THE STATUS OF WEB 2.0 TOOLS IN THE NAMIBIA UNIVERSITY OF SCIENCE AND

TECHNOLOGY (NUST) AND UNIVERSITY OF NAMIBIA (UNAM) LIBRARIES

A THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS

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ABSTRACT

The introduction of Web 2.0 tools within libraries has become increasingly common and is being incorporated in many libraries' services worldwide. This study investigated the status of Web 2.0 tools at the Namibia University of Science Technology and the University of Namibia main campus libraries. The study population comprised of library staff and students. The study adopted a mixed-methods research approach, employing a case study research design, with surveys and interviews as data collection methods for the quantitative and qualitative research contexts respectively. For the qualitative part of the study, library staff were selected through non-probability sampling technique applying purposive sampling. Five staff members were selected from NUST library and five from UNAM library.

Furthermore, students were selected using the stratified sampling method, where students were divided according to their respective faculties for the quantitative study method. This was followed by convenience sampling that was used to identify large classes with full-time students, who were available to participate in the study within the respective departments of each faculty. This type of sampling was chosen because due to the large on-campus University population, it was not possible to include every subject as the population was almost finite. The researcher administered a total of 200 questionnaires, whereby 177 questionnaires were completed. The Statistical Package of Social Sciences (SPSS) was employed to obtain descriptive statistics for quantitative data. The qualitative data was analysed by identifying patterns in the data, thereafter creating codes, and categorizing those codes into themes. These themes were then presented in an organized manner. The findings indicate a very slow uptake of the adoption of Web 2.0 tools within the NUST and UNAM libraries, which can be associated with the low level of awareness of such tools. The most used tools by students were Facebook and Instagram. The staff indicated that they were familiar with LinkedIn as a Web 2.0 tool, and suggested that library management should host change management workshops to encourage the adoption of new Web 2.0 tools among students and staff. The provision of

adequate services and resources in-line with library users' information needs is important to ensure that academic libraries remain relevant. The study recommends a comprehensive training programme covering the areas of change management and the introduction of new Web 2.0 tools for the libraries. In addition, the study also recommends that academic libraries develop and implement policies and guidelines to encourage library users to take part in accessing and using Web 2.0 tools. This policy should be aligned with existing IT policies that encourage the advancement of technology use within Namibia as a whole. Areas of further research would examine the status of awareness and adoption of Web 2.0 tools within special and public schools. Further research should also be extended to the investigation of awareness and adoption of Web 2.0 tools by librarians and students in the UNAM and NUST Universities regional centres and other academic institutions on a national level.

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LIST OF ABBREVIATIONS AND ACRONYMS

DOI   Diffusion of Innovation

EIFL   Electronic Information for Libraries

ETSIP   Education and Training Sector Improvement Programme

GRN   Government of the Republic of Namibia

ICT   Information and Communication Technology

IT   Information Technology

MCA   Millennium Challenge Account

MM   Motivational Model

MPCU   Model of PC Utilisation

NUST   Namibia University of Science and Technology

SCT   Social Cognition Theory

TAM   Technology Acceptance Model

TPB   Theory of Planned Behaviour

TRA   Theory of Reasoned Action

UNAM   University of Namibia

UTAUT   Unified Theory of Acceptance and Use of Technology

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DEDICATION

This study is dedicated to my mother, Margaret Ntabadde Kizza. Thank you, mummy, for pushing me when I could no longer push myself. To my three children Amir, Firmino, and Fernando, you give me the strength to push through, thank you. To my father George William Kizza, thank you for your guidance and to my late grandmother Grace Nakato, thank you for your prayers.

DECLARATION

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CHAPTER 1
INTRODUCTION

1.1 Orientation of the study

Library services focus on satisfying the information needs of their patrons. To achieve this, libraries strive to exploit new possibilities for interaction with their patrons available through accessing the Internet and utilising various channels such as the use of potential technology to design and deliver library services effectively.

The term Web 2.0 is a phrase made popular by Tim O'Reilly and Dale Dougherty of O'Reilly Media in 2001 and refers to a "perceived second generation of Web-based services such as, social networking sites, wikis, communication tools and folksonomies that emphasise online collaboration and sharing among users" (Peltier-Davis, 2009, p.18). The fact that users of Web 2.0 tools can contribute to their content allow them to collaborate, communicate and share information (Ngcobo, 2016).

1.1.2 Web 2.0 versus Social Media

Social media is defined as web platforms that allow users to create, and exchange their ideas, content, information, and multimedia in computer-mediated groups and communities (Ackland & Tanaka, 2015). Examples of social media include social network sites. Web 2.0, on the other hand, is the term to "describe the second generation of the World Wide Web which is characterized by user-generated and dynamic content, online collaboration and sharing among users" (Santosh, 2017, p. 192). Web 2.0 is, therefore, the network used as a platform, connecting all devices. Web 2.0 tools/applications are those that make the most of the advantages of that platform that deliver software as a constantly updated service that improve as people use it. Web 2.0 represents an emerging suite of tools that have to enrich

communication, collaboration, and innovation. Web 2.0 includes technologies such as social networking sites, video-sharing sites, Wikis, blogs, and folksonomies (Santosh, 2017).

1. Web 2.0 underpins a freeing of data, allowing it to be seen, found and manipulated in different ways from the intentional purpose of the application originally used to get access;

2. Web 2.0 allows the construction of virtual applications, pulling data and functionality from various sources as needed;

3. Web 2.0 is participative in comparison to the traditional Web 1.0, which was one-sided, from a content provider to the viewer. Viewers are allowed to participate and interact with one another through platforms such as sharing files, tagging and bookmarking content of interest;

4. Web 2.0 is about sharing of content and ideas;

5. Web 2.0 applications work for the user and can locate and assemble content that meets users' needs (Ngcobo, 2016).

Web 2.0 came about as a result of several evolutions, social as well as technological, and is referred to as a new stage of development in the World Wide Web, as it is more dynamic and interactive. Web 2.0 provides librarians and educators with a variety of tools, which may be used to improve information literacy. In addition to that, Web 2.0 tools in the library also encourage knowledge creation and use; more interactivity between users and librarians; facilitation of communication and feedback; offer library services to users wherein need; create an information-sharing culture; enrich information services with multimedia experiences; create library environments that are fun and user-friendly and facilitate users to contribute in the management of the libraries by making suggestions (Owusu-Ansah, Gonshi, Mutibwa & Ukoma, 2015). Therefore, Web 2.0 is a technology, that uses tools that allow the creation of

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platforms for interactivity - where feedback and exchange are key features. Social Media, on the other hand, are the platforms created using these Web 2.0 tools (Selwyn & Stirling, 2016). The decision to investigate Web 2.0 tools for this study instead of social media, was taken to study whether the student and staff community were familiar with and the use of the Web 2.0 tools used within the Social media platforms.

Students are provided with access to mediated resources, and with a forum to participate creatively on the Web, encouraging collaboration between them and librarians (Herring, 2011). Among popular Web 2.0 tools that libraries have been using are blogs, used to inform patrons of new developments, solicit feedback, and are known to be the most widely used Web 2.0 feature. Libraries that have Facebook pages, provide links to institutional resources, host embedded search facilities, and give patrons the ability to become a 'fan' of the learning centres as well as offer a means of providing news in an environment, which many students at the University are likely to use and be familiar with. Twitter is also being widely used by an increasing amount of librarians (Herring, 2011). Schulman, Yep and Tomé (2015) cite studies by Cole (2009), Cuddy et al. (2010), Del Bosque et al. (2012), Dickson and Holley (2010), Gunton and Davis (2012), Milstein (2009) and Sewell (2013) that, Twitter is an effective tool for broadcasting library information, and scholarly communities stand united in the belief that Twitter should be used by academic libraries to interact with followers to take advantage of the given platform.

 Library Web sites are now viewed as information dissemination spaces that have leveraged the use of these Web 2.0 tools to provide various dynamic information services to their patrons and to act as a library promotional mechanism (Harinarayana & Raju, 2010).

Another Web 2.0 tool that Library professionals utilise is LinkedIn, a social network that is business and employment-oriented service that operates as a career tool. LinkedIn can be

compared to a traditional networking event when you would go to meet other professionals, discuss what you do and exchange business cards, on a virtual level (Nations, 2019).

Munatsi (2010) maintains African libraries are still struggling with the concept of Web 2.0 systems. Munatsi (2010) further adds that the development of Web 2.0 services in University libraries in Africa has been unplanned and at a slow pace. To render a client-focused service to students, the awareness about Web 2.0 tools should be investigated and the possible adoption rates assessed (Munatsi, 2010). This proposed study addressed the status of Web 2.0 tools with respect to awareness, usage, and adoption by librarians and students. In the modern information environment, understanding and using Web 2.0 tools are vital if University libraries are to provide and support quality services to librarians and students (Makori, 2011).

Web 2.0 users are mostly those who were born from roundabout 1980 to the turn of the millennium, namely, the digital natives (Ganito, Burnay & Ferreira, 2012).

Burhanna, Seeholzer, and Salem (2009) state that "this generation grew up with a computer and Web-based technologies and is believed to be more technologically savvy and perhaps more technologically dependent than any preceding generation" (p. 523). However, in a survey conducted by Chu, Cheung, Hui, Chan, and Man (2010), it is argued that generations perceived to be technologically savvy were not very eager to communicate with their professors, or parents through Facebook or MySpace.

On the other hand, Berkman Centre for Internet and Society at Harvard University as cited in Pontefract (2011) expressed their opinion regarding digital natives and digital immigrants: "those who were not "born digital" can be just as connected, if not more so, than their younger counterparts" (para. 9). This notion is supported by Vaidhyanathan (2008) who maintains that there is no such thing as a digital generation.

Those, however, not born in the digital world but have at some point in their lives become fascinated, and adopted many aspects of the new technology are known as digital immigrants

(Prensky, 2001). The significance of this distinction as stated by Prensky (2001) is that digital immigrants learn, some much better than others. In contrast, those not born in the digital world reveal their non-native status through a "Digital Immigrant accent" that manifests itself in several ways—printing out a digital document to edit it rather than editing it online, for example. Prensky (2001) means, that those not born within the digital era, tend to stick to their old ways of carrying out tasks, such as printing out a document, rather than editing online, which would have been an alternative, with the aid of technology.

According to Prensky (2001), digital natives are used to grasping information very fast, multi-tasking and prefer graphics to text rather than the opposite. This idea is not supported by Parkes and Walton (2010), who feel that young people are doing sophisticated tasks with technology, but this technology is superficial and is all about communicating and recreational activities with friends. The younger generation has always had characteristics such as fearlessness, lots of spare time (Parkes & Walton, 2010). As a result, many young people are seen to be confident in their use of technology, but not necessarily competent. While on the other hand, Pontefract (2011) believes that every class, every group of people, and every generation has an appropriate bell curve of individuals with low, medium and high levels of technology expertise.

 NUST and UNAM libraries in Windhoek can start to get the "ball rolling" by knowing their status when it comes to the integration of Web 2.0 tools in their organisation and attempt to set projects in place to provide and support quality services by changing their current information services through the use of new technological innovations.

1.1.3 Namibian Government initiatives in transforming libraries

1.1.3.1 Vision 2030

Namibia's Vision 2030 document outlines the importance of moving from heavy industry to a knowledge-based economy centered on specialist services, specialised industries, and communications and information technologies. In recognition of the role of libraries to achieve this, and the realisation that libraries in Namibia were not well equipped with computers that provide Internet access, the GRN undertook the task to locate and set up Internet centres nationally and install wireless connection as well as free broadband Internet access for all the libraries around the country (Office of the President, 2004). The Government also acknowledged that although investments had been made in schools, tertiary institutions, and learning centres, some areas were not adequately provided with libraries (Office of the President, 2004).

1.1.3.2 ICT Policy for Education

The ICT education policy, in line with the status of Web 2.0 tools in the NUST and UNAM libraries, promotes the implementation and use of new technology in the education sector.

The Ministry of Education adopted the ICT education policy in 2005, an update of the original policy established in 1995 and updated in 2000 (Isaacs, 2011). The areas of priority in the policy were colleges of education and related in-service programmes; secondary schools; teacher programmes at tertiary institutions; vocational training; primary schools; libraries and community centers; adult education centers and special needs education. The purpose of this policy was to direct all relevant stakeholders in their preparation for all the trials put on the Namibian community by the global economy.

The objectives of the policy were as follows (Office of the President, 2004):

- Produce citizens that are ICT literate;

- Produce individuals that are capable of working in the new information and knowledge-based economy and society;

- Leverage ICT to aid in learning to benefit all learners and teachers;

- Improve educational administration and management at a classroom, school library, through the school and on to the sector holistically; and

- Broaden access to quality educational services for learners and set criteria and targets to help categorise the different levels of development using ICT in education.

The outcome of the above policy led to the establishment of the National Education Technology Service and Support (NETSS) Centre, which served as a national helpdesk for technical support (Isaacs, 2011). The main function of the NETTS Centre was to provide the sourcing, refurbishing, installation, and support of ICT in all educational institutions in Namibia (Isaacs, 2011).

Besides, the adoption of the ICT policy for education has led to the amendment of the programme to accommodate ICT literacy, computer studies as well as Basic Information Science subjects to enable students from primary to secondary education level to acquire ICT skills (Ministry of Education, 2015).

1.1.3.3 Education and Training Sector Improvement Plan (ETSIP)

Namibia devised a 15-year improvement plan for education known as the Education and Training Sector Improvement Plan (ETSIP) in conjunction with the ICT policy for education. One of the aims of ETSIP was to improve access to ICTs to enhance learning and making ICT a subject and a cross-curricular tool, staff training in ICTs and developing support services and structures for deployment and maintenance. The ETSIP policy acknowledged the demands and challenges, which educational institutions faced, and with the new century, they were not

prepared for. The demands of the information age have placed educational institutions under pressure to provide information and communication technology, internet connectivity and access to computers for each educational institution.

Educational institutions were at the very least expected to set up and utilise media centers that had more than mere printed material and are required to also give access to global information through electronic means. ETSIP's initial focus was on creating a base in education to provide ICT knowledge and expertise across the spectrum of technical education and training, tertiary education and basic education for adults. ETSIP aimed to improve the efficiency of education management including HIV/AIDS management as well as information and knowledge management. In the process, it proposes the establishment of appropriate institutions to enable the realisation of these objectives including institutional capacity development. It also aims to increase ICT access to enhance learning and administration (Isaacs, 2011).

The use of ICT for information management had revolutionised libraries, as a result of which the need for the growth of the Namibian Library and Information Services sector is clearly stated in ETSIP (Ministry of Education, 2012). Tech/Na! was an implementation strategy that the Ministry of Education developed based on the ICT for education policy. The main goals of TECH/NA! were the following:

- Equip educational institutions with hardware, software, connectivity, curriculum, content, and technical support;
- Educate administrators, staff, teachers, and learners in ICT literacy and ICT integration across the entire curriculum;

The ICT policy for education and implementation plan prioritised educational institutions in agreement to their proximity of learners to the labour market. Teacher-training institutions were issued the highest priority, because of their influence on the education system. Using the

guidelines, the positioning of the ICT's in the education sector was based on the following priorities:

- Pre-service and in-service teacher education institutions;

- Schools with secondary grades (combined schools, junior and senior secondary schools) ;

- Vocational training centres and community skills development centres •National, regional, and community libraries and community and adult education;

- Primary schools.

The strategy was premised on the support of existing role players, programmes, and projects operating in Namibia (Isaacs, 2007).

1.1.3.4 Information and Technology Policy (IT Policy)

The Information and Technology policy was developed by the Ministry of ICT to establish the IT Policy for the country (Ministry of ICT, 2009). The policy identified that the ICT sector provided benefits to the country's education and training sectors. The Information and Technology Policy in Namibia aimed to fulfil the following:

- Increase access to the Internet;

- Improve IT literacy and skills development;

- Encourage competition and open markets;

- Increase transparency in decision making and development;

- Develop the promotion of user's influence in the development of the IT sector;

- Strive to protect the rights of consumers; and

- Encourage fair and transparent industry practices to grow the ICT sector.

Namibia's Constitution guarantees the fundamental rights and responsibilities of individuals and society and is important to the advances made in science and technology (Office of the President, 2004). The Directorate of Namibia Library and Archives Service in the Ministry of Education Arts and Culture aims for existing public libraries to have access to computers and the Internet by 2022. It's Director, Sarah Negumbo, noted that one of the aims of the Ministry of Education is to ensure public access to Information and Communication Technology (ICT) in all public libraries (Nakale, 2018). To carry out the above target, a partnership agreement with Electronic Information for Libraries (EIFL), a non-profit organization, had been placed to strengthen the professional development of librarians at public libraries nationwide. The partnership commenced as of August 2018 to April 2020, to empower a group of Namibia Library and Archives Service librarians to become trainers, so that they can extend their skills and give ongoing training within the network of Namibian public libraries. The training included developing and introducing new technology-based services, re-organising library spaces, change management, improving information services through technology, conducting library impact studies as well as communications and advocacy (Nakale, 2018).

1.1.3.5 Information for Self-Reliance and Development: A Policy Framework for Libraries and Allied Information Agencies for Namibia

The Information for Self-Reliance and Development Policy was established to:

- create a unifying policy framework for libraries operating in all sectors;
- form legislation establishing a basis for a co-ordinated and developmentally oriented library system in Namibia; and
- form a development plan to achieve a goal set in the policy framework and embodied in the legislation.

The reason behind the setting up of this library policy was to transform and renew the existing library systems in Namibia (MBEC, 1997). This policy framework also addressed the issues of access, quality, democracy, and equity, which implied that access to basic information services, will be freely available to every Namibian citizen, and this entails free Internet access and free computer usage (MBEC, 1997).

Within the policy, various strategies and major resources needed were outlined, of which IT was one of them. The IT element of the policy stipulated that major investments were to be made in this sector to optimise the development of Namibian libraries.

As a result of the implementation of this policy framework, cooperation between the Namibian, Finnish and Tanzanian libraries was formed and carried out through partnership with the Finnish Library Association (FLA) and Millennium Challenge Account (MCA). The Finnish Ministry of Foreign Affairs allocated funds for the Finnish Library Association for the years 2012-2014, which supported development cooperation with Namibian and Tanzanian libraries, with 20 libraries from Namibia and 2 from Tanzania.

According to NLAS (2017), promoting ICT literacy was one of the objectives of this project to foster technology cooperation. This project was part of the partner countries ' poverty reduction strategies with the Millennium Development Goals of the United Nations. About 153 library staff, 3315 community members, 871 special groups were provided with free basic ICT training by 425 by the end of the project in 2017.

With all the above policies in place, this study needed to be carried out to establish if academic libraries respond and align their services to the long-term national development plan (Office of the President, 2004). This correlates to a paper on "Empowering National Development Goals: The future of Ministerial Libraries in Namibia" written by

Hamwaalwa (2015) states that "There is a need to adopt new technologies to meet the information needs of their users and this will create various non-traditional methods of networking and resource-sharing among libraries" (p. 10).

1.1.4 Location of the study

The study is located in the capital city of Namibia, Windhoek, with the Namibia University of Science and Technology and the University of Namibia libraries, being the focus of the study. Higher education in Namibia was established between 1979 and 1980, before these students that sought to pursue further higher education studied abroad (Namibia University of Science and Technology, 2020).

In 1995 the NUST library was established and had 3000 items in stock, which increased to 20 000 items in 2000 with 10 computers for library patrons. In terms of the technological infrastructural development of the NUST Library, in 2003 the library subscribed to their first online database (EBSCOHost) our 1st full-text e-resource database. In 2005, with the inauguration of the new Library, the library subscribed to 17000 online journals, with an additional 85 computers available for the students. By 2010, the NUST Library developed an online catalogue and a Repository as well as 150 computers, 56 621 books and 192 journal titles and 111 645 titles within the e-journal collection. The NUST staff increased to 38, of which 15 had obtained their degrees. In 2011 the EBSCO Discovery Service was introduced which provided single-point access to all Library resources. The Polytechnic of Namibia became the Namibia University of Science and Technology in 2016, and a new library management system, Sierra was introduced. From 208, social media platforms were introduced to improve the engagement between Library and the patrons it services, within that same year the Research Data Management (RDM) was brought to NUST through a sensitising workshop and survey.

According to the 2018 NUST Annual Report, NUST enrolled a total of 11235 students of which 5702 were male and 5533 were female. In 2018, 1200 staff members were employed at NUST (Namibia University of Science Technology, 2020).

The University of Namibia (UNAM) was established on 31 August 1992, based on the recommendation by a Commission on Higher Education. This was in union with the newly attained independence of Namibia in 1990. The University of Namibia Library's structure was inspired and led by the long term national development goal of 'Vision 2030' and the short term development goal 'NDP 3' and ETSIP that still strives to afford Namibians with the quality of life like that of the developed world. The UNAM library supports the academic curriculum of the University, and it is a knowledge hub, supports research and education.

In 1994, the UNAM library opened its Archival unit, to preserve the UNAM's memory for administrative, legal, historical and future research purposes. One of the major goals in the UNAM library was and still is to apply technological innovations and boost the adoption of learning technologies, to enable and create a productive environment. Library services and how they are communicated is very important to UNAM library, to raise awareness and promote partnership with other libraries and communities. The UNAM library highlights the importance of library staff, services, collections and facilities to be tools to satisfy the information needs of its patrons and to attain the national goals. According to the UNAM statistics, in 2018 a total of 28217 students were enrolled, of which 18745 were female and 9472 were male (University of Namibia, 2018).

1.2 Statement of the Problem

The use of Web 2.0 tools in the world has brought revolutions in many fields, services in academic libraries have also been influenced by these technologies (Hussain & Jan 2018). The Government of Namibia's vision of transforming the country into a knowledge-based economy

has identified the role of libraries. Yeh (2018) argues that "despite the strategic urgency in examining service innovation, there is a dearth of research on service innovations in higher education institutions, especially regarding higher education libraries in the digital age" (p.5). According to Ayooluwa (2016), understanding the use of Web 2.0 among academics and students in Nigerian universities would aid in the policy intervention to improve the global academic environments.

With the introduction of technological innovations with NUST and UNAM, it was critical to investigate the awareness and level of use of these tools within the NUST and UNAM student and staff community. There has been no investigation into the use and awareness of Web 2.0 tools within these universities, therefore reflecting the gap of literature. Therefore, this study which investigated the awareness and level of use of Web 2.0 tools by students and library staff in the NUST and UNAM libraries aimed to fill this gap.

1.3 Objectives of the Study

The overall purpose of the study was to explore the status of Web 2.0 tools among students and librarians at NUST and UNAM's main campus libraries. The objectives of the study were to:

- Investigate the awareness of Web 2.0 tools among students and librarians;
- Establish the level of use of Web 2.0 tools by students and librarians;
- Establish the influence of the use of Web 2.0 tools on library services;
- Determine the factors that might hinder the adoption of Web 2.0 tools;
- Propose recommendations for the adoption of Web 2.0 tools in academic libraries.

1.4 Significance of the Study

"The significance of the study conveys the importance of the problem for different audiences that may profit from the study" (Creswell, 2014, p.248).

This study addresses the status of Web 2.0 tools in respect of usage and adoption by librarians and students. This study will contribute to existing literature and address the gaps in Web.20 at NUST and UNAM. The study also supports existing literature on how innovations are being adopted, as well as the fear, awareness, and lack of knowledge of such innovations within academic environments. As libraries strive to remain relevant as leading providers of information that can both attract and engage their patrons, embracing Web 2.0 tools has become almost synonymous with their overall success (Han & Lui, 2010). The approaches embodied by Web 2.0 technology present libraries with a variety of opportunities to serve their existing users and to extend these services beyond the library doors and Web sites to reach potential users wherever they may be (Miller, 2005).

