

**THE USE OF THE INTERNET FOR STUDENTS' PERFORMANCE AT
INSTITUTIONS OF HIGHER LEARNING**

by

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THESIS

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DECLARATION

I, Nhlayisi Cedrick Baloyi, declare that this thesis entitled “**THE USE OF THE INTERNET FOR STUDENTS’ PERFORMANCE AT INSTITUTIONS OF HIGHER LEARNING**” hereby submitted to the University of Limpopo, for the degree of Doctor of Philosophy in Media Studies has not previously been submitted by me for a degree at this or any other university; that it is my work in design and in execution, and that all material contained herein has been duly acknowledged.

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Date: 22/04/2021

Signature: 

DEDICATION

This thesis is dedicated to my late grandfather, Mafemani Samuel Mnisi (1933-2011). He did not live longer to see my achievements. May his soul rest in peace.

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To God be the Glory, because He gives me the strength to do all things.

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LIST OF ABBREVIATIONS

4IR	–	Fourth Industrial Revolution
ACS	–	American Chemical Society
ADSL	–	Asymmetrical Digital Subscriber Line
ANOVA	–	Analysis of variance
AOL	–	America Online
ARPA	–	Advanced Research Project Agency
Arpanet	–	Advanced Research Projects Agency Network
ASE	–	Academic Self-Efficacy
CATV	–	Cable Television
CD	–	Compact Disc
CERN	–	European Organisation for Nuclear Research
CERT	–	Centre of Excellence for Applied Research and Training
COVID-19	–	Coronavirus Pandemic 2019
CSE	–	Computer Self-Efficacy
DVD	–	Digital Versatile Disc
E-book	–	Electronic books
EBSCO	–	Elton B. Stephens Company
ECAR	–	EDUCAUSE Center for Analysis and Research
E-journals	–	Electronic journals
E-learning	-	Electronic learning
E-mail	–	Electronic mail
Emerald	–	Environmental Management Exchange and Resource Alliance for Local Development

E-resources	–	Electronic resources
FTP	–	File Transfer Protocol
Gbps	–	Gigabytes per second
HCU	–	Home Computer User
HTML	–	Hypertext Markup Language
HTTP	–	Hypertext Transfer Protocol
IA	–	Internet Addiction
ICT	–	Information and Communication Technology
IM	–	Instant Messaging
Internet	–	Integrated Network
ISP	–	Internet Services Provider
ISPA	–	Internet Service Provider Association
IT	–	Information Technology
IUIU	–	Islamic University in Uganda
JINX	–	Johannesburg Internet Exchange
JKUAT	–	Jomo Kenyatta University of Agriculture and Technology
KIU	–	Kampala International University
LAN	–	Local Area Network
LCMS	–	Learning Content Management System
LMS	–	Learning Management System
LOR	–	Learning Object Repository
Los	–	Learning Objects
MSN	–	Microsoft Network
MUBS	–	Makerere University Business School

MUK	–	Makerere University of Kampala
NCSA	–	National Centre for Super Computer Applicant
NGO	–	Nongovernmental organization
NRENs	–	National Research and Education Networks
NSF	–	National Science Foundation
ODeL	–	Open Distance and E-learning
OECD	–	Organization for Economic Co-operation and Development
OERAfrica	–	Open Educational Resources Africa Organization
OSS	–	Open Source Software
OUT	–	Open University of Tanzania
PDF	–	Portable Document Format
RENs	–	Research and Education Networks
SABINET	–	South African Bibliographic Information Network
SNT	–	Social Networking Site
SPSS	–	Statistical Package for the Social Sciences
STN	–	Social Technical Network
SUA	–	Sokoine University of Agriculture
TAM	–	Technology Acceptance Model
TCP/IP	–	Transmission Control Protocol/Internet Protocol
TPB	–	Theory of Planned Behaviour
TRA	–	Theory of Reasoned Action
TUT	–	Tshwane University of Technology
TVET	–	Technical and Vocational Education and Training

UAE	–	United Arab Emirates
UCT	–	University of Cape Town
UDSM	–	University of Dar es Salaam
UGT	–	Uses and gratifications theory
UK	–	United Kingdom
UKZN	–	University of KwaZulu-Natal
UL	–	University of Limpopo
UNESCO	–	United Nations Educational, Scientific and Cultural
UNISA	–	University of South Africa
UNIVEN	–	University of Venda
URL	–	Uniform Resource Locator
USA	–	United States of America
WAN	–	Wide Area Network
WES	–	Web Information System
WI-FI	–	Wireless Fidelity
WWW	–	World Wide Web

ABSTRACT

This study focuses on the use of the internet for students' academic performance at institutions of higher learning. Various internet applications including search engines, online library resources and social media are evaluated to explore how best they can be used to enhance students' performance at institutions of higher learning. This is critical to ensure that students maximise the use of technology specifically for academic purposes.

Generally, students are constant users of the internet at institutions of higher learning, hence it is cardinal to examine their internet use patterns for academic purposes. Institutions of higher learning have invested in advanced technology through the internet to enhance student academic purposes. Therefore, one would expect students to use various internet applications effectively for the betterment of their studies.

In this study, the researcher used both qualitative and quantitative research methodologies. The researcher also employed exploratory and descriptive designs. These methodologies and designs are appropriate for this study because they allow data to be collected through focus group interviews and questionnaires. Focus group interviews were employed to collect qualitative data and questionnaires were used to collect quantitative data. The researcher conducted six focus groups from three institutions of higher learning, namely the University of Limpopo, University of Venda and Tshwane University of Technology, Polokwane campus. Three hundred and forty-three (343) questionnaires were analysed for this study.

These data collection tools were pertinent for this study since they assist to determine factors that influence the attitudes, opinions and behavior of the participants. Online library resources play a cardinal role in enhancing the learning process for students by providing online content which could have been difficult to access without the internet. Social media improve and enhance students' academic performance, but students do not know how best to use it for academic purposes. Proper integration of social media into education is needed.

In contrast, students prefer to use social media purely for socialising and entertainment. Despite their ability to assist students in enhancing and improving learning process, social media are, mostly not used for academic purposes.

Additionally, students' use of internet search engines exposes them to an array of information which require critical online information literacy in order to choose the best information. Lastly, the study contributes to the existing body of knowledge by creating a model which will enhance and assist students to easily access academic information through the use of a mobile application. The study also provides significant information which could be used to amend and draft new ICT policies within institutions of higher learning, taking into consideration the adoption of online learning through the use various technologies including social media.

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CHAPTER 1

INTRODUCTION TO THE STUDY

1.1 INTRODUCTION

The discourse around the role of the internet in education, which is the focus of this study, is prevalent in South African society and literature (Blignaut, Hinostroza, Els & Brun, 2010; Somro, 2010; Oyedemi, 2014; Meyer & Gent, 2016; Mphidi, 2016; Chisango, 2017; Hlatshwayo, 2017; Maswanganyi, 2017; Myeni, 2018; Matlala, 2020).

This discourse on the role of the internet to advance the education of South Africans is high on the agenda of the South African government and legislated and promoted through various Laws, old, amended and new (South African Higher Education Act No. 101, 1997; Blignaut et al, 2010; South African Government Department of Education White Paper on e-Education, 2004; Cross & Adam, 2007; Hlatshwayo & Shama, 2020). This discourse focuses on the promotion and use of technology to improve education. The internet is part of the services offered by technology and it is the focus of this study, in terms of how selected university students make use of it to contribute towards the advancement of their university education.

University students are the focus of this study because technology disparities experienced by students at South African universities continue to exist and indicate that there exists a digital divide between South African universities, a development that affects student access to and use of the internet to advance their education. This situation means that some universities are information haves and other universities are information have nots (Osunkunle, 2010; Wiener, 2021). In this regard, Wiener (2021) states that the digital divide that exists between South African universities haves and have nots is getting worse and more glaring than ever. A social issue that is chronic, such as the digital divide that affects South African students, is worthy of continuous and unending research so that solutions to this challenge can be established by social sciences researchers. The need for this kind of research becomes even more imperative, and critical, if some students have less access to the internet, a deficiency with a potential to negatively affect their education and this state of affairs prompted this researcher to conduct this study, with a view to contribute to

this discourse and assist in finding solutions to the digital divide challenge experienced by university students.

