used books (34%), textbooks (34%) and dictionaries (22%). The relatively high use of newspapers by students justified that the Ibrahim Babangida Library spent a huge percentage of the monthly or quarterly budget on printed newspaper subscriptions. However, it is noteworthy that it was still a relatively high percentage (37.9%) of students never or seldom using newspaper articles. Contradictory to the students, 20% of academics used newspapers on a daily basis, while the majority (55%) seldom or never used the library's newspapers. It might be that they bought their own newspapers or accessed them elsewhere. Daily usage of dictionaries and books was relatively high for both groups of library users.

The library resources never or seldom used by the students were master's dissertations (51%), governmental publications (48.7%), multimedia (47.3%), journal indexes and abstracts (46.4%), and yearbooks (45.2%). Except for journal articles, books, textbooks and journal abstracts and indexes as well as dictionaries, more than half of academics seldom or had

213

never used the listed library resources. To a lesser extent, students also reflected the pattern of non-usage. The reasons for non-usage will be discussed later. Eyiolorunshe, Ayooluwa and Eluwole (2017: 119) as well as the Australian Library and Information Association (2014) argued that efficient use of information resource could be optimised by the type and number of resources in the library collection.

The use of the DoI theory had become inevitable here where it could provide convincing reasons (using the communication channels) as to why the use of those seldom used or never used resources could be of immense help to students as well as academics. The DoI theory could be used as a conceptual model to forecast various resources the library had and its structures as well as to look at how students and academics at MAUTECH could understand the innovation the Ibrahim Babangida Library put in place to procure relevant library resources for them.
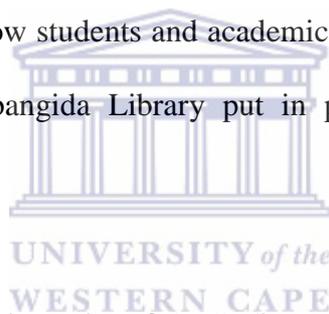
Applying the communication channels of DoI (knowledge, persuasion, decision and confirmation) to the use of e-resources would be of help to students and academics. Knowledge about the proposed innovation (library portal and e-resources) is needed; otherwise there will be no positive rationale for role players to accept what they are not conversant with. After this comes the persuasion aspect where academics and students are to be convinced to accept the idea that is being shared. These thoughts must be allowed to be dissected by the role players. After this comes the validity test through the confirmation process of either adoption or rejection of innovation to be considered by all parties.

8.7   Evaluation of library collection

An evaluation of the Ibrahim Babangida Library collection was done based on the quality and quantity of library resources. Findings revealed that 42% of students and 55% of academics were not satisfied with the quantity of resources provided, while 49% and 46% of academics and students respectively were not satisfied with the quality of provided resources. The major reasons for dissatisfaction were resources not relevant, resources not current, inadequate resources, the disorganised state of the resources, and the lack of Internet access and power supply. The library not having adequate resources was the predominant reason for dissatisfaction with the quantity of library resources.

Five academics mentioned the lack of stable Internet access for utilisation of e-resources as well as the unavailability of e-resources linked to the dated resources and the fact that the ICT section housing e-resources were not functional. Poor communication from the library, resulting in academics not being aware of resources and services, was also mentioned. Dissatisfaction with and non-use of library resources might be a reason why only 45% of academics referred students to the library to consult resources. This coincided with the study by Clink (2015: 20-21) who emphasised that academic libraries endowed with resources played a pivotal role in advancing the academic activities of higher institutions. In support of this view, Jackson (2017: 87-88) argued that the quality of library services was measured entirely by the amount of money spent on them, and these were cumulatively combined with the expenditure of other services rendered by the library.

These outcomes can also be linked to the conceptual framework of this research that the adoption or rejection of library resources by academics and students will depend largely on the decision process of the parties involved, which is based on the perceived usefulness and

215

perceived ease of use of provided resources. Dissatisfaction of service may lead to rejection of an innovation, but satisfaction, on the other hand, may attract the acceptability of innovated creativity.

8.8   E-resources

Findings showed that only 19 students were familiar with e-resources - mainly websites, e-books and e-documents. Academics were mainly familiar with e-journals (63%), e-books (57%), e-textbooks (52%), e-newspapers (52%) and websites (48%), indicating that they, in general, use a wider variety of e-resources. Academics were, however, like the students, not familiar with Libguides, repositories, indexing and abstracting databases and e-governmental publications. It could be concluded that both students and academics were only familiar with certain e-resources, perhaps because the library did not have e-resources in their collections or supplied free access to them. This contradicts findings supported by Adeniran (2013) who concluded that the use of e-resources had an enormous impact on the academic performance of undergraduate students.

The frequency of e-resources use, more than half of the students indicated they used e-newspapers (55.79%), Google Books (52.12%) and e-textbooks (50.79%) either daily or weekly. The relatively excessive use of these e-resources could be attributed to their being open-access sources and therefore, they could be used free of charge. Academics reflected less excessive use of e-resources, as they accessed websites (32%), e-newspapers (31%), e-textbooks (30%) and e-journals (30%) on a daily or weekly basis. The majority of both students and academics never used Libguides, repositories, e-reference material, indexing databases and e-government publications. The findings on the inadequate utilisation of e-resources corresponded with studies conducted by Joshua (2014: 10). Underutilisation could

be due to lack of awareness, exposure to and training on the use of e-resources. Noteworthy was that open-access sources like Google Books and Google Scholar were never used by 55% and 62% academics respectively.

Data emanated from the Acting University Librarian on the availability of e-resources and the utilization thereof as he stated that there was no anticipated problem. Perhaps he is confident enough to anticipate no problems. As noted earlier at the time of this research, the Ibrahim Babangida Library had no interconnectivity, stable Internet access or dedicated library portal to provide access to library-acquired e-resources.

Contradictory to the MAUTECH situation, Adetimirin (2007), cited by Olajide and Folayan (2014: 1), argued that it was the responsibility of the library to acquire, organise and make accessible both print and e-resources to its clients while Habiba and Chowdhury (2012: 76-78), Kwafoa, Osman and Afful-Arthur (2014) as well as Nisha and Ali (2013) confirmed that a large number of e-resources were provided in university libraries, and that library users were aware of e-resources and databases in their institutions. In line with these findings, however, was the conclusion reached by Jonathan and Udo (2015: 8, 11) that there was ignorance about e-resources in Nigerian university libraries, resulting in large numbers of e-resources not being utilised.

The fact that students and academics were already utilizing e-resources by doing Internet searches, visiting websites and finding open-access sources is an indication that they can already be regarded as adopters of technology and new innovations in terms of the TAM and DoI theory.

8.9 Impact of e-resources

Students acknowledged that they used e-resources because they found it easier to find relevant information, to broaden the focus of their research and to keep up to date with developments in their disciplines. The findings supported those of Adeniran (2013) who concluded that the use of e-resources had an enormous impact on the academic performance of undergraduate students. The impact of e-resources on academics' research and teaching was lower. They used e-resources to a much lesser extent and preferred to use other resources.

Challenges faced by libraries in providing adequate e-resources were, among others, lack of a library acquisition policy to procure e-resources, lack of technical personnel, underfunding, unnecessary bureaucracies and politics as well as complexity issues on licensing negotiations (Kahn & Underwood 2013: 14; Vasileiou, Rowley & Hartley 2012: 28). The Acting University Librarian at the Ibrahim Babandiga Library indicated that the library subscribed to e-resources, memos on the arrival of e-resources were constantly issued and ICT tools were in place to supply access to e-resources, resulting in no envisaged problems with e-resource utilisation.

This, however, is contradicted by the fact that especially academics acknowledged the low impact of e-resources and reliance on other information sources. The TAM (Davis 1986: 89) predicted that system usage should be anchored on perceived usefulness and ease of use. As low positive impact was recorded, it could be concluded that students and academics had not experienced usefulness or ease of use in utilising e-resources.

This assertion also corresponded with the study done by Saade, Nebebe and Mak (2009: 109) explaining perceived ease of use as the degree with which academics and students believed that access and utilisation of e-resources would be free from many efforts.

8.10 Use of journal articles

Findings on the use of journal articles by students and academics showed contradictory results. Students (46.44%) read one to five journal articles per semester whereas academics (60%) read more than five articles per semester. Most students (41.09%) retrieved journal articles by photocopying them from printed journals or by doing a Google search (24.6%), while academics mostly preferred using e-resource platforms like open-access journals (40%) or e-journals (38%) available on the Internet. The majority of students indicated that they found it difficult to retrieve journal articles. This could be attributed to lack of training, which this study equally suggested. Many students (51.98%) and academics (55%) indicated that they had never used ScienceDirect. This was largely due to a lack of awareness.

Almost half of the students (47.49%) and more than a third (35%) of academics confessed to not being able to find a journal article using bibliographic details or to retrieve bibliographic details for journals articles. Both academics and students agreed that they could not find the complete bibliographic details of journal articles. King (2007) identified the same trend, and concluded that online retrieval tools and full-text databases could be used to retrieve journal articles easily if retrieval skills, as part of information literacy education, were mastered.

8.11 Preference printed or e-resources

The majority of students (60%) and academics (55%) indicated that they were not ready to accept complete e-content library collections migrating completely to e-resources. However,

219

willingness to adopt to e-resources was expressed. Some of the reasons listed for adopting e-formats were that they were easy and faster to retrieve as well as the benefit of less printing and photocopying costs. Both students and academics opted for having a choice of using printed or e-books. Some reasons for preferring both printed and e-resources were that it was easy to access them, being familiar with them and that it was easier to read from printed sources. Perhaps due to lack of training and inexperience, some students indicated a preference to printed sources as they included references, would not be affected by viruses, had more information and were more reliable than e-books.

One student expressed mistrust towards the MAUTECH management and another believed that e-resources would not appear as promised. Most academics preferred printed sources as backup because of accessibility problems regarding e-resources. Perhaps lack of training, lack of sufficient e-resources and Internet accessibility hindered them from wanting to migrate completely from printed to e-resources. These findings confirmed the study of Joshua (2014) in which users of the University of the Philippines Library indicated that they could migrate to a complete electronic retrieval if the library would provide sufficient e-resources and training in the utilisation thereof.

8.12 Library orientation and information literacy education

The majority of students (78%) and academics (66%) did not receive any library orientation or information literacy training to equip them with the requisite skills in information retrieval, evaluation and use. Those who had training received it from places outside the library. Reasons for non-training were because they were not aware of training or had no interest in being trained. This trend corresponded with those of, among others, Daramola (2016), Masese, George, Makwae and Moenga (2016: 206) as well as Okite-Amughoro, Makgahlela

and Bopape (2014) who confirmed that inadequate training had often led to students not utilising library resources and services. MAUTECH librarians as well as the UWC Digital Communications Librarian alerted to the need for training for librarians in order to maximise accessing e-resources.

Both the DoI and TAM are characterised by adoption of technology or an innovation if users experience ease of use and the advantages of using it. Students, academics as well as librarians need to be trained in order to see the perceived ease of use of e-resources together with the perceived usefulness, for example, to retrieve journal articles effectively. The use of the DoI theory should also apply in the sense that the proper use of communication channels (knowledge, persuasion, decision and confirmation) should be employed to make potential users as well as students and academics at MAUTECH aware of the availability of library portal and e-resources.
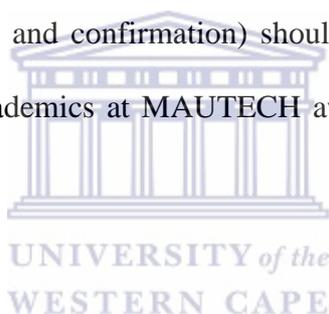
8.13 Digitization of library resources

The majority of the students and academics confirmed the need for digitization of library resources, especially local newspaper or magazine clippings, undergraduate projects, master's dissertations, doctoral theses, rare books, rare documents and research data. Some of the academics had reservations regarding the digitization process. Librarians agreed on the need for digitisation, but had divergent views on the scope thereof. Two suggested that the entire library be digitized; however, one believed digitisation should be done in selected divisions - prioritising cataloguing, circulation and referencing - depending on funding and available personnel. A need for more computers in all divisions of the library - not only in the Cyber Cafe - to facilitate digitisation process was also identified.

Academic libraries are already displaying their resources through digital content for extensive information sharing. The process of digitisation is considered a subset of designing a library portal (Rafiq & Ameen 2013: 37). This is in tandem with Davis (1989: 320) who explains that the TAM seeks to "provide better measures for predicting and explaining use" of ICT at universities. Adopting the concept of DoI should help the management of MAUTECH in taking the decision to supply sufficient funds to accelerate the digitisation process. However, if this decision process and communication channels are mishandled, it could lead to rejection instead of acceptance of the concept in its entirety.

8.14 Establishing a library portal

Input from all role players were needed to establish an effective, responsive and friendly library portal. This section explores the intricacies of establishing a library portal. It will explain reasons for needing a library portal revolving it around literatures and fact findings. It will also look at pragmatic requirements for a library portal alongside with the challenges in the design thereof.

8.14.1 Need for a library portal

Although the Acting University Librarian indicated the existence of a library portal, the subscription to e-resources, implementation of ICT tools to support e-resource sharing and no problems regarding the availability and utilization of e-resources, no evidence thereof was observed by the researcher. Students and academics emphasized lack of access to e-resources, specifically ScienceDirect. The majority of students (87.63%), academics (59%) and librarians (100%) agreed or strongly agreed to the establishment of a dedicated library portal. Many academics (37%) are undecided perhaps due to reservations about funding, facilities, equipment and personnel.

222

The acceptance of the library portal as a new innovation will depend on the decision process of library users as well as the perceived usefulness and perceived ease of use of e-resources via the library portal. The outcome of the output level will solely depend on the flow of input and process levels. For example, a non-responsive library portal, or academics and students finding access difficult, will be an indication that the portal and e-resource applicability, compatibility, productivity, marketability and dependability cannot be actualized. This is what has necessitated the use of the TAM and DoI concepts to assist academics and students in adopting new innovation and applying its ideology where applicable. Acceptance of innovation through persuasion and the perceived use of a system and ease of use will together determine academics' and students' rejection or adoption thereof.

Considering this concept as a new phenomenon, the application of DoI will be appropriate to apply. One focus of the diffusion theory is the means by which information about an innovation is disseminated to the targeted recipients (Rogers 2003: 20).
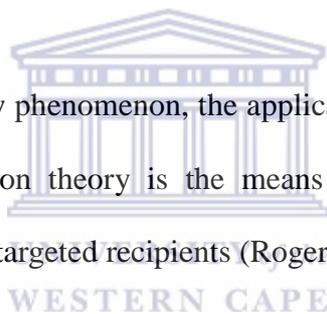
In line with this, Chang (2010) explains that the diffusion of innovation (DoI) is a theory that assists the adoption process of an innovation by modelling its entire life cycle to the aspects of communication and human information interactions. Therefore, the diffusion of innovation theory offers valuable insights into the interface and design of a library portal supporting the application and dissemination of e-resources. This provides an evaluation of e-resources and offers information required for decision-making to help boost maximum usage of e-resources by the stakeholders in the university. Koutropoulos (2014: 65-66) emphasises that if expectations differed from the library portal interface, users often reverted to using Google.

8.14.2 Reasons for establishing a library portal

The reasons academics and students supplied for establishing a library portal were mostly to enhance access to e-resources but also to benefit the university community, to improve research and teaching as well as to increase morale. Academics realized a library portal would facilitate online accessing of resources without going to the library, keeping pace with development elsewhere and being part of the global village and the IT world.

This coincides with the studies of Adepoju 2015, Boateng, Agyemang and Dzandu 2014, Leeder, 2013, Lippincott 2015: 284, Patil 2013 as well as Singh 2015 who emphasize that academic libraries need library automation and networking in order to enhance their services, to deliver quality e-resources and to fulfil the expectations and demands of their users. Research has also shown that when academics and students have access to a variety of library resources through a portal, it tends to add value to the institution (Rao & Mulloth 2017: 12).
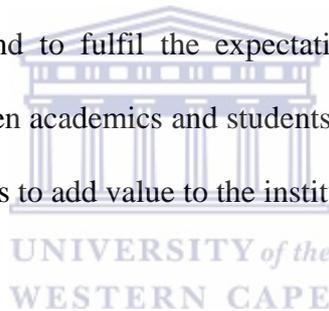
For MAUTECH, especially the need is to have a dedicated library portal to gather and combine all the e-resources subscribed to but which are currently scattered throughout the university.

8.14.3 Requirements of a library portal

Findings reflect that students require a library portal to contain academic resources, teaching material, general library information, orientation and training as well as study results. Academic resources include recent textbooks, discipline-relevant books, journals, e-resources, newspapers, referencing material and research data. Teaching material includes course outlines, project sites and examples as well as the work experience scheme. General library information includes a list of available e-resources reflecting the need to know what

224

resources can be accessed. Academics focus on the need for current resources to facilitate teaching and research, different e-resources, namely e-books, e-journals, e-newspapers and e-magazines, and an integrated research repository. Their needs correspond with those identified by the academic librarians. They have indicated the need for direct access to available resources, an e-library, marketing of the library, current awareness services and the selective dissemination of information. Noteworthy is that students, academics, a librarian as well as the UWC Digital Communications Librarian have all requested sufficient, stable, free Internet access with rapid response time and stable electricity supply.

These findings reflect Ukwoma and Dike's (2017: 17) conclusion that academics download scholarly publications from institutional repositories to identify new findings or gaps in knowledge. This is considered one of the cardinal functions of a library portal, namely to provide useful information to users for research and collaboration purposes.
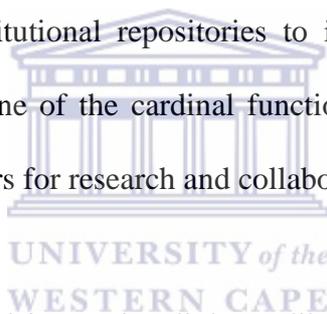
Library portals are geared toward improving links to library resources, services, staff and events. Emezie and Nwaohiri (2014: 2) encourage the use of ICTs to automate cataloguing, circulation and acquisition services to provide e-resources, online retrieval of library material and online library services in a more efficient manner. These statements coincide with the views held by Das and Saha (2015: 111-112) who explain that web portals are tools that are used to support and enhance access to e-resources.

The library portal unites many functions and applications like OPAC, joint catalogues, resource discovery, databases, discipline-oriented e-resources, circulation, renewal, reservations, free resources, new book arrivals and live chats with reference librarians (Mane & Panage 2015: 109; Obahiagbon & Otabor 2012: 82) by applying high-level programming

225

languages, Google-like features, user-friendly terminology, appealing screen design, easy navigation, help menus and personalisation. Behrends (2012), Perruso (2016) and Sadeh (2007) confirm the need for user-friendly Google-like portals without rigid structure and interfaces.

From the literature review, various technical systems requirements and tools that are needed to design a library portal have been identified. Specifications, detailed portal requirements as well as server operating systems and configurations are captured in Appendix E (Beal, 2017; Das & Saha 2015; Madhusudhan 2011; System Requirements Lab 2018; The Ubuntu Story 2017). MAUTECH librarians have also recommended the inclusion of library management software. The IT expert recommends the Waterfall model typology while the Digital Communications Librarian has outlined the installation of a local virtual server, appropriate software, designing the layout, consultation on design and transfer of web content to the web hosting service provider. However, no matter the type of typology used, the library portal should be able to provide customisation, personalisation and integration of diverse resources for the end-users.

Wada (2014: 168-169) proposes the Portal Development and Deployment Model (PDDM) which is aimed at helping academic institutions to successfully design a library portal. The model contains steps and procedures to incorporate users' information needs and demands - one of the aims of this study.

8.14.4 Challenges in establishing a library portal

For a library portal to be efficient, both academics and librarians alerted to the need for regular power supply, stable Internet access and human resources. The librarians also

226

identified the importance of good management, the need for trained persons to manage the portal as well as support and funding from MAUTECH management. Contrary to this, the Acting University Librarian envisaged no problems. Agyekum and Ossom (2015: 13) confirmed access complications and complexities of e-resources in Ghana because of, among others, slow Internet connectivity, frequent power outages, online catalogue links, e-book locators, and data services and products. Ahmed (2013: 300) as well as Beisler and Kurt (2012: 97) added challenges of pricing, licensing issues, digital rights management, different interfaces and access to back issues.

8.14.5 Role of librarians

The academic librarians of the Ibrahim Babandiga Library regarded themselves as computer literate with various computer skills. They expressed the need for digitization and a library portal in order to "remain relevant" and "the hub of academic activities". They saw their roles as the designers of all procedures to ensure efficient, effective, direct access to available library resources. They also identified roles in marketing the library, deliver current awareness services and the selective dissemination of information. The identified roles could be connected with the NASIG (2013: 1-3) core competencies for e-resource librarians and the management of the life cycle of e-resources. All academic librarians were of the opinion that training would be needed to assist them in managing the library portal. Training on ICTs and software applications should be offered in the form of workshops, conferences and in-house initiatives. The UWC Digital Communications Librarian suggested step-by-step guides for training.

If is foreseen that after the library portal has been installed, training the trainer will be needed. Librarians will have to offer workshops and training initiatives for students and

academics on how they can access and utilise e-resources proficiently. Efficient training should be incorporated into information literacy education. The portal may be used for training initiatives like online tutorials, recorded videos and social media. Alternative classroom training and embedded information literacy in academic modules can be employed effectively (Lippincott 2015: 286).

8.15 Establishing the Ibrahim Babandiga Library portal

The PDDM facilitates the design and implementation of a library portal by articulating the steps planning, user needs analysis, develop blueprint, development of the prototype, inspection, mending and finally implementation. The model encourages the use of free open-source software like Joomla, Drupal, VLC Media Play and Apache where the rigour of programming is reduced, and an easy library portal design and implementation process are accomplished.