Therefore, this study is significant to:

a) Library students: the study provides the benefits of the adoption of Web 2.0 tools, that can enable student needs to be satisfied;

b) Academic Libraries: that can use Web 2.0 tools to effectively market library services; and

c) Policymakers: the study provides a foundation upon which relevant policies can be formulated to the implementation of Web 2.0 tools in the marketing of library services.

1.5 Limitation to the Study

A limitation of the study is that the investigation focused on libraries within the main campuses of the NUST and University of Namibia; therefore, the findings are not generalisable to other academic libraries. However, the findings and recommendations obtained will be available and applicable to all academic libraries, and this study may provide useful information to other similar academic libraries.

1.6 Delimitations to the Study

As part of the study, only full-time students on the NUST and UNAM main campuses were investigated, and the population excluded part-time students. Therefore, the perceptions and experiences of part-time students were not included in this investigation. The library staff comprised of staff in managerial positions and did not include all library staff within the NUST and UNAM libraries respectively. As a result, their perceptions and experiences were not included in this investigation either.

1.7 Research Methodology

The study used a case study research design, as a form of inquiry. A concurrent mixed-method approach was utilised whereby, both qualitative and quantitative research methods were integrated into the study.

The study's cases were NUST and UNAM main campus libraries, and the units of analysis were students and staff. The study population comprised of academic librarians and registered full-time students, from each of the academic institutions. Purposive sampling was employed to select the research sites. The library staff were purposively selected based on their managerial position in the library. For the quantitative part of the study the sampling method

adopted was a hybrid of stratified sampling technique, quota sampling, and the convenience sampling technique. Chapter 3 presents a detailed discussion of the methodology.

1.9 Definition of key terms

The purpose of this section is to provide clarification on the keywords used in this study. Defining important terms is essential to ensure a common understanding of key concepts and terminology is shared between the dissertation author and his or her audience, particularly if the term is unusual or not widely known. Clearly defining your terminology will enhance readers' understanding of important terms

Web 2.0: For this study, the following definition of Web 2.0 was used: "perceived second generation of Web-based services such as, social networking sites, wikis, communication tools and folksonomies that emphasise online collaboration and sharing among users" (Peltier-Davis, 2009, p.18). This definition of Web 2.0 gave an understanding as to what tools have been established from this next level of Web-based services.

Internet: The following is the definition of the internet was adopted for the study, "the wider network that allows computer networks around the world run by companies, governments, universities, and other organisations to talk to one another" (Sample, 2018, para.1) This definition gave clarity as what the Internet is and what Web 2.0 tools are derived from it.

Library 2.0: Library 2.0 is the natural evolution of library services to a level where the library user has control of how and when he/she gets access to the services he/she requires (Brevik, 2006). The term Library 2.0 was significant to this study, as the concept addressed how Web 2.0 technology has come to be embedded in modern-

day library service delivery. Therefore, re-defining the library by the new form of service provision through the use of Web 2.0 tools.

1.10 Structure of Thesis

The thesis is organised into six chapters as follows:

- Chapter One: Introduction to the study gives the background, objectives, the problem under investigation, and the research methods used for this study.

- Chapter Two: Literature Review- This chapter provides a review of the literature within the field of Web 2.0 applications in academic libraries among students and staff. Gaps are identified in this literature.

- Chapter Three: Methodology- This chapter discusses the research methodology including research paradigm; research approaches; research design; study population; sampling techniques; data collection methods; validity and reliability of the instruments; data analysis and ethical issues.

- Chapter Four: Data Analysis and Presentation - This chapter presents data analysed from qualitative and quantitative data sourced from questionnaires and interview schedules. This data was then presented in the form of tables and figures.

- Chapter Five: Discussion and interpretation of findings-This chapter discusses the results as presented in chapter four.

- Chapter Six: Summary, Conclusions, and Recommendations-This chapter provides a summary of the findings, in addition to recommendations based on the outcome of the study and suggestions for further research.

- References: This section provides an alphabetical list of all literature cited within the study, using the American Psychology Association (APA) referencing style.

- Appendices: This section of the study provides all documentation, which includes research data collection tools used, permission letters and consent letters required to carry out the study.

1.11 Summary

This chapter focused on laying the foundation for the study, by briefly highlighting the main topics proposed to be discussed throughout the study. The chapter introduced the research and provided an introduction to the study. A brief background of traditional library services and how Web 2.0 tools have been integrated into library services was discussed. The statement of the problem identified the main issues that drove the study. The statement provided a brief overview of the situation in existing academic libraries and the obstacles faced in the adoption of Web 2.0 tools. The next aspect explained the objectives of the study, detailing the purpose behind the research and what it aimed to investigate. These objectives sought to investigate the awareness, level of use, adoption barriers as well as the influence of Web 2.0 tools in the library. The significance of the study followed, highlighting the importance of the study concerning library patrons, academic libraries as well as policymakers. Thereafter the limitation and delimitations of the study were explained. The context of the study followed by giving an overview of the legal frameworks and policies surrounding the Information and Communication sector structure in Namibia, and existing library policies. A summary of the research design and the methodology used was also discussed in this chapter. The research design explained the action plan the research intended to follow and guidance on how the data was collected and analysed. The methodology chapter followed that gave a more detailed explanation of what research methods were adopted into the study and the shortcoming encountered from those chosen methods. The chapter concluded with a definition of key terms used in the study and the structure of the thesis. The next chapter is on the literature review

CHAPTER 2
LITERATURE REVIEW

2.1 Introduction

A literature review is an evaluative report of previous studies found in works that are related to your selected area of study, as a result reviewing what's already known and not known. A literature review enables one to summarise, describe, evaluate and clarify literature to determine the nature of one's research (Babbie, 2013). Randolph (2009) mentions that through conducting a literature review a researcher can demonstrate their knowledge about the topic under research, which includes theories, key variables, and phenomena, methods, and history.

This literature review is presented under the following sub-headings drawn from the research objectives:

- investigate the awareness of Web 2.0 tools among students and librarians;

- establish the level of use of Web 2.0 tools by students and librarians;

- establish the influence of the use of Web 2.0 tools on library services;

- determine factors that might hinder the adoption of Web 2.0 tools

Various electronic databases were utilised to collect and review works that focused on the adoption, challenges, and uses of Web 2.0 tools within the academic library setting within Africa and other developing nations. These databases were Emerald, Proquest Dissertations and Theses and Academic Source Premier (EBSCO) Host as well as Taylor and Francis. The keywords that were utilised to conduct searches were: "Web 2.0 adoption in academic libraries", "Web 2.0 adoption in libraries", "social media in libraries" to name a few. Other Internet sources were also consulted with the use of Google Scholar that provides a wide variety

of up to date scholarly articles. Besides, books on the subject of Web 2.0 and library 2.0 were used to facilitate the literature review process.

2.2 Awareness of Web 2.0 tools by students and staff

A digital native is just one of many names that can be used to describe the generation of people who have had access to digital technology and computers, from the time when they were born (since about 1980), (Zimerman, 2012). There has been literature documented on digital natives and their place within the world, however not much has been directed about the library. In a recent study by Ayooluwa (2016) on the use of Web 2.0 tools in teaching and learning in federal universities in Nigeria, she documents that students interact with technologies effortlessly as they grew up having access to technology, however, the "digital immigrants" often held negative attitudes and were reluctant and unwilling to use new technologies for teaching purposes. She continued to mention that academics at times have to be trained to use these Web 2.0 technologies, as their utilisation may not match that of students.

The term digital native was made popular by Prensky (2001) to describe this group, which mostly consists of students. Those, however, not born in the digital world, but have at some point in their lives become fascinated, and adopted many aspects of new technologies are known as digital immigrants (Prensky, 2001).

The significance of this distinction as stated by Prensky (2001) is that digital immigrants learn, like other immigrants some much better than others. To adapt to their environment, they always retain to a certain degree their 'accent', that is their foot in the past. The "digital immigrant accent" can be seen in situations whereby, browsing the Internet would be the second medium of information gathering. Another example of the "digital immigrant accent" is reading the manual to a particular program, instead of assuming that the program itself will teach us to use it. Another factor of digital immigrants is the printing out a document, for one to edit it, rather

than editing the document on the computer itself. Prensky (2001) adds todays' older generation were socialised differently from their children and are now in the process of learning a new language, and a language, which is learned at a later stage in life goes into a different part of the brain, according to scientists.

According to Prensky (2001), digital natives are used to grasping information very fast, multi-tasking and prefer graphics to text. Digital natives relate better to graphics than to text. Digital immigrants, on the other hand, have very little appreciation of these tasks that natives have perfected, developed through years of interaction and practice. They believe that their students cannot learn anything holistically while watching television or listening to music, simply because they (immigrants) cannot carry out the same task. According to Hazari, North and Moreland (2019) they state that the student-generations are actively participating in using Web 2.0 tools, as they are part of the tech-savvy student generation. As a result, most students do not only understand how to use Web 2.0 tools but begin to thrive in an environment where such tools are part of communication solutions in the classroom. This is not supported by educators Clement and Miles (2018) who believe that students have withdrawn themselves gradually into the digital world, and as a result, their communication skills have deteriorated. Many educators have noticed a sharp decline in communication skills among children entering the school system.

When discussing the impact of Web 2.0 technologies within academic library services, it is crucial to consider the kind of users and their profiles that the library serves. In an academic environment, there is a growing trend to accommodate and incorporate technology in education to satisfy some of the technological expectations of students. Students today as mentioned earlier by Prensky (2001) are considered digital natives and use Web 2.0 applications daily regularly. These applications provide a range of benefits, which include "promote opportunities

and environments for student participation and reflection, and foster a collaborative and active community of learners" (Ferdig, 2007, p. 8). Therefore, other academics and librarians have many questions regarding this generation's expectations for and through the use of Web 2.0 technologies in their academic environments.

According to Zimerman (2012), the gaps between students' and faculty members' use of technology have expanded. In the mid-1990's most students did not own a personal computer, they would use single function technologies such as phones, cameras, audio, and video players, and had very limited access to the Internet. In a study conducted by Baro, Edwewor, and Sunday (2013) on "Web 2.0 tools: awareness and use by librarians in university libraries in Africa", they state that libraries have to become part of the Web 2.0 universe to effectively serve their patrons.

In a similar study by Chu and Du (2012) an investigation was carried out on the use of Web 2.0 tools in academic libraries, by examining the extent of their use and the challenges which librarians are facing, their perceptions of the usefulness and factors influencing their decisions to use such tools. The study was carried out among 140 libraries in North America, Asia, and Europe, through a Web-based survey. The results indicated that 27 libraries used Web 2.0 tools and that six libraries did not plan to use them at all. Most of the library staff had a positive perception of the usefulness of Web 2.0 tools, hindrances observed, were limited participation by students and hesitancy among library staff. In another study carried out by Adah (2012), library staff were encouraged to become more aware of Web 2.0 tools and their benefits. He listed six reasons why libraries should use social media:

1. to build awareness and promote the library and programs and services

2. to manage the accuracy of information shared about the library

3. be at the forefront of being the community's choice for research and readers advisory

4. improve library services based on feedback received from patrons

5. reach out to new inactive patrons or customers

6. provide a way for customer-contributed content (Baro, Nelson & Sunday, 2014).

By being aware of and understanding the advantages of using Web 2.0 technologies in the library, the above literature suggests that both visitors and the library will benefit from great service delivery and service provision. This is supported by Oyovwe-Tinuoye, Krubu, and Ijiekhuamhen (2017), who mention the following:

"Awareness of a new technology and its potential benefit when used is what instigate people to try and lay their hands on them. Web 2.0 tools usage is relatively new in universities libraries especially in developing nations of the world like Nigeria" (p.5)

In terms of the most popular Web 2.0 tools that librarians are aware of, a study done by Baro, Idiodi and Godfrey (2013) indicated that librarians were more familiar with social networking sites, instant messaging, media sharing sites, blogs and wikis. Web 2.0 tools like RSS feeds, podcasts, social bookmarking, were among the least used.

A study by Okoendo, Azubuike, and Adeyoyin (2018) on "the awareness and use of Web 2.0 technologies by library and information professionals in selected libraries in South West Nigeria" investigated the level of awareness of the existence of Web 2.0 technologies. The findings were as follows: 60% of the respondents were aware of Web 2.0 existence and 19.6 % were not aware. In response to what could be hindering the unawareness of such technology, 96.4% of respondents indicated that lack of publicity of Web 2.0 technology was responsible for their non-use of these technologies and 0.9% indicated a lack of interest. The findings suggest that the most common Web 2.0 technology was Facebook and that very few librarians still lacked knowledge on online social media networks. In light of this research paper, a study

conducted by Anunobi and Ogbonna (2012) stated that studies are replete on the awareness and use of Web 2.0 from librarians' perspective, more especially within the developing world. They further added that the popularity of Web 2.0 tools use was quite overwhelming on news media, telephones and the Internet such that its awareness is was taken for granted, and they highlighted that awareness does not necessarily suggest use. In a study conducted by Pacheco, Kuhn, and Grant (2010) low usage and acceptability were mostly found among the older generation of librarians. Aharony (2009) discovered in his study of Israeli librarians that four elements influence the use of Web 2.0 tools, which are the following:

1. Librarians may differ in their use and awareness of Web 2.0 tools based on their personalities (resistance to change);

2. Computer expertise;

3. Motivation; and

4. Capacity towards studying and integrating different applications of Web 2.0.

Gbaje (2007) described the above factors like lack of facilities within developing countries; while Ashcoft and Wetts (2005) described it as a lack of competencies. Atulomah and Onuoha (2011) indicated the factors as laisses-fare attitude of librarians and privacy issues.

In a study by Yadav and Patwardhan (2016), they mentioned that teachers were hesitant about the use of Web 2.0 tools, as they felt that they risked being embarrassed and they did not have time to use them. It was also observed that educational institutions as a whole were very slow to adopt the changes than the students.

2.3 Categories of Web 2.0 tools in academic libraries

Chua and Gho (2010), classified Web 2.0 tools used by libraries into four categories, which are as follows:

- information acquisition tools: used to gather information from sources outside libraries (for example, blogs and wikis);

- information dissemination tools: used to distribute content and information to patrons (such as RSS feeds);

- information organisation tools: facilitate storage and subsequent retrieval of information (social bookmarking and tagging); and

- information sharing tools: facilitate the joint flow of information between libraries and patrons (social networking and media sharing sites) (Okite-Amughoro, 2017).

Similarly, Rudman and Steenkamp (2009) also made a tabulation of Web 2.0 tools that can be categorised in four main categories:

TABLE 2. 1: CATEGORIES OF WEB 2.0 TOOLS

Categories	Tools
Publication: Blogs and wikis which can be edited and content can be contributed by various users.	Weblogs (blogs), wikis, user-generated media
Syndication: This facilitates the sharing, merging and sourcing of information from different sources	Really simple syndication (RSS) or newsfeeds, social tagging or bookmarking, folksonomies
Collaboration: Users can form communities to work together or use tools to collaborate on projects.	Social networking, peer-to-peer networking Web application program interfaces (APIs)
Recombination: Flash-based players, podcasts are easy to create and can be used for various purposes	Podcasts, mash-ups

Source: Rudman and Steenkamp (2009)

The above table shows the different Web-based services and tools that demonstrate the foundations of the Web 2.0 concept, and how they are being utilised in education. These are not technologies as such, but services that have been built using the building blocks of technologies and open standards that support the Internet and the Web. These include blogs, wikis, multimedia sharing services, content syndication, podcasting, and content tagging services. Many of these applications of Web technology are relatively mature, having been in use for several years, although new features and capabilities are being added regularly (Rudman & Steenkamp, 2009). Library and information resource centres have encountered a shift in how services are being rendered, overcoming barriers and enabling communication between library and users. The use of Web 2.0 tools has affected libraries positively, allowing libraries to provide patrons with efficient service. These technologies have been utilised in information acquisition, dissemination, organisation and sharing tools (Idiegbeyon-ose et.al., 2019). Libraries are no longer concerned about the housing of information, but more on meeting the information needs of their users. According to Ouyang and Chu (2010), Web 2.0 tools allow libraries to collaborate, participate, market as well as create openness in libraries (as cited in Idiegbeyon-ose et al., 2019).

According to (Okite-Amughoro, 2017), the following is a list of well-known examples of Web 2.0 tools that are used in academic libraries.

- Blogs;
- Wikis;
- Rich Site Summary;
- Social networking sites;
- Twitter;
- Instant messaging;

- Tagging;

- Podcast/Vodcast; and

- YouTube

2.3.1 Blogs

Blogs can be defined as a hierarchy of text, images and media objects that are arranged chronologically (Chua & Goh, 2010).

Also known as Weblog, or Web log, a Blog is a Website consisting of entries reflecting brief paragraphs of opinion, information, personal diary entries, or links, called posts, appearing in reverse chronological order in the style of an online journal with the most recent entry appearing first (Gunelius, 2014). According to Li (2013), blogs encourage user interaction through their comments section where users can give feedback on the information posted in the blog. Information professionals can use this platform to post news on events happening within the library and user client interaction is created through the comments that have been left on a post (Okite-Amughoro, 2017).

2.3.2 Wikis

Wikis are defined as a Web page or a set of Web pages that can be easily edited by anyone who is allowed access (Ngcobo, 2016). Libraries can utilise wikis to aid personal learning, provide support to groups to share knowledge and help users to locate knowledge (Okite-Amughoro, 2017).

2.3.3 Rich Site Summary (RSS)

Rich Site Summary is also known as –Really Simple Syndication, whereby its function is to enable subscribed users to a particular Webpage to receive updates about that site regularly, without requiring them to visit that particular Webpage (Kim & Abbas, 2010).

In a recent study done by Balaji, Vinay, Shalini and Mohan (2019) on Web 2.0 use in top Asian Universities, it was found that RSS feeds were used to track and read content updates, rather visiting the originating Websites by syndicating all new content on various sites. Libraries are now providing RSS-rich sites for tracking upcoming events, news, providing search results and announcing new arrivals. In academic libraries, users can subscribe to a library Website that offers an RSS feed for library information and upcoming activities as well as an addition to existing collections within the library such as, new issues of journals, new books, etc. Figure 2.1 below presents an image of an RSS feed from the Toronto Public Library, that allows their users to subscribe to it allowing them to receive automatic updates when the library receives something new.
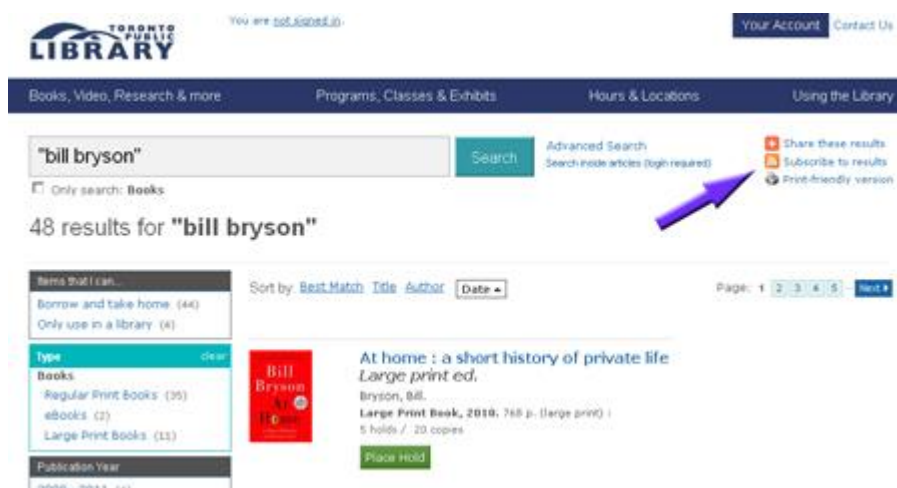
FIGURE 2. 1 RSS FEED USED IN TORONTO LIBRARY

Adapted from *Toronto Public Library*, 2019, Retrieved from https://www.torontopubliclibrary.ca

2.3.4 Social Networking Sites (SNS)

A social networking site (SNS), also known as a social networking Website or social Website is an online platform which users can utilise to create a public profile and interact with other users on the Website. Social networking sites usually have newly subscribed users to choose

with whom they have a connection with, thereafter allowing people with whom they share a connection with, to confirm or deny the connection. Furthermore, within academic libraries the use of SNS enabled the library staff to create relationships with their users and other libraries that share the same mission and values. SNSs also broaden the visibility of library services and library activities (Okite-Amughoro, 2017). Examples of SNS are Facebook, Twitter, LinkedIn, and Pinterest that have millions of users (Fire, Goldschmidt, Elovici, 2014). In addition to a combination of other features found in other Web 2.0 applications such as messaging, blogging, video streaming and social tagging enable librarians to connect with users, promote library services and expand their contact base (Chua & Goh, 2010). This culture of connections will birth a library of community users that are both real and potential. (Mazzocchi, 2014).

2.3.5 Instant Messaging (IM)

Instant messaging or online chat refers to the online live synchronous channel, which enables online interaction between two people, and can be used to substitute the traditional e-mail and form-based reference services (Ngcobo, 2016). Li (2013) states that different kinds of multimedia resources such as pictures and audio files can be exchanged as well, allowing the users to be in their comfort zone by not requiring to be at the library to get answers to their questions. This is supported by Gibbons (2007) who states that libraries utilise instant messaging to provide chat-reference services so that users can pose their queries directly to librarians and get an immediate response from them. This form of communication according to Okite-Amughoro (2017), gives the librarians an instant connection to their user and allows the user to get personalised assistance remotely without being physically present within the library.

2.3.6 Tagging

A tag is a non-hierarchical keyword or term that is designated to a piece of information such as an internet bookmark, image, or even a computer file. This kind of metadata helps describe an item and allows it to be found again by searching or browsing (Okite-Amughoro, 2017). Macgregor and McCulloch (2006), state that tagging allows users to assign uncontrolled keywords of their choice to information resources. Tags are used to organise information within a personal information space. Within the library setting, a system of folksonomy is very popular, which is a system of classification derived from the practice and method of collaboratively creating and managing tags to interpret and categorise the content. This process is known as social tagging, social indexing and social classification (Si et al., 2011).

The Library Online Public Access Catalogue (OPAC) can permit users to define their keywords for library resources and to correspond to subject headings defined by librarians. The tags added to a folksonomy can be organised into a tag cloud, where more popular terms are represented with large font sizes. Similarly, the library tag cloud can encourage users to browse their matched terms. An information need can be posed as a query in an information retrieval approach. On social bookmarking sites, the information is a tag given by the user to obtain an ordered list of resources that are related to that tag. As a result, the system provides a list of related tags, allowing navigation through the collection (García-Plaza, Zubiaga, Fresno & Martínez, 2012).