To interrogate and demonstrate this historical and chronic university digital divide further, in a study, Wright (2003), recorded that there is a huge disparity in the technical levels of the students who attend South African universities. This observation from Wright (*ibid.*), implies that some universities are information-rich (or technology and information haves) and other universities are information-poor (or technology and information have nots). The term “information-rich”, according to Bornman, Lesame and Schoonraad (2001, 344), refers to those cities, states, regions and countries of the world (but universities in the context of this study), which have, produce and distribute large amounts of information to other states or regions. In the case of universities, therefore, this situation implies that information-poor universities do not have adequate access to advanced technology (and consequently internet services), and could be in a position of producing as well as distributing less information to the reading population as compared to universities with more access to technology (and internet services).

On the other hand, information-rich universities have adequate access to advanced technology (and internet services), and this could mean that they do have the potential to produce and distribute more information to the reading population or scholarship. For example, in this regard, Osunkunle (2010:381-382, in Soomro, 2010), records that in South Africa, historically white universities (HWUs), including “Wits, Rhodes and Stellenbosch enjoy unlimited access to ICT facilities like computers and the Internet”. Furthermore, Osunkunle (*ibid.*) declares that historically black universities (HBUs), including the Universities of Fort Hare, Zululand and Limpopo “have limited access to technology, including computers and the internet”. These findings, from Wright (2003) and Osunkunle (2010), and the glaring facts and conditions of technology and internet challenges faced by South African university students, challenges that still existed as far as the early 2000s (*cf.* Lesame, 2001), existed in 2017 when this researcher commenced with this study, and *still* exist in 2021 as recorded by Wiener (2021), motivated this researcher to conduct this study to contribute to this necessary and unending discourse to find solutions to the digital challenges encountered by HBU and other university students.

Access to the internet is not enough, but information and communication technology (ICT) applications and the intellectual knowledge, expertise and skills to use them to find relevant information and solve socio-economic problems is what is essential in South Africa (Mphidi, 2016; Chisango, 2017; Hlatshwayo, 2017; Myeni, 2018; Matlala, 2020). It is a critical advantage that people who have technology and internet access are in a better position to access education and advance their studies than people who lack access to technology and the internet, which is a disadvantage to them. In this digital era, people (including university students and villagers), who do not have access to the internet are at a disadvantage (Matlala, 2020).

The University of Limpopo (UL), which is one of the universities selected for research in this study, has been researched and recorded before by some Communication and Media Studies scholars and found to be suffering from the digital divide which has negative effects on the education of students (Oyedemi, 2012, 2014; Maswanganyi, 2017). Against that background, this researcher found it necessary to continue the process of investigating access and use of the internet by the UL students because the digital divide issue in that campus continues to exist which means that researchers should continue to conduct research on the issue to find solutions to it. When a social condition such as the digital divide at universities is chronic, that situation demands and requires continued research and focus, in order to find solutions for it. This researcher took that research challenge with the aim of contributing towards the solution of the university digital divide chronic problem to assist students to access and use the internet better to improve their education. The three universities selected for this study were viewed by this researcher as those universities with a potential to have limited technology and internet services, which could benefit from recommendations from a study of this nature in terms of how internet services could be accessed and used to contribute better to students' education.

To expand on the focus of this study, the researcher also sampled the two other universities, viz., University of Venda and Tshwane University of Technology (Polokwane campus) because of geographical location and convenience to the researcher who resides and works in Limpopo Province (at the UL), and the fact this researcher considered the cost-effectiveness of conducting research on digitally challenged universities nearer to one's residential and work area, due to financial constraints because aspects such as travel when conducting research can be costly.

This study is located in Communication and Media Studies because the internet is a communications tool to share information. Retrieval of information is also a part of communication and information sharing, even though that function of the internet is related to the field of Information Studies. The internet, as an educational resource and a communications tool, is used in university libraries for communication and information sharing purposes. However, the use of the internet for various communication purposes remains part of Communication and Media Studies.

The Coronavirus disease, otherwise known as (COVID-19) pandemic which started in 2019 has also necessitated that issues of university student access to the internet be resolved because some students study via online resources and universities such as the UL started teaching and learning using digital platforms such as Blackboard. In this regard, through the use of digital media and education platforms such as Blackboard, the UL offers students “multimodal teaching” (Mokgalong, 2020:1). Multimodal teaching encompasses the use of offline and online teaching platforms. According to Green (2020: 1), “the COVID-19 pandemic is having a dramatic impact on all aspects of life and work”. This COVID-19 impact on aspects of work has also influenced the use of the internet for education by university students (Le Grange, 2020; Ramrathan, Ndimande-Hlongwa, Mkhize & Smit, 2020; Shawa, 2020). All these factors make it necessary for Media Studies researchers to continue investigating aspects of how students, especially those who study at HBUs, use the internet for learning. This study is a necessary and valuable contribution to that discourse aimed at finding solutions to the digital divide pertaining to the access and use of the internet by university students.

1.2 BACKGROUND AND MOTIVATION

The use of the internet is spreading swiftly into aspects of everyday life and directly affects people’s ideas and actions. The internet has an impact on many fields, including higher education. Internet use has become an everyday learning activity for students at almost all institutions of higher learning. The internet is a global collection of networks and these networks connect together in many different ways to form a single entity known as the internet (Lesame, Mbatha & Sindane, 2012). The use of technology and the internet in particular, has changed the way of teaching and learning at institutions of higher learning where education processes take place (Torres-Diaz,

Duart, Gomez-Alvarado, Marin-Gutierrez & Segarra-Faggioni, 2016). Thus, it is of paramount importance to recognise the impact of the internet on students' academic performance.

The internet is a channel for scientific resources, and it comprehends a large amount of information for different subjects, purposes, target groups, trustworthiness and other crucial matters. Hence, it is imperative that users are attentive of the extensive variety of data available on the internet, and are trained in the measures by which information content ought to be evaluated. The growth in the field of telecommunications has brought about online services, specialised electronic networks, Web pages, software, electronic mail (e-mail) and global information sources to our households and education (Soegoto & Tjokroadiponto, 2018). The internet affords a setting where billions of people contribute to and engage in the creation and sharing of information.

Agil and Ahmad (2011) describe the internet a vehicle for data kept in archives or documents on a computer, which carries countless data and services, comprises email, online chat, file transfer, the interlinked Web pages and other documents of the World Wide Web. In the current world, the internet plays an essential role in teaching and learning, including research at institutions of higher learning (Ivwhighrehweta & Igere, 2014). Thus, the advent of the internet has signified the emergence of a new method of knowledge construction and dissemination. This new form of data resources has, as its utmost advantage, an effectively limitless wealth of information resources which is readily accessible to billions of people at once in several parts of the world (Kumar & Kaur, 2006). The internet is a resourceful tool for searching, retrieving and circulating information, with an important impact on students and academics. The internet can always be consulted as a reference resource because it is extensive and dynamic.

The internet has liberated scholarship from the academic, economic and geographic restrictions related to traditional print media (Kuma & Kaur, 2006). This liberty has had a key influence on academics' research aptitude and productivity. It has also assisted academics who embark on the field of research by keeping them up to date with developments in research subjects by utilising the internet (Ogedebe, 2012).

The primary functions of the media in general are to inform, educate and entertain the audience in the mass communication process (Fourie, 2007). The internet has

enhanced and changed the manner in which people and students in particular, search for information in institutions of higher learning. Nowadays, the internet is a very effective and popular tool to be used by students for education as well as variety of other purposes including entertainment. Limaye and Fotwengel (2015) state that the internet has absolutely transformed the information technology, computer and communication in the world. However, (Al-rahmi, Othman & Musa, 2014; Acheaw & Larson, 2015) have alluded to misuse of the internet by students.