Although the Acting University Librarian claimed that the Ibrahim Babandiga Library already had a library portal, when this study commenced, no portal was visible. A member of the MAUTECH IT staff designed an e-library using PHP with a MySQL database as web scripting language and the Waterfall model for typology. It did not, however, incorporate all the requirements for a library portal.

The researcher used the knowledge gained by reviewing relevant literature, analysing the requirements of MAUTECH students, academics and librarians, scanning the library portals of other libraries and by interviewing experienced ICT staff members, a Digital Communications Librarian and other IT specialists to establish a library portal for the Ibrahim Babandiga Library. It was done by integrating the library portal requirements

recommended by students, academics, librarians and IT experts as well as combining it with trends, similarities and any contradictory data from the relevant literature and functioning portals.

After collating the necessary information from students, academics and librarians, and considering the specifications and tools, as captured in Appendix F, the researcher conceptualised the library portal layout and decided on main and drop-down menus. With the support of the UWC Digital Communications Librarian, a virtual server was established, appropriate software installed, the portal layout designed and contents transferred to the web hosting service provider WhoGoHost, one of Nigeria's leading web hosting and domain registration companies. WordPress and Omeka web publishing scripts were used in developing the portal. Included as main menus were About Us, Online Newspapers, Resources, E-dissertations and -theses, Past Examination Papers, Online Catalogue and Up-coming Events. Doctoral theses, master's dissertations, past examinations papers and the MAUTECH newsletter were encapsulated in the portal. The portal was hosted with WhoGoHost for a year. The hosting charges were paid for a year, with the option of annual renewal. The steps taken resulted in a functional library portal accessible through the URL https://mautechlibrary.com

MEMBERSHIP

The use of the library is normally restricted to registered users only. Eligibility for registration as a library user is open to all persons in the following categories: Full-time and part-time senior teaching and research staff of the university. Members of the University Council. Registered full-time and part-time Postgraduate, Undergraduates and non-graduate students of the University. University employees other than those mentioned above. Non-members of the University, who are permitted to use the library, by the University Librarian.

building with two main reading halls, 9 offices including a workroom and PG. Reading room located on both the ground and first floors. Presently, the library occupies an ultra-modern structure build by the Central Bank of Nigeria (CBN), commissioned on 14th August 2015 by President Muhammadu Buhari, represented by the Executive Secretary, National Universities Commission (NUC) Professor Julius Okojie, during the joint 18th, 19th and 20th convocation ceremony of the institution. The main reading areas were designed for an optimum capacity of 750 reader spaces and book stock of 50,000 volumes. Presently, it has a stock of 30,173 volumes of books and over 5,585 titles of journals. The books are arranged on the shelves according to the Library of Congress Classification Scheme.

Copyright 2015-2018

To conform to the inspection, mending and final implementation of the PDDM, stakeholders were invited to inspect the portal, supply input and make suggestions. Currently, input and suggestions are being received which will be used to improve the layout and functionality of the portal.

8.16 Concluding summary

Discussing the findings culminated from the different scholarly perspectives, scanning of library portals and research results underpinned by the TAM and DoI theory. The discussion exposed that students and academics rated the Internet access, Cyber Cafe and library collection low, were using both electronic and printed sources, did not visit the library often, were familiar with some e-resources, were to an extent aware of the benefits of migrating to e-resources and willing to do so, and did not receive adequate library training. Students, academics and librarians were, although they had some reservations, positive about the digitisation of library resources and the establishment of a library portal.

231

When this study commenced, the Ibrahim Babangida Library did not have a dedicated library portal providing access to e-resources. Most offices in the library had computers but lacked interconnectivity, LAN and Internet access to share information. The Cyber Cafe provided printing facilities and Internet access. The library was not subscribing to full-text databases or other e-resources, and did not provide online access to their catalogue or resources. Library users had to rely on resources available on the Internet, other libraries and open-access sources. After studying findings from the literature, scanning library portals and consulting IT experts, a library portal was established. The next chapter provides the conclusions and recommendations of the study.

CHAPTER NINE

9   CONCLUSIONS AND RECOMMENDATIONS

9.1   Introduction

This chapter seeks to draw conclusions based on the findings discussed and to make recommendations. Conclusions are made in relation to the research questions and objectives, while recommendations identify possible further investigations suggested by the study.

Academics and students expect adequate resources in an academic library to satisfy their continuous research and educational demands. Therefore, this study has critically investigated and evaluated the availability and utilisation of the e-resources in the Ibrahim Babangida Library as well as those supplied by the university management at MAUTECH. The study also investigated the design and establishment of a library portal in order to facilitate library services and utilisation of all library resources. Based on these premises, this research aimed to answer the following research questions:

1. What role does the university management play in providing e-resources to academics and students at MAUTECH?

2. Are academics and students satisfied with the Ibrahim Babangida Library collection?

3. To what extent are students and academics accessing and utilizing the e-resources?

4. What challenges can be encountered in providing, accessing and using e-resources?

5. How can the Ibrahim Babangida Library establish a library portal?

6. To what extent will a library portal enhance the information services of the Ibrahim Babangida Library?

233

9.2   Role played by the MAUTECH university management in providing e-resources

The Ibrahim Babangida Library, as an academic library, aligns itself with the goals of the higher education institution MAUTECH, and is responsible for acquiring, organising and providing access to print and e-resources to the university community. The library collection is a measure of the library's effectiveness (Adetimirin 2007; Olajide & Folayan 2014), demanding usage of collection development policies and practices to ensure an up-to-date collection catering for all information needs.

The University Librarian, the Vice-Chancellor, Registrar and Bursar are part of the university management team as well as Principal Officers of MAUTECH. In the light of advancing the image of the university with visible online research output, the university management is expected to play a pivotal role in the provision of e-resources. Despite some cases of external funding from the National Universities Commission, the Tertiary Education Trust Fund, federal government agencies and donors it is nevertheless still the prerogative of the university management to monitor and control the flow of funding.

Vendors offer different packages of e-resources. At tertiary education institutions, subscription and renewal agreement policies should align with collection development policies, which, in turn, are informed by the university curriculum and research mission. E-resources are made publicly available only when subscribed to and authenticated by the institution (Jonathan and Udo 2015: 8, 11). The open access and fair use initiatives have resulted in research publications being available online and free of charge. It does not, however, expose students to the full range of scholarly publications needed for academic and research work.

The university subscribed to databases like ScienceDirect and EbscoHost, mostly using external funding. Because of low utilization of the databases due to unawareness and accessibility problems caused by the need to auto-generate usernames and passwords the subscriptions have not been renewed.

The situation at the time of study contradicts the view of the Acting University Librarian who claims the procurement of e-resources as well as the Library Guide (2016: 8), stating that the library has numerous e-resources that cut across all disciplines and other fields of knowledge. He also claims the existence of e-resources comprising of books, journals and journal articles, and that the library subscribes to various databases, including, among others, ScienceDirect, AGORA, EbschoHost and e-Granary accessible through the university portal. At the time of the study, no link to the library existed on the university website, resulting in databases not being accessible as no dedicated access point is provided. This is confirmed by the findings that 52% of students and 55% of academics have never used ScienceDirect. Some responses were:

> *I have tried accessing it before but it didn't work.*
> *No access to the subscription.*
> *No registration with science direct.*
> *Every time I tried using few resources I could not get anything (not registered by your institution).*

Although the Ibrahim Babangida Library has an unspoken policy of 60% print and 40% e-resources, no publicly available policy exists. It is suggested that a more specific working policy with clear guidelines based on IFLA and ALA guidelines for e-resources be formulated. This is unlike, for example, Gakibayo, Ikoja-Odongo and Okello-Obura (2013) reflecting Mbarara University of Science Technology Library's paradigm shift to e-resources and strategic work plan from 2008 – 2013 to invest more in e-resources and services by

235

subscribing to ten different vendors, which included full-text electronic journals, current awareness and bibliographic databases.

It can be concluded that there are indications that the MAUTECH management team, through the library committee is doing little to support the acquisition of e-resources and providing ICTs to ensure accessibility.

9.3 Satisfaction with the Ibrahim Babangida Library collection

Many respondents expressed dissatisfaction with the quality and quantity of resources contained in the library collection. Findings revealed that 82% of students were not satisfied or only to some extent satisfied with both the quality and quantity of library resources. Even more academics (90% and 92% respectively) were not satisfied or only to some extent satisfied with the quantity and quality of resources in the library collection. The major reasons for dissatisfaction were resources not being relevant, resources not being current, inadequate resources, the disorganised state of the resources, and the lack of Internet access and a stable power supply. The library not having adequate discipline-oriented resources was the predominant reason for dissatisfaction with the quantity of library resources. Since MAUTECH is one of the technological universities, the library should focus on developing the collection to provide science-based resources covering all aspects of the curricula offered.

Many scholars have predicted for academic libraries to maintain as vibrant enterprises, they must migrate from print to electronic collections (Lewis 2007: 4), adopt new services based on technological advances in the commercial space (Raju & Schoombee 2013: 27), support open access (Pietersen 2015: 89), increase the capacity of the institutional repository (Pietersen 2015: 89), employ networked technologies and social technology (Michalak 2012:

236

413), supply e-resources allowing utilisation from outside the library (Pietersen 2015: 89) as well as respond to users' need of technology and current technology-oriented user behaviour (Michalak 2012: 414; Pietersen 2015:92). The concepts regarding e-resource availability and access (Ibrahim and Lakshmi 2017: 81), their impact on users in the academic community (Hossaini 2017: 25-26) and providing a library portal (Zabicka 2017: 3-4) as a platform for digital content and library functions and services are not sufficiently addressed by the Ibrahim Babangida Library.

Dissatisfaction with and non-use of library resources might be reasons why only 45% of academics refer students to the library to consult resources. This coincides with the study by Clink (2015: 20-21) who emphasises that academic libraries are endowed with resources play a pivotal role in advancing the academic activities of higher education institutions.
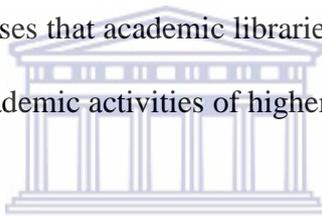
The current library collection is also not fulfilling the library's mission to provide quality library and information resources and services in support of teaching, learning, research and creative work, and to supply access to recorded knowledge in print and electronic formats.

Perhaps the MAUTECH management team and the library committee should consider the argument of Jackson (2017: 87-88) that the quality of library services is measured entirely by the amount of money spent on them, and these are cumulatively combined with the expenditure of other services rendered by the library. It can be concluded that students and academics are not satisfied with the library collection.

9.4 Extent of e-resources utilization

Access to information and knowing how to retrieve, use, evaluate, share and present new information is the fundamental rights of students and academics in a learning environment. An essential starting point is that students and academics must be aware of sources of information, as lack of awareness will hamper the utilisation of the information. Various platforms should be used to ensure reliable communication between the academic library and the university community. Library services like new arrivals, current awareness and dissemination of information are aimed at making their users aware of information and events.

Although the Acting Librarian claimed that students and academics were constantly informed of the availability of e-resources in the library, from their responses it was deducted that both students and academics were only familiar with certain e-resources.
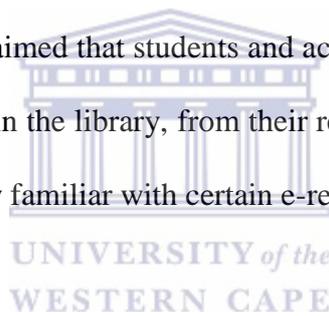
Findings showed that only nineteen students were familiar with e-resources - mainly websites, e-books and e-documents. But academics were mainly familiar with e-journals, e-books, e-textbooks, e-newspapers and websites, indicating that they in general use a wider variety of e-resources. Academics were, however, like the students, not familiar with Libguides, repositories, e-reference material, indexing and abstracting databases, and e-governmental publications. E-resources utilised frequently were e-newspapers, Google Books, e-textbooks, e-journals and websites. The relatively excessive use of these e-resources could be attributed to their being open-access sources and therefore, could be used free of charge. Noteworthy, though, is that open-access sources like Google Books and Google Scholar were respectively never used by 55% and 62% academics. Underutilisation could be

due to lack of awareness, exposure to and training on the use of e-resources (Jonathan and Udo 2015: 8, 11; Joshua 2014: 10).

Although students and academics acknowledged reading journal articles, most students (41.09%) retrieved journal articles by photocopying from printed journals or by doing a Google search (24.6%), while academics mostly preferred using platforms like open-access journals (40%) or e-journals (38%) available on the Internet. The majority of students and some academics indicated that they found it difficult to retrieve journal articles on a subject, using the bibliographic details to find a specific article or to retrieve bibliographic details for journal articles. As journal articles could be retrieved easily if retrieval skills and access to full-text journal article databases, as part of information literacy education, were mastered (King 2007), findings indicated the need for training at MAUTECH.
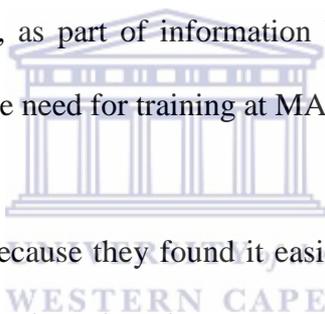
Those using e-resources did so because they found it easier to find relevant information, to broaden the focus of their research and to keep up to date with developments in their disciplines. Although both students and academics opted for having a choice of using printed or e-resources, willingness to adopt to e-resources was expressed. Some of the reasons listed for adopting e-formats were they were easy and faster to retrieve as well as the benefit of less printing and photocopying costs. Some reasons for preferring printed sources were that it was easy to access them, being familiar with them, it was easier to read from printed sources, lack of sufficient e-resources, problems with Internet accessibility, and they served as backup because of accessibility problems regarding e-resources. Perhaps due to inexperience and lack of training, some students indicated preference to printed sources, as they included references, could not be affected by viruses, had more information and were more reliable

than e-books. Other factors were mistrust and not believing that e-resources would be provided.

> *I don't trust MAUTECH management.*
> *Nigerian never say and do … they only say and continue to say another thing else.*

The fact that students and academics were utilising e-resources by doing Internet searches, visiting websites and finding open-access sources was in line with 21st century library users' use of technology and technology-oriented information behaviour (Michalak 2012: 414; Pietersen 2015: 92), and adopters of technology and new innovations (Davis 1989; Rogers 2003).

9.5   Possible challenges in providing, accessing and utilizing e-resources

Although the Acting University Librarian anticipated no problems with the availability and utilization of e-resources as ICTs were in place, at the time of this research the Ibrahim Babangida Library did not provide interconnectivity, LAN or stable Internet access, or a dedicated library portal to provide access to library acquired e-resources. It corresponded with the study by Ajayi, Shorunke and Aboyade (2014) indicating insufficient Internet access as a factor hindering the effective information service in Nigerian higher education institutions.

Challenges faced by libraries in providing adequate e-resources were, among others, lack of a library acquisition policy to procure e-resources, lack of human resources with technical expertise, underfunding, unnecessary bureaucracies and politics as well as complexity issues on licensing negotiations (Kahn and Underwood 2013: 14; Vasileiou, Rowley and Hartley 2012: 28). Badenhorst (2015) alerted to major constraints to e-resource management due to lack of devices to access e-books, inadequate digital literacy, infrastructure and access

restriction to e-books. Zinn and Langdown (2011) added the high cost of subscribing to e-books as well as insufficient e-books in most disciplines.

Assuming the library subscribed to e-resources, access must be provided via a strong, stable network with a rapid response time (Majapelo and Dube 2014). A network backbone like the TENET network, which caters to all academic institutions in South Africa, should be considered in order to allow for high traffic. Librarians as well as IT staff members alerted to the need for stable and responsive Internet access.

Findings indicated that both students and academics were of the opinion that there was no sufficient access to the Internet on the MAUTECH campus - a fundamental function of a university to access the Internet to enhance academic activities (Masese, George, Makwae and Moenga 2016: 206). Some responses were:

> *No functional Internet facility on the campus.*
> *I wanted to frequent but most times the network for the database was*
> *not fast.*
> *Internet not adequate.*
> *Generally, weak Internet access/signal.*
> *Network is not always available.*

Insufficient Internet access might be the reason why many students (45.9%) and some academics (28%) rated the Cyber Cafe as poor or very poor, and not visiting the library. This was in contrast to the growing Internet use trend in Nigeria (Internet Live Stats 2016). This could be attributed to insufficient funds from the university management to help improve Internet access in the university environment (Anie 2015).

The TAM examined the behavioural intention of academics and students to use e-resources as a system or within the specific framework of their studies and research – in the case of e-resources, on a computer-driven platform. Without the computer-driven system, no accessing or utilisation would be achieved. The TAM (Davis 1986: 89) predicted that system usage should be anchored on perceived usefulness and ease of use. As a low positive impact was recorded, it could be concluded that students and academics had not experienced usefulness or ease of use in utilising e-resources. Once the three stages – perceived ease of use, perceived usefulness and behavioural intention to use – are accomplished, the last stage – actual system use – should revamp the user the ability to use e-resources easily and effectively. This assertion also corresponded with the study of Saade, Nebebe and Mak (2009: 109) explaining perceived ease of use as the degree with which academics and students believe that access and utilisation of e-resources should be free from many efforts.
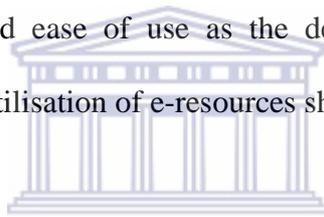
Previous research has shown that lack of library orientation and training results in library users not utilizing library resources and services (Ajayi, Shorunke and Aboyade 2014; Habiba and Chowdhury 2012; Joshua 2014; Zinn and Langdown 2011). This is, however, not the case at MAUTECH, Ibrahim Babangida Library. The majority of students (78%) and academics (66%) have not received any library orientation or information literacy training to equip them with the requisite skills in information retrieval, evaluation and use. Those who had training received it from places outside the library. Reasons for non-training were because they were not aware of training or had no interest in being trained. This trend corresponded with those of, among others, Daramola (2016), Masese, George, Makwae and Moenga (2016: 206) as well as Okite-Amughoro, Makgahlela and Bopape (2014).

It is foreseen that if e-resources were supplied, the Ibrahim Babangida Library would develop and offer workshops and training initiatives for students and academics on how they could access and utilize e-resources proficiently. Efficient training should be incorporated into information literacy education. The portal could be used for training initiatives like online tutorials, recorded videos and social media. Alternative classroom training and embedded information literacy in academic modules could be employed effectively (Lippincott 2015: 286).

9.6   Establishing a library portal at the Ibrahim Babangida Library

For some time now the library as well as the librarians in the university offered modulated services, provided a low library collection, did not supply required ICTs, could not offer stable electricity supply or sufficient Internet access, resulting in library users not visiting the library and rating the library collection as qualitatively and quantitatively insufficient.
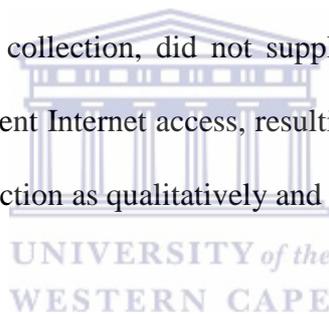
Although the Acting University Librarian claimed that the Ibrahim Babandiga Library already had a library portal, when this study commenced, no portal was visible, resulting in the study identifying an objective to investigate the design of an implementable library portal. Students, academics, librarians and ICT staff members confirmed the need for a responsive and robust library portal, as it would support research, teaching and academic activities, enhance access to e-resources, increase morale, facilitate online accessing of resources without physically going to the library, keep pace with development elsewhere as well as instigate being part of the global village and the IT world.

This coincided with the studies done by Adepoju 2015; Boateng, Agyemang and Dzandu 2014; Leeder, 2013; Lippincott 2015: 284; Patil 2013 and Singh 2015 who emphasised that

academic libraries needed library automation and networking in order to enhance their services, to deliver quality e-resources, and fulfil the expectations and demands of their users. Research also showed that when academics and students had access to a variety of library resources through a portal, it tended to add value to the institution (Rao & Mulloth 2017: 12). For MAUTECH especially there is a need to have a dedicated library portal to gather and combine all the e-resources subscribed to but currently scattered throughout the university. Recognising the need for a library portal and willingness to utilise it when established is again proof of the acceptance of an innovation and therefore, the DoI theory (Chen, Kirkley and Raible 2008; Rogers 2003).

Effective library portal designs are dynamic, robust and responsive. Static library portals are boring and hardly used because their designed interfaces are either complex or difficult to navigate. Das and Saha (2015) have confirmed that portals support and enhance accessibility to e-resources. Scholars like Mane and Panage (2015) describe the features of the Jayakar Library portal in India as having online local and joint catalogues, free resources, open-access journals, archives, subscribed databases and serial publications as well as discipline-oriented e-resources. Considering the needs of students, Google-like features, namely user-friendly terminology, screen design, easy navigation, support (help menus) and personalisation have been added.

The researcher used the knowledge gained by reviewing relevant literature, analysing the requirements of MAUTECH students, academics and librarians, scanning the library portals of other libraries and interviewing experienced IT staff members, a Digital Communications Librarian and other IT specialists to establish a library portal for the Ibrahim Babandiga Library. In line with the steps of the PDDM, library portal requirements recommended by

students, academics, librarians and IT experts as well as combining these with trends, similarities and any contradictory data from the relevant literature and functioning portals were incorporated. A portal was designed and implemented, but still needs further input, assessment and refining.