2.3.7 Twitter

Twitter is a virtual social network allowing users to write short messages (of up to 140 characters), called tweets, that can be read by anyone with access to their page. It is an Internet social network and micro-blogging platform with both mass and interpersonal communication features for sharing (Buigues-García & Giménez-Chornet, 2012; Chen, 2011). Twitter is the

second most popular Web 2.0 platform. Often library users prefer Twitter to interact with librarians because Twitter is more influential than other Web 2.0 and has access to more markets, people and societies (Okite-Amughoro, 2017). Library staff and patrons can be updated on the library's daily activities, for example, frequently updated library collections. Users can utilise this platform to type in short messages or status updates. Twitter can create library service alerts (Ezeani & Igwesi, 2012). As an accessible public relations and marketing tool, Twitter has been more effective for non-profit organisations as a means of engaging with clients, than have their traditional Websites (Kanter & Paine, 2012; Waters & Jamal, 2011). To make it more distinguished, a Twitter account could be given a personal touch. A picture, for instance, could be added to the Twitter account page's wallpaper. The library could also set-up searches for its Twitter account to save and retrieve them quickly, like setting up a search on the name of your library or setting up a geo-locational search. If ever a human error occurs in posting a message, the librarian can quickly respond and apologise seriously. There are over a million Twitter tools; it is good to stick to ones that give actionable results (Potter, 2012).

2.3.8 Podcast/Vodcast

A podcast can be defined as a series of digital audio files that pay attention to a particular topic or theme (Ruoff, 2019). Podcasts can be accessed online via computer, tablet, smartphone and can be downloaded as well so that they can listen to any time. Listeners of podcasts can be updated automatically of new episodes by subscribing to it. A vodcast, on the other hand, is the video matching part if a podcast. Libraries can use podcasts to market recordings about library services and activities (Okite-Amughoro, 2017). Podcasts have given library patrons the opportunity to listen to recorded intellectual outputs online, without having to use additional software and download for later use. These tools have proved to be essential in expanding, marketing and posting web-based information services to library patrons. Makori (2012) states

that, the utilisation of podcasts and vodcasts has helped information professionals to take information services to where their users are.

2.3.9 YouTube

YouTube is a video sharing site that was established in 2005, which enables people worldwide to communicate and interact, making it a distribution point for user-created content (Moreau, 2019). Academic libraries primarily used YouTube to market services, host lectures, give instruction on how to use library resources as well as information literacy demonstrations. YouTube has been quite successful for connecting with patrons as it is easily accessible on various devices, without requiring frequent updates, unlike Facebook or Twitter, which requires regular updates to maintain user interest (Collins & Quan-Haase, 2014).

The information environment within which libraries are operating today is changing faster than before. For a library service that intends to meet the needs and expectations of its users, integrating the tools into mainstream library services is crucial. Libraries, therefore, require a communication strategy that is not costly and is convenient both to users and service providers. Libraries are required to go beyond the needs, wants and demands of their users and should try to fulfill them by anticipating them as far as possible (Hanif, 2009).

2.4 Use of Web 2.0 tools in African academic libraries

According to Lwoga (2012), the usage of Web 2.0 tools is still at an infancy stage; and recommends that African universities should take full advantage of innovative and evolving technologies and even consider the learning preferences of the "Net generation" or "digital natives".

Developing countries have showed that the adoption of Web 2.0 tools among academic libraries was still low in Africa according to Wordofa (2014). With the acknowledgement that technology within academic libraries will aid in rendering optimum information services,

certain African academic libraries have begun to utilise Web 2.0 tools (Lwoga, 2012). In Tanzania Muneje and Abungu (2012), found that the most frequently used Web 2.0 tools in Tanzanian libraries are Facebook, followed by Twitter and blogs. According to Lwoga (2014), most students supported the implementation of Facebook and Blogs in library services. Similarly, in Nigerian academic libraries, librarians were once again more familiar with Facebook, Twitter, and IM, which led to their adoption in their respective libraries (Baro, Idiodi and Godfrey, 2013). Based on the above findings from the different authors in Nigeria and Tanzania, it is observed that Facebook was one of the most popular Web 2.0 tools. However, with the adoption, some challenges are faced and barriers encountered.

According to Kelly, Bevan, Akerman, Alcock, and Fraser (2009), barriers to the effective use of Web 2.0 tools include sustainability risks, digital preservation risks, user disinterest, and accessibility issues. They also express the need to raise awareness and willingness to use these services, to ensure success in providing optimum service to the user. In addition to the above-mentioned barriers, there are also institutional barriers that may inhibit the adoption of Web 2.0 tools, such as setting policies or inconsistent networks. This is supported by Owasu-Ansah who carried out a study of Web 2.0 use in African institutions, and he highlighted the necessity for social media strategy, the appointment of social media librarians, constant professional development of librarians to enable the effective use of up-coming technologies in academic institutions. Some other libraries according to Byrne (2008) have challenges, which include legal and ethical issues such as user-generated content when Web 2.0 tools are used in libraries. Some other barriers include lack of privacy, lack of necessary skills, and doubts about the reliability of tools, poor institutional support and lack of policy on emerging technologies (Santosh, 2017).

Academic libraries within Sub-Saharan Africa according to Magoi, Aspura and Abrizah (2017) are using YouTube videos to market their services and provide library instruction and training as well as offer tutorials on database instruction. Owusu-Ansah et al. (as cited in Williams, 2018), that noted social media platforms are adopted by academic libraries but are being used minimally for communication reasons. This finding was reported after they examined the application of Web 2.0 and social media for research support in selected African academic institutions in South Africa, Ghana, Uganda, and Nigeria.

Their findings were that Web 2.0 tools used in the Rhodes University Library in South Africa were as a result of a formal social media strategy. The University of Education, Winneba Library in Ghana, on the other hand, the Makerere University Library in Uganda and the University of Nigeria Library did not encourage the use of Web 2.0 tools for research support, but only for formal communication between colleagues. A study conducted in Cameroon by Bawak (2019) found that academic libraries were lagging due to deteriorating budgets, lack of trained staff, totally absent or inadequate technology and infrastructure. Bawak (2019) mentions that as a senior librarian with thirty years working in the academic sector, she is highly concerned about the status and extent at which academic libraries in Cameroon are responding to the 21st-century scenery. It is difficult to change libraries as quickly as other technology-based information providers because library systems and services constructed around them have been in place (and deeply ingrained) for centuries.

2.5 Challenges in the adoption of Web 2.0 tools within libraries

In the ever-changing academic and information environment, new challenges have risen for librarians and patrons in University libraries. Such challenges range from low Web 2.0 usage skills to the lack of awareness and network issues that were among the challenges that Akporhonor and Olise (2015) documented in their study on "Librarians' use of social media

for promoting library and information resources and services in university libraries in South-South Nigeria". The study done by Akporhonor and Olise (2015), concluded that for University librarians to reach out to 21st users better, and encourage effective communication as well as comply with innovation, the adoption of social media becomes a must. "Challenges such as privacy concerns, low level of technology penetration and network problems, are issues that must be looked at critically for maximum tapping of the benefit derived from the use of social media" (Akporhonor & Olise, 2015, p.7).

 Academic libraries serve as a tool for developed nations and developing countries as well and act as a tool for intellectuals' freedom and economic development; a gate-way to political, economic and social happiness (Adamu, Omame, Ahmed & Gombe, 2019). Within developing countries, various challenges have been encountered. This notion is supported by Chinyere (2013), who adds that the Web 2.0 library experience in developing countries is not shared fairly by all academic libraries around the world. He adds that while existing literature documents many success stories from libraries that have adopted Web 2.0 tools, some libraries in developing countries still have a relatively new concept

Baro, Edewor, and Sunday (2014) agree with Chinyere (2013) on the notion that libraries in more developed countries have success stories after adopting Web 2.0 tools. They state the following: "Libraries in the more developed world have already experimented with the application of Web 2.0 and they have enjoyed the new paradigm of a more enhanced relationship with library users through participation and two-way communication using Web 2.0 tools" (p. 865). Benda (2011) researched the use of social networking tools by librarians at three Zambian Universities. The first one at the Copperbelt University in Kitwe, the second at the University of Zambia and the third, Mulungushi University in Zambia. The study revealed that social networking tools were hardly being used for work-related activities by librarians in

Zambia. This statement is supported by Wordofa (2014) who says that the actual use of and adoption of Web 2.0 tools in African academic libraries is very limited. He adds that literature does exist on how academic libraries have actively taken part in the use of social Web tools with the main purpose to promote library services and resources, provide information literacy instruction and tutorials, and to interact with patrons.

Some of the concerns raised when it comes to the introduction of new technology are the fear that it will provide a path for malware to reach the business. (Olasina, 2011). Ngcobo (2016) states that it's not only about understanding the nature of patrons that academic libraries serve, but the risks associated with using new technologies is very crucial. She recommends that librarians educate themselves on the risks of using Web 2.0 tools and work side by side with IT staff, restrict activities that may expose libraries to risks. Measures to mitigate the risks include the formulation of a clear Web 2.0 policy that is understood between IT and library staff, and lastly providing sufficient training to library users in acceptable Web 2.0 practices and security features to mitigate the risks when using Web 2.0 tools (Ngcobo, 2016).

Ngcobo (2016) states that to provide relevant services, just-in-time information, there is a need for a twenty-first-century library to be on the same level as fellow academic institutions nationally and globally and adopting these technologies plays a pivotal role. The above literature is a picture of what other scholars have investigated the importance of utilising technology within library service delivery. Therefore, by assessing the adoption and awareness of Web 2.0 technology within NUST and UNAM libraries is crucial to provide a proper modern-day information service delivery. Since the investigation on the application of Web 2.0 tools in the NUST and UNAM is still marginal, understanding the challenges other academic libraries have faced have aided in understanding the findings if this study.

This study sought to investigate the status of Web 2.0 tools within NUST and UNAM libraries focusing on the levels of awareness and usage by the student community and library staff. The research was inspired by a change in the mode of service delivery in libraries worldwide, by adopting technology, so it was important to examine where Namibian libraries are today. In a study done by Yeboh and Ewur (2014) as cited in Meyer (2017) their findings revealed that some hindrances in the adoption of Web 2.0 within Nigerian University libraries, was due to libraries failed contribution in ensuring the integration of Web 2.0 technologies at the universities. The reasons given to explain this finding included lack of adequate knowledge by librarians about the importance and efficiency of these technologies; misunderstanding by librarians that ICTs are solely responsible for training staff and students on the use of Web 2.0 tools; poor power supply; unreliable internet access and lack of funds to host workshops or trainings.

Besides, the financial constraints that most developing countries face, in the adoption of the Web 2.0 tools is the struggle to get professional staff/ colleagues interested to adopt such tools. This involves how to motivate people within the working environment (Kapurubandara & Lawson, 2018).

Furthermore, the obstacle noted is that technology obstacles faced by the study's librarians are correlated with technological infrastructure, lack of technical expertise or technical support. Librarians believed that to use Web 2.0 tools in their daily jobs, they needed to be familiar and acquainted with the technology first (Zohoorian-Fooladi & Abrizah, 2013). Similarly, a study done by Bawack (2019), on "Academic libraries in Cameroon in the digital age", the lack of the state of the art ICT infrastructure, poor internet connectivity, unstable electricity supply and low bandwidth were some of the challenges identified in the adoption of Web 2.0 tools to manage sustainable institutional repositories. Despite the difficulties encountered, some

universities in Cameroon have made a series of ongoing efforts to adopt technologies that aid in optimum service delivery (Bawack, 2019).

Okite-Amughoro (2017) highlights the following challenges in the adoption of Web 2.0 technologies: poor technological infrastructure and the prohibitive cost of educational technologies, lack of awareness and poor attitudes towards e-learning as well as the lack of IT technical support to support e-learning initiatives. Similarly, Arif and Mahmood (2012) agreed that the following three factors play a role in the adoption of Web 2.0 in libraries: lack of computer literacy, lack of training programs and low availability of computers and Internet facilities that have an influence on the adoption of Web 2.0 technologies by librarians.

In the Taylor and Francis (2014) survey, the challenges of Web 2.0 that stood out were the following:

- time/resource (67%);

- judging an appropriate tone for communications (64%), and

- making people aware of the library's social media activities (61%).

Isfandyari-Moghaddam and Hosseini-Shoar (2014) investigated "Factors affecting Web 2.0 adoption", among librarians in an academic library in Iran. Their study identified the following challenges faced by librarians in the adoption of Web 2.0 tools: lack of training; low availability of computers; lack of familiarity with Web 2.0 tools to apply it within their working environment; changeability and poor English proficiency. They concluded that to identify increased social inclusion and faster adoption of Web 2.0 tools, some other categories should be included in the grouping of factors/adoption criteria affecting Web 2.0 adoption. They suggest that future research should investigate factors affecting Web 2.0 adoption by academic libraries from a manager's perspective. Similarly, the adoption and use of Web 2.0 tools on providing just in time and just in-demand services from the viewpoint of the end-user, and the hindrances for the low uptake of Web 2.0 services for future research.

Kwanya, Stilwell, and Underwood (2012) recommended the following on the adoption of Web 2.0 technology: develop the necessary standards; policies, strategies, and plans; increase the bandwidths; pick out appropriate Web 2.0 tools, train librarians and users and encourage linkages with other libraries. The above recommendations were based on the challenges identified in the study by Kwanya et al. (2012) which were: inadequate infrastructure within Kenyan libraries; lack of technical skills; as well as restrictions on the access of certain Web 2.0 tools. These challenges identified in Kwanya's study hampered the effective use of Web 2.0 tools by librarians and users.

Generally, the literature that documents the adoption and implementation of Web 2.0 in developing countries is still fragmented due to the inconsistent availability of knowledge, facilities, and reliable and stable infrastructure. The reason for the utilisation of these technologies is mainly driven by individual efforts, instead of institutional policies and strategies, which limit the wide usage of these technologies to support learning and teaching within academic institutions (Lwoga, 2012).

2.6 Theoretical framework

The acceptance of technology is an active area of research, whereby several theories and models have been proposed to understand the drivers of technology adoption (Akbar as cited in Williams, 2018). Theories such as Diffusion of Innovation (DOI) and Unified Theory of Acceptance and Use of Technology (UTAUT) are examples of such theories, which explain the technology adoption process.

According to Venkatesh, Morris, Davis, and Davis (2003) the four major constructs that determine technology acceptance and use within the UTAUT model are the following:

1. **Performance Expectancy (PE)**: the extent to which an individual believes that using the system will help him/her to attain gains in job performance;

2. **Effort Expectancy (EE)**: the degree of ease associated with the use of the system;

3. **Social Influence (SI):** the degree to which an individual perceives that important others believe he or she should use the new system;

4. **Facilitating Conditions (FC)**: the degree to which an individual believes that an organisational and technical infrastructure exists, to support use of the system (as cited in Okite-Amughoro, 2017).

In a study done by Khan, Masrek, Mahmood and Qutab (2017), investigating factors influencing the adoption of digital reference services among the University libraries in Pakistan adopted the UTAUT model. Their study introduced three predictors in the context of Pakistani librarians, namely: usefulness, ease of use and Information and Communication Technology (ICT) skills. According to Venkatesh et al. (2012), integration of new constructs in the UTAUT model can augment its theoretical scope, therefore age, gender and the type of library in the UTAUT model was integrated. Organisational readiness was already present in Pakistani libraries, as a result the UTAUT model was ideal in the study, as the authors assumed that librarians were willing to adopt digital reference services. A number of authors including Baran and Stock (2015) and Yueh et al. (2015) agree that the UTAUT model is useful when it comes to the study of a person's behavioural intention toward the adoption of innovations.

UTAUT is discussed above to give an indication of what other related studies on the adoption of new technology innovations have used. DOI through comparison with UTAUT was deemed suitable for this study, whose innovation in relation to the theory was represented by the Web 2.0 technology within the respective libraries. Since NUST and UNAM libraries represent a social system/group, it was appropriate to use this theory as it assessed how librarians and students adopted this technology. By analysing the findings, it was seen at which stage the library staff/students were at accepting this new innovation (innovators, early adopters etc).

The channel of communication, was reflected through the marketing strategies that were utilised with the libraries, the channels of communication used to carry the message of the new innovation, as this according to Rogers (2003), is important and could be a factor that could hinder the adoption of the innovation.

Importantly, this theory allowed the researcher to identify areas that warrant further study. These areas, as reflected in the objectives of the study, included: level of awareness of the Web 2.0 tools, level of use, and factors hindering their adoption.

The DOI theory "…has often been used as a theoretical framework to analyse the adoption of information and communication technologies in the library environment" (Neo & Calvert, 2012, p. 227). The theory also provides a more detailed understanding of the processes involved in the adoption of new technologies, as well as the different rates at which new technologies are adopted (Rogers, 2003). Since the conception of this theory in 1962, the DOI theory has been tested and refined through studies in communications, sociology, marketing and organisational science (Russel & Hoag 2004, Blackburn, 2011).

The main concept of the theory is diffusion, a process by which an innovation is communicated through certain channels over time among the members of a social system (Rogers, 2003). The definition entails four main elements that are involved in the diffusion process: innovation, communication channels, time and the social system.

The first element of the DOI theory is an innovation, which is defined as an idea, practice or object that is perceived as new by the individual (Rogers, 2003). Concerning this study, the innovation concept of this theory refers to Web 2.0 technology. Technology according to Rogers (2003) has two components: a hardware aspect that consists of the tool that represents the technology as material or physical objects, and a software aspect that consists of the information base for the tool.

The second element in the diffusion innovations theory is the communication channel. Communication is the process whereby individuals create and share information with each other to reach mutual understanding. The communication channel on the other hand is how messages get from one another (Blackburn, 2011). The majority of individuals evaluate an innovation, not because of scientific research by experts, but through the evaluation of peers who have adopted the innovation.

Time is the third element that is crucial within the diffusion process, which is the factor that determines the following:

- the innovation-decision process whereby an individual goes through the first knowledge of the innovation, through its adoption or rejection;
- the innovativeness of the individual, meaning the time it takes for the individual to adopt an innovation compared to other members of the social system, and
- innovation's rate of adoption in a social system-this is measured as the number of members of the system that adopt the innovation within a given time.

The social system as mentioned above refers to individuals, informal groups or organisations (Rogers, 2003). The social system in this research is academic libraries. The diffusion of innovation model constructed by Rogers (2003) shows that the innovation-decision process is made up of five stages. The knowledge, persuasion, decision, implementation and confirmation stages. The knowledge stage is where the individual has the knowledge about innovation and is aware of it, and how they acquire information on how to use it.

The persuasion stage is where one forms an attitude towards innovation, either positive or negative. The next stage is crucial as it determines if the innovation has been adopted or rejected by the individual, which is the decision stage. In the implementation stage which follows, the individual puts the innovation to use, if they have chosen to adopt it (Rogers,

2003). In line with this study, the stage of implementation was important and was investigated under the objectives: awareness and use of Web 2.0 tools. These objectives sought to find out how frequent the Web 2.0 innovation was utilised and how aware respondents were of the innovation.

The final stage, which is the most overlooked stage is the confirmation of the adoption of innovation. Libraries often speak of assessment through numbers, such as patron count and programme attendance. Technology, on the other hand, can be more complex to understand especially if it is so new that no other libraries exist to easily benchmark success against. As a result of that, libraries often face challenges when adopting innovations in finding ways to evaluate them. It may take months or even years to witness the significant benefits from the technology, despite the ease and use of the innovation daily, as the assessment period must be drawn out to get a valid sample (Blackburn, 2011).

In a study carried out by Meyer (2017) on the influence of school librarians as change agents, the DOI theory was used as a theoretical framework upon which her study was grounded. Her study focused on technology integration in schools, Web 2.0 tools to be exact, Web 2.0 is the innovation as in the DOI theory. Rogers (2003) states that communication through channels is a way of sending messages from one another. In reference to technology integration in schools, how messages are sent to the school community matters, according to Meyer (2017). Any miscommunication of the message may hinder the adoption process, just as Rogers (2003) describes the element of time in the diffusion process as important to know the length of time for an adoption to be accepted or rejected by a group or social system. Within this group is where one finds a change agent making the difference, and seeks out development for the group. "As a school librarian working as a change agent for improving technology integration practices in my school and school district, I believe the change model theory in Rogers's

Diffusion of Innovations (2003) is appropriate" (Meyer, 2017, p. 9). The aspect of identifying a change agent is relevant to this study, as mentioned in the quote above, as a change agent would be the source of creating a difference for the social group. The librarians in this study would be the ideal change agent(s), as through the use and adoption of certain Web 2.0 tools by them, they, in turn, would seek out development for the whole social group which would be the library environment in this case.

2.7 Summary

Literature reviewed in general suggest the need for Web 2.0 tools to be accessed within the library setting, in order to keep up with current trends and for trends to be aligned with the latest form of service provision. Although, studies on academic libraries revealed the importance of using Web 2.0 to effective service provision some challenges are evident. Some of the challenges are lack of skills, poor infrastructure, poor ICT infrastructure and lack of standardisation and policy. Literature was reviewed on digital natives (which would be in this case a majority of students who have left high school to pursue tertiary education) and whom have been born into the era of technology and on digital immigrants, (digital immigrants in this case being the librarians/staff within the academic library setting). The study therefore investigated the different levels of adoption and awareness of Web 2.0 tools among students and library staff as well as their use. Despite the challenges and limitations, literature showed that Web 2.0 tools could be effectively utilised to market academic library services provided there are certain measures or policy in place to assess the effectiveness of the tools. After assessing literature on the hindering factors on the adoption of Web 2.0 tools it can be concluded that, there are no set rules, academic libraries can choose tools or methods that suit them. This chapter also looked at the technology adoption theories, namely, DOI and UTAUT which provided a basis for understanding the rate of adoption of a new innovation and

suitability for studying technology acceptance and use perceptions. The next chapter will discuss research methods and sampling techniques that will guide the study.

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the research methodology and techniques used in this study. Research methodology according to Rajasekar, Philominathan and Chinnathambi (2013) is a systematic procedure of solving a problem. It is a science on how research needs to be conducted. It is the procedures by which researchers go about carrying out, describing, explaining and predicting phenomena are called research methodology. Research methodology can also be defined as a way to steadily solve a research problem, which helps a researcher to understand the assumptions underlying various techniques including theoretical and philosophical assumptions upon which research is based and the implications of these for the methods and methods adopted (Kothari, 2004; Saunders, Lewis, & Thornhill, 2009). It is also defined as the study of methods by which knowledge is gained, where its aim is to give the work plan of research (Rajasekar et al., 2013). This chapter is structured by first addressing the study's theoretical premises, followed by the research design that influenced the study. The population is then discussed, the methods of sampling are adopted and the instruments of data collection and the procedure of the data collected are explained and how the data was analysed. Ultimately, the chapter ends with the research ethics and how the data was analysed. The chapter is finally ended off by a discussion of the research ethics and the chapter summary.

3.2 Philosophical Assumptions

While there are many elements and aspects of the research process that are crucial in producing valid and reliable research results, there is one general aspect that tends to be overlooked. This aspect is the domain assumptions that the researcher carries into any research project. According to Glazier (2002) domain assumptions are those assumptions that are "the most

basic and serve to structure individuals' belief systems as well as their lives in general" (p. 281). Research is generally a complex task because whether basic or applied it is the pursuit of knowledge. The ancient Greeks grouped knowledge in two forms, "doxa" or known **as** opinion and "epistme" or knowledge or truth (Powell & Connaway, 2004). The early Greek philosophers for the most part, generated "doxa" or opinion as they relied solely on speculation and myth as opposed to perception or experience of their knowledge. The two problems that existed for the ancient Greeks are still applicable and very relevant for modern researchers. The first being, the epistemological and ontological assumptions that all researchers bring into their studies and the second, the linkages among theories and disciplines (Powell & Connaway, 2004).

Prior to conducting any form of research, deciding on the methods and methodologies to be used, deciding on sample sizes or strategies, researchers must first reflect on their basic epistemological and ontological assumptions.