The internet has become a worldwide device to achieve better educational outcome, mostly in developing countries. Tandale and Raman (2016) submit that for Nigerian universities, the use of the internet among students is promptly spreading. Nonetheless, they are still faced with a challenge of providing impartial, affordable and sustainable access to the internet at various institutions.

The internet offers important opportunities for attaining information in various fields such as economics, health, science and education by sharing and storing information (Mbatha & Lesame, 2013). It has become so crucial higher education advancement in that it provides an entryway to massive information at fingertips (Mbatha, 2015).

1.2.1 Information and communication technology and education

University education is geared towards the production of complete scholarship, proficient of independent learning and research. Before the use of information and communication technology (ICT) for attaining, processing and dissemination of assignments and research information, teaching and learning were limited in information due to inadequate materials available in libraries. However, with the new media and the internet bridging the digital divide, students have improved access to information that is easily accessible regardless of where one is located in the world. The process of accessing and circulating information for university education is no longer limited to physical available prints, but includes electronic-materials (Bola & Ogunlade, 2012). A lot of updated and current information is available on the internet through advanced search and the students can only access this information provided they have adequate skills to do so.

Information and communication technology and the internet in particular permits high-level educational cooperation among students, academics and researchers.

Kinaanath (2013) expounded that this cooperation can take place amongst individuals in extensively dispersed geographical settings. The internet is also useful in the establishment of collaborative learning, where students can work together on common tasks from different locations. Wang (2008) emphasised that it is significant for learning environment to offer pertinent tools so that students can simply communicate and cooperate with each other. By utilizing the various internet applications and services including social media, students can share their philosophies and work collaboratively with fellow students regardless of geographical location (Lai, 2011). The internet plays a crucial role in the rise of collaboration amongst academics and it affords opportunities for international, cross-cultural and cooperative learning (Kinaanath, (2013). Moreover, Khan, Hasan and Clement (2012) highlighted the significance of international collaboration and networking in academia and professional development through many forms including sharing of knowledge over the internet.

The use of technology such as computers brought about a positive impact on the educational purpose, unlike using traditional chalkboards, textbooks, and traditional media such as radio and television (Aduwa-Ogiegbaen & Iyamu, 2005; Hsu, 2007). Punie (2007) submits that in a cooperative learning setting, students are more inspired and encouraged, as a result they tend to learn better. According to Wang (2008:418) “social constructivists advocate collaborative learning where students can learn from each other, resulting in the construction of coherent knowledge”.

Lai (2011) also confirm that using digital technologies including the internet and computers can improve the quality of learning experiences and support partnerships amongst students. ICT-based approaches are making it expedient to create positive attitudes towards a cooperative and productive learning perspective (Sangra & Gonzalez-Sanmamed, 2010).

Lai (2011) is of the view that digital technology permits more collaborative pedagogy by supporting online learning communities. Libraries can no longer be places for storage of printed materials, and accessing numerous digital libraries is regarded as the new approach to teaching and learning at institutions of higher learning. These digital collections comprise of electronic books (e-book), electronic journals (e-journals), other resources like illustrations, maps, photographs, and audio files

(Kearney, Schuck, Burden & Aubusson, 2012). These developments and the rise of online libraries leads to an increase in teaching and learning outside the traditional lecture rooms (Hefzallah, 2004). Students and academics use the internet as a significant educational tool for research, assignments and other academic work.

Online and digital publications are more up-to-date when compared to printed books and journals. Due to online publications, students and academics are able to access recent and quality information from all parts of the world for their studies and research (Douglas, 2011). Students can access Web sites through the World Wide Web (WWW) and the internet links, which leads them to online information to use for academic purposes (Godoe & Johansen, 2012).

The next section discusses the research problem.

1.3 RESEARCH PROBLEM

This study examines the use of the internet for students' performance at selected institutions of higher learning. The internet, which was established to increase communication and ease information exchange, has developed beyond prospects. Adediran and Kehinde (2014) highlight that the internet is commonly used by students to collect information to conduct research or improve the knowledge of any field of study. However, some users are unable to control their internet use, and thus experience difficulties such as lack of expertise in using the internet for academic purposes (Senormanci, Konkan, Güçlü & Senormanci, 2014).

The primary role of the internet at institutions of higher learning is to enhance the learning process for students. The internet with its range of updated information available, requires skills to be utilised effectively and for students to access updated information, they should have capabilities to use it. For more advanced and specialised information, there are specific search engines (for example, Google Scholar, and Library search engines) which identify scholarly and technical sources. Button, Harrington and Belan (2014) found that there is little information literacy among students, thus they are unable to manage excessive volumes of information retrieved through electronic databases. Button et al. (ibid.) also state that students are not fully equipped to use the internet for their academic purpose. Durodolu and Mojapelo

(2020) describe information literacy as the remedy for inspiring problem-solving aptitudes, mostly those difficulties associated to the contemporary use of technology that drives information access. They further indicate that information literacy helps students and academics with critical thinking skills, to pursue solutions to essential questions, to search for information from numerous sources, create knowledgeable sentiments and assess sources of information for cognisant judgment.

Taylor and Dalas (2017) are of the view that although students are considered to be having knowledge on how to use the computer, they, however, lack the skills of evaluating the authenticity of retrieved digital information. Taylor and Dalas (2017) also state that students do not seem to understand the information quality issues regarding internet information sources. Thus, students may lack the information literacy skills to make better choices about the use of these sources. Care should be taken to ensure that good sources of information have been identified, as it can be problematic to distinguish poor from good information, and one cannot always track the individual that has posted the information, what their background is and whether or not they are qualified to write on the topic (Lesame, Mbatha & Sindane, 2012).

Students with enough skills to effectively utilise the internet for academic purposes benefit from this phenomenon. However, some students are not well acquainted with the use of the internet as an academic tool. Despite the massive use of the internet at universities, there is a poor level of using electronic resources such as the electronic journals and online databases which are significant for learning and research. Onovughe (2012) records that although the majority of students use the internet for academic purposes, most of them spend fewer hours reading relevant accredited journals. This can have little impact on their academic performance. Burton (2006) maintains that students have a tendency to use the internet mostly for entertainment and not for academic purposes. Others still prefer to use the traditional way of using printed textbooks when reading for and writing assignments. This can affect them especially because libraries can only house limited printed resources. Makokha (2016) mentions that regardless of the considerable allocation of ICT resources to education, the sector is facing challenges including the use of new ICT including the internet.

With the ever-changing technology, it is of significance that students at institutions of higher learning possess critical knowledge on how to use ICT in general and the

internet in particular for educational purposes. Access to recent and updated information is crucial in academia, and the technological revolution including the Fourth Industrial Revolution (4IR) is changing the means of accessing information.

The internet is an important channel for academic information and contain vast quantities of data which differ regarding to content, purpose and trustworthiness. It is, therefore, important that students are aware of the varied information presented on the internet and acquainted in the measures by which the information content should be retrieved (Chapman, 2002). It is worth noting that the extent of utilising these electronic resources differs along tertiary institutions. Hence this study sought to explore how students at the Universities of Limpopo, Venda and Tshwane University of Technology Polokwane campus utilise the internet as an academic tool. Dlamini, Ncube and Muchemwa (2015) indicate that this problem exists in most of the institutions of higher learning; as such, the researcher examined it at the mentioned three universities.

The next section outlines the purpose of the study, objectives, rationale and scope of the study.

1.4 PURPOSE OF THE STUDY

1.4.1 Aim of the study

The aim of this study was to examine the use of the internet for students' performance at the institutions of higher learning.

1.4.2 Objectives of the study

The objectives of this study were, namely, to:

- (a) identify the means by which students at institutions of higher learning uses the internet to enhance their academic performance;
- (b) establish the opportunities and challenges faced by students when using the internet for academic purposes; and
- (c) analyse the manner in which and reasons for which the students use different internet search platforms for academic purposes.