Details of the portal design can be explained as follows:

9.6.1   Hosting company

A web-hosting company to provide the live streaming of the websites or pages for people to search, use and interact with is needed. The ten top website providers in Nigeria are Whogohost, SmartWeb, QServers, HostNowNow, Domain King, Utiware.net, GlobalHosting 247, Syskay Systems, Main One and PhilmoreHost. After careful assessment and consultation, Whogohost was selected, as it is one of the leading hosting companies in Nigeria and have 21 products in the domain, shared hosting, reseller hosting and cloud web design under the platform Linux and Windows OS. It allows for a complete company description, address location, phone and fax details, Twitter/Facebook/Google+ forum, blogs, announcements and a knowledge-based Frequently Asked Questions.

9.6.2   Domain name

A domain is a network address that indicates a unique name on IP addresses for easy identification and access. The domain name www.mautechlibrary.com implying the name has been registered and set up in the domain name system server.

9.6.3 Features

9.6.3.1 About us

As main menu "About us", the Ibrahim Babangida Library is introduced. In order to reflect the services and structure of the library, the following submenus are linked: Mission and vision, Remarks from the vice-chancellor, Acting Librarian, library divisions, academic librarians, non-academic staff may be show cased. It also has tabs for Contact us, Library guide and Opening hours.

9.6.3.2 Online newspapers

A substantial part of the library budget is used for subscribing to physical serial publications. To reduce costs and to satisfy the demand for e-newspapers by especially students, it was decided to incorporate online newspapers. Three categories of online newspapers, namely local newspapers, international newspapers and MAUTECH news, were added. Forty-seven local Nigerian newspapers and twenty international newspapers were embedded in the portal.

246

For current awareness, MAUTECH News, previously available only in printed copies, was incorporated to ensure wider than campus access.

9.6.3.3 E-Resources

The e-resources menu has two submenus, namely free e-resources and subscribed e-resources. Incorporated under free e-resources are a number of online resources aiding teaching, learning, research and collaboration. Currently it consists of six categories, namely databases, e-books, e-journals, dictionaries, online encyclopaedias, and dissertations and theses. More resources may be added in future. The category "subscribed e-resources" presents some proprietary resources to be accessed only by registered students and academics through authentication verification. As the library does not subscribe to e-resources yet, access to databases like the American Association of Petroleum Geologists, African Journal Archive, Access Pharmacy, Emerald e-Journals might be added in future.

247

9.6.3.4 E-theses and dissertations

This section of the portal is part of the institutional repository and designed to provide an electronic version of all master's dissertations and Ph.D. theses. The printed theses of the university are grossly underutilized due to lack of awareness and not being arranged professionally. A database of theses with author, title and faculty indexes embedded in the portal makes them searchable and accessible with easy navigation and the option of downloading them free of charge. Omeka, an open-source code used to create custom computer-based exhibits like building features or templates, has been used to create the repository. It has a large memory capacity for archiving purposes (Omeka 2017). It is envisaged that the repository will improve access to research as well as the research status and ranking of MAUTECH globally.
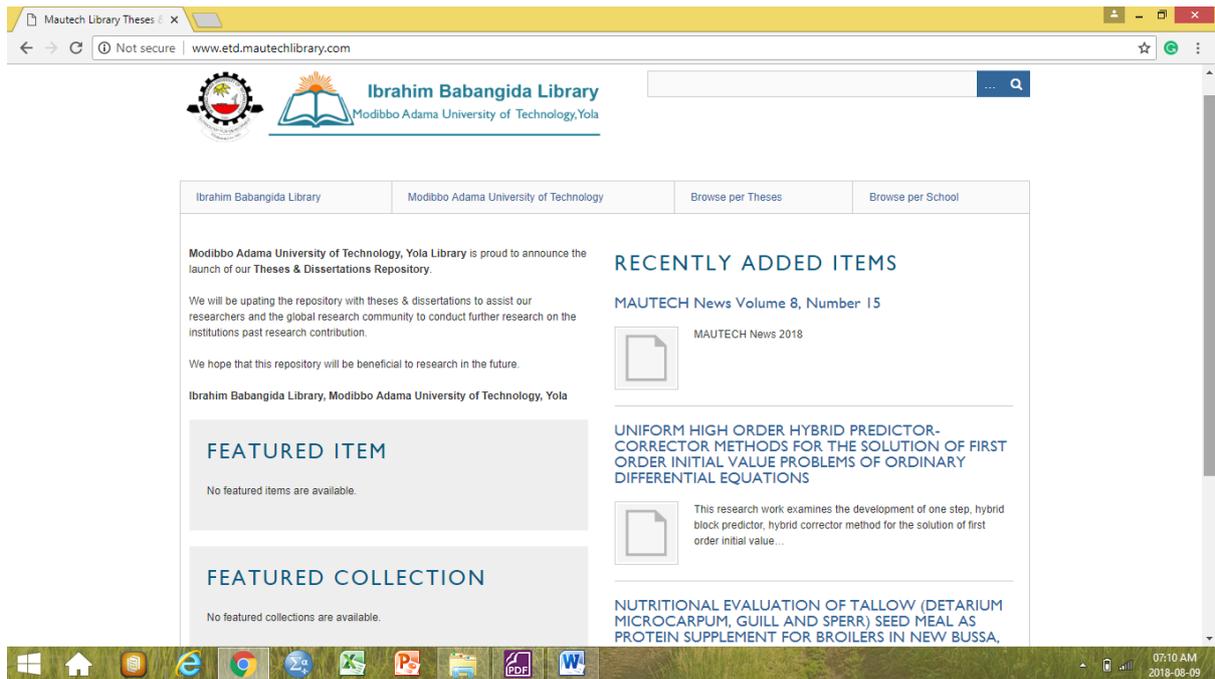
9.6.3.5 Past examination papers

The aim of this link is for students to familiarize themselves with past examination paper formats and questions in order to increase their chances of passing examinations and for academics to use as revision tools. To facilitate this development, a section was created to upload past examination papers from the schools and departments in the university.

249
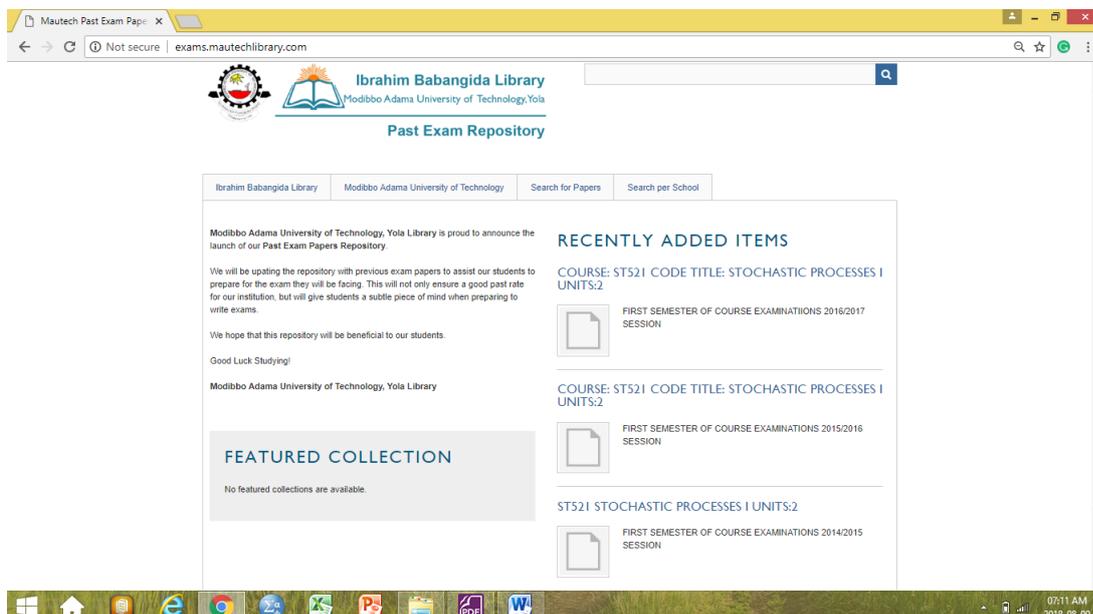
9.6.3.6   Online catalogue

As the library still needs to develop an online catalogue, a link to WorldCat (a union catalogue) has been created, providing access to catalogue records of over 72 000 international libraries. If the Ibrahim Babangida catalogue is to be developed, it would be possible to incorporate it in the portal.
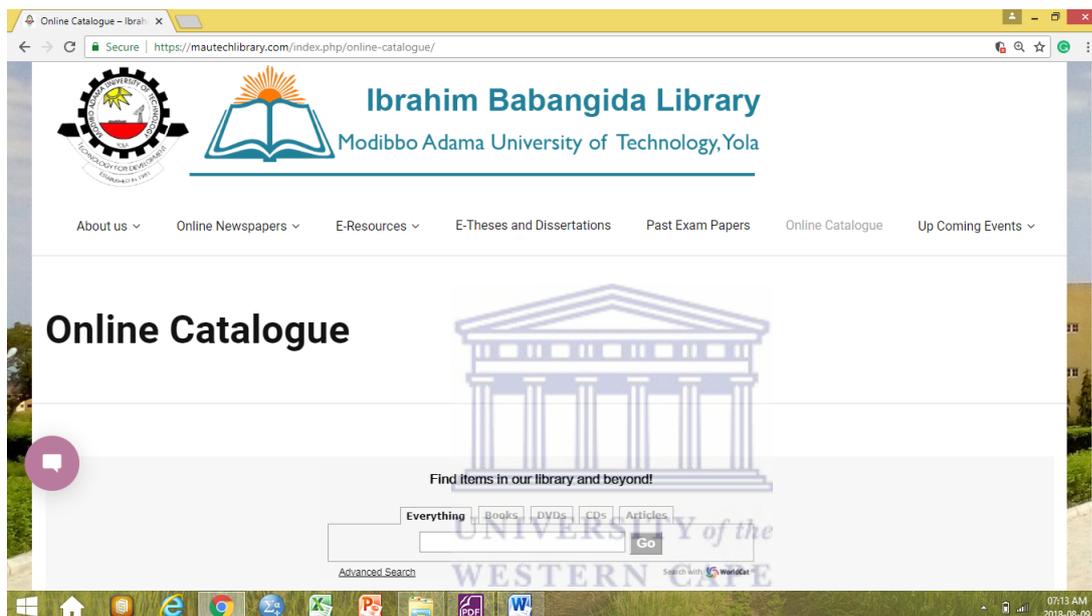
9.6.3.7   Upcoming events

This link is meant to showcase upcoming activities like orientations, seminars and information literacy training initiatives, and announcements from the library. The pop-up menu includes the submenus events calendar, events, submit an event and let's hear from you. The first is a calendar platform where consistent announcements will be posted with users free to respond to announcements.

9.6.3.8   Chat with a librarian

An interactive function where users are allowed to speak to or ask librarians questions was also activated. A reference librarian would be required to log in to the chatting tool in order to answer enquiries that might arise from users – particularly those off campus. The difference between an interactive tool and "let's hear from you" is that the latter is not synchronised whereas the first is designed to work in synchronised mode, happening live between the librarian and a user.

251
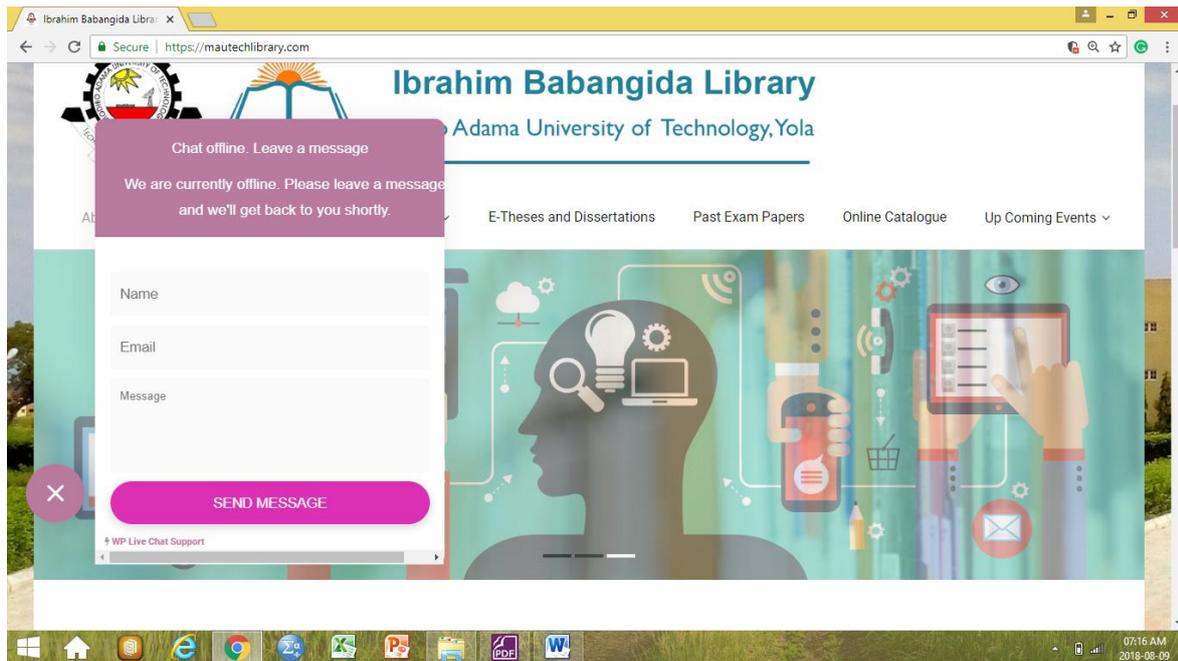
9.6.3.9   Social media tools

For now three social media tools Facebook, Twitter and Instagram were incorporated into the library portal to market the activities of Ibrahim Babangida Library and encourage socialisation. These tools now become the voice of the library and serves to reach both the registered as well as potential library user.
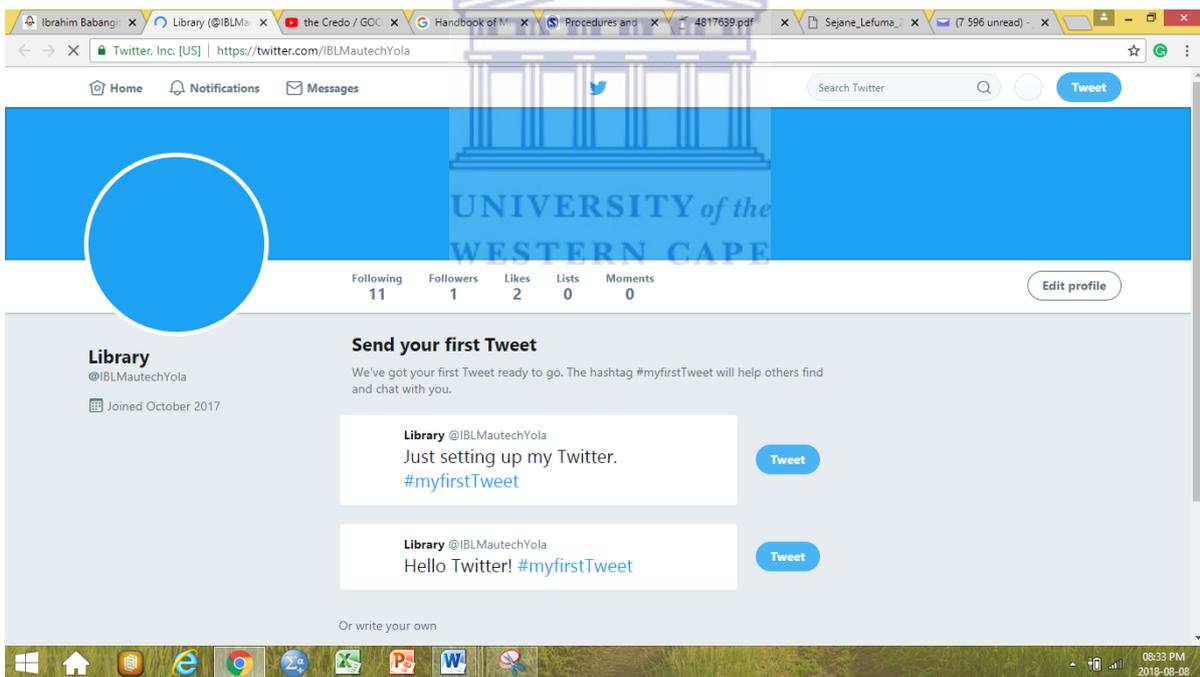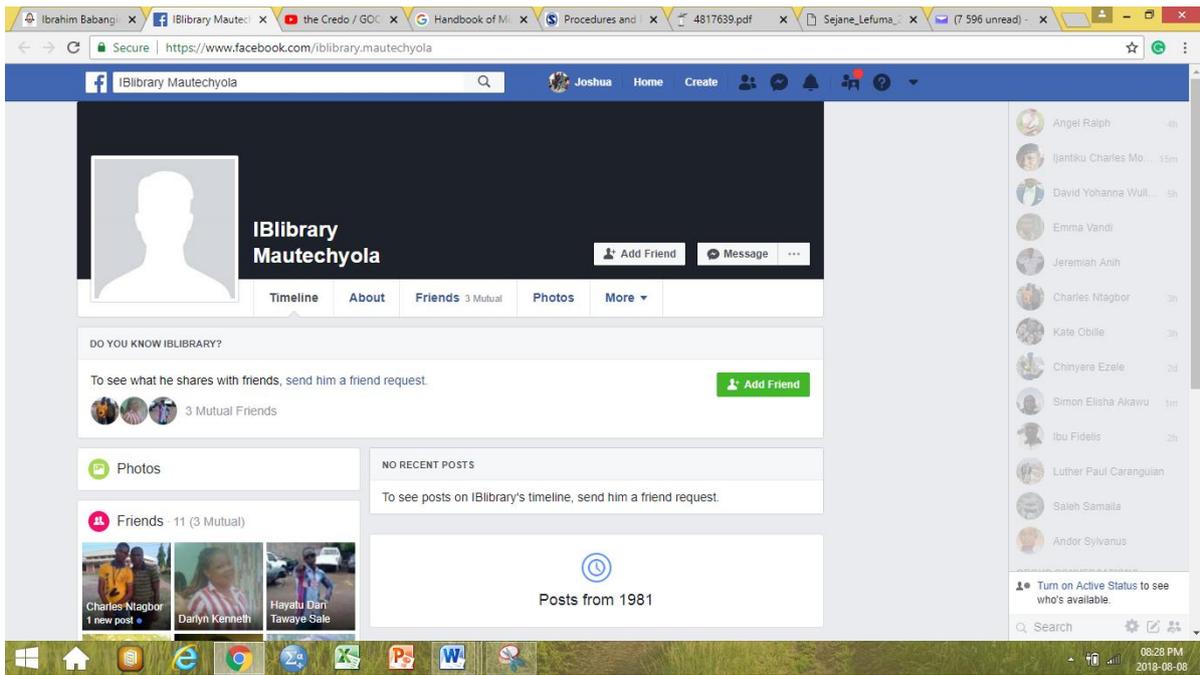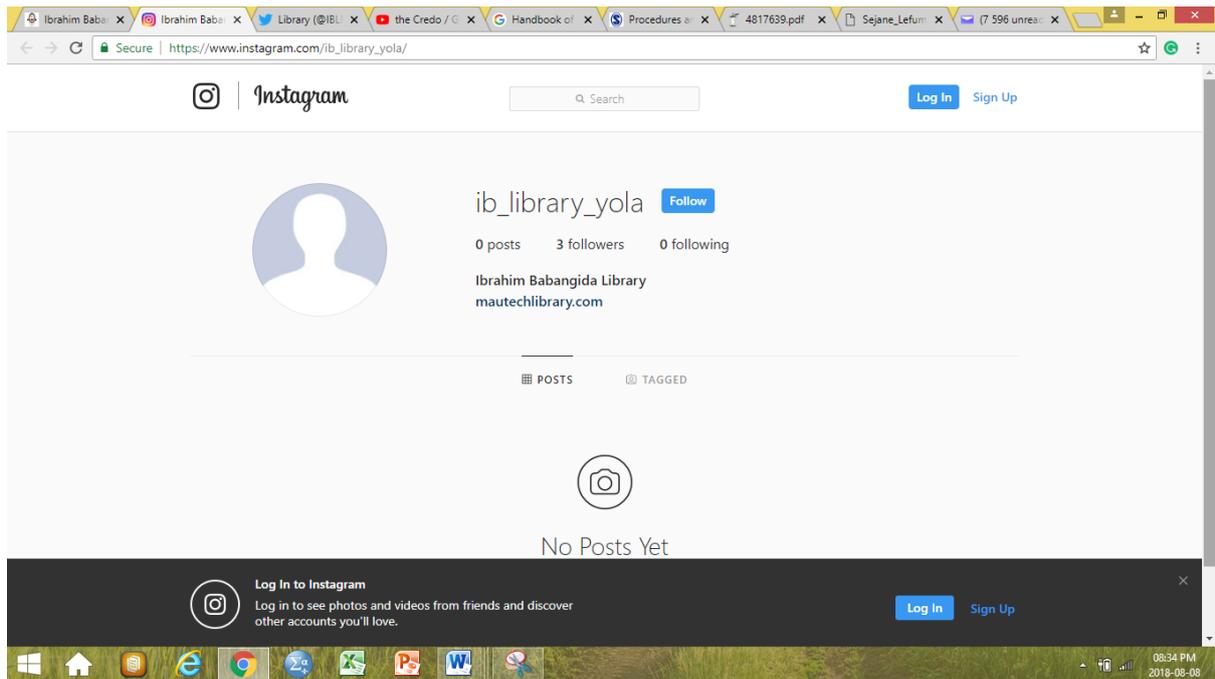
9.6.3.10 Information architecture of the library portal