3.2.1 Ontological and Epistemological assumptions

Ontology comes from the Greek word "ontos" meaning being and "logos", which means theory. When put together the term ontology means "theory of being and existence" (Scotland, 2012). Runes (2001) defines ontology as the science of fundamental principles. Another explanation as to what ontology is, is by Smith (2004), a systematic explanation of existence and seeks to give an absolute and exhaustive classification of entities in all spheres of 'being'. Quine (1957) provides a less complex definition of ontology as a network of claims, derived from the natural sciences, about what exists together with the attempt to establish what types of entities are most basic. Ontology "raises basic questions about the nature of reality and the nature of the human being in the world" (Crotty, 2003, p. 10). The role of ontology according to Powell and Connaway (2004), is to serve as the basis for all things including the nature of

knowledge. The application of ontology within this study is relevant as it involves knowledge sharing. Knowledge sharing involves digital libraries, and the adoption Web 2.0 technologies. The scientific paradigm rose to fame during the Enlightenment, and Comte popularised the term positivism (Crotty, 2003) when he pursued to apply the scientific paradigm, which originated studying the natural world, to the social world (Cohen, 2007). The ontological position of positivism is one of realism, where realism is the view that objects have an existence independent of the knower (Cohen et al., 2007 as cited in Scotland, 2012). Thus, a discoverable reality exists independently of the researcher (Pring, 2000). According to Plooy-Cilliers (2014), the positivist researcher aims to find a causal relationship between variables, and ought to use quantitative research methods, which enables him/her to use statistical techniques to analyse the collected data. The positivist views suggest, that valid knowledge is produced by the measurement of objective realities (Smith, 1998). A positivist approach to research means placing trust in the scientific method, which involves: the formulation of a research question, creation of hypotheses, research design and data collection, followed by the interpretation of data with a view to accepting or rejecting the formulated hypotheses (Gliner & Morgan, 2000).

The quantitative data for this study was derived from the questionnaire handed to students. A positivism paradigm adopts a quantitative approach, based on the ontological assumption that science is the only foundation for true knowledge. It holds that the methods, techniques and procedures used in the natural sciences offer the best framework for investigating the social world (Smith, 1998).

The positivist approach is related to the quantitative research approach, the interpretivist approach is closely related to the qualitative research approach. According to Holloway (1997), the interpretivist approach in social science focuses on human beings and the way in which they make sense of reality. This approach rejects the positivist view that there are measurable,

objective realities. The interpretivist approach argues that there are multiple, subjective realities among people in society.

Research undertaken within an interpretivist research paradigm treats the data collected as a basis for investigation and insight, rather than mathematical analysis. The interpretivist researcher presents conclusions based on his/her understandings and insights into the realities constructed by research subjects, rather than statistical evidences (Holloway, 1997). An interpretive paradigm is evident in the qualitative approach, which claims that understanding and providing insight into the realities constructed by research subjects, rather than statistical evidences. The interpretivist approach is based on a naturalistic approach of data collection such as interviews and observations (Runes, 2001).

Epistemology, or the study of knowledge, is "a way of understanding and explaining how I know what I know" (Crotty, 2003, p. 3). Epistemology as explained by Powell and Connaway (2004) refers to the study of knowledge whereby the root word "episteme" is a Greek word which means knowledge or truth and the suffix "ology" comes from the Greek word "logos", which means the principle of reason of theory. These elements come together to form the term epistemology as "theory of knowledge". Runes (2001) defines epistemology as the basis, building, method and validity of knowledge.

Grounding epistemological perspectives is an ontological perspective that requires an epistemological position for a discipline to carry out investigations and be reflective. (Oyieke, 2015). Epistemology serves as the platform upon which to build one's knowledge of the world. It is the actual foundation of the assumptions that ground the research methodologies used to gather data and that provides the basis for data analysis and interpretation and the drawing up of conclusions (Powell & Connaway, 2004).

The positivist epistemology is one of objectivism, whereby positivists go forth into the world impartially, discovering absolute knowledge about an objective reality. Plooy-Cilliers (2014)

argues that given the fact that interpretivist researchers study reality subjectively they use qualitative research methods to gain in-depth understanding. This entails focus group discussions, in-depth interview, and narrative enquiry. This studies epistemological assumption is partially that of objectivism, that also adopts qualitative methods of enquiry such as carrying out of interviews among the library staff.

The quantitative data was derived from the questionnaire handed to students. A positivism paradigm adopts a quantitative approach, based on the ontological assumption that reality is constructed by one of realism, where reality is constructed by research subjects, rather than statistical evidence hence knowledge is produced by the measurement of objective realities. An interpretive paradigm is evident in the qualitative approach which claims that understanding and providing insight into the realities constructed is based on a naturalistic approach of data collection such as interviews.

Post-positivism refers to the thinking after positivism, which challenges the traditional notion of the absolute truth of knowledge (Phillips & Burbules, 2000) and recognises the fact that human beings cannot be "positive" about their claims of knowledge when studying their behaviour and actions. This study therefore adopted the post-positivist research approach. Post-positivism supports methodological pluralism (mixed methods), which is built on the assumption that the choice of a research method is based on the types of research questions posed by the research, with the view that each research approach can contribute to the understanding of a general research problem by addressing different research problems (Wildemuth, 1993).

A mixed method approach in this study was necessary so as to capture the best of both quantitative and qualitative approaches. Through this mixed approach the findings were strengthened by cancelling and neutralizing the prejudices of both qualitative and quantitative

methods. By collecting data from a combination of both close-ended and open ended questions, a clear understanding of the research problem was ensured resulting in respondents giving a bit of explanation to their answers. Johnson and Onwuegbuzie (2004) strongly advocate for a mixed method approach as it is a rich field for the combination of data, as with design "words, pictures and narrative can be used to add meaning to numbers" (p.14). In other words what we generally consider qualitative data, words, pictures and narrative can be put together with quantitative, numerical data from a larger-scale study on the same issue.

Mason (2006) agrees for a mixed method approach by stating that social experience and lived realities are multi-dimensional and may be inadequate if we view these phenomena only along a single dimension. These procedures and methods opened perspective to provide reality on the ground of what was taking place at the NUST and UNAM libraries, in terms of Web 2.0 tools usage. Johnson and Onwuegbuzie (2004) state that using both qualitative and quantitative methods of research produce more complete knowledge necessary to inform theory and practice. This study adopted the pragmatic paradigm, which advocates the use of mixed methods as a pragmatic way to understand human behaviour-hence Pragmatic paradigm. The paradigm arose among philosophers who argued it was not possible to access the truth about the world from just using a single scientific method as advocated by the positivist paradigm, nor to determine the social reality as constructed under the interpretivist paradigm (Kivunja & Kuyina, 2017). As a result these philosophers (such as Alise & Teddlie, 2010; Biesta, 2010; Tashakkori and Teddlie, 2003a, and 2003b; Patton, 1990) as cited in Kivunja and Kuyina (2017), argued that what was required was a worldview, which could provide a method of research that would be considered for studying phenomenon at hand. The aim of these theorists was to seek for approaches to research that was more practical and pluralistic that could allow more than one method that could shed light on the behaviour of participants, the belief behind those behaviours and the implications that could follow from different behaviours. The

pragmatic paradigm supports a relational epistemology, a non-singular ontology (there is no single reality and a person has their own interpretation of realty) and a mixed methods methodology (a combination of quantitative and qualitative research methods) (Kivunja & Kuyina, 2017).

The quantitative research approach is a numerical representation and manipulation of observations for the purpose of describing and explaining the phenomena that those observations reflect (O'Leary, 2004). By using questionnaires to gather the quantitative data, the researcher was able to directly analyse a population that was too large (students). A quantitative approach involves the use of closed ended questions requiring a choice amongst a number of given answers. This aspect in a way guides the respondents on the kind of answers to be provided. Yin (2016) mentions that "close ended questions lead to more accurate data and a more definitive analysis" (p.141).

Similarly, the qualitative approach entails the use of open-ended questions to collect data with primary intent of acquiring opinions and attitudes on a specific topic (Creswell, 2009). Open-ended questions allowed the researcher to probe more from the respondents and they were given a platform to construct answers in their own words.

This study through the mixed method research design, focused on a pragmatic approach to investigating the level of awareness and adoption of Web 2.0 tools within the NUST and UNAM libraries. According to Creswell (2009) the mixed method research design is pragmatic as it seeks to provide useful information based in a sequence of decisions, and allows the researcher the freedom of choice in selecting research techniques best suited for the study.

3.3 Research Design

A research design can be defined as an action plan to be followed for the research conducted**.**

This study used a case study research design, defined as a method of studying elements of the social through comprehensive description and analysis of a situation, for example a detailed study of a group or event (O'Leary, 2004). The research design can also be seen as a tool that can be used to provide a form of guidance to give the researcher the cheapest, most economical form of collecting data and analysing it in relation to the research (Hernon & Schwartz, 2009). In other words the research design gives the researcher the most simple yet most economical way of carrying out the research (Terre Blanche, Durreheim & Painter, 2006).

This research adopted a concurrent mixed methods research approach, which is according to Creswell (2003), a mixed method approach that collects both types of data (qualitative and quantitative) during the same stage. There are different types of concurrent methods: a) concurrent triangulation, b) concurrent nesting, and concurrent transformative designs. In each of the above designs, both the qualitative and quantitative data are collected simultaneously, although priority may be given to one form of data over the other. The concurrent triangulation design utilises both qualitative and quantitative data to define relationships more accurately among variables of interest. In concurrent nested designs, both qualitative and quantitative data are collected during the same stage, although one form of data is given more weight over the other (Creswell, Clark, Gutmann, & Hanson, 2003). In a concurrent transformative design, priority may be given to either phase or there may be equal priority. Data is integrated during analysis or possibly during interpretation phase. The strengths of the concurrent transformative strategy: can collect both quantitative and qualitative data simultaneously allowing for perspectives from each; provides advantages of both methods. The study opted for a concurrent transformative strategy, whereby the qualitative and quantitative data carried equal weight within the study.

This study utilised the mixed method approach of inquiry whereby, the combination of quantitative data and qualitative data both had equal weight in the study. Priority was not given

to either the qualitative nor the quantitative data. The qualitative and quantitative data was collected concurrently for confirmation. The objectives of the study sought to be answered by both data collected from the survey (through the use of the questionnaires) and from the interviews held with the librarians. Therefore, showing equal weight distributed among the qualitative and quantitative data collected.

The research adopted a multiple case study approach which employed both qualitative and quantitative research approaches. Single case studies generalise findings, in an analytical way, however, multiple-case studies according to Yin (2014) strengthen or broaden generalisations. Other benefits of carrying out a multiple case study according to Gustafsson (2017) is that the data generated from a multiple case study is strong and reliable and the researcher can clarify if the findings from the results are valuable or not. Multiple case studies such us this, has its strength in replication logic, whereby the case studies of NUST and UNAM libraries were designed to corroborate each other.

3.4 Population

 A study population is defined by O'Leary (2004) as the whole group that constitutes the realm of applicability for the research. The study population comprised of 11235 students from NUST enrolled during the 2018 academic year of which 5533 (49.2%) were male and 5702 (50.8%) were female (Enrolment Report, 2018). UNAM had a total of 28217 enrolled students of which 18745 (66.4%) were female and 9472 (33.6%) were male (UNAM Statistics Office, 2018).

3.5 Sample and sampling

The UNAM and NUST Windhoek campuses were selected as locations to carry out the study as they were the first tertiary institutions established in Namibia. Purposive sampling was the chosen procedure to select the research sites (the libraries) as they achieved representativeness

for comparability as stated by Teddle and Yu (2007). Representativeness aids how accurate something is reflected upon a sample, therefore the research sites and their professional librarians were selected because they are homogenous. Homogeneous sampling is used when the goal of the research is to understand and describe a particular group in depth.

According to Creswell (2014) there are two types of sampling techniques, which exist and are:

- probability and
- non-probability sampling techniques.

Probability sampling techniques were used to select participants for quantitative data collection; while non-probability sampling techniques were used to select participants for qualitative data collection (Creswell, 2014).

The following are some of the probability sampling techniques:

- Simple random sampling- This is the basic probability sampling technique and it is incorporated into all the elaborate probability sampling designs. It is a sampling method that gives each of the sampling units (N) of the population an equal and known non-zero probability of being selected (Nachmias & Nachmias, 2008). It involves these five steps:

    - obtaining a complete sampling frame;

    - giving each case a unique number starting at one;

    - deciding on the required sample size;

    - selecting that many numbers from a table of random numbers; and selecting the cases which correspond to the randomly chosen numbers.

- Systematic sampling – To obtain a systematic sample, the researcher works out a sampling fraction by dividing the population size by the required sample size. Systematic sampling consists of selecting every Kth sampling unit of the population

after the first sampling unit is drawn randomly from the first K sampling units (Nachmias & Nachmias, 2008). This method is much simpler than simple random sampling.

- Stratified sampling – This method is designed to produce more representative and therefore produce more accurate samples by making sure that different groups of the population are adequately represented in the sample, so the level of accuracy in estimating parameters is increased (Nachmias & Nachmias, 2008).

- Multistage cluster sampling – This involves drawing several different samples in such a way that the cost of final interviewing is minimised. The researcher selects a sample by first sampling larger groups, called clusters, which are selected by a simple or stratified sample.

Unlike probability sampling, non-probability sampling uses a non-random method to select the sample. Non-probability sampling method mostly involves judgement, and participants are selected as they are easy to access. One of the shortcomings of the non-probability sampling method, is that the findings derived through this particular method lack generalisability. Findings obtained through this method apply mostly to the group studied, it may not be right to extend these findings beyond that specific sample. The non-probability however, can study a particular phenomenon with the potential to generate valuable insights and is less expensive, less complicated and easy to apply.

Some non-probability methods of sampling are as follows:

- Convenience sampling: is a non-probability sampling technique where the members of the population meet particular criteria, such as easy accessibility, geographical proximity and availability at a given time (Etikan, Musa & Alkassim, 2016).

- Purposive sampling: is a non-probability sampling technique where the researcher chooses the participants as per his/her own judgment. This kind of sampling is utilised mostly in research of an exploratory nature as well as in field research. With purposive sampling, the researcher is not certain whether the participants selected are representative of the population or not. Purposes sampling is not expensive, easily accessible, more convenient and include only those individuals that are relevant to research design.

- Quota Sampling : This type of non-probability sampling involves selecting units that are selected into a sample on the ground of pre-specified characteristics (Babbie, 2013). In quota sampling, the research population is divided into subgroups. The researcher divides the entire population into class levels, intersected with gender and socioeconomic status. (in this research, full-time students were identified from the subgroups). Then, the researcher takes note of the proportions of these subgroups in the entire population and then samples each subgroup accordingly. The main reason why researchers choose quota samples is that it allows the researchers to sample a subgroup that is of great interest to the study. If a study aims to investigate a trait or a characteristic of a certain subgroup, this type of sampling is the ideal technique. It is important to remember that quota sampling should only be carried out when a researcher does not have access to the entire population (Etikan et.al., 2016).

- Snowball sampling: This non-probability sampling method is usually used in field research. In this method of sampling, each participant that is interviewed, may be asked to refer/suggest additional people for interviewing (Babbie, 2013). This sampling technique is also referred to as "chain referral sampling", and researchers will use it when there are very few methods to secure a list of the population or when the population is unknowable.

For the quantitative part of the study the sampling method adopted was a combination of stratified sampling technique, quota sampling and then convenience sampling technique. In this method, the population was divided into different subgroups or strata (according to faculties within the Universities). The faculties were then further subdivided into the departments belonging to each respective faculty and then assigned 20 full-time students, (from an overall sample of 200 students), as the sample from each department through quota sampling. Convenience sampling was then used to identify large classes with full time students, who were available to participate in the study within the respective departments of each Faculty. This type of sampling was chosen, because due to the large on-campus University population, it was not possible to include every subject as the population was almost finite. After appointments were made with lecturers within respective faculties (which was upon availability of the lecturers), the students within their lecture/class was where the questionnaires were distributed. Convenience samples are sometimes referred to as 'accidental samples' because elements may be selected in the sample, as they happen to be positioned, spatially or administratively, near to where the researcher is conducting the data collection (Etikan et.al., 2016). As a result of that sampling technique a saturation of 20 students were reached per Faculty. This method was preferred because the students' population consisted of different levels of study, age, group and marital status.

A non-probability sampling technique was utilised to select participants for the qualitative part of the study. The purposive sampling technique, also called judgment sampling, is the deliberate choice of an informant due to the qualities the informant possesses (Tongco, 2007). According to Tashakkori and Teddlie (2010), purposive sampling techniques involve selecting certain units or cases based on a specific purpose rather than randomly. The library staff were purposively selected based on their managerial position in the library, of which five were from the UNAM library and five from the NUST library. Patton (as cited in Pickard, 2007) is of

opinion that, the logic of purposeful sampling lies in selecting cases, which comprise of respondents, which are information-rich.

TABLE 3. 1: STUDENT POPULATION SAMPLE SIZE

Name of Faculty	Total Number of full-time students in classes consulted in NUST and UNAM	Total number of students interviewed
Engineering	35	9
Humanities	140	78
Economics and Finance	68	11
Health and Applied sciences	24	8
Natural resources and spatial sciences	120	64
Other		7
Total	**387**	**177**

The table above is an indication of the total number of student population that completed the questionnaires. The second column represents the total number of full-time students in all classes (by faculty) where the researcher was given permission to administer the questionnaires.

3.6 Data Collection Methods

For the qualitative approach of this study, in-depth interviews were conducted among the library staff, as they were considered key to providing more insight about the status of Web 2.0 tools within the libraries. An interview is a method of data collection, which is explained as a dialogue between two or more people. An interview involves direct contact with the participant, answering the questions relating to the research problem (Bless & Smith, 2000).

Interviews conducted with librarians were of an in-depth nature. Guiding questions of an open-ended nature were developed to facilitate accurate description.

There are different types of interviews according to (Bless & Smith, 2000):

- Structured interview: This interview method is used with large sample groups. Questions are pre-established and are predetermined to maintain consistency and uniformity.

- Semi-structured interview: This interview method is flexible as the questions are neither fully fixed nor fully free. Researchers who use this method usually being with a defined question plan already, and conduct more of a conversational style of interviewing. Researchers need to be careful not to be side-tracked when using this particular method of interviewing.

- Unstructured interview: This interview lacks any kind of order and lacks structure; this interview does not have a set of predetermined questions. The interviewers usually have certain topics in mind they wish to address already. Such interviews flow like daily conversations and are more open-ended. Researchers who conduct such interviews often are quite skilled, as their control over the conversation must be minimal, but still need to make sure that the person being interviewed stays on topic (Patton, 2002). Such interviews are helpful when one wants to get some insight into a particular phenomenon within a particular cultural context (Zhang & Wildemuth, 2014).

This study adopted the semi-structured interview method as it was flexible enough to allow the researcher to probe when interviewing the study sample, if questions were not answered to researchers' satisfaction (Bless & Smith, 2000). It also created a comfortable environment for the librarian as it was a more focussed conversational style as compared to unstructured interviews. The flexibility of this approach, particularly compared to structured interviews, allows for the discovery or elaboration of information that is important to participants but may not have previously been thought of as relevant by the researcher (Bless & Smith, 2000).

Several advantages come from using interviews as a method. One of them is the fact that researchers get immediate responses from their respondents to a question. If there is any

uncertainty regarding a question, it can be addressed there and then by the respondent. In addition to that, it creates a forum whereby any uncertainties regarding the questions can be addressed (Maree, 2012). The researcher used a conversational style of interviewing to acquire information, attitudes, and beliefs around certain themes (Maree, 2012).

The quantitative part of the study used a survey to collect data from the students. Surveys provide some form of anonymity which allows students to be more truthful in their responses. Respondents may be more truthful than they would be in a face-to-face encounter (Leedy & Ormrod, 2001). Survey research involves acquiring information from one or more groups of people about their characteristics, opinions, attitudes or past experiences by asking them questions and thereafter tabulating their responses (Leedy & Ormrod, 2001).

In survey research, all the respondents in the sample are systematically asked the same questions, in the same order in each interview and by the interviewer, which is a big difference to qualitative research methods such as in-depth interviewing and life histories. The survey method is one of the most important data collection methods in the social sciences, which is used extensively to collect information on numerous subjects of research (Leedy & Ormrod, 2001).

There are various kinds of surveys which exist, they are the following:

- Descriptive surveys: provide descriptions of for example age, gender and studying patterns.

- Explanatory surveys: explain why things are the way they are and are more detailed than descriptive surveys.

- Cross-sectional surveys: use a sample of participants that represent a target population, and involve descriptions and inferences from the respondents collected at one point in time.

- Census surveys: Unlike cross-sectional surveys, this survey method involves every individual within the target population involved (Maree, 2012).

- Longitudinal surveys: This kind of survey method involves observing variables over and over again over different points in time. The same group of participants studied over an extended period of time, which would involve the administration of several surveys and certain time intervals (Creswell, 2009).

This study used the cross-sectional survey method and was applied by giving the students the questionnaires at a single point in time (within their class times) allowing the researcher to look at various characteristics at once (age, income, gender, etc.). The cross-sectional survey method allowed the researcher to study a snap-shot of the participants to determine the prevailing characteristics at that specific point in time.

3.6.1 Data Collection Tools

According to Kumar (2011) the construction of data collection tools is important because the outcome of a study is based on how the information was collected from the beginning. Kumar adds that the nature of information gathered depends on the questions that are posed to the respondents. A questionnaire (Appendix E) was used for the survey and a semi structured interview guide (Appendix F) for the interviews. The two sections that follow describe each instrument and how it was used.

3.6.2 Questionnaires

A questionnaire is defined as a document that is comprised of questions that are formulated to suit the objectives of the study, to get answers for the research questions (Tashakori & Teddie, 2009). Self- administered questionnaires were used in the current study and were administered to students in both libraries.

The advantage of utilising questionnaires is that it is cheap and a large number of respondents can be surveyed in a short period of time, even if they are not in the same geographical location (Milne, 1999).

Students were asked to rate their familiarity (awareness) of Web 2.0 tools in the first part of the questionnaire and to rate their usage of Web 2.0 tools across ten applications using a 5-point Likert-type scale from 1 = *strongly agree* to 5 = *strongly disagree.* A Likert scale was used to indicate how strongly respondents agree or disagree with a statement. Another scale that was used within the questionnaire was a Dichotomous Scale that has two choices that are opposed to each other, some examples are "Yes" or "No", "Male" or "Female". There is no way a respondent can be neutral, and by that there is a lot of value in the lack of neutral options (Birkett, 2019).

The questionnaire also included a series of open-ended questions, which sought to investigate the students' opinions and thoughts on a particular issue, they were also used as a follow-up question in response to a question that required them to answer either "yes" or "no". The second part of the questionnaire included a series of questions to examine the factors that hindered students' from adopting Web 2.0 tools. Questions were structured to retrieve the students' awareness regarding the use of technological innovation, their level of use and factors hindering their adoption. The use of closed-ended questions was to obtain quantitative-based results. Since people's opinions were sought for, the type of scale used needed to be an effective one, such as the Likert scale (Leedy & Ormrod, 2005).