1.4.3 Rationale of the study

It is crucial to embark on a study of this nature because the internet is a significant tool for education. If institutions of higher learning want to maintain their importance in creating knowledge and developing solutions for the challenges facing the world, the internet remains vital in accessing updated information. Students in higher education campuses have access to the internet and use it to communicate and share information. Students are the most active group that uses the internet. In the past, traditional media (printed books and journals) were the reliable sources of information for students. The internet and social media in particular, have changed the status quo in terms of searching for and sharing of information among students and academics. Digital technologies including the internet has provided the means of easy sharing and access for information regardless of where one is located in the world.

Students are expected to possess the knowledge about how to search for academic related content through various internet platforms. The main aim of this study was to examine the use of the internet for students' academic performance at institutions of higher learning. Previous studies including (Al-Hasib, 2009; Al-Zoube & El-Seoud, 2009; Al-rahmi, Othman & Musa, 2014; Acheaw & Larson, 2015), have been conducted on the use of the internet at universities, but little has been done to address the correlation between the use of the internet and students' academic performance. Studies on the use of social media by university students have been conducted in South Africa (Johannes, Michael & Corinne, 2014; Petersen & Johnston, 2015; Nsizwana, Ige & Tshabalala, 2017; Seedat, Roodt & Mwapwele, 2019; Budree, Fietkiewicz & Lins, 2019), however, not much has been done to examine the integration of the use of social media and access to updated and relevant academic content among students. This study came at a time when facets of life including education has been changed by the arrival of the Coronavirus disease, making it difficult to conduct contact lessons in all level of education. In response to the pandemic, the education sector including higher education has prioritised the online learning. The use of the internet for education has become the key aspect than ever before. Thus, it was of significant for the researcher to embark on the study of this nature to establish how students uses various internet applications to enhance their academic performances.

1.4.4 Scope of the study

The internet is a relatively broad concept because internet has various applications which can be utilised for accessing and sharing of information among students. In the interest of this research, the researcher included internet search engines, electronic databases, and social media as internet applications for this study. There are 26 universities in and several Technical and Vocational Education and Training (TVET) colleges in South Africa (Higher Education and Training, 2019). However, for this study, University of Limpopo, University of Venda and Tshwane University of Technology Polokwane campus, all based in Limpopo were purposively selected for this study. These institutions share the same attributes in that they both accommodate mainly black students from rural communities, they share fairly similar infrastructure, and they are the biggest institutions admitting fulltime students in the province. Students from these institutions were sampled for this study.

The subsequent section focus on the theoretical framework of the study.

1.5 ROLE OF THEORY IN THE STUDY

This section explains the philosophical perspective and epistemological position on which the study is underpinned. The theoretical framework of this study is discussed grounded on two theories, namely, the practice theory and the uses and gratifications theory.

The main focus of these theories is to explain user adoption of information technology. A consideration of these procedures in mass communication is essential about investigating the use of the internet as an academic tool by students at institutions of higher learning.

1.5.1 Philosophical paradigm: Constructivism

There are many philosophical paradigms in existence today due to the advancement in human ways of thinking and different ways of explaining social phenomena. The centre of this study is on deductive theory, with constructivism as an ontological position and interpretivism as an epistemology. Adom, Yeboah and Ankrah (2016:2) describe constructivism as a “philosophical paradigm as an approach that asserts that

people construct their own understanding and knowledge of the world through experiencing things and reflecting on those experiences. It is based on the analogy or basis that people form or construct much of what they learn through experience". Thus, constructivist philosophy depicts the notion that learning does not simply take place from the traditional way of lecturers standing in front of the students and lecturing. However, learning also take place when students discover the knowledge through experimentation and practicing (Dođru & Kalender, 2007).

The constructivism philosophical paradigm is an efficient tool that can yield many benefits when implemented in the carrying out of research in diverse fields of study as well as in undertaking teaching and learning activities at any educational level (Adom et al, 2016). Hobein (1996) describes the constructivism philosophical paradigm as an approach that asserts that people construct their own understanding and knowledge of the world through experiences and reflecting on those experiences. Constructivism is based on the analogy or basis that people construct much of what they learn through experience (Hein, 1991; Cashman et al., 2008). Thus, to the constructivist, constructing meaning is learning. Constructivism aims to study an issue from the perspective of the research participants and is subjective in nature (Honebein, 1996; Adams, 2006; Kalender, 2007; Duckles et al., 2019). According to Kim (2005), there are two main processes involved in the construction of knowledge, accommodation and assimilation. The accommodation process in the construction of knowledge through learning involves the framing of one's mental representation of the external world to fit the new experiences s/he has experienced. Thus, the learner allows room for new experiences in one's mind. On the other hand, assimilation is the second process of knowledge construction, which means the learner incorporates the new experience one has learnt into the existing frame of mind one already had. Therefore, the old and new experiences coexist concurrently in the learner's mind for use in decision making and advancement of learning.

This constructivist philosophical standpoint is used to reinforce studies that pursue to comprehend how subjects being investigated 'make sense' of their daily life in their normal settings, it could be at the school or working environment. Furthermore, it is suitable for a researcher who embark on a study with the purpose of comprehending the inspiration and impact of certain behaviour on the attitude of the subjects in a

specific environment (Adom, Yeboah & Ankrah, 2016). Moreover, constructivism and interpretivism approaches maintain that knowledge is constructed by exploring and understanding the social world of the subjects being studied, focusing on their meaning and interpretations from a specific background (Al-Saadi, 2014).

This philosophical standpoint is suitable for this study, since the research sought to examine the use of the internet in enhancing students' performance at institutions of higher learning. The researcher understands that certain behaviour towards using the internet could have impacted by several factors within the subjects' environment. Again, students possess certain knowledge, meaning and understanding regarding the use of various internet applications for academic purposes. It is with this background that the researcher positioned this study under constructivism philosophical paradigm.

1.5.2 Epistemological position: Interpretivism

Interpretivism integrates human interest into a study (Dudovsky, [Sa]). Interpretive researchers assume that access to reality (given or socially constructed), is only through social constructions such as language, consciousness, shared meaning and instruments (ibid.). Development of interpretivist epistemology is based on the critique of positivism in social science (positivism is based on the premise that science is the only way to learn about the truth and is associated with quantitative research) (ibid.). Interpretivism, on the other hand, is associated with qualitative research and is based on the premise that alternatives exist in establishing truth in social science (Goldkuhl, 2012; Dean, 2018; Pulla & Carter, 2018). Therefore, interpretivism is in direct opposition to positivism (Ryan, 2018).

In this study, students registered at the three selected universities has constructed meaning of their experiences with regard to the use of technology for academic activities. The interpretation of the experiences of the students at the institutions of higher learning has been regarded as the reality of the students' lived experiences at these universities, with specific reference to how they use technology to advance the education.

Assumptions of the practice theory and the relevance of this theory to this study are described next.

1.5.3 Practice Theory

The practice theory aims to move beyond the old debates about media effects, political economy, the ideological nature of the media, and active versus passive audiences (Couldry, 2004; Fourie, 2010). Rather, the theory seeks to focus on the media as practised in life, and how the media as a practice anchor and organise other human practices and experiences (Couldry, 2004). The practice theory states that media research should start not with media texts or institutions, but with what people are practically doing with media and what media are practically doing with people across a whole range of institutions and contexts (Fourie, *ibid.*).

The main questions of this theory are all about the following:

- a) What does it mean to live in a media-saturated world?
- b) What does the concept mediation really mean?
- c) How do the expansion and infiltration of media in Africa and other developing regions affect traditional life and culture?

The practice theory is relevant to this study because it explains the use of media, which, in this study relates to internet use by students. The answers to the above-mentioned questions fulfil the purpose of this study which, amongst others, sought to explore how the internet has changed the behaviour of students with regard to searching for information, and how has it impacted on students' academic performance.

As outlined by Fourie (2010:181) there are imperative questions which the practice theory tries to answer. These questions are outlined thus:

- a) What does it mean, or what is it like, to live in a media-saturated world?
- b) What does it mean to live in a society dominated by large-scale media institutions?
- c) What are the role and the product of media practices in ordering other practices across the social world?