The library portal designed used Ubuntu 16.04 Lamp stack which comprised Linux, Apache 2, MYSQL 5 and PHP 7.0 (see Appendix E for more details). The structural design of the library portal is presented and explained below:
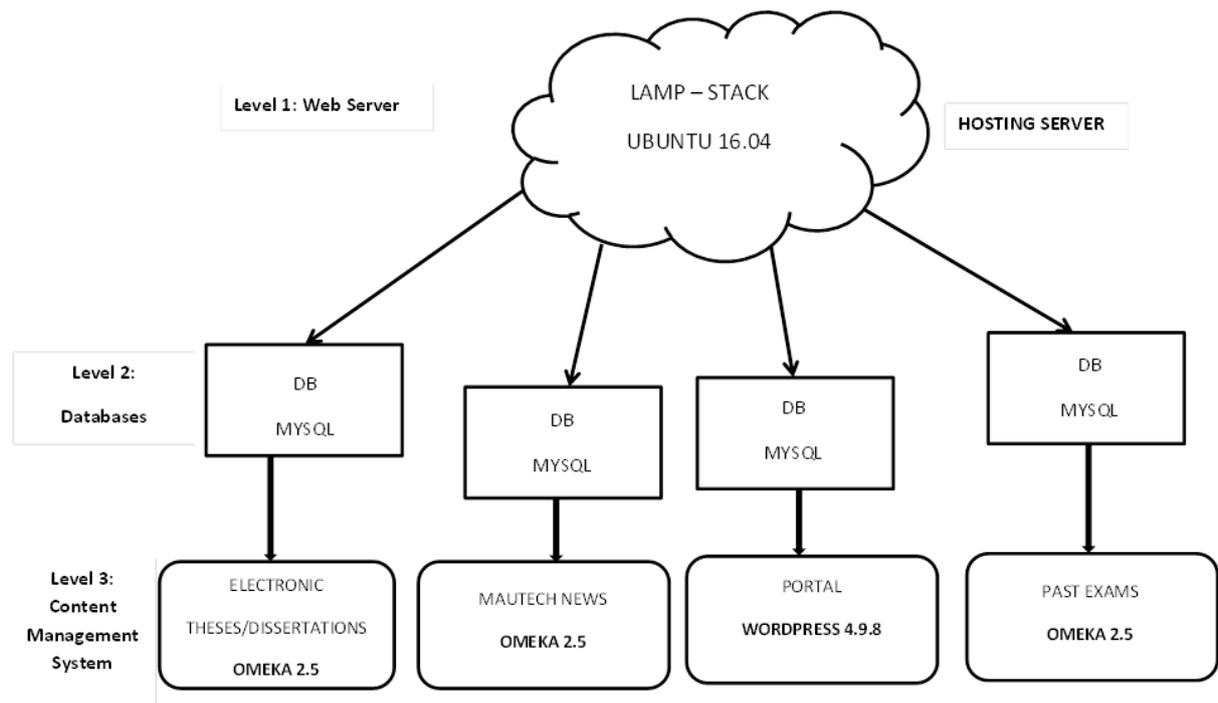
Figure 9.1: Library portal information architecture - Ibrahim Babangida Library

9.6.3.11 Stages of design and implementation

The process of developing a library portal access goes through different stages. Prior to designing the web library portal there should be a problem definition (need for a portal access), requirements for gathering and analysis (data set needed), bench marking process (comparing standard), prototyping (test run on local server) and finally design (full implementation). For this study, two stages were used to design the library portal:

Stage 1: Create virtual server on VMware
1. Setup LAMP – Stack

2. Install software – WordPress, Omeka instances

3. Design and layout

4. Finalise

Stage 2: Aquire hosting company (see more details section 9.6.1)

1. Transfer and import VM image

2. Change permalinks in databases

3. Go live

9.6.3.12 Graphical illustration of Ibrahim Babangida Library portal

To provide a visual explanation of the designed library portal, Figure 9.2 illustrates the concept applied to develop the portal taking into account the local and host servers.
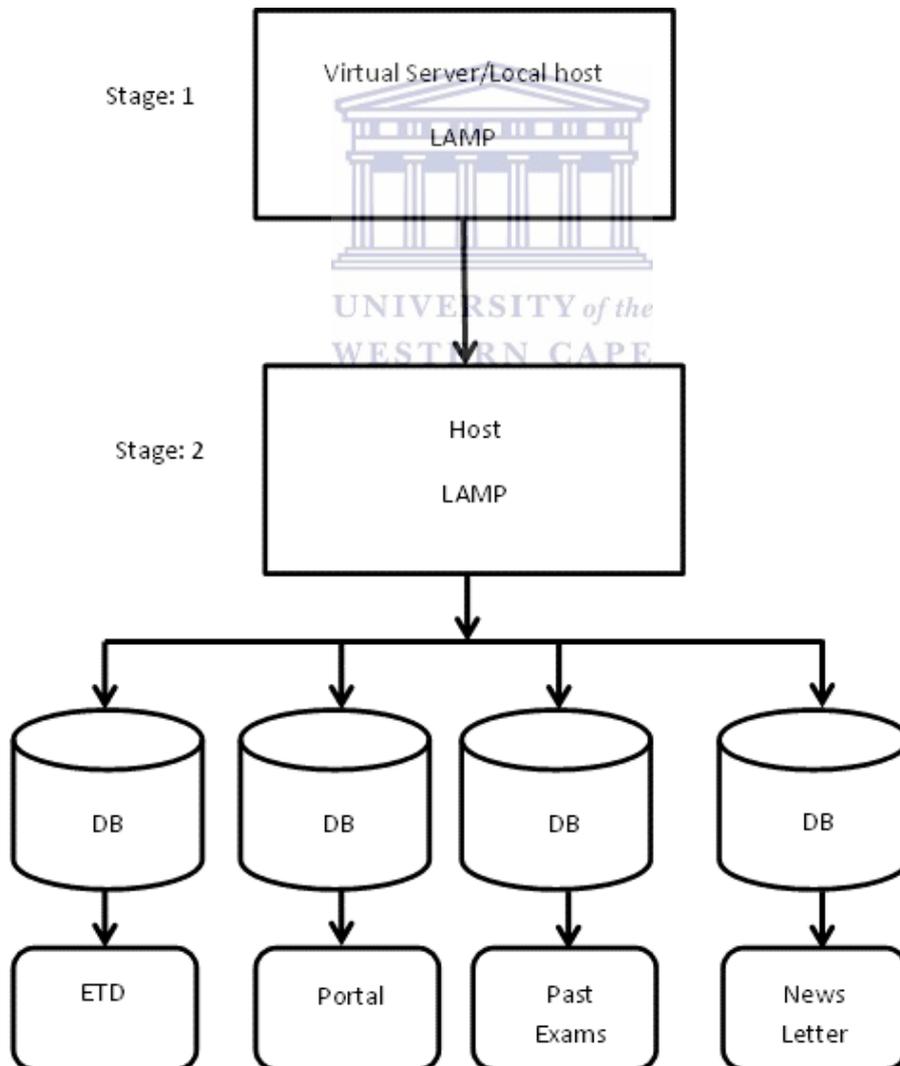
Figure 9.2: Graphical illustration of Ibrahim Babangida Library portal

256

9.7   Possible challenges in establishing a library portal

The epicentre of designing a library portal is its ability to provide flexibility and a free flow of links and interfaces that can attract prospective users to search for information instead of abandoning the search and turn to Google. The portal should be updated regularly and dead or inaccessible links must, after a thorough evaluation of the database, be removed. Mutula (2012) and Womboh and Abba (2008: 2) alerted sub-Saharan African universities to challenges influencing the successful implementation of library portals as budgetary constraints, economic conditions, governmental apathy, high cost of ICT facilities, lack of ICT skills, lack of ICT strategies and policies as well as limited electricity and telecommunication infrastructures.

Closely related to this study, Michalak (2012) emphasised that transforming academic libraries would be difficult due to institutional foundation and rigidity, numerous print collections, inflexible buildings and lack of ICT-skilled human resources.

Although the Dhaka University Library provided large numbers of e-resources, Habiba and Chowdhury (2012) observed serious challenges in terms of infrastructure facilities. They recommended ICT-skilled personnel, user training and user input in e-resource subscriptions. Scholars like Ahmed (2013), Badenhorst (2015) and Boateng, Agyemang and Dgandu (2014) alerted to additional challenges of access to back issues of e-resources, off-site access, limited computers and slow Internet response time, non-inventiveness, inadequate digital literacy and access restrictions.

A technical challenge impairing the design and implementation of a library portal is the choice of high-level language or web publishing scripts. For efficient library portal

development, a combination of web scripting languages is needed. High-level languages like Apache, Javascript, Hypertext Pre-processor and My Structured Query Language (MSQL) are needed for the design process. Web codes and tools like HTML tags and web authoring tools like DreamWeaver/MS Frontpage are needed for writing web pages, portals and websites. Photoshop for images and banners, Flash Excellent for dynamic images and contents, JavaScript for a dynamic website, PHP for a dynamic website with web forms attributes and Adobe Acrobat Professional for PDF files are additional requirements (Madhusudhan 2011).

As predicted by the TAM and DoI theory, not everybody will accept an innovative system. Yet, consideration should be given to the vast majority of the university community who are willing to use ICTs and e-resources.
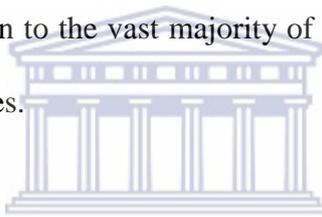
Although the Acting University Librarian at the Ibrahim Babandiga Library did not envisage any problems with the implementation of a library portal, various other respondents from this study alerted to the same challenges listed - especially the university's readiness to support the project, funds, Internet access and electricity supply. Some of their responses were:

> *Inadequate funding from the university management*
> *Lack of library portal policies*
> *Lack of corporation from stakeholders in ensuring that such an enviable project is implemented*
> *Lack of infrastructures and equipment to aid development of the said project*

The Ibrahim Babangida Library might experience challenges due to lack of professionalism, inadequate human resources to manage the portal, technical challenges, lack of funds to maintain the portal, lack of funds to subscribe to e-resources, lack of infrastructure,

inefficient Internet access on campus and political bureaucracies. Detailed e-resource and ICT policy documents must be created. The library might have to market the new portal enthusiastically, and supply training to illustrate its use and benefits to ensure gradual acceptance by the university community in order to convince the MAUTECH management and other donors to allocate funds to overcome these obstacles.

9.8 Enhanced information services

A 21st century academic library should provide digital content of library resources to its users, fulfil the expectations and demands of their users, and ensure that users are independent information users. Library users should be able to find, retrieve and engage with relevant information in various formats from a variety of sources. It is advocated that academic libraries automate and network library services to deliver quality content resources to users from a single access point to enhance the teaching and research of the institution.
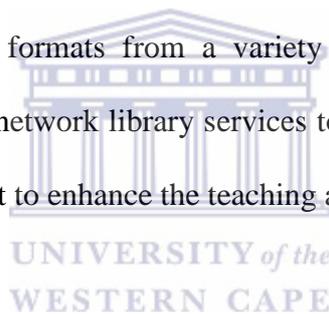
The majority of the respondents of this study have predicted that a library portal will improve research and teaching, increase morale, provide online accessing of resources without going to the library, enhance sharing and dissemination of resources, enhance access to e-resources, improve accessibility, higher utilisation of e-resources and off-campus accessibility, provide more discipline-based resources, improve library services, improve library utilisation, benefit the university community, lessen stress of information retrieval, ensure keeping pace with development elsewhere as well as provide being part of the global village and the IT world. Some of their comments were:

> *The basic thing in e-library is accessibility.*
> *No doubt, the utilisation will be high.*
> *People/staff/students can then access materials/e-resources from*
> *anywhere on campus.*

259

It will be easier to access the materials on net.

Efficiency is necessary.

Network problem will be reduced, accessibility will be enhanced, and less money will be spent on the net due to efficient and effective network.

Yes, because when that is done accessing information on different area will be made easy and will attract users.

Many people will access the library.

Must students usually complained about lack of access to several database (online) due to subscription restriction.

It will enhance quick access to learning resources.

Integration enhanced accessibility to resources

One can get what he/she want.

An integrated library portal ... with efficient and dedicated library staff operating the system may help to minimise stress for all library users.

Enhance Internet browsing with regular power supply
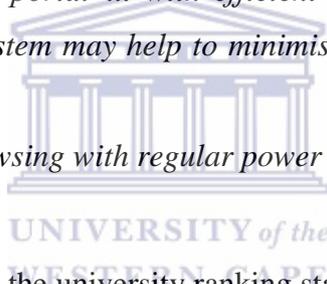
A library portal will also improve the university ranking status and research output. It has the potential to attract prospective researchers and students to the university. It can be used to market the library and to encourage interaction between librarians and users (Koutropoulos 2014). The portal can also collate organised information and if structured well, assist users locate and use them. Librarians have confirmed that a library portal will improve accessibility of resources and enhance current awareness as well as selective dissemination of information services. It is foreseen that the portal will develop internal, regional and international collaborations and connections. If rare documents are digitised and archived in the institutional repository on the portal, they will not only be preserved for future use, but also be accessible internationally.

9.9 Applying the theoretical framework to library portal

To apply the theoretical and conceptual framework of this research, a return to the theoretical premises on which this thesis has been based can help to generate insights regarding the elements used from the TAM and DoI theory. In order to overcome any weaknesses as well as blend the functions of e-resources and the library portal, a strategic emphasis on the discourse of the theories has been established. The TAM has been used to assist students and academics appreciate and utilise e-resources seamlessly with the use of technology, while the DoI theory has been applied to encourage academics and students to accept a new concept being introduced – in this case, the library portal. TAM support library portal architecture by reinforcing perceived usefulness and perceived ease of use of a system (library portal) for students and academics at MAUTECH. This is taking alongside with the idea of DoI by conceptualising it into an innovation that is to be generally accepted by the university community.
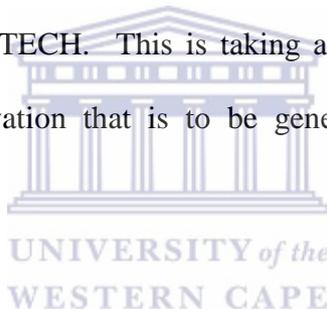
The associating components of the theoretical or conceptual framework are input, process and output levels. As input level, the study has determined the perceived usefulness and perceived ease of use of e-resources by academics and students. For the process level, willingness to use e-resources as well as a library portal and actual utilisation of e-resources has been determined to result in findings of a positive attitude. The output level relating to the behavioural intention of using and adopting the system reflected that, in general, stakeholders will be adopting the use of e-resources and the library portal if it was available. The library portal has been designed to incorporate features and functions to accommodate requirements of applicability, compatibility, productivity, marketability and dependability.

9.10 Contribution of the study to body of knowledge

It is imperative that research should contribute to the existing body of knowledge. Academic libraries in the 21st century need a contemporary approach to deliver efficient library services. With rapid growth in technology, academic libraries are expected to provide a user-friendly library portal incorporating requirements of and useful ideas from library users. Empirical studies have shown that most library portals are designed to fulfil the needs of librarians and not those of their users. This study tried to resolve the anomaly.

The design and implementation of a library portal at MAUTECH was achieved after input from all stakeholders were congregated. The uniqueness of this study can be found in the fact that it was a case study unique to the Ibrahim Babangida Library and MAUTECH, that no study like this has been carried out before at MAUTECH and therefor contributes to fill the gap in body of knowledge on designing a library portal incorporating input from all MAUTECH library users and stakeholders.
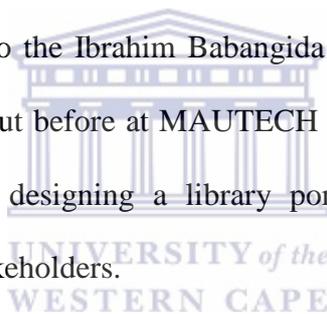
9.11 Shortcomings of the study

The shortcomings of the study lie within unsatisfactory responses of all respondents regarding qualitative responses to questionnaire and interview questions. Although a large number of questionnaires were retrieved, most open-ended questions were either not completed or irrelevant information was supplied. Compared to face-to-face interviews during which the interviewer can prompt the interviewee for richer and more detailed answers, the e-mail interviews resulted in the provision of limited facts and attitudes.

9.12 Recommendations

Based on the findings, the following recommendations are made to improve the information services of the Ibrahim Babangida Library further:

1) Library orientation should be provided to all incoming students and academics. Awareness and orientation programmes could be announced under the "Upcoming events" or at the welcome page of the library portal.

2) Information literacy education should be provided, either solely by the library in the form of face-to-face classroom teaching, recorded videos or online tutorials, or in cooperation with academics' embedded academic modules.

3) Special training in the use of the library portal should be provided to the library staff first, and then rolled out to students and academics.

4) Since many respondents have indicated not using the library because it is too far away for some schools, the university should provide a special shuttle service to transport students and academics to the library.

5) Findings indicated that the least used resources were undergraduate projects, master's dissertations and doctoral theses currently arranged unprofessionally and stored in a locked room in the thesis unit of the Readers' Services Division. A designated area where these projects are arranged for easy accessibility and use is suggested. It is also suggested that these theses and dissertations are digitized for future online access.

6) The established library portal should provide access to all open-access e-resources as well as those subscribed to in future in order to avoid past problems of unawareness and inaccessibility.

7) The Collection Development Division should develop an acquisition policy to ensure the purchase and subscription of relevant and current e-resources covering all

263

disciplines of the curriculum. Students should also be involved in the selection process.

8) Students' utilization of e-newspapers and e-textbooks should be supplemented with e-journals, e-theses and e-dissertations as well as indexing and abstracting databases with full-test journal articles from accredited journals. Science-based databases like American Association of Petroleum Geologists, American Chemical Society, African Journal Archive, Access Pharmacy, BioMed Central, and Premier should be considered for subscription.

9) Students should be encouraged to read more journal articles as part of their core courses. If students were information literate resulting in independent information users, and easy accessible e-resources were provided, students should be able to find their own relevant articles.

10) Stable free Wi-Fi with fast response time should be provided on campus – including residences - 24/7 to facilitate searching for information resources without costs. The library portal will endure online off-campus access.

11) As many students are using smartphones and other mobile devices for Internet access, the library portal should provide mobile applications to allow easy access.

12) An internal Library Portal Committee, chaired by the University Librarian, should be instituted to facilitate the development of an e-resources policy concerning e-resources, subscription and licensing agreements with vendors as well as developing guidelines and policy concerning technical issues regarding the portal.

13) To develop the institutional repository further, students and academics should be requested to provide research publications as well as dissertations and theses for digitization and consequent archiving and cloud storing.

14) The MAUTECH management should support the acquisition of e-resources financially, especially proprietary e-resources, to meet the needs of the university community by covering all science-based subject resources.

15) The library should use the established library portal for marketing and training purposes.

16) Past examination papers from the last three years should be uploaded to the library portal in order for students to familiarize themselves with different types and formats of examination questions to enhance academic performance.

17) The formation of a consortium with other academics in the region is highly recommended. The networking could result in negotiating better deals with e-resource vendors, and improve interlibrary loan services and access to alternate resources.

18) To move the library into the 21st century, the automation of all library sections and services should be given high priory. As librarians are computer literate, they will embrace the process. The MAUTECH management team should allocate adequate funding for the purchase and maintenance of the needed hardware and software, employing human resources and supplying in-house training.

19) The library should build a permanent server system as back-up for its digital content.

20) For current day-to-day needs, but especially if the library is automated, the MAUTECH management should put mechanisms in place to ensure sufficient consistent electricity supply on campus.

21) The established library portal should be developed more to incorporate links reflecting all the library's resources and services. The dynamism of library portals is their ability to interpolate different interfaces or resources in one access point for user utilisation.

22) A dedicated Online Public Access Catalogue should be designed and incorporated into the library portal. This is to supplement the link to WorldCat already established.

23) An integrated library management system like Koha or Worldshare, an allied of the Online Computer Library Center should be considered to deploy a complete acquisition circulation and catalogue system for Ibrahim Babangida Library.

9.13 Recommendations for further research

While gathering information and analysing data, the need for further research is realised. Recommendations for further research are:

1) For feasibility reasons, respondents taking part in this study excluded members of the governing council, non-graduate students and non-teaching staff. It is recommended that input from these respondents be also gained to make it an encompassing study.

2) The study did not formulate an e-resources guidelines manual. It is recommended that further research is done to ensure institutional e-resources standardization.

3) The automation of a library is a complex process requiring funds, expertise, strategies and policies. A detailed study on the automation of an academic library is needed to guide the process at the Ibrahim Babangida Library and to develop the existing library portal further.

9.14 Final conclusion

The research objectives of this study were to determine the extent of e-resource availability at MAUTECH, how students and academics utilized printed as well as e-resources, and techniques of designing and establishing an integrated customised library portal.

Findings reflected low use of the Ibrahim Babangida Library, dissatisfaction with the quality and quantity of the library collection, insufficient and unreliable Internet access on campus,

limited information literacy education, preference to a combination of printed and e-resources, familiarity and utilization of e-resources due to flexibility and easy access to academic information, a need for digitization of library resources as well as a need for a dedicated library portal.

The study recommends, among others, information literacy education for students and academics, subscription to full-text databases, provision of sufficient and free Internet access, e-resource and e-services policies, and establishing a consortium with other Nigerian academic libraries.

The outcome of the study was the design and establishment of a functional and responsive library portal based on the input from stakeholders of the MAUTECH community, scholarly views found in relevant literature and expertise from other libraries.

List of References

Abubakar, B.M. (2011). Academic libraries in Nigeria in the 21st century. *Library Philosophy and Practice. Paper 1464.* 1-6. Retrieved August 10, 2015, from http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1464&context=libphilprac

Abubakar, D., & Cholom, K.M. (2017). Relationship of user education, computer literacy and information and communication technology accessibility and use of e-resources by postgraduate students in Nigerian university libraries. *Philosophy and Practice. Paper 1555.* Retrieved October 10, 2017, from http://digitalcommons.unl.edu/libphilprac/1555

Adeleke, D.S., & Nwalo K.I.N. (2017). Availability, use and constraints to use of electronic information. *International Journal of Knowledge Content Development & Technology*, 7(4), 51-69.