3.6.3 Semi-Structured Interview Guide

A semi-structured interview guide was compiled to aid in the interviews, refer to Appendix F. A semi-structured interview guide is a list of questions that are to be explored within the course of an interview (Maree, 2012). A semi-structured interview guide consists of several key

questions that help to define the areas to be explored but also allows the interviewer or interviewee to deviate to address an idea or answer in more detail. The semi-structured interview guide was compiled to make sure that the same information was obtained from participants by covering the same material but allowing the researcher to probe or get clarity on issues. Librarians from NUST and UNAM libraries were interviewed by the researcher, by asking specific information, which was then compared with other responses received in other interviews. The researcher asked the same questions in each interview but remained flexible as new information kept arising.

3.7 Reliability

Reliability is concerned with the stability and consistency of measurement (Bryman, 2015). The result is that the research findings can be seen as reliable if they can be repeated and if they can manage to yield constant results (Yin, 2009). According to Gerring (2001), the product of a good research design is its ability to produce results that do not vary after being repeated over and over again. Payne and Payne (2004) share the same view when they claim that there are two main questions about the credibility of the research. The first question is concerned with whether similar results would be obtained if the study were repeated and the second one is if the same results were obtained, would they be right, that is, has the study investigated what it initially intended to investigate. Both questions relate to the validity and reliability of a study respectively.

 To achieve reliability of the research instruments, a broad research population was used. The ability to produce the same result is important in quantitative research "because if researchers are using standard measurement devices, such as attitude scales or observation schedules, they need to be sure that these give consistent results" (Hammersley, 2008, p.43). Therefore, reliability is about being confident that the way data was gathered could be repeated: "without

the methods themselves producing different results" (Payne and Payne 2004, p.196). The reliability of an instrument is the consistency with which a measuring instrument yields a certain result when the entity being measured hasn't changed. A total of 100 students from each University were asked to take part in the study, giving a total of 200 students. To retrieve constant and reliable results, instructions were made as clear and as understandable as possible to respondents. To ensure reliability in qualitative research, the assessment of trustworthiness is important. Within qualitative paradigms, the terms credibility, neutrality or confirmability, consistency or dependability and applicability or transferability are the essential criteria for quality (Lincoln & Guba, 1985). Dependability in qualitative research closely corresponds with the idea of reliability in quantitative research (Golafshani, 2003). Within this research, through interviews with librarians, semi-structured interviews allowed the staff to provide their responses in detail, providing the interviewer with the opportunity to test and extend their responses (Rubin & Rubin, 2005). As a result, this provided more reliable responses.

3.8 Validity

Validity is a key factor in acceptable research, and it refers to the extent to which the information gained is a true reflection of the subject under investigation (Bryman, 2015). Content validity refers to the extent to which the measuring instrument provides sufficient coverage of the phenomena under study. The validity of an instrument refers to the extent to which it measures what it intended to measure (Leedy & Ormrod, 2001). In other words, do the questions address what needs to be investigated, or are the responses by the person answering the questions influenced by other factors (Yin, 2009).

This study pre-tested the questionnaire for content validation. "Pre-testing questionnaire and interview schedules is one of the tools that may be used for content validation" (Ngulube, 2005, p. 136). The pre-test was conducted in the library, among a group of full-time students, 10 from

UNAM and 10 from NUST. After the respondents completed the questionnaire, they were asked by the researcher if the questions were clear and understandable. The outcome was that there were a few questions that were not clear and required to be restructured for ease of understanding. The researcher also ensured that the questions posed within the questionnaire addressed the set objectives. The study utilised an interview guide to ensure validity, as it allowed in-depth probing while allowing the researcher to keep the interview within the parameters traced out by the aim of the study (Berg, as cited in Alshenqeeti, 2014).

3.9 Procedure

The quantitative part of the study was conducted through the administration of questionnaires to the students by the researcher, during lectures on the NUST and UNAM campuses. Appointments were made with the lecturers in advance whereby the nature of the research was explained to them as well as permission to allow the researcher to administer questionnaires within their lectures/classes. The researcher then informed the lecturer that it would require 15 minutes of their class time for students to complete the questionnaires. Thereafter the lecturers would check their timetable where they had the highest number of students attending and would inform the researcher to hand out questionnaires within that designated time. In each Faculty 20 questionnaires were administered. However, if there were less than 20 students within a class, then another appointment was set to allow the researcher to administer the outstanding questionnaires. The lecturer would introduce the researcher in most cases, in other cases the lecturer would allow the researcher to explain what the study aimed to investigate, and also inform students that the study was purely voluntary. Those that participated were asked to sign an informed consent form (Appendix D). The presence of the researcher also allowed students to ask questions if the questionnaire was not clear to them.

For the qualitative part of the study, appointments were made to interview librarians, after gaining permission from both Heads of the Libraries. The interviews were recorded with the permission of the interviewees, the interviews lasted about 10 minutes depending on the length of explanations given by the interviewee, with the longest interview lasting about 25 minutes. However, some librarians refused to be recorded and the researcher resort to writing down responses as they answered the questions. A research permission letter (see Appendix A) granted the researcher permission issued by the Postgraduate School of the University of Namibia, which the researcher used to seek permission to conduct the study in the two libraries.

3.10 Research Ethics

In any study that uses employees as research participants, there can be risks involving confidentiality, anonymity, right to privacy, conflicts of interest, and exploitative relationships. Neuman (2011) adds that research poses the possibility of negative effects of those being studied and there is a need to respect the research participants and sites. Research ethics presents the researcher with a code of moral guidelines on how to research a morally acceptable way (Gillespie, 2008).

Before administering the questionnaire, students were informed that it was purely voluntary and they were not coerced into completing it**.** This was done to ensure the voluntary participation of the respondents to rule out that the respondents were forced to complete the questionnaire. This has been supported by Creswell (2009) who stated that it is the researcher's responsibility to make sure that the participants understand that their participation is crucial but not mandatory.

The researcher provided potential participants with the option to refuse to be interviewed or to answer any of the interview questions and questionnaires. In addition, participants had the option to refuse to be recorded. An ethical clearance certificate was issued by the University of

Namibia Research Ethics Committee (UREC) (see Appendix C) as an indication that the researcher had satisfied the committee with all the necessary ethical issues for the study. The researcher sought informed consent from respondents and requested them to read and sign a consent letter to indicate that they understood the nature of the study and that they were willing to partake in it. Babbie (2016) defines informed consent as a norm in which subjects base their voluntary participation in research studies with a full understanding of the possible risks involved.

3.11 Data Analysis

The quantitative data obtained from the questionnaires were analysed using Statistical Package of the Social Sciences (SPSS) a computer-based programme to obtain descriptive statistics. The data was first cleaned which involved checking questionnaires for completeness and clarity. Questionnaires were numbered from 1-200, from the 200 questionnaires administered only 177 were worth being analysed. Data cleaning simply put, involves eliminating errors in the data as some errors are unavoidable both in the data collection and input (Babbie, 2016). The researcher thoroughly reviewed the questionnaires collected (quantitative data) to identify any errors or mistakes which could have distorted the description of the students' experiences of adopting and awareness of Web 2.0 tools in the NUST and UNAM academic libraries. Thereafter, the findings were presented in form of tables and figures.

The qualitative data was collected through interviews with library staff. The data was analysed through thematic content analysis. The questionnaires administered to the students' used open-ended questions as well and data analysis took place in two phases. Responses from open questions and interviews were analysed using the thematic content analysis. This form of data analysis as defined by Babbie (2013) is "the non-numerical examination and interpretation of observations, to discover underlying meanings and patterns of relationships" (p.390). The data

retrieved through the interviews with library staff was first read through and understood to gain clarity and understanding of the responses. Thereafter, common characteristics were identified in the data (themes) and were generated based on the responses by the library staff, these themes were then defined. The defining of themes refers to the ongoing analysis to refine the specifics of each theme, by generating clear definitions and names for each theme.

3.12 Evaluation of the methodology

The methodology utilised within the study employed a mixed-method approach. The problem with this approach was that not all academic libraries within Windhoek could be under investigation, therefore concluding the status of Web 2.0 tools only at the UNAM and NUST libraries. Both NUST and UNAM libraries have regional centres nationwide and students, as well as staff within these centres (which could have provided additional incites due to varying factors), were not included within the study. Another shortcoming of the methodology was that the sample was very small compared to the population of NUST and UNAM libraries respectively. A larger sample could have given a more representative picture. Not all lecturers were co-operative when it came to requesting for the researcher to utilise 15 minutes of their class time to administer questionnaires to their students, and refused the researcher to administer the questionnaires during their class time, despite appointments being scheduled. An online survey would have been a better option to utilise, as it would have been cheaper as well since the printing of questionnaires would be eliminated. When carrying out interviews, staff members would be interrupted during interviews as they were interviewed during working hours. A strategy that could eliminate external distractions would be to carry out interviews in a setting outside of the office space. Such a setting would perhaps be within lunch hours, or tea break, other times external to working hours would be inconvenient.

3.13 Chapter Summary

This chapter presented the methodology and research design applied by the researcher to collect data. This study utilised a mixed-method approach to enable the researcher to collect data that addressed the objectives of the study. The study population comprised of both library staff and full-time students. The sampling technique used to select the students was of a multi-stage nature. This began with the stratified sampling technique, followed by quota and convenience thereafter with purposive sampling for the library staff. The data collection instruments used were a questionnaire for students and a semi-structured interview guide to carry out interviews among library staff. The study also looked at how the researcher approached the ethical issues within the study. Finally, the evaluation of the research methodology was discussed, which reflected on the shortcomings of the methodology adopted and what could have possibly been done to overcome these shortcomings. The next chapter focuses on the analysis and presentation of the data.

CHAPTER 4
DATA ANALYSIS AND PRESENTATION

4.1 Introduction

This chapter is on data analyses and presents the data collected in this study. Research is concerned with finding out about a phenomenon. It stimulates learning and enhances knowledge acquisition while advancing knowledge. When data about a phenomenon has been gathered, it must be analysed and presented. The purpose of this chapter is to focus on the analysis of data and presents the findings on the status of Web 2.0 tools in the NUST and UNAM libraries. According to Garaba (2010) the purpose of data analysis and presentation of findings in research is to display findings in an attempt to answer the research questions or objectives addressed by the study. The purpose of this study was to investigate the status of Web 2.0 tools among students and librarians of the NUST and UNAM main campus libraries guided by the following objectives.

4.2 Research Objectives

The objectives of this study as discussed in Chapter 1 were the following:

- To investigate the awareness of Web 2.0 tools among students and librarians;

- To establish the level of use of Web 2.0 tools by students and librarians;

- To establish the influence of the use of Web 2.0 tools on library services;

- To determine the factors that might hinder the adoption of Web 2.0 tools;

- To propose some recommendations to enhance the acceptance and use, of Web 2.0 tools in academic libraries

The data that addresses the above objectives were collected through a combination of qualitative and quantitative data collection methods. The data that was collected using a self-administered questionnaire (which students completed) and semi-structured interviews with

library staff is presented according to the research objectives of the study. Where appropriate data from the questionnaires and interviews is integrated. The data obtained from the questionnaires and interviews addresses the following issues, which is how this chapter is structured:

- Demographic data

- Awareness of Web 2.0 tools among students and staff

- Level/Frequency of use of Web 2.0 tools by students and staff

- Influence of the use of Web 2.0 tools on library services

- Factors hindering the adoption of Web 2.0 tools

- Recommendations on the acceptance and the use of Web 2.0 tools

4.3 The Response Rate

As mentioned in Chapter 3, the sample consisted of 200 students, of which 100 students were from NUST and 100 students from UNAM. Of the 200 students, a total of 177 students completed the questionnaires and participated in the study. This is a response rate of 88.5 %. According to Fincham (2008), a response rate of 60% for most research should be the goal of a researcher. A total of 10 librarians selected through purposive sampling were interviewed. Five librarians were from UNAM (Coded as UL1, UL2, UL3, UL4, and UL5) and five were from NUST (Coded as NL1, NL2, NL3, NL4, and NL5). The code UL meaning UNAM Librarian and NL meaning NUST Librarian and the subsequent numbers represent the individual librarian. The respective libraries are coded as UNL (UNAM Library) and NUL (NUST Library).

4.4 Demographic Information

The study sought to investigate the demographical information of the respondents of the questionnaire. The demographic data consisted of the following information:

- Age

- Sex

- Tertiary institution where studying

- Faculty

- The current year of study

4.4.1 Age

As seen in Figure 4.1 below, the majority of the respondents fell within the age group 18-24 years and the least were either 31 years and above.
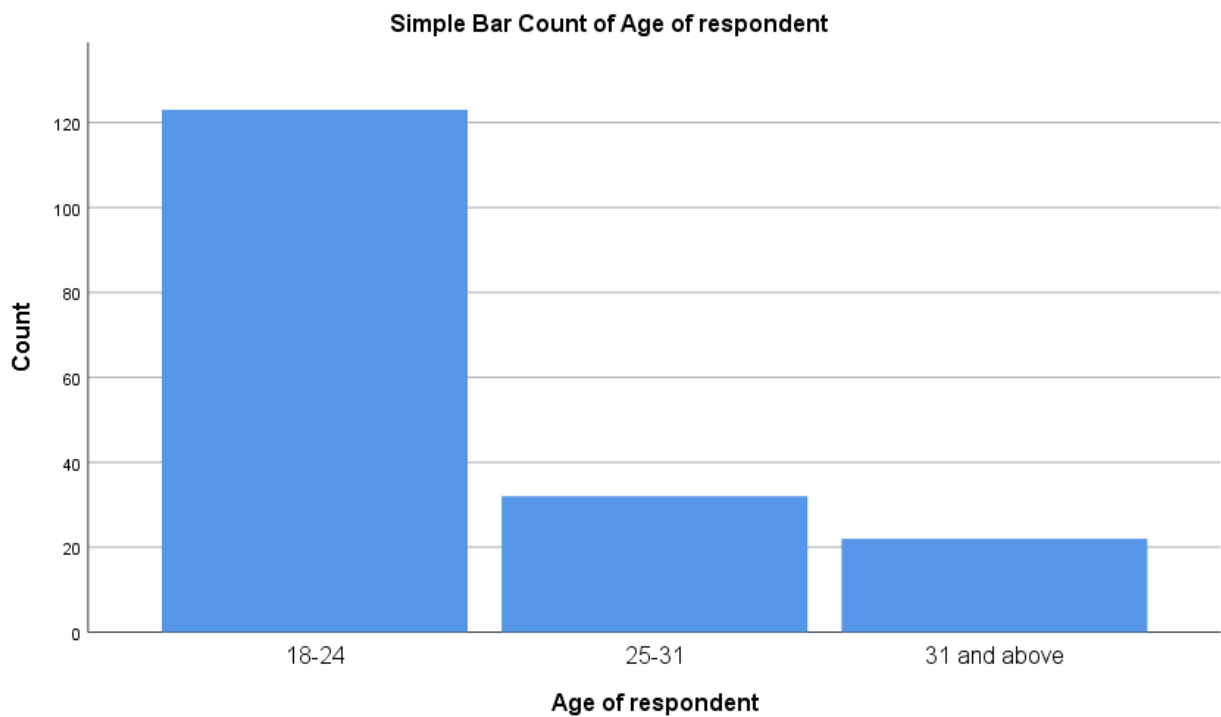
FIGURE 4. 1: AGE OF RESPONDENTS

4.4.2 Sex

The table below indicates the sex of the respondents.

N=177

TABLE 4. 1: SEX OF RESPONDENTS

Sex of the respondent

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	73	41.2	41.2	41.2
	Female	104	58.8	58.8	100.0
	Total	177	100.0	100.0	

As seen in Table 4.1 above, 104 (58.8 %) of the respondents were females and 73 (41.2%)

were male.

4.4.3 Institution
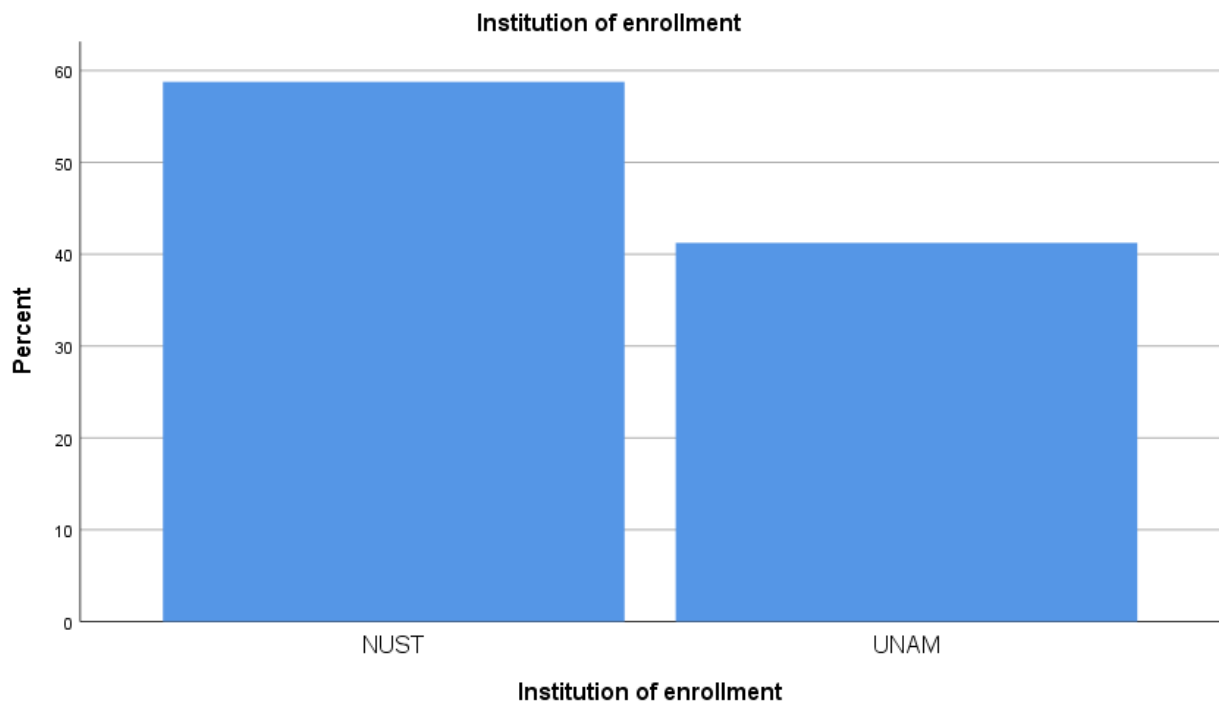
FIGURE 4. 2: INSTITUTION OF ENROLMENT

The results reveal that most of the students that completed the questionnaire were enrolled at

the NUST, which were just under 60% of the respondents. UNAM however, had just above

40% of students enrolled at the University as indicated in Figure 4.2 above.

4.4.4 Faculty

TABLE 4. 2 : Faculty

N=177

Faculty

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Engineering	9	5.1	5.3	5.3
	Humanities	78	44.1	45.9	51.2
	Economics and Finance	11	6.2	6.5	57.6
	Health and Applied Sciences	8	4.5	4.7	62.4
	Natural Resources and Spatial Sciences	64	36.2	37.6	100.0
	Total	170	96.0	100.0	
Missing	System	7	4.0		
Total		177	100.0		

Respondents were asked to indicate the Faculty they belonged to. From a total of 177 respondents who answered the questionnaire, 78 (44.1%) respondents belong to the Faculty of Humanities. The least amount of respondents belonged to the Faculty of Health and Applied Sciences with eight respondents, closely followed by the Faculty of Engineering with nine respondents registered under that Faculty respectively. The results presented in Table 4.2 above indicate that, from a total of 177 respondents, seven did not indicate which Faculty they are registered under.

4.5 Awareness of Web 2.0 tools among students and librarians

The first objective of this study was aimed at establishing awareness of Web 2.0 tools among students and library staff. The following subthemes addressed this objective: awareness of Web 2.0 tools by students and librarians, level of awareness of Web 2.0 tools in the library by students and librarians.

4.5.1 Awareness of Web 2.0 tools by students

The study sought to establish the awareness of some Web 2.0 tools among students. Students were required to indicate the Web 2.0 tools they know, by ticking either "yes" or "no" among the listed tools which were: Blogs, Twitter, Facebook, Instagram, Instant Messaging services and "other". Students were allowed to indicate any additional Web 2.0 tool they know under the "other" option. Tables 4.3 - 4.8 below present the findings.

TABLE 4. 3: Use of blogs

N=177

Blogs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	61	34.5	34.5	34.5
	No	116	65.5	65.5	100.0
	Total	177	100.0	100.0	

As seen in Table 4.3 above, the results revealed that 116 (65.5%) respondents indicated that they had no knowledge of how to use blogs, which is a very large number indeed, with 61 indicating that they knew how to use blogs.

TABLE 4. 4: Use of Facebook

N=177

Facebook

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	162	91.5	91.5	91.5
	No	15	8.5	8.5	100.0
	Total	177	100.0	100.0	

As seen in Table 4.4 above, 162 (91.5%) of respondents used and knew how to use Facebook, which was the most used tool in comparison to all other tools listed.

TABLE 4. 5: Use of Twitter

N=177

Twitter

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	105	59.3	59.3	59.3
	No	72	40.7	40.7	100.0
	Total	177	100.0	100.0	

Twitter was the next popular tool used with 105 (59.3 %) of respondents indicating knowledge on how to use it.

TABLE 4. 6: Use of Instagram

N=177

Instagram

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	126	71.2	75.4	75.4
	No	41	23.2	24.6	100.0
	Total	167	94.4	100.0	
Missing	System	10	5.6		
Total		177	100.0		

Table 4.6 above shows that 126 (71.2%) of the respondents had knowledge of how to use Instagram, and a mere 41 (23.2%) did not.

TABLE 4. 7: Use of instant messaging

N=177

Instant messaging

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	96	54.2	55.8	55.8
	No	76	42.9	44.2	100.0
	Total	172	97.2	100.0	
Missing	System	5	2.8		
Total		177	100.0		

Table 4.7 reveals that more than half 96 (54.2%) of the respondents used Instant Messaging and 76 (42.9 %) did not.

Respondents were asked to indicate if they use any other Web 2.0 tool other than the ones listed within the question. Table 4.8 below shows some of the other tools that the students mentioned

TABLE 4. 8: other Web 2.0 tools used

N=177

Other

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		158	89.3	89.3	89.3
	badoo	1	.6	.6	89.8
	Linkedin	3	1.7	1.7	91.5
	pinteres	1	.6	.6	92.1
	snapchat	2	1.1	1.1	93.2
	tumblr	1	.6	.6	93.8
	whatsapp	10	5.6	5.6	99.4
	youtube	1	.6	.6	100.0
	Total	177	100.0	100.0	

Table 4.8 above reveals that WhatsApp was the most commonly used tool with 10 (5.6%) students using it.

4.5.1.2 Awareness of Web 2.0 tools among librarians

The findings showed that the majority of staff members were aware generally of what Web 2.0 tools were. Their awareness of Web 2.0 tools was revealed when the researcher asked librarians what their general opinion was about them. This question was asked in such a manner to observe the librarians' knowledge about Web 2.0 tools, without explaining too much about them. All ten librarians from NUST and UNAM could list more than five Web 2.0 tools.

One librarian from NUST library in particular mentioned the following:

NL1 in particular said:

"My opinion about Facebook, Twitter, WhatsApp, Instagram just to name a few is a positive one. They are needed especially when it comes to sharing information and socializing and keeping in touch with others far from you. But like with all good things, it has its disadvantages too".