The basic assumptions of the uses and gratifications theory (UGT) are discussed next.

1.5.4 The uses and gratifications theory

Studies on the internet use have been conducted within the framework of the uses and gratifications theory (Kaye & Johnson, 2004; Kaye, 2007; Karimi, Khodabandelou, Ehsani & Ahmad, 2014; Musa, Azmi & Ismail, 2015; Malatji, 2019). The main functions of the media are, namely, to inform, entertain and to educate amongst others (Muhammed, 2013:410; Khalid & Ahmed, 2014:70). The uses and gratifications theory (UGT) explains the media consumption concept that describes why people use certain media and the gratifications derived from usage and access (Luo, Chea & Chen, 2014). This theory proposes that media consumption is purposive, and that users actively seek to fulfil their needs through a variety of uses. Media content is used to explore, challenge, adjust or confirm personal identity. The media fulfil the need for information about the immediate and distant world and circumstances. Media users get information about issues that can affect them directly or indirectly (Fourie, 2007). Furthermore, Fourie (ibid.) highlights that the main questions of this theory are all about: what do people do with the media and what do they use media for?

The responses to these questions relate to the purpose of this study which sought to uncover what do the students use the internet for? and how do they use it for their academic purposes. Data were collected to get responses to the above-mentioned questions, and the responses were presented during data analysis and presentation in Chapter 6.

The following section describes and records the internet landscape in South Africa, the internet and social media usage and the aspect of the digital divide in higher education.

1.6 INTERNET LANDSCAPE IN SOUTH AFRICA

According to Statistics South Africa (2020) South Africa has an estimated population of about 59.62 million people. The recent population statistics indicate that out of this population, 31.18 million people (54%) are regarded as regular internet users (Digital Dynamite, 2019).

1.6.1 Overview

The study by the Digital Dynamite (2019) also reveals that 97% of the regular internet users in South Africa, mostly watch videos online, streaming content and playing streamed games. South Africa has 54% internet penetration with seven per cent growth from the year 2017 (We Are Social, 2018). More than 23 million people are actively using social media. Over 40% of the population are actively engaging in social media (ibid.). Statista (2019) anticipated that these numbers were expected to increase to almost 40% of the South African population, of which 30% of them will be accessing Facebook. We Are Social (2018) indicated that South Africa had a 20% increase on people who use social media between 2017 and 2018. It is worth noting that majority of these people are youth including students. Digital Dynamite (2019) revealed that Facebook is the most accessed social networking site accessed by 23 million people, followed by LinkedIn (6.9 million), Instagram (4 million), Twitter (1.67 million) and SnapChat (1.35 million).

South Africa is regarded as one of the technologically innovative countries in Africa. The country was ranked as having the biggest number of Web sites of the Southern African Development Communities (Chisholm, 2004). Nonetheless, even though it is observed as a noticeable player in the area of technology in the region, South Africa is a comparatively minor player when compared to developed countries in the world. Lack of electronic skills (e-skills) development is prevalent in the country (Merkofer & Murphy, 2009). Hence, there is a need for key stakeholders including government, the corporate world and academics to cooperate in order to address the lack of e-skills in South Africa, and this public-private partnership will go a long way in turning the country into an ICT 'powerhouse' in the world (Merkofer & Murphy, 2009:686).

1.6.2 Internet use at institutions of higher learning

The widespread development of the internet had a great influence on education in general and higher education in particular. Furthermore, Kovačević, Špoljarić and Vuk (2014) indicate that the improvement of the internet-based technology has considerably impacted both the learning process and the role of academics and students in the learning process. These developments assist students to access information and be part of universal audience.

The acknowledgement of the internet development including social networks at institutions of higher learning become an integral part of academia to meet the needs of the 21st century students. Ahmed, Abdel Almuniem and Almabhough (2016) highlight that these developments permit new ways of collaboration, communication and interaction over and above creating new possibilities for producing and sharing of information.

Likewise, the internet development demands that users in general and students in particular shift from being passive recipients of information into actively participating in the creation of knowledge. Thus, critical skills and knowledge on the use of the internet to enhance students' academic performance is of critical importance. Many studies at international level including that of Rogers-Estable (2014) established that inherent elements of a lack of time, resources and training are regarded as the key obstructions in utilising the recent internet development for academic purposes. Thus, it is imperative to examine the usage of the internet by students at institutions of higher learning, in order to address educational challenges.

1.6.3 Social media and education

The usage of social networking sites (SNTs) as part of the learning method is no longer new, and growing numbers of students and lecturers employ them in their everyday academic work (Karal & Kokoc, 2013; Lupton, 2014; Dahlstrom & Bichsel, 2014; Fox & Bird, 2017). Subsequently, it is crucial to study social media influence on students' academic performance. Several researchers have underlined the importance of social networking sites in education, their pedagogical prospective (Boyd & Ellison, 2007; Bosch, 2009; Acheaw & Larson 2015; Durak, 2017), and their active role in societal learning (Santoveña-Casal, 2019).

Social media offer a doorway for entertainment and communication and have become leading platforms for accessing information and news especially for youth. The social media usage of American adults aged between 18 and 29 years, a group which represent the higher percentage of university students increased from 12% in the year 2005 to 90% in 2015 (Perrin, 2018) Likewise, in Africa and other parts of the world, the amount of social media users is increasing (Bosch, 2009; Adediran & Kehinde, 2014; Apuke, 2016). Additionally, Mowafy (2018) stated that social media users in

Egypt, precisely those with Facebook accounts have surpassed seven million which is close to 10% of the population, and the majority of them are young people. Moreover, Saied, ElSabagh and El-Afandy (2016) confirmed that this number increased to more than 50% in 2015, and more than 80% of them are young people particularly university students.

Observing how social media became entrenched within the young generation's way of life, students at institutions of higher learning established a way to use social media as tools of communication between them and lecturers (Junco, 2015). Moreover, the majority of universities these days have an official page or group on one of the social media networks where students, academics and the higher education community at large can share resources and communicate on various issues (Selwyn, 2009). Additionally, DeAndrea, Ellison, LaRose, Steinfield and Fiore (2012) point out that many universities, globally, have opened social media accounts in order to help students to socialize and connect with the community comprise of academics and even alumni to establish a sense of connection with the respective institution.

The impact of social media on teaching and learning is gradually getting attention and discussed among higher education researchers. For example, Lynn, Healy, Kilroy, Hunt, Werff, Venkatagiri and Morrison (2015) described social media as the great game-changer of learning and teaching. Furthermore, McLoughlin and Lee (2010) indicated that use of social media networks for educational purposes could assist academics to apply the inquiry-based methodology and embolden the cooperation between lecturers and the students. Also important is the prospect of these technologies for inspiring independent self-directed learning and encouraging students as active knowledge creators (Dumpit & Fernandez, 2017), which is usually considered as a positive affordance for media.

Jones, Blackey, Fitzgibbon and Chew (2010) note that though the majority of students are active users of social media networks, 70% of them are not using social media for academic purposes. Tariq, Mehboob, Asf and Khan (2012) accentuate that the availability of technologies including social media could have some negative consequences on social networks addicts. Tariq et al. (ibid.) are concerned that social networks grasp the complete attention of students and distract them towards non-

educational and unproductive activities including inadequate chatting, and wasting much time by random searching.

Nonetheless, with all the impressive aptitudes of social media to tertiary education, there are conflicting opinions where others indicate their negative effect on students' academic excellence (Yeboah & Ewur, 2014; Fatokun, 2019). Studies (Adamu, 2011; Jegede, 2015), illustrate that heavy users of *Facebook* perform academically lower compared to the light users of Facebook. Adamu (2011) examined the impact of social media on students' academic performance of Ahmadu Bello University students, and established that the majority of them use their social media through even during lectures. Jegede (2015) established that youth cannot spend for two to three hours without login into their social media accounts even at the disadvantage of other important activities including their education. Teaching and learning is drastically changing thanks to the new technologies including the internet, thus, students and academics alike should be willing to utilise the new concepts in the academic world.