Adeniji, M., Babalolo, G., & Ajayi, S. (2015). Awareness and utilization of electronic resources by librarians of the Olabisi Onabanjo University Ogun State, Nigeria. *Information and Knowledge Management,* 5(2), 57-62.

Adeniran, P. (2013). Usage of electronic resources by the undergraduates at the Redeemer's University, Nigeria. *International Journal of Library and Information Science,* 5(10), 319-324.

Adeoye, Y.M., Oluwole, A.F., & Blessing, L.A. (2013). Appraising the role of information communication technology (ICT) as a change agent for higher education in Nigeria. *International Journal of Educational Administration and Policy Studies,* 5(8), 177-182.

Adepoju, E.O. (2015). Library automation: a case study of Ekiti State Library board, Ado-Ekiti. *Sci-Afric Journal of Educational Research and Learning Techniques,* 1(3), 119-124.

Adetimirin, A.E. (2007). Availability, accessibility and use of information and communication technology by undergraduates in Nigerian universities: What role for

268

university libraries? A paper presented at *2007 NLA National Conference and AGM* on 9-14 Sept. Held in Uyo, Akwa Ibom State.

Agaba, D.M., Bukenya, N.K., & Nyumba, J.B. (2004). Utilization of electronic information resources by academic staff at Makerere University. University of Dares Salaam Library Journal, 6(1), 18-28. *University of Dares Salaam Library Journal,* 6(1), 18-28.

Agosti, M., Crivelluri, F., Di Nunzio, G.M., & Gabrielli, S. (2010). Understanding user requirements and preferences for a digital library Web portal. *International Journal on Digital Libraries,* 11(4), 225-238.

Agyekum, B.O., & Ossom, S. (2015). Awareness and impact of electronic journals usage by faculty members and lectures in Kumasi Polytechnic, Ghana. *Information and Knowledge Management,* 5(1), 9-17.

Ahmed, A., & Al-Reyaee, S. (2017). Knowledge and use of electronic information resources by medical students at Al-Jouf University in Saudi Arabia. 1-22. *Library Philosophy and Practice. Paper 4352.* Retrieved July 14, 2017, from http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=4352&context=libphilprac

Ahmed, S.M.Z. (2013). Use of electronic resources by the faculty members in diverse public universities in Bangladesh. *The Electronic Library,* 31(3), 290-312.

Ajala, S.F., & Ayankola, I.A. (2017). Libraries services, library automation programmes and the software industries in Nigeria. *Library Philosophy and Practice. Paper 4303. 1-17.* Retrieved July 18, 2017, from http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=4303&context=libphilprac

Ajayi, S.A., Shorunke, O.A., & Aboyade, M.A. (2014). The influence of electronic resources use on students' reading culture in Nigerian universities: a case study of Adeleke University Ede, Osun State. *Jewel Journal of Librarianship,* 7(1), 187-198.

Akang, U.D., & Faculty, A. (2012). Theoretical constructs, concepts, and applications. *American International Journal of Contemporary Research,* 2(9), 89-97.

Akinyetun, T.S. (2016). Bridging the researcher-respondent divide: role of Internet-based survey. *International Journal of Academic Research in Education and Review,* 4(4), 116-126.

Alsaawi, A. (2014). A critical review of qualitative interviews. *European Journal of Business and Social Sciences,* 3(4), 149-156.

American Library Association (ALA). (2013). ALA Glossary of Library and Information Science. ALA Editions, 4th ed. 288.

Anaf, S. & Sheppard, L.A. (2007). Mixing research methods in health professional degrees: thoughts for undergraduate students and supervisors. *The qualitative resport*, 12 (2), 184-192.

Anderson, T., Varnhagen, S., & Campbell, K. (1998). Faculty adoption of teaching and learning technologies: contrasting earlier adopters and mainstream faculty. *The Canadian Journal of Higher Education,* 28(23), 71-78.

Ani, O.E. (2013). Accessibility and utilization of electronic information resources for research and its effect on productivity of academic staff in selected Nigerian universities between 2005 and 2012. Unpublished PhD thesis, University of South Africa, Department of Information Science.

Anie, S.O. (2015). Internet accessibility: challenges before the African Nations. *Information Impact: Journal of Information and Knowledge Management,* 6(2), 207-211.

Appleton, L. (2006). Perceptions of electronic library resources in further education. *The Electronic Library,* 24(5), 619-634.

Aravind, S. (2017). Use of electronic resources in Engineering College Libraries: user study. *Journal of Advances in Library and Information Science,* 6(1), 85-89.

Australian Library and Information Association. (2014). *The library and information sector: core knowledge, skills and attributes.* Retrieved October 17, 2017, from https://www.alia.org.au/about-alia/policies-standards-and-guidelines/library-and-information-sector-core-knowledge-skills-and-attributes

Babbie, E., & Mouton, J. (2008). *The practice of social research*. 8th ed. Cape Town: Oxford University Press.

Badenhorst, P. (2015). Use and perception of e-books in academic libraries: a case study of the University of Zululand. Retrieved April 01, 2015, from http://www.lis.uzulu.ac.za/conference/docs/pp/day1/session%203/15_Use%20and%20Perception%20of%20EBooks%20in%20Academic%20Libraries%20A%20Case%20Study%20of%20the%20University%20of%20Zululand%20P_Badenhorst.pdf

Baro, E.E., Eze, M.E., & Nkanu, W.O. (2013). E-library services: challenges and training needs of librarians in Nigeria. *OCLC Systems & Services: International Digital Library Perspectives,* 29(2), 101-116.

Barreiro, P.L., & Albandoz, J.P. (2001). Population and sample. Sampling techniques. *Management Mathematics for European Schools,* 1(1), 1-18.

Bashorun, M.T., & Isah, A.M.Y. (2011). User perception of electronic resources in the university of Ilorin, Nigeria (UNILORIN). *Journal of Emerging Trends in Computing and Information Sciences,* 2(11), 554-562.

Bazeley, P. (2006). The contribution of computer software to integrating qualitative and quantitative data and analyses. *Research in the schools,* 13(1), 64-74.

Beal, V. (2017). *Windows Server.* Retrieved October 21, 2017, from https://www.webopedia.com/TERM/W/Windows_Server.html

Behrends, S. (2012). *Libraries vs. Google in the 21st century.* Retrieved May 12, 2017, from https://theidaholibrarian.wordpress.com/2012/11/12/libraries-vs-google/

Beisler, A., & Kurt, L. (2012). E-book workflow from inquiry to access: facing the challenges to implementing e-book access at the University of Nevada, Reno. *Collaborative Librarianship,* 4(3), 96-116.

Blankenship, S.E. (1998). Factors related to computer use by teachers in classroom instruction. Unpublished PhD thesis, Virginia Polytechnic Institute and State University.

Boateng, H., Agyemang, F.G., & Dzandu, M.D. (2014). The pros and cons of library automation in a resource challenged environment: a case study of KNUST Library. *Library Philosophy and Practice. Paper 1061.* 1-21. Retrieved June 24, 2015, from http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=2590&context=libphilprac

Bowden, F.D.J., & Williams, P.B. (2013). A framework for determining the validation of analytical campaigns in defence experimentation. 20th International Congress on Modelling and Simulation, Adelaide, Australia, 1-6 December. Retrieved December 12, 2015 from http://www.mssanz.org.au/modsim2013/E1/bowden.pdf

Brancato, G., Macchia, S., Murgia, M., Signore, M., Simeoni, G., Blanke, K., Körner, T., Nimmergut, A., Lima, P., Paulino, R., & Hoffmeyer-Zlotnik, J.H.P. (2006). *Handbook of recommended practice for questionnaire development and testing in the European statistical system.* Place: European Commission Grant Agreement.

Breeding, M. (2015). Library systems report 2015: operationalizing innovation. *American Libraries, May 1, 2015.* Retrieved July 17, 2015, from http://americanlibrariesmagazine.org/2015/05/01/library-systems-report

Carnegie Corporation. (2012). *Developing automated libraries phase II: a professional development and technical assistance program for Carnegie grantee libraries in East and West Africa.* Illinois: The Mortenson Center for International Library Programs.

Chandel, A.S., & Saikia, M. (2012). Challenges and opportunities of e-resources. *Annals of Library and Information Studies,* 59(1), 148-154.

Chang, H.C. (2010). *A new perspective on twitter hashtag use: diffusion of innovation theory.* ASIST 2010 proceedings of the 73rd ASIS&T annual meeting. Navigating streams in an information ecosystem. 47, Oct., 22-27, 1-4. Retrieved June 24, 2015, from http://onlinelibrary.wiley.com/doi/10.1002/meet.14504701295/epdf

Chen, B., Kirkley, D., & Raible, J. (2008). *Applying diffusion of innovation model to embrace Web 2.0 technologies: implementing an institutional strategy.* Presentation at the Sloan-C International Symposium, Carefree, AZ, May 7-9.

Chen, Y.H., & Smith, I.C. (2015). Factors influencing students' use of a library web portal: applying course-integrated information literacy instruction as an intervention. *The Internet and Higher Education,* 26(1), 42-55.

Chilimo, W. (2014). Next-generation catalogues how are the academic libraries in Kenya faring? *Mousaion*, 32 (2), 93-118.

Chimwaza, G. (2017). Factors affecting the use and non-use of electronic information resources in scientific, technological and medical disciplines at the University in Zimbabwe. Unpublished PhD thesis, University of Pretoria.

City Population. (2017). *Adamawa State, Nigeria – population statistics, charts, map and location.* Retrieved April 16, 2018, from https://www.citypopulation.de/php/nigeria-admin.php?adm1id=NGA002

Clarke, C.P., Hui, S., & Li, R. (2013). Three digital platforms: Hangzhou public library widens access to resources. *Library Trends,* 62(1), 140-159.

Clarke, R. (1999). *A primer in diffusion of innovations theory.* Retrieved March 9, 2016, from http://www.rogerclarke.com/SOS/InnDiff.html

Clink, K. (2015). The academic library's role in student retention. *Pacific North-West Library Association Quarterly,* 80(1), 20-24.

Coetsee, T., & Weiner, S.A. (2013). Key professional principles for South African academic librarians. *Mousaion,* 31(3), 110-126.

Cooper, D.R., & Schindler, P.S. (2011). *Business research methods.* 11th ed. New York: McGraw-Hill/Irwin.

Corley, K.G., & Gioia, D.A. (2011). Building theory about theory building: What constitutes a theoretical contribution? *Academy of Management Review*, 36(1), 12-32.

Creswell, J.W. (2013). Steps in conducting a scholarly mixed methods study. *DBEER speaker series. 48.* Retrieved December 12, 2015 from http://digitalcommons.unl.edu/dberspeakers

Creswell, J.W. (2014). *Research design: qualitative, quantitative and mixed methods approaches.* 4th ed. Los Angeles: Sage.

Curtin, N., Malley, J., & Stewart, A. (2016). Mentoring the next generation of faculty: supporting academic career aspirations among doctoral students. *Journal of Higher Education Research,* 57(1), 714-734.

Curzon, S., & Skinner, J.Q. (2009). *Academic libraries.* Encyclopaedia of Library and Information Sciences. Retrieved June, 6, 2015 from DOI:10.1081/E-ELIS3-120044525.

Daramola, C.F. (2016). Perception and utilization of electronic resources by undergraduate students: the case of the federal university of technology library, Akure. *American Journal of Educational Research,* 4(5), 366-370.

Das, A., & Saha T. (2015). Library portal: a tool for the accessibility of subscribed e-resources. *International Journal of Multidisciplinary Research and Development,* 2(7), 111-117.

Davis, F.D. (1986). A technology acceptance model for empirically testing new end-user information systems: theory and results. Unpublished PhD thesis, Sloan School of Management, Massachusetts Institute of Technology.

Davis, F.D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319-339.

Davis, F.D., Bogozzi, R.P., & Warshaw, P.R. (1989). User acceptance of computer technology: a comparison of two theoretical models. *Management Science*, 35(8), 982-1003.

Davis, F.D., Bagozzi, R.P., & Warshaw, P.R. (1992). Extrinsic and intrinsic motivation to use computers in the workplace. *Journal of Applied Social Psychology*, 14(1), 1111-1132.

Dempsey, L. (2003). *The recombinant library: portals and people.* Retrieved August 3, 2015, from http://www.oclc.org/content/dam/research/people/dempsey/dempsey_recombinant_library.pdf

Denzin, N.K., & Lincoln, Y.S. (2011). *The SAGE handbook of qualitative research.* 4th ed. Thousand Oaks, CA: Sage.

Devi, R. (2015). Indian librarians emerging info-architects and library portals information architecture. *International Journal of Social Science and Humanities Research,* 3(1), 89-91.

Dhanavandan, S. (2014). Knowledge and utilization of e-resources and services in Annamalai University Library. *International Journal of Information Dissemination and Technology,* 4(1), 95-100.

Dhanavandan, S., & Tamizhchelvan, T. (2012). An evaluation of e-resources in academic libraries in Tamil Nadu. *Journal of Emerging Trends in Computing and Information Sciences,* 3(3): 421-426.

Dolo-Ndlwana, N. (2013). Use and value of library's electronic resources by academics and postgraduate students at Cape Peninsula University of Technology (CPUT). Unpublished Master's dissertation, University of Cape Town.

Dooley, K.E. (1999). Towards a holistic model for the diffusion of educational technologies: an integrative review of educational innovation studies. *Educational Technology & Society,* 2(4), 35-45.

Dresselhaus, A. (2012). Extending access to electronic resources of a merged community college and university library. *Collaborative Librarianship,* 4(4), 175-182.

Dudley, J.M. (2013). *Maintenance and development of the library web portal at Bryant & Stratton College Cleveland Downtown Campus.* TCC 2013 Conference Proceedings. 16-18 April, Manoa, Hawaii, 1-8. Retrieved February 5, 2016, from http://etec.hawaii.edu/proceedings/2013/Dudley.pdf

Edem, N.B., & Egbe, N. (2016). Availability and utilization of electronic resources by postgraduate students in a Nigerian university library: a case study of the University of Calabar, Nigeria. *Information and Knowledge Management,* 6(2), 60-69.

Elmir, R., Schmied, V., Jackson, D., & Wilkes, L. (2011). Interviewing people about potentially sensitive topics. *Nurse Researcher*, 19(1), 12-16.

Elstad, E., & Christophersen, K-A. (2017). Perceptions of digital competency among student teachers: contributing to the development of student teachers' instructional self-efficacy in technology-rich classrooms. *Education Sciences,* 7(1), 27. doi.org/10.3390/educsci7010027

Emezie, N.A., & Nwaohiri, N.M. (2014). The challenges of library automation in Nigerian universities of technology: the example of Federal University of Technology, Owerri, Nigeria. *International Journal of Information and Communication Technology,* 11(1), 1.

Explorable. (2018). *Research population*. Retrieved August 05, 2018, from https://explorable.com/research-population

Eyiolorunshe, T.A., Ayooluwa, A., & Eluwole, O.A. (2017). Awareness, accessibility and use of library resources by faculty members of Landmark University, Nigeria. *Information Impact: Journal of Information and Knowledge Management,* 8(2), 118-128.

Fagan, J.C. (2017). An evidence-based review of academic web search engines, 2014-2016: implications for librarians' practice and research agenda. *Information Technologies and Libraries,* 36(2), 7 - 47.

Fathema, N., Shannon, D., & Ross, M. (2015). Expanding the Technology Acceptance Model (TAM) to examine faculty use of Learning Management Systems (LMSs) in higher education institutions. *MERLOT Journal of Online Learning and Teaching,* 11(2), 210-232.

Fati, O. I., & Adetimirin, A. (2017). Influence of computer literacy skills on OPAC use by undergraduates in two universities in Nigeria. *Academic Research Journal*, 5(1), 27-37.

Fatima, N., Ahmad, N., & Ahmad, S. (2011). Use of library portal by engineering and technology students of Aligarh Muslim University: a survey. *Journal of Library & Information Technology,* 31(3), 168-174.

Fisher, V.F. (2005). Rogers' diffusion theory in education: the implementation and sustained use of innovations introduced during staff development. Unpublished PhD thesis, University of Nebraska.

Fritz, R., & Vandermause, R. (2017). Data collection via in-depth email interviewing: lessons from the field. *Qualitative Health Research*, 1-10. Doi: 10.1177/1049732316689067

Gakibayo, A., Ikoja-Odongo, J.R., & Okello-Obura, C. (2013). Electronic information resources utilisation by students in Mbarara university library. *Library Philosophy*

277

and   Practice.   Paper   2055.   1-29.   Retrieved   July   12,   2016,   from
http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=2055&context=libphilprac

Gay, B., & Weaver, S. (2011). Theory building and paradigms: a primer on the nuances of
theory construction. *American International Journal of Contemporary Research,* 1(2),
24-32.

Geetha, M., Mamatha, K.R., & Farhana, F. (2013). Use of library portals by research scholars
and faculty members at Kuvempu University: a survey. *Journal of Library &
Information Technology,* 33(6), 509-515.

Gelso, C.J. (2006). *Applying theories to research: the interplay of theory and research in
science.* In Leong, F.T., & Austin J.T. (Eds.). The Psychology Research Handbook.
pp. 455-467. Thousand Oaks, CA: Sage.

Georges, H. (2014). Google vs. the library (Part II): student search patterns and behaviors
when using Google and a federated search tool. *Libraries and the Academy,* 14(4), 503-
532.
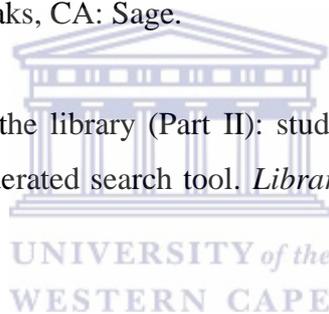
Giesen, D., Meertens, V., Vis-vissches, R., & Beukenhorst, D. (2012). *Questionnaire
development.* Hague/Heerlen: Statistics Netherlands.

Habiba, U., & Chowdhury, S. (2012). Use of electronic resources and its impact: a study of
Dhaka University library users. *The Eastern Librarian,* 23(1), 74-90.

Hamilton, R.J., & Bowers, B.J. (2006). Internet recruitment and e-mail interviews in
qualitative studies. *Qualitative Health Research*, 16(1), 821-835.

Haridasan, S., & Khan, M. (2009). Impact of e-resources by social scientists in national
science documentation centre, India. *The Electronic Library,* 27(1), 117-133.

Heinen, J. (1985). A primer on psychological theory. *The Journal of Psychology,* 119, 413-
421.

Hossaini, S.B. (2017). Use and impact of electronic resources: a study on two selected academic libraries. *International Journal of Law, Humanities & Social Science,* 1(1), 23-59.

Hussain, A., & Lavanya, N. (2014). The impact of ICTs in Library and Information Services at Indus Business Academy, Bangalore. *International Journal of Knowledge Management,* 1(3), 1-14.

Hussain, A., & Singh, J. (2017). Internet usage in Punjab libraries. *PEARL - A Journal of Library and Information Science,* 11(2), 175-182.

Hustad, E., & Arntzen, A.B. (2013). Facilitating teaching and learning capabilities in social learning management systems: challenges, issues, and implications for design. *Journal of Integrated Design & Process Science,* 17(1), 17-35.

Ibrahim, M.S., & Lakshmi, S. (2017). A study on library management using electronic resources. *SSRG International Journal of Economics and Management Studies. Special issue. April 2017.* 81-85. Retrieved September 24, 2017, from http://www.internationaljournalssrg.org

IFLA. (2012). Key issues for e-resource collection development: a guide for libraries. Retrieved December 12, 2015, from https://www.ifla.org/publications/key-issues-for-e-resource-collection-development-a-guide-for-libraries

Internet Live Stats (2016). *Nigeria internet users.* Retrieved March 5, 2017, from http://www.internetlivestats.com/internet-users/nigeria/

Isah, A. (2014). Awareness and usage of automated library systems by patrons in two Nigerian university libraries. *International Journal of Information and Communication Technology,* 11(1), 1.

Jackson, B. (2017). The representation of library value in extra-institutional evaluations of university quality. *Canadian Journal of Higher Education,* 47(1), 80-96.

Jacobsen, M. (1998). Adoption patterns and characteristics of faculty who integrates computer technology for teaching and learning in higher education. Doctoral thesis, University of Calgary.

Japheth, A.Y., & Kikelomo, A. (2016). Digitization of educational resources in Nigerian academic libraries: prospects, challenges and the way forward. *International Journal of Information Research and Review,* 3(1), 1594-1600.

Jaschik, S., & Lederman, D. (2014). *The 2014 inside higher education survey of faculty attitudes on technology: a study by Gallup and inside higher education.* Washington, DC: Retrieved February 8, 2016, from https://www.insidehighered.com/news/survey/online-ed-skepticism-and-self-sufficiency-surveyfaculty-views-technology

Jennings, E. (2013). The relevance of academic libraries in the twenty-first century. *College & Undergraduate Libraries,* 20(1), 1-8.

Johnson, A.M. (2005). *The technology acceptance model and the decision to invest in information security.* Proceeding of the 2005 Southern Association of Information Systems Conference (SAIS). Paper 21, 114-118. February 25-26, Savannah, GA. Retrieved June 24, 2015, from http://sais.aisnet.org/2005/Johnson.pdf

Johnson, S., Evensen, O.G., Gelfand, J., Lammers, G., Sipe, L., & Zilper, N. (2012*). Key issues for e-resource collection development: a guide for libraries. Acquisition and Collection Development Section.* Hague: International Federation of Library Associations and Institutions (IFLA). 1-30.