All other nine librarians listed the following tools: Facebook, WhatsApp, LinkedIn, Instant messaging within their responses and indicated that the usage of such tools has shown to have a positive impact on the lives of individuals. The responses from the librarians also indicated their level of awareness by elaborating on their opinions about the Web 2.0 tools. As a result, their level of awareness of these tools was also reflected in this part of the interview.

4.5.2 Level of awareness of Web 2.0 tools in the library by students and librarians

The students and staff were required to indicate their level of awareness of Web 2.0 tools in the library by indicating whether they had heard of, used, knew, or did not know about such tools being used in the library.

4.5.2.1 Level of awareness of Web 2.0 tools in the library by students

The researcher asked the students from both NUST and UNAM libraries what their level of awareness of Web 2.0 tools in their library. The data shown below is the students ' overall view of their Web 2.0 tool awareness level in their library. The data is presented in Figure 4.3 below.

Level of awareness of Web 2.0 tools in the library
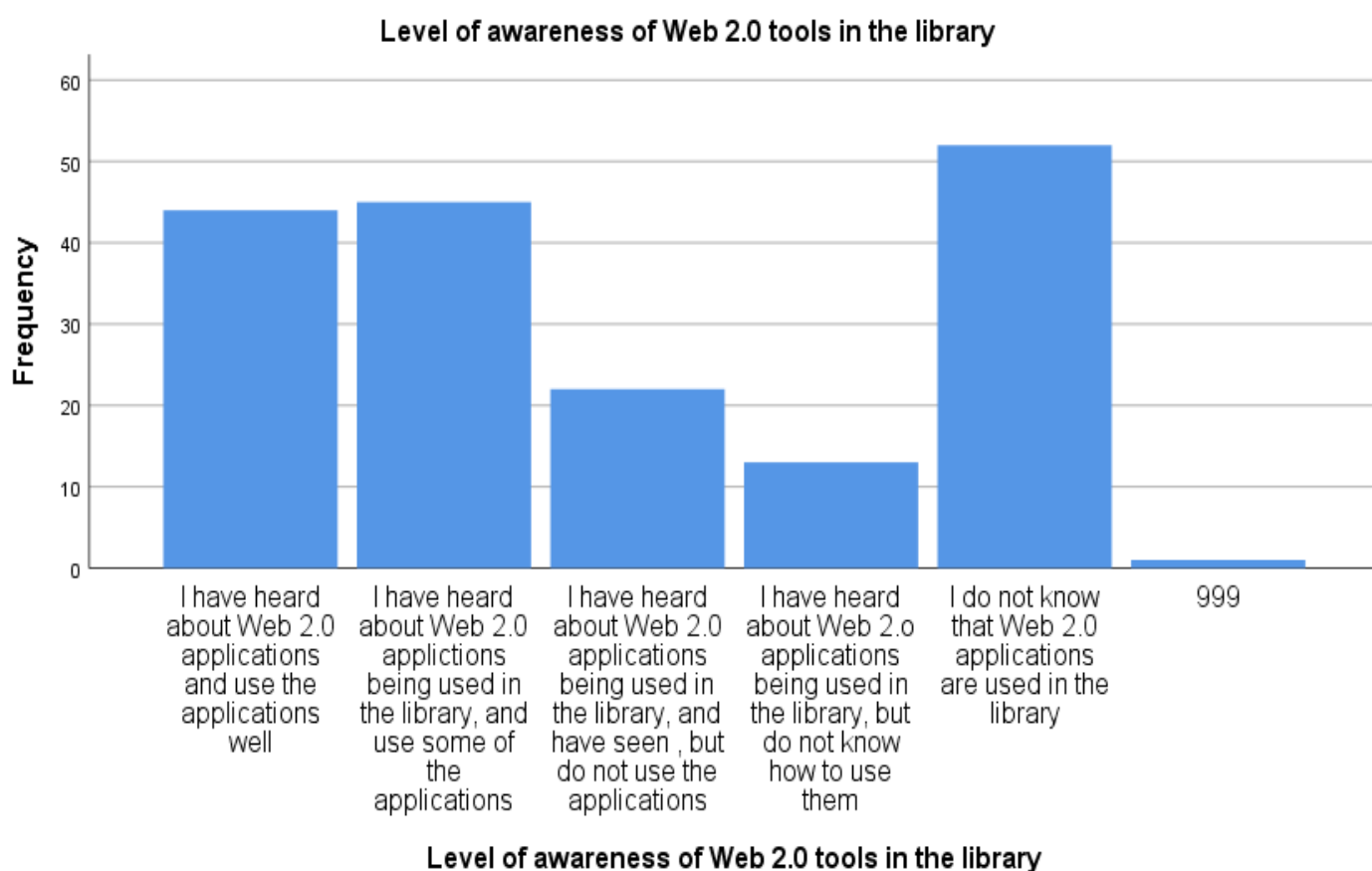
FIGURE 4. 3: STUDENTS' LEVEL OF AWARENESS OF WEB 2.0 TOOLS IN THE LIBRARY

Figure 4.3 above shows that 52 (29.4 %) of respondents did not know that Web 2.0 tools were used within the Library; 45 (25.4%) students had heard about Web 2.0 applications being used in the library and used some of them, and 44 (24.9%) used the applications well.

4.5.2.2 Level of awareness of Web 2.0 tools among librarians

The findings of the level of awareness of Web 2.0 tools among librarians was investigated under the awareness of Web 2.0 tools among librarians in section 4.5.1.2

4.6 Level of use of Web 2.0 tools by students and librarians

The second objective of the study was to investigate the level of usage of Web 2.0 tools by students and librarians. The following subthemes addressed this objective: frequency of use of Web 2.0 tools by students and frequency of use of Web 2.0 tools by librarians.

4.6.1 Frequency of use of Web 2.0 tools by students

This question was addressed in two parts. The first part of the questionnaire sought to investigate how often (the frequency) the students used a particular Web 2.0 tool within a specified period of time, which was either, once a week, twice a week or never. Question 8 asked, "Which of the following Web 2.0 tools do you use?" Students were required to tick the Web 2.0 tool (s) they used and the frequency of each tool in terms of how many times per week they utilised it. Tables 4.9 to 4.13 below present the findings.

TABLE 4. 9: Frequency of Facebook usage

N=177

Facebook

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	28	15.8	16.8	16.8
	once a week	46	26.0	27.5	44.3
	twice a week	93	52.5	55.7	100.0
	Total	167	94.4	100.0	
Missing	System	10	5.6		
Total		177	100.0		

As seen in Table 4.9 above ten respondents did not answer the question. Ninety-three (52.5%) respondents used Facebook twice a week; some respondents added a note at the bottom of the

question and indicated that they used it more than twice a week. Forty-six (46 (26%)) respondents used Facebook once a week.

TABLE 4. 10: Frequency of Instagram usage

Instagram

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	41	23.2	24.6	24.6
	Once a week	43	24.3	25.7	50.3
	twice a week	83	46.9	49.7	100.0
	Total	167	94.4	100.0	
Missing	System	10	5.6		
Total		177	100.0		

As seen in Table 4.10 above ten respondents did not answer the question and 83 (46.9%) respondents used Instagram twice a week. A total of 43 (24.3%) respondents used Instagram once a week, and 41 (23.2%) never used Instagram.

TABLE 4. 11: Frequency of Blog usage

Blog

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	139	78.5	83.7	83.7
	once a week	12	6.8	7.2	91.0
	twice a week	15	8.5	9.0	100.0
	Total	166	93.8	100.0	
Missing	System	11	6.2		
Total		177	100.0		

As seen in Table 4.11 above the majority of 139 (78.5%) of the students did not use blogs, and a mere 15 (8.5%) used blogs twice a week, three percent more than those who used it once a week.

TABLE 4. 12: Frequency of Twitter usage

Twitter

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	91	51.4	54.5	54.5
	once a week	31	17.5	18.6	73.1
	twice a week	45	25.4	26.9	100.0
	Total	167	94.4	100.0	
Missing	System	10	5.6		
Total		177	100.0		

Table 4.12 indicates that 91(51.4%) of students never used Twitter, and 45 (25.4%) of students used Twitter twice a week. While 31 (17.5%) used Twitter once a week.

TABLE 4. 13: Frequency of Instant Messaging usage

Instant messaging

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	never	73	41.2	43.7	43.7
	once a week	31	17.5	18.6	62.3
	twice a week	63	35.6	37.7	100.0
	Total	167	94.4	100.0	
Missing	System	10	5.6		
Total		177	100.0		

Table 4.13 shows that 73 (41.2%) of students never used Instant Messaging, which is just ten percent more of students who indicated that they used Instant Messaging twice a week. A total of 31 (17.5%) students used Instant Messaging once a week.

4.6.2 Increased frequency of use of Web 2.0 tools through promotion

In one of the open-ended questions, respondents were asked, "How can we encourage the use of Web 2.0 resources in the library by library users?" This was intended to investigate how to increase the frequency of use of Web 2.0 tools. The answers are shown in Table 4.14 below.

TABLE 4. 14: Responses on the promotion of Web 2.0 tools

Number of Respondents	Response
44	"Providing awareness to students on how to Web 2.0 tools work".
52	"Create awareness".
66	"Awareness and education because some people still do not know how to use Web 2.0 tools".
68	"Create an app that connect the students together and promote studying, through addressing questions and sharing answers".
146	"Library users need to be trained in how to use the tools".
75	"I think they should place posters in the library and create a booth that are specially meant for the use of Web 2.0 tools usage in the library and it should clearly indicate where this booth can be found".
82	"Awareness can be created through the promoting the use of Web 2.0 tools and provide ways on how people can use the tools".
87	"Training should be offered on how to train users on how to use these tools through setting up of a committee and awareness should be created as not everybody knows how to use these tools".
97	"Emphasis on the need to use Web 2.0 tools in the library due to convenience and fast exchange of information can be conveyed to users through platforms such as e-learning".
112	"Awareness needs to be raised on how to use Web 2.0 tools by either organising classes or through media".
172	"Initiate awareness campaign to encourage individuals to make sure of Web 2.0 applications".

The above Table shows responses received from students to question 9: "How can the usage of Web 2.0 tools be promoted among users of the library?" An overwhelming majority (172) of the respondents mentioned that awareness should be raised to promote the usage of Web 2.0 tools within the Library. Some (87) students indicated that some users could be illiterate and needed further guidance on how to use Web 2.0 tools. Training was another suggestion that many students (146) indicated. In addition to the responses given above from the students, all responses were categorised into the following themes from the responses to open-ended question 9 as listed below:

- Raising of Awareness

- Training on how to use Web 2.0 tools.

- I do not know how to use Web 2.0 tools

- Web 2.0 education should be integrated into first-year compulsory courses

The majority of students (seven out of eleven students) who answered this open-ended question, emphasised a need for raising awareness to promote Web 2.0 tools.

4.6.3 Frequency of use of Web 2.0 tools among librarians

Library staff were also asked to mention the Web 2.0 tools they used the most. They highlighted the following tools (listed from the most used to the least used):

- Facebook

- Twitter

- Blogs

- WhatsApp

These tools mentioned above were used for personal reasons and not within the Library. Out of the ten librarians interviewed, one (NL10) responded that he/she did not use any Web 2.0 tools at all.

4.7 Influence of the use of Web 2.0 tools on library services

The third objective was to establish the influence of the use of Web 2.0 tools on library services. This objective was addressed by the following themes: user-friendliness of Web 2.0 tools in the library and the effect of the use of Web 2.0 tools on the number of users.

4.7.1 User-friendliness of Web 2.0 tools

This part of the questionnaire sought to investigate the influences of the use of Web 2.0 tools on library services. Respondents were asked if their use of Web 2.0 tools had made the library more user-friendly. In the second part of the question, respondents were asked to explain why they selected either yes or no in the previous question. The data is presented in Table 4.15 below.

TABLE 4. 15: User-friendliness of the library due to the use of Web 2.0 tools in the library

Is library user-friendly with use of web2.0 tools

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	89	50.3	56.7	56.7
	No	68	38.4	43.3	100.0
	Total	157	88.7	100.0	
Missing	System	20	11.3		
Total		177	100.0		

As indicated in Table 4.15 above, 89 (50.3%) of respondents found the Library to be more user-friendly. A total of 68 (38.4 %) respondents found the Library not so user-friendly with the use of the Web 2.0 tools and 4 (2.3%) of respondents did not answer the question.

As a follow-up question, (part of Question 10 on the influence of Web 2.0 tools) students were asked to explain their answer further on whether they thought the use of Web 2.0 tools had made the library more user-friendly. The explanations given are reflected in Table 4.16 below:

TABLE 4. 16 : Web 2.0 usage and user-friendliness in the library

Number of Respondents	Response
10	"Yes-Users can communicate and share information".
165	"No- I do not know on Web 2.0".
146	"Yes-You can have access to library materials using your own laptop or smartphone".
167	"Yes- Because they can access information through Web 2.0 tools".
171	"No-most of the users are not familiar with the application".
176	"Yes-Web 2.0 tools are very powerful two way based tool, e.g. a blog at NUST library. Users have a platform where we can enter our thought, ideas, suggestion and comments thus giving us or creating a positive, conducive atmosphere".

As indicated above in Table 4.16, only 6 respondents answered the follow-up question to question 10. Four students gave positive responses, indicating that the Web 2.0 tools usage had made the Library user-friendly.

4.7.2 Effect of the use of Web 2.0 tools on the number of users

Librarians were asked if the use of Web 2.0 tools in the library had increased the number of patrons that the Library served. UL2, UL5, NL3, UL1 mentioned that they did not see library users face-to-face and that they couldn't give any feedback. UL3, UL4, NL2, NL1, NL4, and NL5 mentioned that the number of patrons had increased in terms of queries received via email, compared to the usual walk-in patrons. They mentioned that this could be so as each Library catered for students within other regional centers as well. NL1, NL2, NL4, and UL3 whose task was to provide staff and students with research support mentioned that students corresponded more online. One such platform was *ask-a-librarian*, where students could pose

their queries via the Library Web site and got feedback within a short period of time. Another indication that students were using Web 2.0 tools and at high rate, was through the use of the booking of a study room initiative introduced within the NUL as explained by one librarian (NL4). The librarian mentioned that since students could book rooms online, using their mobile phones or from their laptops, the new initiative had drawn many users to the Library. The booking of study rooms remotely has encouraged students to walk in with the confidence knowing that they have a guaranteed study room they can use, instead of getting tired of waiting to book a room in the Library, and leaving the Library disappointed.

4.8 Challenges in adopting Web 2.0 tools

The fourth objective of the study aimed to find out what factors were hindering the adoption of Web 2.0 tools within the NUL and UNL. This objective was addressed by the following theme: factors hindering the adoption of Web 2.0 tools among students and librarians.

4.8.1 Factors hindering the adoption of Web 2.0 tools among students

The fourth research objective sought to determine the factors hindering the adoption of Web 2.0 tools by students. The data was collected through interviews. This section of the questionnaire was divided into three parts, which consisted of questions 13-15. Firstly, in question 13, students were asked to identify the constraints or barriers, which they faced in adopting new modes of technology. A list of possible barriers were identified and students were asked to tick within the box or boxes that best explained what they identified as hindering factors. The options given were time constraints, comfort with current/usual mode of learning, lack of interest, lack of guidance or perceived irrelevancy. Students were also given the option of ticking other, whereby they could freely write what other difficulties they faced when adopting new modes of technology. Tables 4.17 - 4.21 below represent the findings.

TABLE 4. 17: Time constraints

N=177

Time constraints

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	63	35.6	36.8	36.8
	No	108	61.0	63.2	100.0
	Total	171	96.6	100.0	
Missing	System	6	3.4		
Total		177	100.0		

Majority 108 (61%) of the students did not think that time was a hindering factor when adopting

new modes of technology. However, 63 (35.6%) responded that it was a difficulty which they

encountered.

TABLE 4. 18: Comfort with current/usual mode of learning

N=177

Comfort with current/usual mode of learning

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	44	24.9	25.9	25.9
	No	126	71.2	74.1	100.0
	Total	170	96.0	100.0	
Missing	System	7	4.0		
Total		177	100.0		

The minority (24.9%) of respondents suggested that it was a challenge to be comfortable with

existing learning modes, while 126 (71.2%) of respondents felt it was not. Usual modes of

learning in this respect refer to the traditional modes of learning, without using technology.

TABLE 4. 19: Lack of interest

N=177

Lack of interest

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	46	26.0	27.1	27.1
	No	124	70.1	72.9	100.0
	Total	170	96.0	100.0	
Missing	System	7	4.0		
Total		177	100.0		

Table 4.19 above shows that 124 (70.1%) students were in disagreement that lack of interest in adopting a new mode of technology could be considered a difficulty, but 46 (26%) said that lack of interest could be considered a difficulty in adopting a new mode of technology.

TABLE 4. 20: Lack of guidance

N=177

Lack of guidance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	76	42.9	44.7	44.7
	No	94	53.1	55.3	100.0
	Total	170	96.0	100.0	
Missing	System	7	4.0		
Total		177	100.0		

Table 4.20 shows that 76 (42.9%) of students responded that the lack of guidance may be a difficulty encountered when adopting new modes of technology, while 94 (53.1%) thought not.

TABLE 4. 21: Perceived irrelevancy

N=177

Perceived irrelevancy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	10	5.6	6.1	6.1
	No	153	86.4	93.9	100.0
	Total	163	92.1	100.0	
Missing	System	14	7.9		
Total		177	100.0		

Table 4.21 above indicates that 153 (86.4%) of students disagreed that one of the difficulties to adopt new modes of technology is perceived irrelevancy, this is an extremely high number indeed. While only 10 (5.6%) of the students agreed that perceived irrelevancy is a difficulty when adopting new modes of technology.

Question 14 of the questionnaire asked students what barriers they thought may hinder the adoption of Web 2.0 tools. Out of 177 respondents, only 89 (50.3%) of students answered this question, their responses were grouped into the following categories. Students felt that the following barriers hindered their adoption of Web 2.0 tools in particular:

1. Lack of understanding

2. Technical problems

3. Weak and poor Internet access

Question 15 of the questionnaire asked students what major difficulties have they personally encountered when using Web 2.0 tools. Out of 177 respondents, 92 (52%) of students answered this question. Their responses can be grouped into the following categories:

1. Slow network

2. Technical difficulties

4.8.2 Factors hindering the adoption of Web 2.0 tools by librarians

The fourth research objective sought to determine the factors hindering the adoption of Web 2.0 tools by librarians. The qualitative data was collected through interviews. The following were the responses from the interviews:

- "It can be used for professional and personal development" (NL2).

- "The library can be marketed effectively" (UL3).

- "Interact with customers through customer needs assessment and satisfaction" (NL4).

- "To improve communication between librarian and user" (NL3).

- "The world is changing and we should be able to change with it" (UL2).

- "The field of librarianship is changing and we need to catch up with these technological shifts to give effective services" (UL4).

- "It is high time we move with what our fellow libraries are doing, we cannot be left behind" (NL5).

- "There needs to be an improvement in library service delivery, the library needs to reach and serve the patrons wherever they are. Distance should not be a factor. With using Web 2.0 tools this can be achieved" (UL1).

- "The library can be marketed much better" (UL2).

- "The youth can be reached easily and need to get to know the library since the youth are ones that seem to embrace technology better" (UL5).

It can be observed from the answers given above that the implementation of Web 2.0 tools was seen as keeping up with trends in terms of the latest form of service provision through Web 2.0

technology within the academic library setting. In turn, marketing the library and communicating with its users to give optimum service delivery.

4.9 Recommendations by students and librarians

The fifth objective sought to propose recommendations for the adoption of Web 2.0 tools in academic libraries by the student and librarians. Below are the results.

4.9.1 Acceptance of Web 2.0 tools

In Question 11 of the questionnaire, students were asked, "What must be done to increase the acceptance of Web 2.0 within the library?" This question was meant to establish what the library can do to boost the adoption of Web 2.0 tools in their libraries. The students gave the following recommendations:

Tables 4.22- 4.25 presents the data.

TABLE 4. 22: the library should provide blogs
N=177

Provide library blogs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	74	41.8	43.0	43.0
	Agree	55	31.1	32.0	75.0
	Unsure	35	19.8	20.3	95.3
	Disagree	4	2.3	2.3	97.7
	Strongly Disagree	4	2.3	2.3	100.0
	Total	172	97.2	100.0	
Missing	System	5	2.8		
Total		177	100.0		

As shown in Table 4.22, 74 (41.8%) students indicated that the library should provide blogs, 4 (2.3%) respondents disagreed that the library should provide blogs, and 4 (2.3%) strongly disagree.

TABLE 4. 23: the library should participate in social networking with users
N=177

The library should participate in social networking with users

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	67	37.9	39.0	39.0
	Agree	66	37.3	38.4	77.3
	Unsure	24	13.6	14.0	91.3
	Disagree	11	6.2	6.4	97.7
	Strongly Disagree	4	2.3	2.3	100.0
	Total	172	97.2	100.0	
Missing	System	5	2.8		
Total		177	100.0		

Of the 172 (97.2%) of students that answered question 11, the majority 67 (37.9%)) strongly agreed that the Library should participate in social networking with users; and 66 (37.3%) of the students agreed. Students that were unsure about the Library's participation in social networking were 24 (13.6%), while 11 (6.2%) disagreed and 4 (2.3%) strongly disagreed.

TABLE 4. 24: the library should use instant messaging to collaborate with users

N=177

The library should use instant messaging to collaborate with users

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	55	31.1	32.4	32.4
	Agree	65	36.7	38.2	70.6
	Unsure	41	23.2	24.1	94.7
	Disagree	6	3.4	3.5	98.2
	Strongly Disagree	3	1.7	1.8	100.0
	Total	170	96.0	100.0	
Missing	System	7	4.0		
Total		177	100.0		

Table 4.24 above shows that 65 (36.7%) of students thought the Library should use Instant Messaging to collaborate with them. This number is close to 55 (31.1%) of students that strongly agreed. Only 3 (1.7%) students strongly disagreed, while 6 (3.4%) responded negatively to this notion as well. Out of the 177 respondents, 170 answered the question.