The internet plays a significant role in the education of students at tertiary institutions. However, it can be dangerous to students if there is lack of control in accessing the internet by students. Against this brief background on the positive and negative impact of the internet on students' academic performance, it was, therefore, imperative to embark on the study of this nature with the main focus on the Universities of Limpopo (UL), Venda (UNIVEN) and Tshwane University of Technology (TUT) Polokwane campus.

1.6.4 Digital divide at institutions of higher learning

The digital divide is still a challenge in South Africa consequent to the shortage of the telecommunications infrastructure to enhance e-skills at educational and societal level. The concept digital divide is described as the "gap between those people who have access to digital technologies and information via the internet, and those who do not" (Singh, 2004:5). Furthermore, Kajee and Balfour (2011) submit that as much as many young people have access to mobile technology such as cellphones, computers and tablets, the cost of internet data is still hindering them an opportunity to play part in the creation and consumption of online information. Even institutions of higher learning are not of the same quality as technological development is concern. Most of

previously disadvantaged institutions find it difficult to supply high speed broadband and quality access to the internet to its students and academics alike. Such inequalities emanate from gaps between under-resourced and well-resourced institutions of higher learning.

Moreover, Bornman (2016) stressed that the digital divide, comprises mental dispositions, skills and usage. Significantly, Flanagan (2016) further explained that the digital divide also takes into consideration the inequities in access to the forms of information and communication technology, and the fact that the people who have no access to the World Wide Web are of a sizeable number. It is significant to admit that these descriptions take cognisance of three matters that are not connected to technological features, i.e. personal factors (disposition and skills), societal factors ('transformation', with the implication of progress or improved well-being), and the relative statistics of the 'have nots' as compared to the 'haves'. Thus, critical consideration on the digital divide and efforts to resolve it should take a view of 'technology in context', instead of technology for its own sake. Besides the costly establishment of infrastructure, paying attention to support and provision of skills, shifting of mindsets, influencing transformative potential, and accepting the size of the problem.

Although South Africa is regarded as experiencing the digital divide when compared to the first world countries, South Africa is still viewed as having some technological advantages when compared to other countries in the African continent, and this presents a complicated scenario of the population residing in rural and urban areas experience the digital divide owing to the apartheid legacy (Nyahodza & Higgs, 2017). The impact of apartheid is still visible as the majority of black population live in poverty (World Bank, 2016). In South Africa, the apartheid policies prompted values of discrimination against the black majority South Africans by several means, and consequently endorsing white sovereignty. Apartheid established separate institutions of higher learning for white and black students, which became the crucial recognition of policy which introduced inferior education and poor learning opportunities to black students (Singh, 2004).

Most projects by academic libraries were centred on training users to become proficient in the digital age through digital literacy corporations (Naslund & Giustini,

2008). Nonetheless, students with different levels of acquaintance to technologies and the economic situation of institutions pose considerable challenges in addressing the digital divide (Luaran, Nadzri, Rom & Jain, 2016). Although the education and students' enrolment method in higher education have changed after apartheid, it worth to reaffirm that enrolment in some institutions of higher learning is still dominated by students from poor societies. The University of Limpopo and the University of Venda, as historically disadvantaged institutions deprived of resources under apartheid, continues to attract such students, hence they are suitable focus areas for this study.

The digital divide in higher education spreads outside undergraduate education and into the postgraduate level, and this was an inherited apartheid legacy. Chetty, Aneja, Mishra, Gcora and Josie (2017) submit that some graduate students in South Africa depend on electronic technologies within library spaces, and few could afford to buy their own technological gadgets since they come from poor environments where computer laboratories and internet resources not available. This confirms fact that lack of access to the digital infrastructure was prevalent throughout their basic education journey. Students use ICT for access to education, search for information and other social needs. At postgraduate level, access to computers and the internet, and necessary skills become significant as students are expected to create 'virtual academic environments' for more learning and embarking on research (Ng'ambi, Brown, Bozalek, Gachago & Wood, 2016:845).

Students are expected to conduct online self-study and comprehend numerous programmes and software that assist in data collection and management. These are part of the research series and could not be part of the formal education covered in lectures. Academic libraries' training may be undermined by a shortage of extensive literacy skills, however further challenges experienced in some institutions of higher education are lack of access to networked computers and outdated infrastructure (Singh, 2004) which may further exacerbate the situation for disadvantaged students.

Despite their apartheid experiences, South African universities are projected to produce proficient graduates who play part in numerous economic sectors and who should continue to further their studies through research projects. According to Bornman (2016), lack of both ICT access and information literacy skills obstruct full economic contribution, hence computer and information literacy are important in

addressing the digital divide. Back then (i.e., during apartheid), the previously disadvantaged universities did not encourage critical thinking as the use of ICT and internet was only appreciated in the so-called 'white institutions' (Sehoole, 2005:33). However, all institutions of higher learning are required to embrace the use of technology and internet to enhance students' performance and intensify research production.

The academic populace has embraced the effectiveness of internet and technologies in incorporating social life, work and study. Information and communication technology and internet have been acknowledged as valuable tools for use of Learning Management Systems (LMSs), discussion settings, communication through emails and social networking sites, presentations, online learning and least but not last for distance education benefits (Sadeghi, 2019). Information and communication technology, the internet in particular, expedite experiential learning and promote sharing of information and thoughts, accordingly nurturing cooperation among students even in various institutions (Coman, Tiru, Mesesan-Schmitz, Stanciu & Bularca, 2020). Nonetheless, most of these benefits need adequate access to computers and internet, as well as information literacy.

Shonola, Joy, Oyelere and Suhonen (2016) indicates that although most students have access to ICT and the internet through mobile phones and tablets, there is still minimum use of these resources for academic purposes (Darko-Adjei, 2019), and this perpetuates the digital divide by averting the development of computer skills essential for the information needs of higher education. Students' lack of acquaintance may result in unwillingness to interact with ICTs, and this can interrupt access to e-learning which should enhance their academic performance. Such drawbacks may carry on to affect students at postgraduate level, thus preserving the digital divide in higher education despite the availability of electronic resources (e-resources).

Connecting African universities to affordable, high speed broadband internet is crucial for achieving the goals of the Digital Economy for Africa Moonshot, which targets to ensure that the African population, businesses and governments are digitally empowered by 2030 (Bashir, 2020). Access to the internet stimulates economic growth, enhancements to education and knowledge dissemination. The advanced digital skills that are required to exploit digital technologies, need to be created through

reformed university programmes and rapid skills development programmes. According to the Broadband Commission for Sustainable Development (2019) African universities need broadband in order to enhance blended and online learning; improve the quality of higher education; encourage the use of technology in higher education; and provide access to the vast rich of digital education resources available in the world and also affords Africans to contribute their own digital content.

Universities are among the significant national institutions with the abilities, equipment, personnel and directive to generate new knowledge through research and teaching and learning (Bashir, 2020). In order for African universities to assist in serving the goals of national development, they need the instruments and resources to create a link between academia and policy makers, and to provide opportunities for African scholars, academics and students to cooperate locally and internationally through the Internet.

Throughout the world, the National Research and Education Networks (NRENs) in each country have empowered the university and research community to create and constantly expand a dedicated network which provides high speed broadband access to universities Foley (2018). There has been a rapid increase of NRENs in Africa supported by the World Bank's digital infrastructure projects. Furthermore, sub-regional RENS have also been established to support NRENs. The NRENs in Northern, Eastern and Southern Africa are viewed to be more developed, while in Western and Central Africa they are either do not exist or slightly operational.

Most universities in South Africa already have 10 gigabytes per second (Gbps) last mile connectivity. However, this is little when compared to more advanced countries, where advanced universities have 100Gbps connections (Bashir, 2020). The approach to university connectivity worldwide is to develop a National Research and Education Network (NREN) mandated to connect all universities in a country and to link to international RENS. Without sufficient infrastructure, management and monitoring at the university level, the quality of the service is affected by bandwidth congestion, while actual utilisation is affected by lack of devices, the lack of ability to monitor, mitigate and provide protection against viruses, spam and so on.