Jonathan, C., & Udo, N. (2015). Categories, availability and awareness of electronic information resources by postgraduate library users in south east Nigerian federal universities. *International Journal of Library Science,* 4(1), 7-12.

Jones, S., & Thorpe, A. (2014). Library homepage design at medium-sized institutions. *Journal of Web Librarianship,* 8(1), 1-22.

Joshua, D. (2012). Feasibility of a dedicated e-learning platform in Modibbo Adama University of Technology, Yola, School of Management and Information Technology, Department of Library and Information Science. Unpublished MLIS dissertation, University of the Philippines, Diliman.

Joshua, D. (2014). Users' assessment of e-resources at the university library of the University of the Philippines, Diliman. *Journal of Philippine Librarianship,* 34(1), 1-13.

Joshua, D., Obille, K., John, E., & Shuaibu, M. (2016). E-learning platform system for the Department of Library and Information Science, Modibbo Adama University of Technology, Yola: a developmental plan. *Information Impact: Journal of Information and Knowledge Management,* 7(1), 51-69.

Kadir, M.R.A., Ghani, R.A., Bakar, A.A., Bunawan, A.A., & Seman, M.R. (2016). Factors influencing user satisfaction using electronic resources. In *Proceedings of the 27th International Business Information Management Association Conference - Innovation Management and Education Excellence Vision 2020: From Regional Development Sustainability to Global Economic Growth, IBIMA 2016* (pp. 2045-2055). International Business Information Management Association, IBIMA.

Kahle, B. (2017). Transforming our libraries from analog to digital: a 2020 vision. *EDUCAUSE Review.* Retrieved October 9, 2017, from https://er.educause.edu/~/media/files/articles/2017/3/erm1722.pdf

Kahn, M., & Underwood, P.G. (2013). Issues related to the adoption of e-books in academic libraries: a literature review. *South African Journal of Library and Information Science,* 79(2), 10-17.

Kenyatta University open access institutional repository policy (2013). 1-18. Retrieved February 5, 2016, from http://library.ku.ac.ke/wp-content/uploads/2013/01/Library-IR-Policy.pdf

Khan, S.A., Bhatti, R., & Khan, A.A. (2011). Use of ICT by students: a survey of Faculty of Education at IUB. *Library Philosophy and Practice. Paper 928.* 1-12. Retrieved

August 5, 2015, from http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=928&context=libphilprac

Khan, R., Khan, A., Malik, S., & Idrees, H. (2017). Virtual reference services through web search engines: study of academic libraries in Pakistan. *Publications Journal,* 5(6), 1-13.

Kiilu, P.W. & Otike, J. (2016). Non-use of academic library services: a literature review. *International Journal of Library Science,* 5(1), 7-13.

King, L. (2007). Information literacy of incoming undergraduate Arts students at the University of the Western Cape: assessment of competencies and proficiencies. PhD thesis, University of the Western Cape.

Klopping, I.M., & McKinney, E. (2004). Extending the technology acceptance model and the task-technology fit model to consumer e-commerce. *Information Technology, Learning, and Performance Journal,* 22(1), 35-38.

Kodama, C., Jean, B.S., Subramaniam, M., & Taylor, N.G. (2017). There's a creepy guy on the other end at Google!: Engaging middle school students in a drawing activity to elicit their mental models of Google. *Information Retrieval Journal,* 1-30. Doi: 10.1007/s10791-017-9306-x

Koufaris, M.K. (2002). Applying technology acceptance model and flow theory to online consumer behaviour. *Information Systems Research,* 13(2), 205-223.

Koutropoulos, A. (2014). Library portal 2.0: the social research management system. *Current Issues in Emerging eLearning,* 1(1), 64-79.

Kumah, C.H. (2015). A comparative study of use of the library and the Internet as sources of information by graduate students in the University of Ghana. *Library Philosophy and Practice. Paper 3473.* 1-20. Retrieved April 6, 2017, from http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=3473&context=libphilprac

Kumar, U.Y. (2013). Automation and networking status of aided minority degree college libraries in urban Bengaluru: a study. *International Journal of Information Dissemination and Technology*, 3(4), 279-282.

Kwafoa, P.N., Osman, I., & Afful-Arthur, P. (2014). Assessment of the use of electronic resources among administrators and faculty in the University of Cape Coast. Library Philosophy and Practice. *Paper 2805.* 1-18. Retrieved May 13, 2017, from http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=2805&context=libphilprac

Larsen, T.J. (1997). *Diffusion theory as the basis for understanding information technology related change: true or false?* Position statement presented at WG8.6, Ambleside, USA.

Leeder, K. (2013). *Adventures in rhetoric: the traditional library.* Retrieved August 4, 2015, from http://www.inthelibrarywiththeleadpipe.org/2013/adventures-in-rhetoric

Leedy, P.D., & Ormrod, J.E. (2005). *Practical research: planning and design*. Upper Saddle River: Prentice Hall.

Less, K.H. (2003). Faculty adoption of computer technology for instruction in the North Carolina Community College System. Doctoral thesis, East Tennessee State University.

Lewis, D.W. (2007). A strategy for academic libraries in the first quarter of the 21st century. *College and Research Libraries*, 68(5), 418-434.

Librarians' Registration Council of Nigeria. (2015a). *List of accredited LIS institutions in Nigeria.* Retrieved July 29, 2015, from http://www.lrcn.gov.ng/LIST%20OF%20ACCREDITED%20LIBRARY%20INSTITUTIONS.pdf

Librarians' Registration Council of Nigeria. (2015b). *Minimum standards and guidelines for academic libraries in Nigeria.* Retrieved July 30, 2015, from

http://www.lrcn.gov.ng/Minimum%20Standards%20and%20Guidelines%20for%20Academic%20Libraries%20in%20Nigeria.pdf

Library Guide: Ibrahim Babangida Library (2006). Federal University of Technology, Yola, Nigeria. Yola: Paraclete Publishers, 1-17.

Library Guide: Ibrahim Babangida Library (2016). Modibbo Adama University of Technology, Yola, Nigeria. Yola: Paraclete Publishers, 1-19.

Lippincott, J.K. (2015). Libraries and the digital university. *College & Research Libraries,* 76(3), 283-295.

Madhusudhan, M. (2011). *Designing a library portal.* Retrieved April 4, 2016, from http://www.slideshare.net/kmusthu/desinging-a-library-portal-madhu

Madondo, T., Sithole, N., & Chisita, C.T. (2017). Use of electronic information resources by undergraduate students in the faculty of management and administration at Africa University, Mutare, Zimbabwe. *Asian Research Journal of Arts & Social Sciences*, 2(2), 1-12.

Majapelo, M.S., & Dube, L. (2014). Information access in high school libraries in Limpopo province, South Africa. *South African Journal of Libraries and Information Science,* 80(2), 8-16.

Mallaiah, T.Y., Kumbar, S.S., & Mudhol, M.V. (2008). *Use of library in Mangalore university library: a study of users' opinion.* In Patil, D.B., & Kooganuramath, M.M. (Eds.). (2008) *Library and Information Science.* New Delhi: APH Publishing Corporation, pp. 154-166.

Mane, M.B., & Panage, B.M. (2015). Content analysis of university library portal: a detail study of Jayakar Library Portal, Savitribai Phule University of Pune. *International Journal of Library and Information Science,* 7(5), 109-116.

Manjunath, G.K. (1998). *Library automation: why and how?* Presented at a 'Workshop on Information Technology and Library Automation' held at Thane, Maharashtra on August 16. Retrieved February 10, 2016, from http://www.igidr.ac.in/images/stories/paper1.htm

Mann, S. (2011). A critical review of qualitative interviews in applied linguistics. *Applied Linguistics,* 32(1), 6-24.

Marsden, P.V. & Wright, J.D. (2010). *Handbook of survey research.* London: Clive Bingley.

Masese, J.M., George, B.O., Makwae, E.N., & Moenga, E.N. (2016). Strategies to enhance access and use of e-resources by postgraduate students in selected university libraries in Kisii County, Kenya*. International Journal of Academic Library and Information Science*, 4(8), 203-207.

Massoud, M.R., Nielsen, G.A., Nolan, K., Schall, M.W., & Sevin, C.A. (2006). A framework for spread: from local improvement to system-wide change. IHI Innovation Series white paper. Cambridge, MA: Institute for Healthcare Improvement.

Matton, R. (2015). Filling the Google gaps: harnessing the power of Google through instruction. Retrieved July 8, 2017, from http://elibrary.law.psu.edu/cgi/viewcontent.cgi?article=1011&context=library_faculty

MAUTECH MIS. (2016). Modibbo Adama University of Technology, Yola, Management Information System.

McDonald, K. (2015). Re-envisioning libraries for training and literacy development. *Procedia - Social and Behavioral Sciences*, 176(1), 504-508.

McNabb, C. (2009). Advantages and disadvantages of descriptive research. *Centre for Innovation in Research and Teaching.* Retrieved February 17, 2018, from https://cirt.gcu.edu/research/developmentresources/research_ready/descriptive/advan_disadvan

Medlin, B.D. (2001). The factors that may influence a faculty member's decision to adopt electronic technologies in instruction. PhD thesis, Virginia Polytechnic Institute and State University.

Meho, L.I. (2006). E-mail interviewing in qualitative research: a methodological discussion. *Journal of the American Society for Information Science and Technology,* 57(1), 1284-1295.

Michalak, S.C. (2012). This changes everything: transforming the academic library. *Journal of Library Administration,* 52(1), 411-423.

Ministerial Committee on ICT Policy Harmonization. (2012). [draft] National Information Communication Technology Policy. Retrieved August 9, 2015, from http://nigeriacomputers.com/wp-content/uploads/2012/02/National_ICT_Policy_DRAFT_090112.pdf

Minishi-Majanja, M.K., & Kiplangat, J. (2005). The diffusion of innovation theory as a theoretical framework in library and information science research. *South African Journal of Libraries and Information Science,* 71(3), 211-224.

Modibbo Adama University of Technology Website. (2015). MAUTECH. Retrieved July 29, 2015, from http://mautech.edu.ng/root/#

Montenegro, M., Clasing, P., Kelly, N., Gonzalez, C., Jara, M., Alarcon, R., Sandoval, A., & Saurina, E. (2016). Library resources and students' learning outcomes: Do all the resources have the same impact on learning? *The Journal of Academic Librarianship*, 42(5), 551-556.

Mutula, S.M. (2012). Library automation in Sub-Saharan Africa: case study of the University of Botswana, program. *Electronic Library and Information Systems,* 46(3), 292-300.

Namhila, E.N. (2017). The predicament of library value. *Sage Journals*, 43(2), 141-149.

NASIG core competencies for electronic resources librarians. (2013). Retrieved January 25, 2016, from http://www.nasig.org/uploaded_files/92/files/CoreComp/CompetenciesforERLibrarians_final_ver_2013-7-22.pdf

Natarajan, M. (2012). Exploring the e-resources for educational use. *International Journal of Information Dissemination and Technology*, 1(4), 193-196.

National ICT Policy (2012). National ICT policy draft: the ministerial committee on ICT policy harmonization. 1-55. Retrieved May 14, 2018, from http://nigeriacomputers.com/wp-content/uploads/2012/02/National_ICT_Policy_DRAFT_090112.pdf

National Universities Commission. (2015). List of Nigerian universities and years founded. Retrieved August 2, 2015, from http://www.nuc.edu.ng/pages/universities.asp?ty=1&order=inst_name&page=2

National Universities Commission (2017). List of approved universities in Nigeria. Monday bulletin: a publication of the office of the Executive Secretary. *National Universities Commission,* 12(27): 1-17. Retrieved August 7, 2017, from http://nuc.edu.ng/wp-content/uploads/2017/07/MB-3rd-July-2017-ilovepdf-compressed.pdf

Negi, D.S. (2014). *Library portal.* Retrieved April 4, 2016, from http://www.slideshare.net/dheerajsnegi9/library-portal-39970720

Neuman, W.L. (2006). *Social research methods: qualitative and quantitative approaches.* Boston: Allyn & Bacon.

Ng, P.L., & Tan, A.K.G. (2017). Determinants of e-resource usage by open distance learning university students. *Malaysian Journal of Library and Information Science*, 22(1), 29-45.

Nigerian Vision 20:2020. (2009). *National plans.* Retrieved August 28, 2015, from http://www.nationalplanning.gov.ng/images/docs/NationalPlans/nigeria-vision-20-20-20.pdf

Nisha, F. & Ali, N.P.M. (2013). Awareness and use of e-journals by IIT Delhi and Delhi University library users. *Collection Building,* 32(2), 57-64.

Nwalo, K.I.N. (2001). Effectiveness of polytechnic libraries in Nigeria. *Journal of Librarianship and Information Science in Africa*, 1(1), 44.

Nwankwoala, N.J. (2014). *Education communication and technology: policy implementation and impacts of information and communication technology (ICT) in Nigeria education, systems.* Proceedings of SOCIOINT14 - International Conference on Social Sciences and Humanities. 8-10 September, Istanbul, Turkey, 743-748. Retrieved September 15, 2015, from http://www.ocerint.org/Socioint14_ebook/papers/458.pdf

Nwosu, C.C., & Udo-Anyanwu, A.J. (2015). Collection development in academic libraries in Imo state Nigeria: status analysis and way forward. *International Journal of Advanced Library and Information Science,* 3(1), 126-135.

Obahiagbon, K., & Otabor, J.O. (2012). Automation of library system: a study of John Harris Library, University of Benin, Nigeria. *Information Technologist*, 9(2), 82.

Obasuyi, L., & Otabor, O.J. (2012). A survey of internet literacy skills among physical science undergraduates of the University of Benin, Nigeria. *Journal of Information and Knowledge Management,* 3(1&2), 1-20.

Ocholla, L., Mutsvunguma, G., & Hadebe, Z. (2016). The impact of new information services on teaching, learning and research at the University of Zululand Library. *South African Journal of Library and Information Science,* 82(2), 11-19.

Odufuwa, F. (2012). Understanding what is happening in ICT in Nigeria: a supply and demand side analysis of the ICT sector. 1-46. Retrieved August 28, 2015, from

http://www.researchictafrica.net/publications/Evidence_for_ICT_Policy_Action/Policy_Paper_6_-_Understanding_what_is_happening_in_ICT_in_Nigeria.pdf

Odunlade, R.O. (2017). Availability and accessibility of information resources as predictor of lecturers' teaching effectiveness. *Library Philosophy and Practice. Paper 4310*. 1-19. Retrieved July 14, 2017, from http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=4310&context=libphilprac

Oduwole, A.A., & Akpati, C.C. (2003). Electronic services provisions in Nigerian university libraries. *Nigerian Library and Information Science Review,* 20(1&2): 1-7.

Ogunsola, L.A. (2011). The next step in librarianship: Is the traditional library dead? *Library Philosophy and Practice. Paper 1638*. 1-8. Retrieved March 11, 2016, from http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1638&context=libphilprac

Okite-Amughoro, F.A., Makgahlela, L., & Bopape, S. (2014). The use of electronic information resources for academic research by postgraduate students at Delta State University, Abraka, Nigeria. *South African Journal of Libraries and Information Science*, 80(2), 1-7.

O'Leary, Z. (2004). *The essential guide to research.* London: Sage.

Olajide, O., & Folayan, B. (2014). Availability and satisfaction of information and communication technology (ICT) facilities and electronic resources by lecturers and students at the Federal University Oye-Ekiti Library. *Jewel Journal of Librarianship,* 7(1), 1-10.

Olofinniyi, O.E., Fashiku, C.O., Fashiku B.C., & Owombo, P.T. (2012). Access to GSM and students' academic performance in secondary school of Osun State, Nigeria. *Online Journal of Social Sciences Research,* 1(5), 160-165.

Oluwaseye, A.J., & Abraham, A.O. (2013). The challenges in the development of academic digital library in Nigeria. *International Journal of Educational Research and Development,* 2(6), 152-157.

289

Omeluzor, S.U., Akibu, A.A., Dika, S.I., & Ukangwa, C.C. (2017). Methods, effect and challenges of library instruction in academic libraries. *Library Philosophy and Practice. Paper 4109.* 1-27. Retrieved July 12, 2017, from http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=4109&context=libphilprac

Onwuegbuzie, A.J. & Leech, N.L. (2006). Linking research questions to mixed methods data analysis procedures 1. *The qualitative report*, 11 (3), 474-498.

Onwuegbuzie, A.J. & Leech, N.L. (2007). Sampling designs in qualitative research: making the process more public. *The qualitative report*, 12 (2), 238-254.

Opara, U.N. (2017). Empowering library users through the five laws of Library Science. *Library Philosophy and Practice. Paper 4268*. 1-15. Retrieved July 12, 2017, from http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=4268&context=libphilprac

Orgem, U.M.M. (2012). Utilization of Library Resources by Lecturers in university of agriculture, Makurdi. Master's dissertation, University of Nigeria, Nsukka.

Owalabi, S., Idowu, O.A., Okocha, F., & Ogundare, A.O. (2016). Utilization of electronic information resources by undergraduate students of University of Ibadan: a case study of social sciences and education. *Journal of Education and Practice,* 7(13), 30-36.

Owen, G.T. (2014). Qualitative methods in higher education policy analysis: using interviews and document analysis. *The Qualitative Report,* 19(1), 1-19.

Owens, B. (2003). Ethics and the Internet: a novel approach to computer literacy. *Journal of Computing in Small Colleges,* 18(4), 4-10.

Pandey, U., & Sukula, S.K. (2017). Role use and advantage of library portals in modern information technology era. *KIIT Journal of Library and Information Management,* 4(1), 37-42.

Parisot, A.H. (1995). Technology and teaching: the adoption and diffusion of technological innovations by a community faculty. PhD dissertation, Montana State University.

290

Patel, P.D., & Patel, R.M. (2017). Awareness and use of Internet tools and electronic information resources by management students in B – School Libraries of Gujarat. *Voice of Research,* 5(4), 60-63.

Patel, S. (2016). Collection development in academic libraries. *International Journal of Library and Information Science,* 8(7), 62-67.

Patil, V. (2013). Library automation and networking: need and importance of Maharashtra public libraries. *Journal of Advances in Library and Information Science,* 2(3), 152-156.

Peng, J., & Jin, Y. (2009). Information portal development and practice at Shanghai Jiao Tong University Library. *Online Information Review,* 33(3), 537-547.

Perruso, C. (2016). Undergraduates' use of Google vs. library resources: a four-year cohort study. *College & Research Libraries,* 77(5), 614-630.

Pesch, O. (2009). *ERMS and the e-resource life cycle.* Retrieved December 12, 2015, from http://tinyurl.com/ERLifeCycle.

Pietersen, J. (2015). The shape and form of the 21st century academic library in South Africa: the case of the University of Cape Town libraries. Minor MLIS dissertation, University of Cape Town, South Africa.

Poudyal, M. (2016). *Social research methods in the study of ecosystem services.* Social Research Methods, ESPA Summer School. Retrieved March 27, 2017, from http://www.espa.ac.uk/files/espa/Understanding-Social-Research-Methods_0.pdf

Quadri, G.O., Adetimirin, A.E., & Idowu, O.A. (2014). A study of availability and utilization of library electronic resources by undergraduate students in private universities in Ogun state, Nigeria. *International Journal of Library and Information Science,* 6(3), 28-34.

Rafiq, M., & Ameen, K. (2013). Digitization in university libraries of Pakistan. OCLC systems & services. *International Digital Library Perspectives,* 29(1), 37-46.

Raju, J. (2017). Information Professional or IT Professional?: The Knowledge and Skills Required by Academic Librarians in the Digital Library Environment. *portal: Libraries and the Academy,* 17(4), 739-757.

Raju, R., & Schoombee, L. (2013). Research support through the lens of transformation in academic libraries with reference to the case of Stellenbosch University libraries. *South African Journal of Library and Information Science*, 79(2), 27-38. Doi: 10.7553/79-2-155

Rao, B., & Mulloth, B. (2017). The role of universities in encouraging growth of technology-based new ventures. *International Journal of Innovation and Technology Management,* 14(4), 1-22.

Reitz, J.M. (2004). *Dictionary for Library and Information Science.* Libraries Unlimited. London.

Rogers, E.M. (1995). *Diffusion of innovations.* 4th ed. New York: Free Press.

Rogers, E.M. (2003). *Diffusion of innovations.* 5th ed. New York: Free Press.

Rohatgi, A., Scherer, R., & Hatlevik, O.E. (2016). The role of ICT self-efficacy for students' ICT use and their achievement in a computer and information literacy test. *Computer and Education,* 102(1), 103-116.

Roman, P. (2003). Diffusion of innovations as a theoretical framework for telecenters. *The Massachusetts Institute of Technology Information Technologies and International Development,* 1(2), 53-66.

Rust, K., Schlogl, C., & DongBack, S. (2017). Comparing information literacy of students from University of Graz (Austria) and Chungbuk National University (Republic of Korea) In M. Gäde, V. Trkulja, & V. Petras (Eds.). *Everything Changes, Everything*

Stays the Same? Understanding Information Spaces. Proceedings of the 15th International Symposium of Information Science (ISI 2017), Berlin, 13-15 March 2017. Glückstadt: Verlag Werner Hülsbusch, 24-36. Retrieved April 16, 2017, from http://edoc.hu-berlin.de/conferences/isi2017/rust-kathrin-24/PDF/rust.pdf

Rychlak, J.F. (1968). *A philosophy of science for personality theory*. Boston, MA: Houghton Mifflin.

Saade, R.G., Nebede, F., & Mak, T. (2009). The role of intrinsic motivation in system adoption: a cross-cultural perspective. *Journal of Information, Information Technology and Organizations,* 4(1), 107-126.