TABLE 4. 25 : Benefits of Web 2.0 to a library and its users

Number of Respondents	Response
11	Help people communicate more efficiently Help people to be surrounded by technology
50	Makes communication easier Helps us find information in the library easily
52	I am not familiar with Web 2.0 but, I suggest that students will be able to share important information with their courses
56	Users are able to access information anytime The library can promote its services
65	Not familiar with Web 2.0 tools being used in the library
71	It can help people connect on different platforms with no limitations

Respondents were asked how the Library and its users could profit from Web 2.0 resources. Note that this question was made up of two parts. **Part 1** how can Web 2.0 tools be beneficial for the Library, and **Part 2** a follow-up question which asked users to explain the benefits of Web 2.0. Unfortunately, very few students picked this up and commented on one or the other. Table 4.25 above, reflects some of the responses received. The following themes were identified from question 12 after coding all answers from those 177 that responded, the answers students gave could be grouped into the following categories:

- I do not know how to use the Web 2.0 tools
- Connectivity - users can be able to connect with one another
- Information can be shared from wherever they are

4.9.2 Overall recommendations

Both students and librarians were asked what they recommend the Library to do to improve the adoption of Web 2.0 tools. Out of the 177 respondents, only 85 responded to the question.
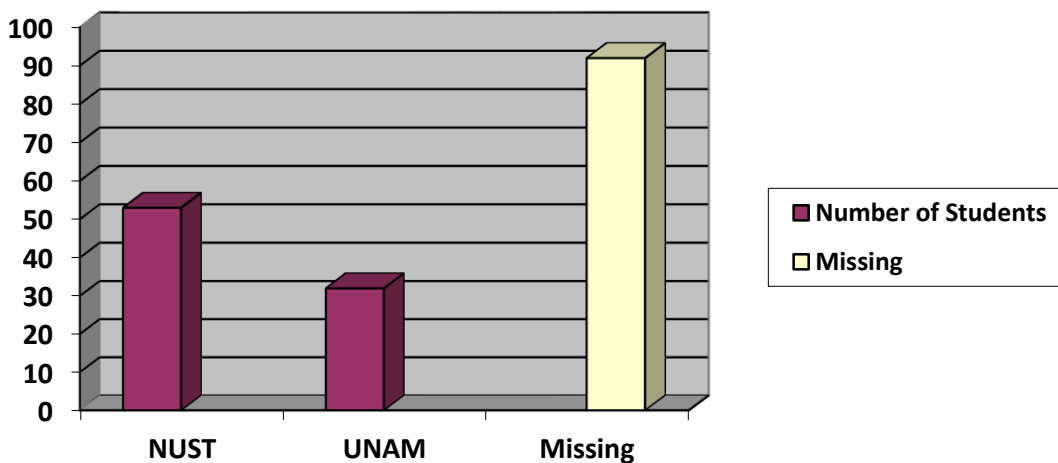
FIGURE 4. 4: RECOMMENDATIONS BY STUDENTS AND LIBRARIANS

Figure 4.4 above represents the number of students who actually gave their recommendations on how to improve the adoption of Web 2.0 tools within the Library. Fifty-three 53(62.3%) of NL students gave their recommendations, while 32 (37.6%) of the UL students gave theirs. Ninety-two (52%) of the students did not give their recommendations, hence the missing bar indicated on the graph.

Below are some of the recommendations given by the students.

- Training programmes should be introduced to instruct students how to use these new technologies as with better understanding, they could use the know-how to actually attempt to use the tools.

- Library Internet connectivity is upgraded, as pages load extremely slowly, preventing them from accessing certain Web 2.0 tools. This creates frustrations and students eventually lose interest in what they were initially looking for.

- About 25% of the students mentioned that Web 2.0 tools be included as a compulsory course at the beginning of the year for first years.

- Students should be provided with information on how to use these tools and their importance of using them.

- Training-makes it easier for students to follow and use, make is short and straight to the point.

- Faster Internet connectivity needed

- "Faster Internet is needed and library staff need to boost the Wifi connections for Web 2.0 tools to be efficient".

- "Guidance and awareness on Web 2.0 must be made".

- "Awareness should be created to library users".

- Lack of training. Libraries should be given training on use of Web 2.0.

- More awareness should be done.

- Students should be taught how to use these things.

- Creating public awareness on this –informing those in the community how to use it. What it is about etc.

- It would help if the public is told about the introduction of Web 2.0 tools and how to make use of the tools.

- More training is needed for the users for them to know the advantages of this.

- Internet signals need to be strengthened.

Some of the recommendations from librarians are as follows:

- "A lack of funds should not restrict the application of Web 2.0 technology in libraries" (NL1)

- "Improve unreliable power and Internet connection (sometimes)". (NL2)

- "What do we want to achieve to improve services? By looking at your situation a study needs to be done on what application would suit the target population". (NL3)

- "We need to explore the benefits Web 2.0 presents to our clients and the library itself as a knowledge base". (UL3)

- "Training opportunities should be made available for staff to mold their skills on how to use Web 2.0 tools". (UL1)

4.10. Summary

This chapter presented the results of the study. The quantitative data from the questionnaires were analysed in two parts as they contained both close-ended (quantitative data) and open-ended questions (qualitative data). First, the quantitative data from the questionnaires were cleaned and analysed through SPSS and presented through graphs and tables. From the 200 questionnaires that were completed by students, only 177 were fully completed and analysed. Secondly, the qualitative data was analysed by assigning codes to the responses, and identifying common characteristics in the responses and creating themes. This process of qualitative data analysis is known as thematic content analysis. The qualitative data collected from the interviews with the library staff was analysed using thematic content analysis and was coded and organised according to themes. The results revealed that the most popular Web 2.0 tool used among the students was Facebook. Among the library staff, the results showed that they were aware of what Web 2.0 tools were, and indicated that they used Facebook more than any other Web 2.0 tool.

CHAPTER 5

DISCUSSION OF FINDINGS

5.1 Introduction

The purpose of this chapter is to provide a description and an interpretation of the findings, in light of the research objectives and what is already known on the topic from the literature (Welman, Kruger & Mitchell, 2005). The nature of the chapter is further explained by Bui (2009), who mentions that this chapter should include a summary of the major findings accompanied by a brief interpretation. A discussion of findings seeks to find patterns among the data and examines whether literature corresponds with or contradicts interpretations.

This chapter discusses the findings within the same key issues under which data was presented as follows:

- Awareness of Web 2.0 tools among students and librarians

- Level of use of Web 2.0 tools by students and librarians

- Influence of Web 2.0 tools in library service delivery

- Challenges in adopting Web 2.0 tools

5.2 Awareness of Web 2.0 tools among students and librarians

The first objective of this study was aimed at investigating the awareness among students and staff members at the NUL and UNL libraries. This objective was addressed by the following sub-themes:

- Awareness of Web 2.0 tools among students
- Awareness of Web 2.0 tools among librarians

5.2.1. Awareness of Web 2.0 tools among students

Within the student groups, the study found that students only used Web 2.0 tools with which they were more familiar with, because they were knowledgeable about how to use them. The study showed that 162 (91.5%) of the students knew how to use Facebook, followed by Instagram with 126 (75.4%). One potential explanation could be that students used Web 2.0 tools such as Instagram and Facebook to keep in touch with friends and peers daily. The high use of Facebook and Instagram could be related to the age range of the students, which was 18-24 years. Students possibly could have used certain Web 2.0 tools more than others, as they could have learned the skills to use them through self-practice and from fellow classmates In support of the above, Eze (2016) findings on awareness of Web 2.0 tools by University of Nigeria Nsukka students, revealed that they (students) "function as the trend-setters, closely watching for new gadgets and quickly incorporating them into their lives. At the beginning of the boom, they are likely to master the new information technology very quickly" p. 15

. Another explanation would be that students are looking for social media presence, by attempting to get a high number of followers on social networks. Therefore, using platforms that reflect such followings. This age range of the students is considered to be under the category of digital natives born within the digital era as stated by Nikou, Mezei, and Brannback (2018), who prefer the use of social media than traditional media not only in their personal lives but also in their professional environment, such as Universities.

Students' level of awareness of Web 2.0 tools was further investigated when they were asked to indicate their level of proficiency in Web 2.0 tools within NUL and UNL. The findings revealed that students were aware of Web 2.0 tools, but could not utilise them due to various factors. The principle of DOI can be used to explain why students did not use or adopt certain Web 2.0 tools. The DOI theory proposed by Rogers describes that four elements influence the

spread of a new idea/innovation, namely: the innovation, communication channels, time and the social system. The innovation, defined as 'an idea, practice, or object that is perceived as new by an individual or other unit of adoption' (Rogers 1995, p. 12), has five attributes, which affect its rate of adoption (Rogers, 2003). One of these attributes is complexity, which is the extent to which an individual perceives the innovation to be difficult to understand and use. This part of the theory can possibly be related to the 45 (25.4 %) of students that were aware of the Web 2.0 tools but had not used them because of complexity and possible lack of understanding. The trialability phase of the DOI theory can be associated with the 22 (12.4%) of students that were aware of the tools, but only used some of them, this part of the theory describes how an innovation may be tested before full-scale use.

5.2.2 Awareness of Web 2.0 tools by librarians

The findings showed that the majority of staff members were aware of what Web 2.0 tools were and also mentioned that LinkedIn was one tool that they often used. The findings are in agreement with a study done by Bart (2010) on social media usage among college Faculty. It was found that 80% of the staff had at least one social networking account. They used it for professional purposes. The library staff of both institutions mentioned that they knew about other Web 2.0 tools, they mentioned that LinkedIn was one that they used often within their working environment. In addition to WhatsApp, which they used to communicate among friends and family. The current findings suggest that students were more aware of Web 2.0 tools and this finding could be related to the fact that students grew up within the digital age and were more comfortable using these tools. Librarians, on the other hand, could list a variety of Web 2.0 tools, therefore, indicating their awareness. Librarians (especially the older ones) were regarded as "digital immigrants" because they were reluctant and sceptical to use new technologies. Overall these findings are following findings reported by Ayooluwa (2016), who

revealed that more students (up to 87.3%) than academics (up to 80 %) had used Web 2.0 technologies for more than three years.

It can be inferred that Web 2.0 tools are more common among students than academics in the surveyed Universities. This could be related to the fact that students easily interacted with technologies because they grew up using them. It was further highlighted that academics sometimes have to be trained to use these technologies, therefore their use of Web 2.0 tools may not match that of students. Another explanation could be that librarians make traditional library services their comfort zone and may be resistant to embrace change.

5.3 Level of use of Web 2.0 tools by students and librarians

The second objective was: "To establish the level of use of Web 2.0 tools by students and librarians". This objective was addressed by the following sub-themes:

- Frequency of use of Web 2.0 tools by students

- Frequency of use of Web 2.0 tools by librarians

- Increased frequency of use of Web 2.0 tools through promotion

5.3.1 Frequency of use of Web 2.0 tools by students

The frequency of use of Web 2.0 tools refers to the number of times that a particular Web 2.0 tool was used by the respondent within a week (as indicated on the questionnaire). The findings indicated that the student population used certain Web 2.0 tools more frequently than others, with Facebook once again being the tool that was used more than twice a week and by the majority of students. This is in support of Ntaka (2017), who states "… Facebook is the most popular and most widely used social networking site nowadays and, according to Statista, in April 2017 it ranked first of all the social networking sites with more than one billion registered accounts and it currently has 1.97 billion monthly active users" (p.3).

The findings are in line with a study conducted by Eze (2016), which revealed that the most frequently used Web 2.0 tool was Facebook, followed by YouTube and Wikis. The possible reasons why Facebook and Instagram were commonly used is that they were mostly used to connect with friends/family, acquaintances / meet people. Besides, the findings of the study may be correlated with the fact that most students are considered virtual natives and have been raised in the digital age.

5.3.2 Frequency of use of Web 2.0 tools by librarians

Library staff indicated that they were not frequent users of Web 2.0 tools offered within their libraries. They continued to mention that they did not actively participate in existing Web 2.0 tools within the library, as they were unsure how to use them. This finding is in line with a study done by Pacheco, Kuhn, and Grant (2010), whose findings revealed low usage and acceptability which was mostly found among the older generation of librarians. Contrary to this study's findings, Aharony (2009) discovered in his study of Israeli librarians that librarians may have differed in their use and awareness of Web 2.0 tools based on their individual personalities (resistance to change).

The library staff can be associated with the category of late adopters within the DOI theory, who make changes only after they see there has been a success with the change and only if a change is inevitable (Rogers, 2003). Library staff that did not work hand in hand with students and in particular (within the acquisitions department) mentioned that they did not deal with Web 2.0 tools other than LinkedIn, and the ones they used for socialising with friends and family. Based on the study at hand, it is, however, inconclusive to say that digital natives within the NUST and UNAM libraries utilised Web 2.0 technology more than the digital immigrants, as a lot of other factors play a role in their utilisation. You may find that a librarian partaking in the study was born in the digital era and was not so keen on using Web 2.0 tools or a digital

immigrant that was keen on learning how to use Web 2.0 tools and the benefits it offers to the library.

5.3.3 Increased frequency of use of Web 2.0 tools through promotion

Students were asked in a follow-up open-ended question on how the usage of Web 2.0 tools can be promoted among users in the library. The majority of the students 172 (97.1%) who answered this question mentioned that awareness programmes should be set up during the academic year, to enable the Library to promote and inform their users about what tools are available for students to use. Students indicated that in addition to promoting new/existing Web 2.0 tools that are known to its users, there is a great need for information awareness among users to increase the frequency of use.

Some library staff stated that promoting Web 2.0 tools and Internet applications should be encouraged by hosting workshops and short seminars during the course of the academic year.

In addition to that, open days were recommended to be part of the library activities whereby training could be provided and debate concerns about Web 2.0 tools. In addition to the above, the library staff also emphasised that if users are not able to use Web 2.0 tools, there is no use in implementing them within the library.

Similarly, in a study done by Okite-Amughoro (2017), concerning students' responses on how to optimise Web 2.0 tools, the views of 120 (46.8%) of the respondents revealed the need for adequate staff training that would enable them to train students on how to use these Web 2.0 tools. Respondents in the above study mentioned that not everyone used the Web 2.0 tools offered in the library setting. As a result, training on how to use Web 2.0 tools would be beneficial to them (Okite-Amughoro, 2017).

The study found that students were indeed willing to learn and adopt new Web 2.0 tools that would aid in their academic work, hence requesting training and marketing programmes to be put in place to enable them to familiarise themselves with existing Web 2.0 tools offered by the Libraries.

5.4 Influence of Web 2.0 tools on library services

The third objective that the study sought to investigate was: "To establish the influence of the use of Web 2.0 tools on library services". This part of the study sought to investigate to what extent has the library gone to communicate and "attract" users to the library through the use of Web 2.0 tools. The following are the sub-themes derived from the objective above:

- User-friendliness of the library through the use of Web 2.0 tools

- Acceptance of Web 2.0 tools in the library

5.4.1 User-friendliness of the library through the use of Web 2.0 Tools

The study sought to investigate if the library had become more user-friendly through the introduction of Web 2.0 tools. This question was divided into two parts. Part 1 was a closed-ended question which asked, whether the use of Web 2.0 tools made the library more user-friendly, and in that sense more attractive? The results showed that 89 (50.3%) of students felt that Web 2.0 tools in their respective libraries were user-friendly and 68 (38.4%) said no, the rest did not answer the question. Half of the students mentioned that the use of Web 2.0 tools had created a user-friendly environment. This could be related to the convenience of students being able to access the library resources off-campus, as well as not having to be physically present in the Library to carry out tasks. Part 2 of the open-ended question asked respondents to explain the answer they gave in part 1 of the question. This objective was a bit of a challenge to investigate due to the respondents not being able to answer part 2 of the question. This can be related to the awareness of Web 2.0 tools. When students are not aware of a particular Web

2.0 tool and utilised it frequently, one will not be able to know if the library environment has been influenced positively by the presence of the Web 2.0 tool. In a study carried out by Tripathi and Kumar (2010), they concluded that the ease of use of Web 2.0 tools by library users is very important, as it attracts more users and user's information needs can be met. If libraries do not use Web 2.0 tools to enhance services, they are most likely to be ignored by users (Tripathi & Kumar, 2010).

From the 6 (3.7%) students that answered part 2 of the question, 4 (2.5%) gave positive feedback mentioning that because of Web 2.0 tools being used within the library, the information could be shared easily and that library materials could be accessed via their laptops. The other 2 (1.2%) on the other hand, did not know what Web 2.0 tools were and did not know how to use them.

5.4.2 Effect of the use of Web 2.0 tools on the number of users

Librarians were asked if the use of Web 2.0 tools in the library had increased the number of patrons that the library served. UL2, UL5, NL3, UL1 mentioned that they were in a department that did not have direct contact with students and that they could not give an answer. UL3, UL4, NL2, NL1, NL4, and NL5 mentioned that the number of patrons were measured by assessing the number of patrons who had sent queries via email as well as through usage statistics provided from the use of electronic databases offered by the library. Ncgobo (2016) similarly stated in her findings, the usefulness of Web 2.0 technologies is measured through user statistics, tracking users' responses to posts, surveys, and reports. Library staff mentioned that queries received via email increased drastically compared to the usual walk-in patrons who came to seek help from their offices.

5.5 Challenges in adopting Web 2.0 tools

The fourth objective was "To investigate the factors, which hinder the adoption of Web 2.0 tools in academic libraries". This objective was addressed by the following sub-themes:

- Factors hindering the adoption of Web 2.0 tools by students
- Factors hindering the adoption of Web 2.0 tools by librarians

5.5.1 Factors hindering the adoption of Web 2.0 tools by students

Certain hindrances can interfere with how a particular tool or innovation is adopted. In this study, a lack of guidance came out as the most hindering factor for students, where 76 (42.9 %) of students agreed to this. The lack of guidance could be related to the lack of awareness of certain Web 2.0 tools. In a similar study, a conclusion was reached when it was revealed in a study by Obura and Ssekitto (2015) on "Web 2.0 application in Teaching and Learning" the Library services department needs to take the lead in adopting these technologies to aid teaching and learning, in turn, give students guidance on how to access Web 2.0 tools. The students within the study felt that they were not given enough guidance resulting in a lack of awareness about certain Web 2.0 tools and how to use them. Similarly, in a study done by Okite-Amughoro (2017), students agreed that training of staff and orientation of users would encourage students to use Web 2.0 tools from the guidance provided by library staff.

Students were further asked to explain what barriers may hinder the adoption of Web 2.0 tools. Their responses ranged from lack of poor Internet connectivity and that not all students had access to the Internet outside of the campus where wireless Internet is offered. The findings of this study correspond with William's (2018) arguments that the University of Limpopo, staff, and students were limited to the use of social media during office working hours, and were only accessible from 08h00-17h00, therefore limiting Internet connectivity. These findings concur with international and national research by the Taylor and Francis Group (2014) that

found that Internet connectivity and technological infrastructure may hinder access and the use of social media. Regarding poor connectivity, this Namibian study is in agreement with a study done by Gaffar, Singh, and Thomas (2011) found that with poor infrastructure, poor Internet bandwidth, poor technical support as well as the high cost of the Internet connectivity, are the major barriers that inhibit the use of Web 2.0 tools in teaching and learning at the Caribbean University.

The study also found that lack of accessibility to Web 2.0 tools was a major constraint. Students also mentioned that too many passwords were required. In addition to that, the study found that user friendliness of Web 2.0 tools is a concept that needs to be looked at once certain Web 2.0 tools are to be introduced with the hope of students adopting them. Students do not want to have to struggle when using specific tools, by having to remember passwords, downloading apps onto mobile devices that require data or even updating certain tools to enable them to use them effectively. Students also mentioned as much as they are aware of new Web 2.0 tools, it is difficult for them to adopt something they are unfamiliar with and which has not been promoted and training offered on how to utilise such a tool. Respondents also mentioned that they preferred to use tools that they were familiar with and which were user-friendly. Similarly, a study done by Ayooluwa (2016) concluded that that ease of use is more likely to have a significant influence on the use of Web 2.0 technologies.

5.5.2 Factors hindering the adoption of Web 2.0 tools by librarians

The library staff were also asked about the challenges they faced when using Web 2.0 tools. The staff mentioned that certain Web pages (social media) were prohibited from being accessed within the library. Another factor was that the slow Internet discouraged them from using certain social media pages even when access was granted. They also pointed out that they were not familiar with using newly introduced technologies within the library. Some library staff

even recommended that before introducing such tools, training should be offered. Similarly, Ngcobo's (2016) study identified a lack of skills as a factor in staff's reluctance to accept the new way of engagement and participate on Web 2.0 platforms. The results indicate that it's not only students that needed training, but library staff as well so that they could educate and train students on how to use new and emerging technologies to give optimum service delivery. It should also be noted that challenges regarding the adoption of Web 2.0 tools are not only limited to NUST and UNAM libraries. Ngcobo (2016) noted that other academic libraries also faced various challenges when faced with adopting new technologies. Similarly, Kwanya, Stilwell, and Underwood (2012) reported that academic libraries in Kenya struggled with several challenges when Web 2.0 technologies were adopted, of which poor ICT infrastructure and lack of technical skills by librarians as well as the conservative culture and laggard nature in adopting new technology was reported. In addition to the above, Kwanya, Stilwell and Underwood's study revealed a lack of appreciation of Web 2.0 and their potential among the older users as well as an absence of supportive policies and financial resources to support Web 2.0 adoption.

5.6 Recommendations by students and librarians

Students were asked what they thought could be done to increase the acceptance of Web 2.0 tools in the library. This question was addressed to find out from the students what resources the Library can acquire/use, to increase the adoption of Web 2.0 tools. From the 172 (97.2%) of students that answered the question, the majority of them were in agreement that the NUL and UNL should participate in social networking with users. 65 (36.7%) of students think the library should use instant messaging to collaborate with them. This number is close to 55 (31.1%) of students that strongly agree to instant messaging being used by the library to interact with them. The responses of the students can be associated with the attitude phase within the

adoption of an innovation in the DOI theory by Rogers (2003). The attitude (assessment) phase involves raising awareness and interest of new innovation and interest and thereafter forming expectations of the technology. The above results were the ones that yielded the highest responses, and students agree that the library should initiate the use of social networking more as well as instant messaging. Furthermore, a follow-up open-ended question asked students how Web 2.0 tools can be beneficial to the library and those that use it? This question sought to investigate what Web 2.0 tools students would like the library to offer more, for them to use them and how the library, in turn, could benefit from them. Students who responded articulated that using the library's Web 2.0 resources to save them time to come to the library would be a resource they would use. They also stated that they would use a platform to promote the sharing of information. Students also stated that they would use resources that could be used at any time to offer library services. The above responses indicate that students are striving for Web 2.0 tools that can be accessed remotely and at any time. In agreement with how students felt about using Web 2.0 tools in the library, Ncgobo (2016) similarly had the same finding in her study. Ncgobo (2016) states in her study that, students felt they developed practical research skills through the use of Web 2.0 tools, which they require in an era where knowledge construction and dissemination make increasing use of online information networks.

5.6 Summary

This chapter focused on the findings of the study. The findings revealed that there was a level of awareness of Web 2.0 tools are among students and library staff within the NUST and UNAM libraries. The findings also suggested that there was a need for adequate training and information literacy programs on the use of Web 2.0 technology among staff and students. This can be assessed by the responses given by both staff and students. The findings also revealed that, as much as the respondents were aware of the Web 2.0 tools, they were not utilised to the same degree as their awareness. Facebook was revealed to be one of the Web 2.0 tools that

were used more frequently than others followed by Youtube. The library staff indicated that they were not frequent users of Web 2.0 tools offered within the library, but used LinkedIn to connect with other professionals. They, however, did mention that they used tools such as Facebook to socialise and connect with friends and family. In terms of the influence Web 2.0 tools on library services, the findings indicated, slightly more than half of the student population agreed that Web 2.0 tools introduction in the library has made it more user-friendly. Less than 38.4% disagreed, indicating that the library is not user-friendly with the use of Web 2.0 tools, whereas the rest of the respondents did not answer the question. The findings also identified that lack of facilities such as computers with Internet access, lack of skills, and lack of time were some of the barriers in the adoption of Web 2.0 tools. The next chapter presents a summary of findings, conclusions, and recommendations.

CHAPTER 6

Summary, Conclusions, and Recommendations

6.1 Introduction

This chapter presents the summary of findings, conclusions as well as recommendations of the study. As the main aim of the research was to build on the body of knowledge, the conclusions relate directly to the research objectives of the study. The significance of the conclusions is to enable the researcher to review significant findings, by highlighting the general significance (Babbie, 2016). The importance of stating recommendations is to stipulate what can be done to improve a practice/address a problem and what benefits it would bring and to whom shall benefit, as well as what resources would be required (Hart, 2009). This chapter presents the summary of findings and conclusions following the themes derived from the data analysis in Chapter 4.