In order to bridge the digital divide in South African institutions of higher learning, Singh (2004) proposed possible solutions which could be implemented, namely that:

- (a) First, universities should establish a technology culture.
- (b) Second, academics should empower themselves in order to lead by example for students to follow suit. If academics use ICT technology and internet for research, teaching and learning, their students will embrace technology as well. Academics can instil the use of online for learning among their students by referring them to valuable Web sites (Chetty, Aneja, Mishra, Gcora & Josie, 2017).
- (c) Third, universities should introduce computer literacy and Web-based research through all faculties, and more computer laboratories need to be built and furnished to provide computing skills to students from all faculties and disciplines of study. They should develop an e-learning culture where academics share lecture notes and links on their personalised Web sites.
- (d) Fourth, Almasi, Machumu and Zhu (2017) submit that if course work is presented online, students will be required to use the internet with a driven purpose.
- (e) Fifth, among other things, students should be familiarised with various online library resources such as Ebscohost, Sabinet, Science direct and other online journals.

The following section explains the significance of the study.

1.7 SIGNIFICANCE OF THE STUDY

Library services were changed by the advent of the internet. Internet users (viz., students and academics in this context) approach information through various available arrangements. Most universities have embarked on the use of Wireless Fidelity (Wi-Fi) access for students, thus making it possible for them to access the internet wherever they are on campus premises. Most libraries are expected to participate in some projects on the use of electronic information, providing access to full-text databases and e-journals. These include the American Chemical Society (ACS), Elton B. Stephens Company (EBSCO), Environmental Management Exchange and Resource Alliance for Local Development (Emerald), South African Bibliographic Information Network (SABINET), Springerlink, and Science Direct, to mention but a few. Therefore, one would expect students at universities to know these valuable resources if they want to improve their academic performance.

This study is important in a number of ways. The study extends existing knowledge and literature on the use of various internet applications for academic purposes. The findings of this study are expected to help in creating a level of awareness and use of array of internet applications among students at institutions of higher learning. The study also will assist the university libraries to integrate various internet applications including social media networks into their services in order to improve access to and use of information resources. Universities under study will have data which they can use to promulgate relevant ICT policies and resource planning to institutionalise various internet applications into the academic endeavour. The study reveals new insights into technology adoption and use by developing a new model (see Figure 8.1 in chapter 8) to maximise the access and use online academic information among students and academic. The study has contributed new knowledge which is valuable to researchers. The research has prompted further areas of research which include the need to integrate social media platforms as a teaching and learning tools. The findings will support policy makers in formulating and/or amending the existing ICT policies to support the use of various internet applications including social media, online journals and search engines amongst others, especially at this current time where online learning is taking a centre stage in all institutions of higher learning.

1.8. SUMMARY OF CHAPTER 1 AND OUTLINE OF CHAPTER 2

Chapter 1 outlined the introduction of the study and the discourse around the role of the internet in education. The chapter also elaborates the background and objectives of the study, which aims to examine the use of the internet for students' performance at institutions of higher learning. The study is necessitated by the need to understand how students at institutions of higher learning use the internet to enhance academic performance. Other topics explained are the problem statement, the purpose of the study, the rationale, the scope of the study, and the theoretical framework in which the study is underpinned. The chapter also highlighted the internet landscape in South Africa, the digital divide at institutions of higher learning, and lastly the significance of the study.

In Chapter 2, a literature review is undertaken to define and contextualise the concepts and constructs which are mostly used in the study. These concepts include the

internet, academic performance, ICT, internet search engines, electronic learning and internet self-efficacy.

CHAPTER 2

DEFINITION AND OPERATIONALISATION OF THE KEY CONCEPTS AND CONSTRUCTS

2.1 INTRODUCTION

This chapter defines and operationalises concepts and constructs that the study is based on that this researcher considers critical to share and discuss main aspects of this literature. According to Bhattacharjee (2020:1), explanations require development of concepts or properties or characteristics associated with objects, events or people, and that concepts are used in conversation, and developed through language. Further, concepts may have progressive levels of abstraction, e.g., some concepts are precise and objective while other concepts are abstract and difficult to visualize (ibid.). By definition, a construct is an abstract concept that is specifically chosen or created to explain a given phenomenon (ibid.). A construct can be a simple concept or a combination of related concepts, such as a person's communication skill, which may consist of several underlying concepts such as the person's vocabulary, syntax and spelling, for example. Bhattacharjee (2020) states that a simple construct is a unidirectional construct and a construct that consists of a set of related concepts is a multi-dimensional construct. This explanation of concepts and constructs serves an important and critical purpose in this chapter because it provides explanations of concepts and constructs, including the internet and how and why it is operationalised in teaching for student learning at universities, and the construct of academic performance is clarified for reader enlightenment and critical grasp.

Constructs used for scientific research must have precise and clear definitions that others can use to understand exactly what it means and what it does not mean. Scientific research requires operational definitions that explain constructs in terms of how they will be empirically measured and understood, e.g. a construct such as academic performance should be defined in terms of whether the interest is in a person's grade point average (Williams, 2018), which means a student's final mark for tests or an examination, and further explicated multi-dimensionally to expose all its concrete and abstract meanings intended by a researcher. Therefore, constructs are

more complex and detailed than concepts and understood as multi-dimensional in nature and explication. The concept of academic performance is multi-dimensional in nature, and is explained, in this chapter, in that context so that the main aspects critical for student academic progress and success are elucidated and applied in the context of this study topic.

The following section discusses the various concepts for this study.

2.2 DEFINITIONS AND CONTEXTUALISATION OF CONCEPTS AND CONSTRUCTS

The following concepts and constructs form the crux of the research and therefore, it is critical that these concepts and constructs be explicated in terms of meaning and be operationalised in terms of how they can be understood by any reader of this work. The internet is defined first as the researcher is concerned with how the internet is used by university student to contribute to their academic performance towards success. The concept and construct of academic performance is expounded and clarified as per meaning of this researcher, for reader comprehension and understanding.

2.2.1 Internet

The internet is a global system of connections between computers that allows instant access to and dissemination of information (Ruzgar, 2005). As a growing trend in the world, internet-based research has become so significant in media and communication and the internet use by students has increased over the years.

The internet is described as a global system of connections between millions of computers which permits immediate access to and distribution of information. Currently, the internet has become so common because of the rapid development of technology and globalization (Adediran & Kehinde, 2014). The world is a global village, and dissemination of information through the internet has made it to be a trustworthy tool. The use of the internet as an educational tool at universities is rapidly increasing. Nowadays, there is a proliferation in the development of educational course Web sites with enormous amounts of learning resources imbedded within them.

The internet capacity to afford students rapid access to information sources and catalogues situated at different institutions makes it a valued information source for students (Leeder & Shah, 2016). There is no contradicting that the internet is beneficial for educational purposes. It is extensively used to collect information so as to conduct research or enhance to the knowledge of any sort of question students could have. The incorporation of the internet as a teaching tool has grown rapidly (Arkorful & Abaidoo, 2014; Bagarukayo & Kalema, 2015). Many institutions of higher learning are employing advanced technologies as a portion of present teaching backgrounds (Denny-Brown & Thomas, 2013). As viewed by Ruzgar (2005), new technologies are rapidly shifting people's ways of communication, the method of teaching, as well as extending learning techniques.

Since its inception, the internet changed the lives of millions of people globally. For students and lecturers, the internet has become a significant part of the academic process. Viegas (2013) affirms that the internet can be used to supplement a lecture where the lecturer requests students to find specific Web sites to gain more profound knowledge about a specific subject. It can also be used to substitute the traditional classroom lecture where courses are presented by means of the internet. The lecturer may place course materials on Web pages or may make a video recording of a lecture for watching on the internet. Soegoto and Tjokroadiponto (2018) further stressed that students nowadays have carried the internet into their classrooms, and learning can never be limited to the precincts of a classroom.