Sadeh, T. (2007). User-centric solutions for scholarly research in the library. *LIBER Quarterly. The Journal of the Association of European Research Libraries.* 17(3-4), 1-11. Retrieved May 13, 2017, from https://www.liberquarterly.eu/articles/10.18352/lq.7897/

Sahin, I. (2006). Detailed review of Rogers' diffusion of innovation theory and educational technology-related studies based on Rogers' theory. *The Turkish Online Journal of Educational Technology,* 5(2), 14-23.

Sahin, I. & Thompson, A. (2006). Using Rogers' theory to interpret instructional computer use by COE faculty. *Journal of Research on Technology in Education,* 39(1), 81-104.

Saikia, M., & Gohain, A. (2013). Use and user's satisfaction in library resources and services: a study in Tezpur University (India). *International Journal of Library and Information Science,* 56(6), 167-175.

Sajane, L. (2017). Access to and use of electronic information resources in the academic libraries of the Lesotho library consortium. Unpublished PhD thesis, University of KwaZulu-Natal, Pietermaritzburg, South Africa.

Sarimanah, E. (2016). Improving lecturers' paedagogic competence through the implementation of lesson study in faculty of teacher training and education of Pakuan University, Indonesia. *Journal of Education, Teaching and Learning,* 1(2): 51-55.

293

Schaub, M. (2016). *92% of college students prefer print books to e-books, study finds.* Retrieved July 22, 2017, from http://www.latimes.com/books/jacketcopy/la-et-jc-92-percent-college-students-prefer-paper-over-pixels-20160208-story.html

ScienceDirect (2017). Retrieved October 29, 2017, from http://www.sciencedirect.com/

Seidman, I. (2012). *Interviewing as qualitative research: a guide for researchers in education and the social sciences.* 3rd ed. New York: Teachers College Press.

Siddike, M.A.K., & Islam, M.S. (2014). Acceptance of e-resources by the medical researchers of International Centre for Diarrhoeal Disease Research, Bangladesh. *Journal of Information & Knowledge Management,* 13(2), 1-9.

Simon, H.A. (1979). Rational decision making in business organizations. *The American Economic Review*, 69(4), 493-513.

Sindhave, R., & Patel, U. (2014). Library automation in academic libraries: need and purpose. *International Journal of Mathematics, Engineering and IT,* 2(1), 28-34.

Singh, S.P., Malik, S., & Singh, P. (2016). Research paper factors affecting academic performance of students. *Indian Journal of Research,* 5(4), 176-178.

Singh, Y. (2015). Library automation in academic libraries in India: problems and prospects. *Library Journal*, 1-6. Retrieved July 17, 2015, from http://www.researchgate.net/publication/228556500

Smale, M. (2012). Convenience and its discontents: teaching web-scale discovery in the context of Google. Retrieved May 6, 2017, from http://acrlog.org/2012/01/27/convenience-and-its-discontents-teaching-web-scale-discovery-in-the-context-of-google/

Snyman, D. (2007). *Unisa library: adapting the organization to an electronic resource management environment.* IFLA pre-conference, Cape Town. Retrieved January 22, 2016, from http://www.library.yale.edu/preifla2007/papers/snyman.pdf

Stried, K.L., & Blixrud, C.J. (2014). Unwrapping the bundle: an examination of research libraries and the "Big Deal." *Portal: Libraries and the Academy,* 14(4), 587-615.

Stuart, W.D. (2000). Influence of sources of communication, user characteristics and innovation characteristics on adoption of a communication technology. Doctoral thesis, The University of Kansas.

Surry, D.W. (1997). *Diffusion theory and instructional technology: paper presented at the Annual Conference of the Association for Educational Communications and Technology* (AECT), Albuquerque, New Mexico. February 12-15.

System Requirements Lab (2018). *Portal system requirements.* Retrieved February 25, 2018, from https://www.systemrequirementslab.com/cyri/requirements/portal/10668

Tashakkori, A. & Teddlie, C. (2003). *Handbook of Mixed Methods in Social & Behavioral Research.* Thousand Oaks: Sage.

Tashakkori, A., & Creswell, J.W. (2007). Exploring the nature of research questions in mixed methods research. *Journal of Mixed Methods Research,* 1(3), 207-211.

Tawfeeq, N. (2015). Lacunae existing in licensing and pricing models of electronic resources. *International Journal of Library and Information Science,* 7(2), 33-39.

Teddlie, C., & Tashakkori, A. (2006). A general typology of research designs featuring mixed methods. *Research in the schools,* 13(1), 12-28.

Tekale, R.B. (2016). User perception of usability of electronic resources among faculty members of colleges in Parbhani: a survey. *The South Asian Academic Research Chronicle,* 3(8), 8-18.

Tekale, R.B., & Dalve, D.B. (2012). E-resources. *Review of Research,* 1(4), 1-4.

Tella, A., Oyewole, M., & Tella, A. (2017). An analysis of perceived usefulness of Google Scholar by the postgraduate students of the University of Ilorin, Nigeria. *South African Journal of Information Management*, 19(1), 1-9.

Teo, T.T., Lee, C.B., & Chai, C.S. (2008). Understanding pre-service teachers' computer attitudes: applying and extending the technology acceptance model. *Journal of Computer Assisted Learning,* 24(2), 128-143.

Thanuskodi, S. (2012). Use of e-resources by the students and researchers of Faculty of Arts, Annamalai University. *International Journal of Library Science,* 1(1), 1-7.

Thanuskodi, S. (2015). Academic libraries: handbook of research on inventive digital for collection management and development in modern libraries. India: Advances in Library and Information Science (ALIS) Book Series. 1-422.

Theory of Administrative Behaviour. (2016). Retrieved March 8, 2016, from http://is.theorizeit.org/wiki/Administrative_behavior,_theory_of

The Ubuntu Story (2017). *Ubuntu.* Retrieved October 21, 2017, from https://www.ubuntu.com/about/about-ubuntu

Thomas, S., & Brycz, M. (2014). Nigeria Vision 20:2020 can dream become reality? Evidence from national accounts. *Journal of International Studies,* 7(3), 162-170.

Tibendera, P.K.G., & Ogao, P.J. (2009). Information communication technologies acceptance and use among university communities in Uganda: a model for hybrid library services end-users. *International Journal of Computing and ICT Research, Special Issue,* 1(1), 394-395. Retrieved June 24, 2015, from http://www.cit.mak.ac.ug/iccir/downloads/ICCIR_08/Prisca%20K.%20G.%20Tibenderan a%20and%20Patrick%20J.%20Ogao_08.pdf

Tiemo, P.A., & Ateboh, B.A. (2016). Users' satisfaction with library information resources and services: a case study college of health sciences library Niger Delta University, Amassoma, Nigeria. *Journal of Education and Practice,* 7(16), 54-59.

296

Toyo, O.D. (2017). Undergraduates' information literacy skills and the use of electronic resources in Delta State University, Abraka, Nigeria. *International Journal of Education and Evaluation,* 3(1), 27-36.

Ukwoma, S.C., & Dike, V.W. (2017). Academics' attitudes toward the utilization of institutional repositories in Nigerian universities. *Portal: Libraries and the Academy,* 17(1), 17-32.

UNESCO. (2015). *Introduction to library automation.* 1-25. Retrieved July 31, 2015, from http://www2.unescobkk.org/elib/publications/ICTEIP/MODULE2/EIPICT_MOD2_ppt/EIPICT_MOD2_L1.pdf

University Library: University of the Philippines, Diliman (2016). Retrieved April 4, 2016, from http://www.mainlib.upd.edu.ph /

University of Portsmouth. (2012). *Primary data collection: questionnaires.* Retrieved April 22, 2016, from http://compass.port.ac.uk/UoP/file/fa9fbb2f-06fb-4fef-9ce1-c5e06b26a831/1/Questionnaires_IMSLRN.zip/page_07.htm

Varaprasad, S.J.D., & Madhusudhan, S. (2010). E-journal consortium: is it a success story always? *DESIDOC Journal of Library Information Technology,* 30(2), 92-96.

Vasantha, N., Venkatesha, (anon), Ambika, J., & Umendra P.K. (2016). *Use of library resources and services by the students of Teresian College, Mysore: a study.* In *National Conference on Library and Information Services for all: Reaching the Unreached in the Digital Era* (Special focus on information services for visually challenged). February 11-12, 2016, University of Mysore, Manasagangotri, Mysuru. 210-216. Retrieved July 15, 2016, from http://eprints.uni-mysore.ac.in/18288/1/12.pdf

Vasileiou, M., Rowley, J., & Hartley, R. (2012). Choosing e-books: a perspective from academic libraries. *Online Information Review,* 36(1), 21-39.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: toward a unified view. *MIS Quarterly,* 27(3), 425-478.

297

Venkatesh, V., Thong, J.Y.L., & Xu, X. (2016). Unified theory of acceptance and use of technology: a synthesis and the road ahead. *Journal of the Association for Information Systems,* 17(5), 328-376.

Vijayakumar, A., & Vijayan, S.S. (2011). Application of information technology in libraries: an overview. *International Journal of Digital Library Services,* 1(2), 144-152.

Wada, I. (2014). Development and deployment of library portal for automating and synchronizing electronic information resources: an adoptive model. *Information and Knowledge Management,* 4(9), 166-172.

Whogohost. (2017). Retrieved November 6, 2017, from https://www.whogohost.com/

Wiese, M., & Du Plessis, G. (2014). The battle of the e-textbook: libraries' role in facilitating student acceptance and use of e-textbooks. *South African Journal of Libraries and Information Science,* 80(2), 17-26.

Womboh, B.S.H., & Abba, T. (2008). The state of information and communication technology (ICT) in Nigerian university libraries: the experience of Ibrahim Babangida Library, Federal University of Technology, Yola. *Library Philosophy and Practice. Paper 1226.* 1-6. Retrieved April 21, 2018, from https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=1226&context=libphilprac

Woods, R.F. (2016). Analytical search strategies: a tip sheet with examples for teachers and students. *Perspectives: Teaching Legal Research and Writing,* 24(1&2), 59-61.

Woody, W.D., Daniel, D.B., & Baker, C.A. (2010). E-books or textbooks: students prefer textbooks. *Computers & Education,* 55(3), 945-948.

World Health Organization. (2004). An approach to rapid scale-up using HIV/AIDS treatment and care as an example. Retrieved October 18, 2015 from http://www.who.int/hiv/pub/prev_care/en/rapidscale_up.pdf

Yeates, R., & Cox, A. (2003). Library portal solutions. *Aslib Proceedings,* 55(3), 155-165.

Yin, R.K. (2014). *Case study research design and methods*. 5th ed. Los Angeles: Sage.

Žabička, P. (2017). *Knihovny.cz – building a discovery portal for Czech libraries.* 1-6. Retrieved September 24, 2017, from http://library.ifla.org/1814/1/S10-2017-zabicka-en.pdf

Zakaria, Z. (2001). Factors related to information technology implementation in the Malaysian Ministry of Education Polytechnic. Doctoral thesis, Virginia Polytechnic Institute and State University.

Zhu, X. (2011). The national site licensing of electronic resources: an institutional perspective. *Journal of Library and Information Studies,* 9(1), 51-76.

Zinn, S., & Langdown, N. (2011). E-book usage amongst academic librarians in South Africa. *South African Journal of Libraries and Information Science,* 77(1), 104-115.

Zinn, S.E. (2012). Information literacy in the classroom: assessing the competency of Western Cape teachers in information literacy education. Doctoral thesis, University of KwaZulu-Natal, Pietermaritzburg.

APPENDICES

APPENDIX A - Ethics consent UWC

**OFFICE OF THE DIRECTOR: RESEARCH
RESEARCH AND INNOVATION DIVISION**

Private Bag X17, Bellville 7535
South Africa
T: +27 21 959 4111/2948
F: +27 21 959 3170
E: research-ethics@uwc.ac.za
www.uwc.ac.za

21 May 2018

Mr D Joshua
Library and Information Sciences
Faculty of Arts

TO WHOM IT MAY CONCERN

I hereby certify that the Senate Research Committee of the University of the Western Cape, at their meeting held on 27 November 2015, approved the methodology and ethics of the following research project by Mr D Joshua, (Library and Information Sciences)

Research Project Title: Establishing a library portal for integrated e-resources at Modibbo Adama University of Technology, Yola, Adamawa State, Nigeria

Project Registration no: 15/7/66

Any amendments, extension or other modifications to the protocol must be submitted to the Committee for approval.

The Committee must be informed of any serious adverse event and/or termination of the study.

Ms Patricia Josias
Research Ethics Committee Officer
University of the Western Cape

FROM HOPE TO ACTION THROUGH KNOWLEDGE.

APPENDIX B – Ethics consent MAUTECH

MAUTECH/R/N.1/VOL.III

6th May, 2015

Dauda Joshua **(ID. No. 3580238)**
School of Library and Information Science,
University of the Western Cape,
Robert Sobukwe Road, Bellville, 7535,
Republic of South Africa.

RE: REQUEST TO CONDUCT A RESEARCH STUDY IN MAUTECH, YOLA.

Your request dated 16th April, 2015 on the above subject matter refers.

I write to inform you that approval has been granted you to conduct a research study titled "*The Perceptions of Faculty Members and Students in the utilization of library e-resources in Modibbo Adama Universi9ty of Technology, Yola, Adamawa State, Nigeria*".

Accept the assurance of my highest regards and consideration.

Thank you.

ALH. IBRAHIM A. RIBADU
R E G I S T R A R
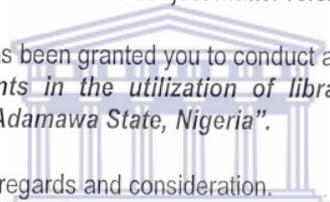
CC.   Vice-Chancellor
        DVC's
        Ag. Librarian

301

APPENDIX C – Information letter

Private Bag X17, Bellville, 7535
South Africa
Secretary: Sonia Stroud
Tel: +27 (0) 21 959 2137
Fax: +27 (0) 21 959 3659

FACULTY OF ARTS

INFORMATION SHEET

Dear Participant/Respondent,

I am a PhD student in the department of Library and Information Science, at the University of the Western Cape, in Cape Town, South Africa.

I am embarking on a survey research entitled, "*Establishing a library portal for integrated e-resources at Modibbo Adama University of Technology, Yola, Adamawa State, Nigeria.*" The objective of this research is to evaluate the present e-resources in the university library and to suggest the establishment of a dedicated library portal for optimum utilization by academics and students of MAUTECH, Yola.

Enclosed herewith a questionnaire and interview questions to be answered on the subject matter. I would appreciate your cooperation in answering the survey where applicable. And note that all of your answers will be kept in strict confidence and will only be used for the research purposes.

If you have any questions or concerns or wish to know more about this study, please contact me at: jopromy@yahoo.com or my supervisor, Dr Lizette King, a lecturer from the department of Library and Information Science at University of the Western Cape via: lizetking@gmail.com

Thank you in anticipation of your positive cooperation.
Dauda Joshua

APPENDIX D – Letter of consent

Consent Form	University of the Western Cape

"Establishing a library portal for integrated e-resources at Modibbo Adama University of Technology, Yola, Adamawa State, Nigeria"
Research Project
Researcher: Dauda Joshua

Please initial box

1. I confirm that I have read and understand the information sheet explainin ☐
   above research project and I have had the opportunity to ask questions about the project.
2. I understand that my participation is voluntary and that I am free to withdraw at any time
   without giving any reason and without there being any negative consequences. In ☐
   addition,
   should I not wish to answer any particular question or questions, I am free to decline.
   (If I wish to withdraw I may contact the lead research at anytime)
3. I understand my responses and personal data will be kept strictly confidential. I give ☐
   permission for members of the research team to have access to my anonymised responses.
   I understand that my name will not be linked with the research materials, and I will not be
   identified or identifiable in the reports or publications that result for the research. ☐
4. As a participant of the discussion, I will not discuss or divulge information shared by
   others
   in the group or the researcher outside of this group. ☐
5. I agree for the data collected from me to be used in future research. ☐
6. I agree for to take part in the above research project. ☐

_____	_____	_____
Name of Participant	Date	Signature
(*or legal representative*)		

_____	_____	_____
Name of person taking consent	Date	Signature
(*If different from lead researcher*)		
<u>Dauda Joshua</u>_____	<u>28th May 2018</u>	_____
Lead Researcher	Date	Signature

(*To be signed and dated in presence of the participant*)
Copies: All participants will receive a copy of the signed and dated version of the consent form and information sheet for themselves. A copy of this will be filed and kept in a secure location for research purposes only.

Researcher: Dauda Joshua	**Supervisor:** Dr. Lizette King	**HOD:** Prof. Sandra Zinn

APPENDIX E - Technical requirements of a library portal

S/N	TOOLS AND SPECIFICATIONS
1.	Library software A: Customization design • Software developers within an institution, for example, the Computer Centre and ICT units of MAUTECH, Yola • They work hand in hand with library professionals and Library Committee to design the portal access • They might link the portal site to the University website. B: Reputed company design • Recognised company with good track record to be contacted for the portal design. • Work with library professionals and Library Committee • Install/design the portal considering the features of the library • Train all library staff on how to use the library portal • Maintain the portal access within the term of agreement. C: Free Library design • The library may try free library software • After testing the prototype, the library may then decide to customise it usage
2.	Example of library Software/Portal: (These are either company designed or free library software/portal access points) LibGuides (CMS) Access-It Library Mandarin ResourceMate Jumbla
3.	Portal Policies/Guidelines Library and ICT committee will have the responsibility of drafting the policy and guidelines.
4.	Internet connection specifications: Request For Comments (RFC) Name Resolution & Type Standards (URI, URL z39.50, URN, URC, DNS etc.) Transport Standards (IP, UDP, TCP, TCP/IX, FTP, etc.) Plugins and Parts (Java, NCAPI, ActiveX, CGI, ILU etc.) Document Markup Languages (SGML, HTML, RFC 1563, CSS, RTF) Internet file and protocol Standards. Portable/Interpretive Programming Languages (Java & JavaScript, PERL, Python, TCL) 3D Specifications (OpenGL, VRML, DXF etc.) Compression (CS, AS, FAQ) Multimedia File Formats (PDF, PNG, GIF, JEP/GIF/PNG etc.) Multi-User Interfaces (Multi-user Domain, IRC-REC1459, UnixTalk, ANSI) Security Protocols and Specifications (Internet security) Other References (ISO, NIST, ANSI, W3C, RTP etc.)
5.	Upgrading a computer server Dell Power Edge T110II SMB Server HP ProLiant MicroServer Gen8 Lenovo ThinkServer R515 Asus Server TS500-E6/P4

	Windows server 2012
	Portal system requirements (minimum)
6.	Computer system to connect to server:
	Processor - dual core 2.4 GHz+ (i5 or i7 series Intel processor or equivalent AMD)
	RAM - 8 GB
	Hard Drive - 128 GB or larger solid state hard drive
	Graphics Card - any with DVI support
	Wireless (WPA2 support required)
	Monitor - 23" widescreen LCD with DVI support
	Operating System - Windows 7/8 Home Premium or Professional with Service Pack 1
	The processor speed of the system should be at least 3.0 GHz (gigahertz of speed clock i.e. 3,000,000,000 clock cycles per second) Pentium 4 series with a Dual-core (i.e. a dualcore processor chip having two processors on one chip) of 2.0 minimum or Athlon (microprocessor from AMD) 44x2 minimum.
	The Random Access Memory (RAM) should be between 1GB XP or 2 GB Vista & 7. It should be compactable with XP and Vista/7 operating systems. The Operating System should either be windows version 7, Vista, XP, 2000 or Linus because these OSs are suitable for network configurations and access to the web.
	For video streaming and webcam, the video card should be a minimum of 128MB with compatibility for pixel shader for graphics resolution and sound interfaces.
	The Hard Disk of the computer system should be a minimum of 7.6GB of free space to accommodate enough data. And the software application may be any kind of web publishing language.
	CPU: 1.7 GHz Processor
	CPU SPEED: 1.7 GHz, RAM: 512 MB, OS: Windows 7 (32/64-bit)/Vista/XP, VIDEO CARD: NVIDIA GeForce3+ / ATI Radeon 8500+,SOUND CARD, FREE DISK SPACE,
	Portal Recommended Requirements CPU: Pentium 4, CPU SPEED, RAM: 1 GB, OS: Windows 7 (32/64-bit)/Vista/XP, VIDEO CARD: DirectX 9 level Graphics Card (GeForce FX 5500/Radeon 9500), SOUND CARD. FREE DISK SPACE
7.	Knowledge on software application required.
	The library website is powered by Drupal and is written in PHP which utilizes MySQL database. They were able to install the following modules or elements: cTools, Entity, Google Analytics, jQuery Update, LDAP, Views, Web form, Weblinks, and Wysiwyg. The portal used "Professional Theme" with some customization in the layout. As a dynamic portal access, the library's Facebook and Tweeter accounts are all incorporated into the website. There are different links to the library e-resources and local databases. The content of the portal is managed by the General Reference section of the library in Diliman.
	Design concept may start from a simple to interactive mode. These features are to be considered under design stage like the content to be made available, audience, content format and processing, structuring and navigation, the layout of a home page and branch pages, site search support and feedback and help.
	Required standards according to Ultimate guide to programming languages (2017; Das & Saha 2015; Shiotsu 2014).

305

	These Content Management Systems are recommended by (Beal 2017; The Ubuntu story 2017 & Madhusudhan 2011).
8.	Printer: MS 810N LaserPrinter Monochrome 1200 x 1200dp Officejet Pro 251DW Injet Printer-colour 1200
9	Scanners: HP Scanjet 8270 document flatbed scanner (L1975A) Epson Perfection V600 photo scanner Flatbed colour image scanner colour Epson MatricCCD LineSensor, 6400x9600dpi, 48-bits per pixel internal/external 16-bits per pixel internal/external, 3.4Dmax
10.	Digital Cameras: Sony Alpha 7s 12.20 Megapixel *Samsung Galaxy NX 20.30 Megapixel
11.	Other Accessories: Backup Device - External hard drive, USB Flash Drive and/or DVD+/-RW drive APC Back-UPS,400 Watts /650 VA, Input 230V /Output 230V, Interface Port Optional Simple Signalling RS232 cable, USB, CDs and flash drives, Cables, Stabilizers, Extension wires etc.