6.2 Summary of Findings

The summary of findings is organised according to the thematic areas followed during the presentation of data of the investigation and the major findings that were derived from the previous chapter that focused on the discussion of findings. The thematic areas are as follows:

- Awareness of Web 2.0 tools among students and librarians

- Level of use of Web 2.0 tools by students and librarians

- Influence of Web 2.0 tools on the number of patrons the library serves

- Challenges in adopting Web 2.0 tools

6.2.1 Awareness of Web 2.0 tools by students and librarians

The above theme was derived from the objective "To investigate the awareness of Web 2.0 tools among students and staff". The study found that Web 2.0 tools that were most used by the student population included social networking applications (Facebook and Instagram) among other tools, despite being familiar with other listed tools (Twitter, Blogs and Instant Messaging). Library staff could mention most Web 2.0 tools and seemed familiar with them as they were able to list most of them and even expand a little on each tool, and this indicated a level of awareness/familiarity. The study found that the majority of the student populations from NUL and UNL, knew how to use Facebook and Instagram specifically well, this could be related to the age range of the students (18-24 years) that are considered digital natives, born in the digital era. The study also found that staff were well aware of most Web 2.0 tools and mentioned LinkedIn as one of the tools that they utilised often. The findings also depicted that, despite knowing about the majority of Web 2.0 tools, the majority of staff did not necessarily use them.

6.2.2 Frequency of use of Web 2.0 tools by staff and students

The above theme was derived from the objective: "To establish the level of use of Web 2.0 tools by students and librarians". The study found that students used Web 2.0 tools, which they were more familiar with, more frequently. Facebook was the tool, which the majority of the student population used more often than any other tool, as it was used as a platform to communicate with friends and family members and to meet new acquaintances. Students, however, were not asked how they use this tool within the library setting, but rather what tool they use daily and are familiar using. Students further explained that they would be willing to use other Web 2.0 tools, should training, and awareness progammes be provided to them, as

well as benefits of such tools explained to them. Students would not mind adopting new modes of technology, in terms of Web 2.0 tools usage, should it benefit their academic work.

The study found that staff members, when interviewed, listed the Web 2.0 tools, which they used, from most used to least used. Since staff members were already familiar with Web 2.0 tools, the most used tool was LinkedIn on a professional level and Facebook that was used to keep in touch with friends and family.

6.2.3 Influence of Web 2.0 tools on library service

The above theme was derived from the objective: "Establish the influence of the use of Web 2.0 tools on library services". Slightly half of the student population 89 (50.3%) mentioned that through the use of Web 2.0 tools the library has been more user-friendly to access both library resources. The rest of the respondents mentioned that the Library was not user-friendly in terms of the use of Web 2.0 tools within it.

Librarians indicated that since the introduction of the use of emails to address user queries, the number of patrons walking into the Library to seek assistance had decreased, and online queries increased. The introduction of such tools within the Library, was an indication that the convenience of accessing the Library resources remotely showed a level of user-friendliness to the student population; thus preventing them from physically walking into the library. The above findings indicated that through using Web 2.0 tools, the online queries had increased indicating a level of convenience to the student population of both libraries that resided remotely.

6.2.4 Challenges in adopting Web 2.0 tools

The above theme was derived from the objective: "To investigate the factors which hinder the adoption of Web 2.0 tools". Library staff were in full agreement with the benefits of adopting

Web 2.0 tools within their respective libraries and found it essential to keep up with trends in terms of the latest form of service provision. However, factors such as delayed Internet speed, poor Internet connectivity, a lack of familiarity with using newly introduced technology and limited use of certain social media pages, were amongst some of the hindering factors in fully adopting Web 2.0 tools by the librarians under investigation. Another factor, which was mentioned was the lack of awareness programmes, which would require training library staff on newly introduced Web 2.0 tools.

The students identified several factors that hindered the adoption of Web 2.0 tools within the Libraries. Such factors were lack of guidance on how to use Web 2.0 tools, which yielded the highest response, as well as poor Internet connectivity as some of the major factors that hindered the adoption of Web 2.0 tools. Students also revealed that it was a challenge to adopt a new Web 2.0 tool(s), which they were unfamiliar with, hence the need for training on awareness, which they felt was necessary. Accessibility was also mentioned as a hindering factor in the adoption of Web 2.0 tools by students. Students also indicated that too many passwords were required to access the tools available within the library. The study also found that students experienced that updating of apps on their mobile devices, from where they accessed some Web 2.0 tools was a barrier. As some apps required data to enable them to utilise such tools, and data needs to be purchased. These procedures were perceived as a hassle to students and hindered them from adopting some tools.

6.3 Conclusions

Guided by the objectives of the study, the following are the conclusions derived from the presentation of the data and discussion of findings.

6.3.1 Awareness of Web 2.0 tools among students and staff

The objective under which this theme was derived was "To establish the awareness of Web 2.0 tools among students and staff", which was done by assessing their familiarity with specific Web 2.0 tools. The study concludes that the student population utilised Web 2.0 tools that were more familiar to them, which was Facebook. The study further concludes that the staff population were very aware of Web 2.0 tools, as they could name most of them, they, however, did not use all named tools. The study concluded that the most used tool among the staff population was LinkedIn that was used professionally and Facebook used to keep in touch with friends and family.

6.3.2 Level of use of Web 2.0 tools among students and librarians

The next objective was "To investigate the level of use of Web 2.0 tools among library staff and students". Web 2.0 tools that were more frequently used among the student community were Facebook, as students were aware of how to use it. Staff members did not use Web 2.0 tools offered by the library, as they were unsure of how to use them, but preferred to use LinkedIn.

6.3.3 Influence of Web 2.0 tools in library service

From the objective "Establish whether the use of Web 2.0 tools in academic libraries influences the number of patrons the library serves", the following conclusion was derived at: The number of online queries/emails has increased far more than walk-in queries, indicating convenience to the student population, as they were not queuing up at their doors waiting for assistance.

6.3.4 Challenges in adopting Web 2.0 Tools

Another objective of the study was "To establish factors that hindered the adoption of Web 2.0 tools in the library". The following was concluded: Factors hindering the adoption of Web 2.0

tools, were lack of awareness by the student population, lack of guidance as well as lack of accessibility. A lack of training on how to use Web 2.0 tools and poor Internet connectivity were among the factors hindering the adoption of Web 2.0 tools by librarians.

6.4 Recommendations

One of the objectives of the study was to come up with recommendations on how the adoption of Web 2.0 tools within academic libraries can be enhanced. Based on the main findings and conclusions drawn from the research objectives, the study makes the following recommendations on the use of Web 2.0 tools at NUST and UNAM libraries.

- **Formulation of a Web 2.0 policy**: A Web 2.0 policy should be developed and be seen as a priority that can market the implementation, access and create awareness on the use of Web 2.0 tools both by library staff and the student community. This policy should be able to guide and be aligned with existing IT policies that encourage the advancement of technology use within Namibia as a whole.

- **An awareness program**: NUL and UNL should consider developing an awareness programme on the benefits of Web 2.0 tools to students, and which Web 2.0 tools can be utilised to effectively access the library resources. This programme can be repeated at agreed intervals during an academic year for students, to accommodate all students. Since each University has regional centers, to accommodate remote students, the same programme could be hosted in each centre respectfully. Likewise, staff members should equally be given some form of training in how to use Web 2.0 tools that will be utilised within the libraries.

- **Adequate training**: The study also found that students used certain Web 2.0 tools more than others. To this effect, Library staff ought to assess which tool(s) are used more by both the student and staff population and utilise such tools to market their resources.

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For library staff to train their patrons on how to use new Web 2.0 tools, they require training as well. These trainings could focus on, what Web 2.0 tools can be best used, to promote and access library resources and how to use these applications.

- **Change Management**: The adoption of Web 2.0 tools within a library setting is stimulated by the desire for change. Therefore, to provide optimum service delivery there needs to be a change in the way services are provided. Change, therefore, needs to occur firstly among the librarians when it comes to adopting new technologies. Meaning the librarians need to be able to adopt new technology (in this case a Web 2.0 tool), to be able to train the student population on how to use it to their benefit. It is therefore recommended that change management strategies should be included in the strategic plans of the libraries. Change management workshops should be hosted by the Libraries, initially for the staff, and then for the students, should a new Web 2.0 tool be introduced, to ensure a shift in the mindset of both staff and students.

- **Student Engagement**: Library staff from NUL and UNL should engage more with their students via instant messaging services and tools, which are seemingly used more by the student population. Providing awareness and change management workshops to both staff and students is highly recommended as mentioned earlier in the summary of the findings section.

6.5 Contribution of the study

The contribution of this study is in three areas, policy, practice and body of knowledge as explained below.

Policy: This study contributes to the paradigm shift needed to address the adoption of Web 2.0 tools, moved by a change that has to occur in the delivery of library services.

Practice: This study provides information that can readily be used and received by librarians on how to better library services through the adoption of Web 2.0 tools. It was anticipated that this study would give insight on what is currently hindering the adoption of Web 2.0 tools, and how aware librarians and students are of Web 2.0 tools within their respective libraries.

Body of knowledge: This study also contributed to the body of knowledge in the field of Library and Information Science by producing knowledge about the status of Web 2.0 tools in the NUST and UNAM libraries.

6.6 Suggestions or further research

Based on the findings and recommendations of the study, areas of further research could examine:

- The use of Web 2.0 tools within UNL and NUL regional centres and other academic libraries on a national level. Other academic libraries and regional centres within Namibia was not part of the scope of the study. The exclusion from the study was due to geographical constraints, time and a large population.
- The awareness and adoption of Web 2.0 tools by librarians and students, within special, and public schools as crucial, to establish how students and librarians deal with such technologies/tools outside the tertiary level of education.

6.7 Final Conclusion

The use and adoption of Web 2.0 tools with the NUST and UNAM Libraries is an aspect that needs to be made part of the usual day to day activities of the library. The traditional way of service delivery is not enough to keep up with the changes the world is enduring and libraries need to keep up with such changes and not be left behind. Academic libraries within developing countries need to start to reclaim their authority and position as information providers, through

small changes within the library settings. The study objectives addressed the adoption of Web 2.0 tools, this adoption of such technology is inspired by change, a change that has to occur in the delivery of library services to meet the information needs of library users. The hosting of change awareness workshops and training on how to use Web 2.0 tools to encourage the acceptance and use of such tools is one way of doing so. Librarians cannot offer effective services using Web 2.0 platforms if they are not Web 2.0 compliant, therefore training on how to use Web 2.0 tools cannot be over-emphasised. The objective of addressing awareness of Web 2.0 tools among librarians and students, is driven by the need to understand the type of technology that is available in the libraries and how much knowledge is known about such technology. As the findings suggest, students are eager to learn to improve their level of awareness of Web 2.0 tools and the benefits of its use, therefore encouraging a paradigm shift.

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APPENDICES

APPENDIX A: RESEARCH PERMISSION LETTER (UNAM)

UNIVERSITY OF NAMIBIA

☎ (~264 61) 206 3111
Website: www.unam.na

340 Mandume Ndemufayo Avenue
Private bag 13301
Windhoek
NAMIBIA

Inspiring minds & shaping the future

Date: March 2016

TO WHOM IT MAY CONCERN

RE: RESEARCH PERMISSION LETTER

1. This letter serves to inform that student: Damalie Najjuuko (Student number: 200301322) is a registered student in the Department of Information and Communication Studies at the University of Namibia. His/her research proposal was reviewed and successfully met the University of Namibia requirements.
2. The purpose of this letter is to kindly notify you that the student has been granted permission to carry out postgraduate studies research. The School of Post-graduate Studies has approved the research to be carried out by the student for purposes of fulfilling the requirements of the degree being pursued.
3. The proposal adheres to ethical principles.

Thank you so much in advance and many regards.

Yours truly,

Name of Main Supervisor: Dr C. m. Bewks-Amiss

Signed: ---

Dr. C. N.S. Shaimemanya

Signed: ---------------------------------

Director: School of Postgraduate Studies
Tel: 2063523
E-mail: cshaimemanya@unam.na

APPENDIX B: RESEARCH PERMISSION LETTER (NUST)

NAMIBIA UNIVERSITY OF SCIENCE AND TECHNOLOGY

13 Jackson Kaujeua Street
Private Bag 13388
Windhoek
NAMIBIA

T: +264 61 207 2118
F: +264 61 207 9118
E: registrar@nust.na
W: www.nust.na

Office of the Registrar

11 September 2019

Ms Damalie Najjuuko
Email: dnajjuuko@nust.na
Windhoek
Namibia

Dear Ms Najjuuko

RE: CONSENT TO CONDUCT YOUR RESEARCH WITH THE NAMIBIA UNIVERSITY OF SCIENCE AND TECHNOLOGY STUDENTS

Your letter dated 12 March 2014, from Prof I Mapuaure, UNAM Research Coordinator, on behalf of the UREC, University of Namibia, has reference.

Approval is hereby granted for you to conduct the research on *"The status of web 2.0 systems: A case study of the Namibia University of Science and Technology and University of Namibia Main Campus Libraries"* in the Namibia University of Science and Technology.   Any information gathered during the research is to be used for the purpose of the study only and must be treated as confidential. The results of the study should be shared with the University. Individual information of staff and students will not be made available, nor will biographical information of students be made available in such a way that individual students can be identified.

You are advised to contact the Director: Library and Information Services, Ms Judy Grobler, to compile a list of possible respondents to your data collection instrument.

I wish you all the best with your research.

Yours sincerely,

Mr Maurice Garde
REGISTRAR

NAMIBIA UNIVERSITY OF SCIENCE AND TECHNOLOGY

P/Bag 13388
Windhoek
NAMIBIA

2019 -09- 1 1

REGISTRAR
OFFICE OF THE REGISTRAR

CC:
Director: Library & Information Services
Deputy Vice-Chancellor: Academic Affairs
Assistant Registrars

APPENDIX C: ETHICAL CLEARANCE

ETHICAL CLEARANCE CERTIFICATE

Ethical Clearance Reference Number: SEC/FHSS/19/2014   **Date: 12 March, 2014**

This Ethical Clearance Certificate is issued by the University of Namibia Research Ethics Committee (UREC) in accordance with the University of Namibia's **Research Ethics Policy and Guidelines. Ethical** approval is given in respect of undertakings contained in the Research Project outlined below. This Certificate is issued on the recommendations of the ethical evaluation done by the Faculty/Centre/Campus Research & Publications Committee sitting with the Postgraduate Studies Committee.

Title of Project: THE STATUS OF WEB 2.0 SYSTEMS: A CASE STUDY OF THE POLYTECHNIC AND UNIVERSITY OF NAMIBIA MAIN CAMPUS LIBRARIES

Nature/Level of Project: Masters

Principal Researcher: DAMALIE NAJJUUKO

Host Department & Faculty: Information& Communication Studies, Faculty of Humanities and Social Sciences

Supervisor (s): C. Beukes-Amiss (Main) C.T Nengomasha (Co-)

Take note of the following:
(a) Any significant changes in the conditions or undertakings outlined in the approved Proposal must be communicated to the UREC. An application to make amendments may be necessary.
(b) Any breaches of ethical undertakings or practices that have an impact on ethical conduct of the research must be reported to the UREC.
(c) The Principal Researcher must report issues of ethical compliance to the UREC (through the Chairperson of the Faculty/Centre/Campus Research & Publications Committee) at the end of the Project or as may be requested by UREC.
(d) The UREC retains the right to:
   (i). withdraw or amend this Ethical Clearance if any unethical practices (as outlined in the Research Ethics Policy) have been detected or suspected,
   (ii). request for an ethical compliance report at any point during the course of the research.

UREC wishes you the best in your research.

Prof. I. Mapaure
UNAM Research Coordinator
ON BEHALF OF UREC

APPENDIX D: CONSENT FORM

Title of the study*: **The Status of Web 2.0 tools: A case study of the Namibia University of Science and Technology and University of Namibia main campus libraries.**

My name is Damalie Najjuuko, I am carrying out a survey involving students from the UNAM and NUST Libraries. Please be assured that all the information gathered during the research will be confidential and will only be used for the purpose of this research.

Kindly answer all questions as honestly as possible. I thank you for taking your time to answer these questions.

Should you have any concerns or questions, kindly contact me on the number provided below:

Mobile number: +264 812895355

Consent you are making a decision whether or not to participate in a research study. Your signature below indicates that you have decided to participate in the study after reading all of the information above and you understand the information in this form.

Signature _____ date _____

.

APPENDIX E: QUESTIONNAIRE FOR THE STUDENTS

Questionnaire for Students

The status of Web 2.0 application in the Namibia University of Science and Technology and University of Namibia Libraries

My name is Damalie Najjuuko; I am a Masters of Library and Information Science student at the University of Namibia. I am carrying a study for my thesis entitled*: The Status of Web 2.0 tools: A case study of the Namibia University of Science and Technology and University of Namibia main campus libraries.*

I am carrying out a survey involving students from the UNAM and NUST Libraries. Please be assured that all the information gathered during the research will be confidential and will only be used for the purpose of this research.

Kindly answer all questions as honestly as possible. I thank you for taking your time to answer these questions.

Demographical Information

1. Which age group do you fall in? Please indicate with a tick in the appropriate box.

    ☐ 18 – 24

    ☐ 25 – 31

    ☐ 31 and above

2. Sex

    ☐ Male

    ☐ Female

3. Which tertiary institution are you studying at?

    ☐ Namibia University of Science and Technology

    ☐ University of Namibia

4. Which School/Faculty do you belong to?

    ☐ Engineering
    ☐ Humanities
    ☐ Economics and Finance
    ☐ Health and Applied Sciences
    ☐ Natural Resources and Spatial Sciences

 Other (Please specify) …………………………………………………………..

5. What is your current year of study?

    ☐ First Year
    ☐ Second Year
    ☐ Third Year
    ☐ Fourth Year
    ☐ Postgraduate
    ☐ Doctoral
    ☐ Other (Please specify)…………………………………………………

Awareness of Web 2.0 tools in the library

6. The following applications are listed as Web 2.0 tools

Do you have any knowledge on how to use the following? Please tick in the appropriate boxes.

	Yes	No
1. Blog		
2. Twitter		
3. Facebook		
4. Instagram		
5. Instant Messaging services		
6. Other-please specify		

7. What is your level of awareness of Web 2.0 tools in the library?

Please indicate, by ticking the relevant box regarding your awareness to the following statements:

[Please select only one]

☐ I have heard about Web 2.0 applications and use the applications well

☐ I have heard about Web 2.0 applications being used in the library and use some of the applications

☐ I have heard about Web 2.0 applications being used in the library and have noticed some of the applications, but do not use the applications

☐ I have heard about Web 2.0 applications being used in the library, but do not know how to use them

☐ I do not know of Web 2.0 applications used in the library

Frequency of use

8. Which of the following Web 2.0 tools and social networking sites do you use?

Please tick all that apply.

	Yes	No	Once a week	Twice a week	Never
1. Blog					
2. Twitter					
3. Facebook					
4. Instagram					
5. Instant Messaging services					
6. Other- Please specify					

9. How can the usage of Web 2.0 tools be promoted among users of the library?

………………………………………………………………………………………

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Influence of Web 2.0 tools

10. Has the use of Web 2.0 applications made the library more user friendly?

☐ Yes

☐ No

Please explain your answer.

………
………
………
…………………………

11. Please indicate by ticking the relevant box what you think should be done to increase the acceptance of Web 2.0 tools in the library

Statement	Strongly Agree	Agree	Unsure	Disagaree	Strongly Disagree
The library should provide library blogs	☐	☐	☐	☐	☐
Librarians should have a library blog	☐	☐	☐	☐	☐
The library should use wikis to collaborate with users	☐	☐	☐	☐	☐
The library should utilise social tagging to connect to users	☐	☐	☐	☐	☐
The library should participate in social networking with users	☐	☐	☐	☐	☐
The library should create RSS feeds for users	☐	☐	☐	☐	☐
The library should use Instant Messaging to collaborate with users	☐	☐	☐	☐	☐

Other [Specify]

12. How can Web 2.0 tools be beneficial to a library and to those that use the library?

………
………
………
………
………
………
…….....……

……
……

Factors hindering adoption of Web 2.0 tools

13. What difficulties do you face when adopting to new modes of technology?

☐ Time constraints

☐ Comfort with current/usual mode of learning

☐ Lack of interest

☐ Lack of guidance

☐ Perceived Irrelevancy

☐ Other [Specify]

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…………………………………………………………………………………………

14. What constraints or barriers may hinder the adoption of Web 2.0 tools?

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15. What major difficulties have you encountered when using Web 2.0 tools?

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……

Recommendations

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……
……

Thank you for participating in this study

APPENDIX F: INTERVIEW GUIDE FOR LIBRARIANS

Interview Guide for Librarians

The status of Web 2.0 tools in the Namibia University of Science and Technology and University of Namibia Libraries

My name is Damalie Najjuuko, I am a Masters of Information Science student at the University of Namibia. I am carrying a study for my thesis entitled*: The Status of Web 2.0 systems: A case study of the Namibia University of Science and Technology and University of Namibia main campus libraries.*

I would like to interview Librarians from the UNAM and NUST Libraries. Please be assured that all the information gathered during the research will be confidential and will only be used for the purpose of this research.

Kindly answer all questions as honestly as possible. I thank you for taking your time to answer these questions.

SECTION A: WORK DETAILS

1. What is your position at this library?

2. For how long have you been in this position?

3. What is your highest qualification?

SECTION B: AWARENESS OF WEB 2.0 APPLICATIONS

4. What is your general opinion about the use of Web 2.0 tools?

5. What is this library doing to adopt Web 2.0 tools?

SECTION C: ADOPTION OF WEB 2.0 APPLICATIONS

6. What influenced the introduction of Web 2.0 tools at this library?

7. What have been the advantages of implementing Web 2.0 tools?

CHALLENGES:

8. What challenges have you experienced while implementing Web 2.0 at this library?

9. What are some of the obstacles librarians face in using Web 2.0 tools?

10. Who participated in the initial implementation of Web 2.0 tools at this library?

SECTION D: EFFECT OF THE USE OF WEB 2.0 ON THE NUMBER OF PATRONS

11. What has been the greatest benefit of the implementation of Web 2.0 tools in the library?

12. What has been the feedback from your patrons?

13. How are you receiving this feedback?

14. In your opinion, has there been an increase in the number of students using the library services, or visiting the library, ever since the introduction of Web 2.0 tools?

SECTION E: USAGE OF WEB 2.0 TOOLS BY STAFF

15. Can you please name which tools you use the most?

16. What was the reason for including this/these tool (s) within the library?

17. Is there any additional information that you would like to include?

SECTION F: RECOMMENDATIONS

18. What can be done to improve the adoption of Web 2.0 tools at this library?

19. What other available tools do you think will be of benefit to the library?

20. Is there any additional information you would like to add to this study?

APPENDIX G: CERTIFICATE OF ENGLISH EDITING

Edits Bi Edits by Lineekela

CERTIFICATE OF ENGLISH EDITING

This certificate confirms that the research paper listed below was edited by one or more English editors. The following issued were corrected: grammar, spelling, punctuation, sentence structure and phrasing

Research Title:

The Status of Web 2.0 Tools In The Namibia University Of Science And Technology (NUST) And University Of Namibia (UNAM) Libraries

Author (s)

Damalie Ethal Najjuuko

Certificate Number

Eb1001

Witness

Date Issued

08 December 2019

Lineekela Hamutumwa

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