UNIVERSITY of the

WESTERN CAPE
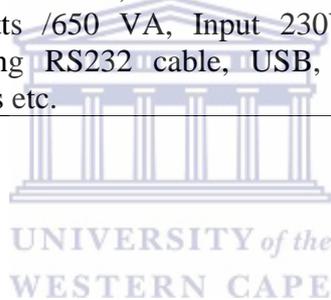
APPENDIX F – Student questionnaire

Establishing a library portal for integrated e-resources at MAUTECH - UG & PG Students only

Dear Participant,

Please take some time to complete this survey. This research study will explore the need for as well as usage and application of an integrated e-resources portal by academics, undergraduate and postgraduate students in the Ibrahim Babangida Library (IBL) of the Modibbo Adama University of Technology, Yola (MAUTECH). The study will evaluate e-resources to ascertain its impact on academics and students of the University as a whole and the design of a library portal access.

1. For which school are you currently enroled?

2. Which year of enrolment are you currently?
Please tick one

- ○ 1st year
- ○ 2nd year
- ○ 3rd year
- ○ 4th year
- ○ 5th year
- ○ Other:

3. Do you stay on or off campus?
Please tick one

- ☐ On campus
- ☐ Off campus

4. Do you possess your own computer/laptop or do you make use of the university's or other facilities?
Please tick one

- ☐ Owned
- ☐ University
- ☐ Other:

5. If you stay on campus, do you have Internet access?
Please tick one

- ☐ Not sufficient
- ☐ Sufficient
- ☐ More than sufficient
- ☐ Other:

6. Please, explain how you go about searching for information for assignments, proposal writings or literature reviews

[text area box]

7. How often do you visit the MAUTECH main library?
Please tick one

☐ Not at all

☐ Seldom

☐ Monthly

☐ Weekly

☐ Daily

☐ Other: [ ]

8. Please supply reason(s) why you visit the MAUTECH library

[text area box]

9. When you visit MAUTECH main library, which of the following divisions do you visit?
Please tick

☐ Reader's services

☐ Serials

☐ Online/Cyber Cafe

☐ Technical services

☐ Administrative services

☐ Books

☐ Collection development services

☐ Other: [ ]

10. How do you rate the Cyber Cafe division of the library?
Please tick one

☐ Very poor

☐ Poor

☐ Adequate

☐ Good

☐ Very good

☐ Other: [ ]

308

11. When you visit the library, which resources do you use?

```
┌──────────────────────────────────────────────────────┐▲
│                                                      │
│                                                      │
│                                                      │
│                                                      │▼
└──────────────────────────────────────────────────────┘
◄│                                                     │►
```

12. Please, indicate how frequent you use the following resources
Please tick one for each resource

	Never	Seldom	Monthly	Weekly	Daily
Newspaper articles	○	○	○	○	○
Journal articles	○	○	○	○	○
Books	○	○	○	○	○
Text books	○	○	○	○	○
Journal & abstracting indexes	○	○	○	○	○
Undergraduate projects	○	○	○	○	○
Master's dissertations	○	○	○	○	○
Doctoral theses	○	○	○	○	○
Dictionaries	○	○	○	○	○
Encyclopedias	○	○	○	○	○
Governmental publications	○	○	○	○	○
Directories	○	○	○	○	○
Yearbooks	○	○	○	○	○
Multimedia, e.g. CD, DVD	○	○	○	○	○

13. Please, indicate how satisfied you are with the quantity of resources provided by the library
Please tick one

○ Not at all

○ To some extent

○ Satisfied

○ Very satisfied

14. Please, supply reasons for your dissatisfaction

[textarea field]

15. Please indicate how satisfied you are with the quality of resources provided by the library

☐ Not at all satisfied

☐ To some extent satisfied

☐ Satisfied

☐ Very satisfied

16. Please, supply reasons for your dissatisfaction

[textarea field]

17. Please state which e-resources you are familiar with

[textarea field]

18. Please, indicate how frequent you use the following e-resources
Please tick for each e-resource

	Never	Seldom	Monthly	Weekly	Daily
e-newspapers	○	○	○	○	○
e-journals	○	○	○	○	○
Databases with journal articles	○	○	○	○	○
Research databases	○	○	○	○	○
Indexing databases	○	○	○	○	○
Repositories	○	○	○	○	○
e-books	○	○	○	○	○
Websites	○	○	○	○	○
Google books	○	○	○	○	○
Google Scholar	○	○	○	○	○

	Never	Seldom	Monthly	Weekly	Daily
e-dictionaries	○	○	○	○	○
e-encyclopedias	○	○	○	○	○
e-official publications	○	○	○	○	○
e-yearbooks	○	○	○	○	○
Libguides	○	○	○	○	○
e-theses	○	○	○	○	○
e-textbooks	○	○	○	○	○

19. Please indicate where you gained access to different e-resources
Please tick for each e-resources

	MAUTECH library	At my department	In my school/faculty	At home	Not applicable	Others
e-newspapers	○	○	○	○	○	○
e-journals	○	○	○	○	○	○
Databases with journal articles	○	○	○	○	○	○
Research databases	○	○	○	○	○	○
Indexing & abstracting databases	○	○	○	○	○	○
Repositories	○	○	○	○	○	○
e-books	○	○	○	○	○	○
e-theses/dissertations	○	○	○	○	○	○
e-dictionaries	○	○	○	○	○	○
e-encyclopedias	○	○	○	○	○	○
e-governmental publications	○	○	○	○	○	○
e-yearbooks	○	○	○	○	○	○
Libguides	○	○	○	○	○	○
e-textbooks	○	○	○	○	○	○

20. Please indicate how the use of e-resources impacts on your studies/research
Please tick for each e-resources

	Easier to find relevant information	Easier to keep up to date with developments in my discipline	Broadened the focus of my studies/research	Reduced my study time	Reduced time spent browsing for information	Not applicable	Others

	Easier to find relevant information	Easier to keep up to date with developments in my discipline	Broadened the focus of my studies/research	Reduced my study time	Reduced time spent browsing for information	Not applicable	Others
e-newspapers	○	○	○	○	○	○	○
e-journals	○	○	○	○	○	○	○
Databases with journal articles	○	○	○	○	○	○	○
Research databases	○	○	○	○	○	○	○
Indexing & abstracting databases	○	○	○	○	○	○	○
Repositories	○	○	○	○	○	○	○
e-books	○	○	○	○	○	○	○
e-theses/dissertations	○	○	○	○	○	○	○
e-dictionaries	○	○	○	○	○	○	○
e-encyclopedias	○	○	○	○	○	○	○
e-governmental publications	○	○	○	○	○	○	○
e-yearbooks	○	○	○	○	○	○	○
Libguides	○	○	○	○	○	○	○
e-textbooks	○	○	○	○	○	○	○

21. Did you have training in how to access resources (both printed and electronic) in the library?
Please tick one

○ Yes

○ No

22. If yes, who/which unit (place) offered the training?

23. If no, please supply reasons for not attending any training

[text area]

24. How many journal articles have you read the previous semester?
Please tick one

○　0

○　1 - 5

○　More than 5

25. Please, indicate how you retrieved these journal articles
Please tick - you may tick more than 1

○　Photocopies from printed journal

○　e-journals

○　Google

◉　Open access journals on Internet

○　Refworks

○　Other: [____]

26. Do you find it easy or difficult to retrieve current, relevant journal articles?
Please explain your answer

[text area]

27. While the library subscribes to the indexing & abstracting database ScienceDirect, how many times have you used it?
Please tick one

○　Never

○　Seldom

○　Often

○　Other: [____]

28. Please, supply reason(s) for utilising ScienceDirect

[text area]

29. If you have all the bibliographic details of a journal article you want to read, please indicate if you ALWAYS find it

Please tick one

○ Never

○ Seldom

○ Often

○ Always

○ Other: [＿＿＿]

30. If the MAUTECH library changes to e-resources, will you be prepared to give up on the printed formats?

Please tick one

○ Yes

○ No

31. Please, supply reason(s) for your preference printed or e-resources

[text box]

32. Please, rate how you consider the following statements regarding e-resources

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
I am not sufficiently familiar with e-resources	○	○	○	○	○
I am not confident in using e-resources	○	○	○	○	○
Materials I need are not available	○	○	○	○	○
I doubt the permanence of e-resources	○	○	○	○	○
I doubt the reliability of service providers	○	○	○	○	○
I don't have the computer skills to retrieve e-	○	○	○	○	○

314

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
resources					
MAUTECH experiences too many technical problems	○	○	○	○	○
Slow Internet connections will cause problems	○	○	○	○	○
Quality of e-resources are doubtful	○	○	○	○	○
I will need additional software to access e-resources	○	○	○	○	○
I don't know how to save e-resources	○	○	○	○	○

33. Please, indicate the need for MAUTECH library to digitise the following resources

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
Local newspaper/magazine clippings	○	○	○	○	○
Undergraduate projects	○	○	○	○	○
Master's dissertations	○	○	○	○	○
Doctoral theses	○	○	○	○	○
Rare books	○	○	○	○	○
Rare documents	○	○	○	○	○
Research data	○	○	○	○	○

34. Please rate the statement below

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
If the MAUTECH library implements	○	○	○	○	○

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
a library portal that will integrate and provide access to all available e-resources, the utilisation thereof will be enhanced					

35. If the MAUTECH library establishes a library portal, what would you like to see on it?

Thanks for your time!

APPENDIX G – Academics questionnaire

Establishing a library portal for integrated e-resources at MAUTECH - Academics only

Dear Participant,

It will be appreciated if you can take a few minutes to complete this survey. This research study will explore the need for as well as usage and application of an integrated e-resources portal by academics, undergraduate and postgraduate students in the Ibrahim Babangida Library (IBL) of the Modibbo Adama University of Technology, Yola (MAUTECH). The study will evaluate e-resources to ascertain its impact on academics and students of the University as a whole and the design of a library portal access.

1. Please, indicate your status at MAUTECH

○ Graduate Asst/ lecturer

○ Assistant lecturer

○ Lecturer II

○ Lecturer I

○ Senior lecturer

○ Associate professor

○ Professor

2. How many years have you been lecturing (working) in MAUTECH?

[   ]

3. Please, indicate your school and department

[   ]

4. Please, indicate courses you taught

[   ]

5. Please, indicate where (places) you access the Internet
Please tick - you may tick more than 1

☐ Access in office

☐ Access in the university quarters

☐ Access at home

☐ Access to the library

☐ Other: [   ]

6. Please, rate the Internet connection and response rate

Please tick - you may tick more than 1

	Inadequate	Adequate	Excellent
In your office	○	○	○

317

	Inadequate	Adequate	Excellent
At the university quarters	○	○	○
At your home	○	○	○
In the university library	○	○	○

7. Do you have your own computer/laptop or do you make use of the university's or other facilities?
You may tick more than one

☐ Owned

☐ University

8. Please, explain how you go about finding information for lecture notes and research

[text box]

9. How frequent do you visit the MAUTECH library?
Please tick one

☐ Not at all

☐ Seldom

☐ Monthly

☐ Weekly

☐ Daily

☐ Other: [____]

10. Please supply reason(s) why you visit the MAUTECH library

[text box]

11. Please supply reason(s) why you did not visit the MAUTECH library

[text box]

12. When you visit MAUTECH library, which of the following divisions do you visit?
You may tick more than one

☐ Reader's services

☐ Collection development

☐ Serials

318

☐ Online/Cyber Cafe

☐ Technical services

☐ Administrative services

☐ Other: _____

13. How do you rate the Online/Cyber Cafe division of the library?
Please tick one

☐ Very poor

☐ Poor

☐ Adequate

☐ Good

☐ Other: _____

14. When you visit the library, which resources do you use?

[text box]

15. Please, indicate how frequent you use the following resources

Please tick one for each resources

	Never	Seldom	Monthly	Weekly	Daily
Newspapers	○	○	○	○	○
Journal articles	○	○	○	○	○
Books	○	○	○	○	○
Text books	○	○	○	○	○
Journal abstracts	○	○	○	○	○
Undergraduate projects	○	○	○	○	○
Master's dissertations	○	○	○	○	○
Doctoral theses	○	○	○	○	○
Dictionaries	○	○	○	○	○
Encyclopedias	○	○	○	○	○
Governmental publications	○	○	○	○	○
Directories	○	○	○	○	○
Yearbooks	○	○	○	○	○
Multimedia e.g. DVD, CD	○	○	○	○	○

16. Please, indicate how you retrieve (find) needed information in the library

319

Please explain

```
[text area]
```

17. Please, indicate how satisfied you are with the quantity of resources provided by the library
Please tick one

○ Not satisfied

○ To some extent satisfied

○ Satisfied

18. Please, supply reasons for your satisfaction/dissatisfaction

```
[text area]
```

19. Please, indicate how satisfied you are with the quality of resources provided by the library.
Please tick one

☐ Not satisfied

☐ To some extent satisfied

☐ Satisfied

20. Please, supply reasons for your satisfaction/dissatisfaction

```
[text area]
```

21. How often do you refer your students to the library to consult resources?
Please tick one

○ Never

○ Once a semester

○ Once a term

○ Monthly

○ Weekly

○ Daily

○ Other: [_____]

22. Please, indicate which e-resources you are familiar with

e-newspapers	○	
e-journals	○	

320

Databases with journal articles	○
Research databases	○
Indexing and abstracting databases	○
Repositories	○
e-books	○
Websites	○
Google books	○
Google Scholar	○
e-dictionaries	○
e-encyclopedias	○
e-official publications	○
e-yearbooks	○
Libguides	○
e-theses	○
e-textbooks	○

23. Please, indicate how frequent you use the following e-resources

Please tick for each e-resource

	Never	Seldom	Monthly	Weekly	Daily
e-newspapers	○	○	○	○	○
e-journals	○	○		○	○
Databases with journal articles	○	○	○	○	○
Research databases	○	○	○	○	○
Indexing and abstracting databases	○	○	○	○	○
Repositories	○	○	○	○	○
e-books	○	○	○	○	○
Websites	○	○	○	○	○
Google books	○	○	○	○	○
Google Scholar	○	○	○	○	○
e-dictionaries	○	○	○	○	○
e-encyclopedias	○	○	○	○	○
e-official publications	○	○	○	○	○
e-yearbooks	○	○	○	○	○

321

	Never	Seldom	Monthly	Weekly	Daily
Libguides	○	○	○	○	○
e-theses	○	○	○	○	○
e-textbooks	○	○	○	○	○

24. Please, indicate how the use of e-resources impacts on your research and teaching

Please tick for each e-resources

	Easier to find	Easier to keep up to date	Broaden focus	Reduce focus	Reduce time	Not applicable	Other
e-newspapers	○	○	○	○	○	○	○
e-journals	○	○	○	○	○	○	○
Databases with journal article	○	○	○	○	○	○	○
Research databases	○	○	○	○	○	○	○
Indexing databases	○	○	○	○	○	○	○
Repositories	○	○	○	○	○	○	○
e-books	○	○	○	○	○	○	○
e-dissertations/theses	○	○	○	○	○	○	○
e-dictionaries	○	○	○	○	○	○	○
e-encyclopedias	○	○	○	○	○	○	○
e-governmental publications	○	○	○	○	○	○	○
e-yearbooks	○	○	○	○	○	○	○
Libguides	○	○	○	○	○	○	○

25. Did you have training in how to access resources (both printed and electronic) in the library?

Please tick

○ Yes

○ No

26. If yes, who/which unit offered the training?

27. If no, please supply reasons for not attending any training

[text box]

28. How many journal articles have you read previous semester?
Please tick

○ 0

○ 1 - 5

○ More than 5

29. Please indicate how you retrieved these journal articles
Please tick - you may tick more than 1

○ Photocopies from printed journal

○ e-journals

○ Google/Google scholar

○ Open access journals on Internet

○ Refworks

○ Other: [____]

30. Do you find it difficult to retrieve (find) current, relevant journal articles?
Please explain your answer

[text box]

31. While the library subscribes to the indexing and abstracting database ScienceDirect, how many times have you used it?

○ Never

○ Seldom

○ Often

○ Other: [____]

32. Please supply reason(s) for utilising ScienceDirect

[text box]

33. If you have all the bibliographic details of a journal article you want to read, please indicate if you ALWAYS retrieve (find) it
Please tick only one

○ Never

○ Seldom

323

○ Often

○ Always

○ Other: [   ]

34. If the MAUTECH library changes to e-resources, will you be prepared to give up on the printed resources?
Please mark only one

○ Yes

○ No

35. Please, supply reason(s) for your preference

[text area]

36. Please, rate how you consider the following statements regarding e-resource

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
I am not sufficiently familiar with e-resources	○	○	○	○	○
I am not confident in using e-resources	○	○	○	○	○
Materials I need are not available	○	○	○	○	○
I doubt the permanence of e-resources	○	○	○	○	○
I doubt the reliability of service providers	○	○	○	○	○
I don't have the computer skills to retrieve e-resources	○	○	○	○	○
MAUTECH experience too many	○	○	○	○	○

324

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
technical problems					
Slow Internet connections will cause problems	○	○	○	○	○
Quality of e-resources are doubtful	○	○	○	○	○
I will need additional software to access e-resources	○	○	○	○	○
I don't know how to save e-resources	○	○	○	○	○

37. Please, indicate the need for MAUTECH library to digitise the following resources

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
Local newspaper clippings	○	○	○	○	○
Undergraduate projects	○	○	○	○	○
Master's dissertations	○	○	○	○	○
Doctoral theses	○	○	○	○	○
Rare books	○	○	○	○	○
Rare documents	○	○	○	○	○
Research data	○	○	○	○	○

38. Please, rate the statement below

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
If the MAUTECH library implements a library portal that will	○	○	○	○	○

325

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
integrate and provide access to all available e-resources, the utilisation thereof will be enhanced					

39. Please, explain reason for implementing a library portal

40. If the MAUTECH library establishes a library portal, what would you like to see on it?

Thanks for your time!

APPENDIX H - Interview schedule: Academic Librarians

1. Are you computer skilled? If No why not? If yes, what area of computerisation are you familiar with?

2. Do you want the library to design its own library portal for information gathering and dissemination to academics and student of MAUTECH?

3. Do you envisage challenges with the design and implementation of the library portal?

4. As a professional librarian when the portal access is designed it should serve the academic community. How would you add value to the whole process?

5. Do you think librarians in the library would need training to assist them manage the portal access well? How would you suggest the best training to be adopted?

6. How do you want the digitization process to start? From all the divisions of the library or from a particular section/unit of the library?

7. What advise will you give the library committee and MAUTECH management towards this laudable project

Thank you for your time and immense contributions.

APPENDIX I - Interview schedule: Acting University Librarian

1) Does the university main library subscribe to e-resources and inform its patrons on the regular basis? What platform does the library use in communicating with its users?

2) What roles does the university main library play in providing sufficient e-resources to academics and students?

3) Are there ICT tools and devices to support e-resource gathering and sharing in the university?

4) Are there problems envisaged by academics and students of MAUTECH toward e-resources availability and utilization?

5) Is there library portal designed to integrate the pre-supposed e-resources for academics and students utilization?

6) Does the library provide e-theses and e-dissertations to academics and students to enhance their studies, research work and teachings? If no, why not?

7) Libraries are migrating from storage-houses to information gateways. What effort is the library making to ensure that information sharing and dissemination gets to patrons timeously?

8) Is the university ready to fund the digitization process of library resources? If yes. How?

9) If the concept of library portal and e-resources are fully utilized, will there be policies to guide the usage and implementation process? If yes. How?

10) What are your plans towards the implementation of library portal, website and e-resources?

11) Can the library adopt Libguide portal as one of its access points to provide information on e-resources to its patrons? Or design its own portal access?

12) When the library portal is designed would the library subscribe to more databases? If yes, how?

13) Would you like to liaise with ICT experts, especially university ICT committee to provide technical assistance in the actualization of the digitization process?
Thank you so very much for your response.

APPENDIX J - Interview schedule: ICT staff

1. Are you familiar with library portal designs?

2. Would you cooperate with the university main library and its professional staff to design the library portal? If yes, how?

3. Would you be able to handle all the technical challenges that will arise in the design of the library portal?

4. What high level language or web scripting will be appropriate for the design and coding of the library portal?

5. Would the portal access design going to be user-friendly with different interfaces, just like google and google scholar, etc.?

6. What type of portal typology design would you suggest to the university main library?

7. Would the library portal design be linked to the university website for wider accessibility?

Thank you so much for the information.

UNIVERSITY *of the*
WESTERN CAPE

329

APPENDIX K - Interview schedule: UWC Digital Communications Librarian

1. How long have you been working as an IT Librarian?

2. What software application or web scripting are you familiar with?

3. How did you design the UWC's library portal? Is it responsive or static?

4. When designing the UWC library portal, did you collaborate/consult with other librarians, academics, and students of the university? If no, why not?

5. How is the network accessibility of the university generally? Are you facing any challenges?

6. Would you be willing to provide technical assistance in the design of library portal of Ibrahim Babangida library? If yes how?

7. Would you provide training for onward management of the library portal? If yes, how?

8. Can Libguide or other portal typology be linked into the portal for extensive research collaboration?

9. How would you advise Ibrahim Babangida Library to handle all technical challenges that might arise in the design process of the library portal?

10. How would you advice MAUTECH management to support the design of the library portal and automate its collections?

Thank you immensely for your time.