The internet is a collection of computers around the world that are linked with each other. The internet is an intermediate that does not have the restraint of information on each user. Many people are dependent on the internet for education, as the internet has countless advantages that can simplify a great deal of work, the internet is useful for effectiveness and productivity (Puspita & Rohedi, 2018). The nature of the effectiveness and productivity of the internet is that it has numerous facilities for users and offers ease of use.

The internet is described as the major computer network in the world to connect all existing computer networks (Intranet, Wide Area Network, Metropolitan Area Network, Personal Area Network, etc.) along with all computers, connected technological devices (Smartphone, Tablet, Switches, routers, hubs, and other connecting devices),

as well as the computer itself, into a single pot world's computer networks. The time spent using electronic mail (e-mail) and surfing online has improved significantly over the years. Many conclusions have been drawn that the use of the internet is one of the key aspects which affect academic performance and social life of students (Acheaw & Larson, 2015). Social media Web sites have grown to be common, giving people innovative ways to communicate with each other. Social networking became extensive between the years 2004 and 2006, after the establishment of Facebook and MySpace. Facebook, for example, had more than 500 million participants in 2015 and is still growing and approximately 85% of students use Facebook (Hong & Jo, 2017).

2.2.1.1 History of the internet

The internet is significant for teaching and learning, and it has changed the way students and academics alike search for information. It is, therefore, also important to look at the historical aspect of this phenomenon.

It is significant to highlight that the history of the internet, while developing in equivalent with the general development of personal computers and other devices for digital information processing and retrieval, is a history of the common networking protocols for transfer of digital information, and of systems for the publication, organisation and distribution of this information (Flew, 2008).

The internet was developed in 1969 by the United States of America (USA) Defense Department computer network by the Advanced Research Projects Agency Network (ARPANET). The Pentagon (Headquarters of the US Department of Defense and military leaders) built the network primarily for military contractors and universities conducting military research to share information (Vivian, 2003:223). The second major development in the history of the internet was the development of a common set of networking protocols, which enabled researchers in the various Local Area Networks (LANs) to communicate with one another, through the interconnection of these LANs into a Wide Area Network (WAN). The major breakthrough came in 1974, with the proposal developed by Robert Kahn and Vinton Cerf to develop a common switching protocol that could meet the needs of an open-architecture network environment, which came to be known as Transmission Control Protocol/Internet Protocol (TCP/IP).

In 1983, the National Science Foundation (NSF), whose accord was to promote science, took over (Leiner, Postel & Kahn, 2009). The new National Science Foundation network attracted additional institutional users, many of which had their own internal networks. For example, most of universities that joined the NSF network had intracampus computer networks. Later on, the NSF network then became a connector for thousands of other networks.

As a backbone system that interconnects networks, the internet was a name appropriate for it (Vivian, 2003). In fact, were it not for the Department of Defense's organisation known as the Advanced Research Projects Administration (ARPA), the internet as it is known today could not exist. This organisation and its successors (among which is the National Science Foundation) were influential in contributing the funding, the encouragement, and the old-fashioned kind of networking that brings people together that made possible the newly developed and unfamiliar networking so necessary to the internet (Tittel & Robbins, 1995).

The internet is not a new system. One may therefore have been amazed to pay attention to the existence of this massive resource in a computer media over recent years. This has been due to a combination of factors. Becoming part of the network was, until a moment ago, very difficult. The internet has always been feared in many respects: the network being perceived as exclusively an environment for technical people and academics (Manger, 1995). However, it can be argued that many different people use the internet for various reasons.

The internet has undergone a technical progression. It does tend to appeal to the more established computer user, in whatever capacity. The internet has developed very quickly because of the interest and input generated by other computer users. This being stated, nevertheless, the newly established Home Computer User (HCU) can get up-and-running without any extensive knowledge of computers, or indeed of the internet (Manger, 1995: 80; Naughton, 1999).

a) The development of the internet in South Africa

The internet access became commercially obtainable in South Africa in 1993 with the evolving of the Internet Services Providers (ISPs) – The Internet Company of South Africa and Internet Solutions (Lesame et al., 2012:41). During their initial operation, ISPs provided dial-up internet connectivity, but in the mid-1990s they started offering

web site development, routers, firewalls, electronic-commerce (e-commerce) and managed networks and security services. Some then extended into designing and building Local Area Networks (LANs) and providing companies with secure communication.

There are various ways in which one can connect to the internet such as through a high-bandwidth (available space in a medium, such as cable to carry messages), satellite technology, or a direct link to the telephone network through a leased line (Lesame, 2001; Pather & Rey-Moreno, 2018). A cable modem offers a two-ways data communication through radio frequency channels on a Cable Television (CATV) infrastructure. Cable modems are commonly developed in countries in Australia, Europe and America (i.e., developed countries) and they provide high-speed broadband internet facilities, of which South Africa (still a developing country) does not have much of at present.

The Internet Service Provider Association (ISPA) was established in 1996, starting with nine members, and played a critical role in driving the progress of the internet connectivity in South Africa, including lobbying government on liberalisation, regulation and other matters. In the early days of ISP operation, there was not much cooperation between the users the ISPs and when electronic-mails (e-mails) passed between users connected to different ISP networks. These messages had to cross the Atlantic and come back, even if the sender and receiver were in the same building (Lesame et al., 2012:41). This made internet connectivity very slow and expensive, because international bandwidth has always been a major cost component.

However, the newly formed ISPA set up the Johannesburg Internet Exchange (Jinx) in 1996, which provided a peering point, allowing ISPs to inter-connect with each other across the country. A peering point is an agreement between two or more networks to accept each other's data packets and forward them (Lesame, et al., 2011). The internet is a combination of public and private peering. This made it much faster to communicate by e-mail and visit local web sites. The peering point was a key to the fast take-up of the internet banking.

Internet service providers (ISPs) were challenged by interconnection problems with the company owning the telecommunications backbone they use and rent, viz., Telkom South Africa, and they have fought anti-competitive practices by Telkom aimed at

slowing down the ISP business. The ISPs experienced legal battles fighting Telkom's anti-competitive practices in court. Some of the bigger ISPs have started offering wholesale services to smaller ISPs, permitting them to connect to their infrastructure and put their services on top, such as e-mail, Web site hosting and customer support. Wireless ISPs install one or more fixed-line Asymmetrical Digital Subscriber Line (ADSL) or leased lines and a Wireless Fidelity (Wi-Fi) router that has a reach of a few kilometres. In 2009, there were 500 to 600 conventional ISPs in South Africa, but if the other hundreds of internet cafes and Wi-Fi spots are included in the list, there are more than thousands of ISPs in South Africa (Lesame et al., 2012:42).

b) The World Wide Web: Accessing information

The development of the World Wide Web (WWW) in the 1990s was the third key development that has made the internet what it is today. Though developments such as TCP/IP and packet switching provided the means by which networks and computers could connect with computers, the question of how people could connect with other people through such electronic networks had not received as much consideration.

The WWW is a global hypertext system implemented on the internet. Hypertext provides a spontaneous way of browsing through information. In a hypertext document, certain words, called 'hyperlinks' are underlined or otherwise highlighted. When one clicks a hyperlink with a mouse, a Web client, called a browser, retrieves and displays the document associated with that hyperlink. This retrieval is possible because every Web page has its own unique address called Uniform Resource Locator (URL) which specifies where it is located in the internet (Pavon & Brown, 2010: 2).

Microsoft rapidly followed suit in 1995 with its internet explorer browser, released as part of its Windows 95 software suite to much fanfare and to the sounds of the Rolling Stones' 'Start me up'. The World Wide Web was associated with the development of both the common Hypertext Transfer Protocol (HTTP), which provided a platform-independent means of interconnection between web sites, and HTML as a relatively straight forward means of writing source code for the World Wide Web (Naughton, 2016).

Jenkins (2002) as cited in Phillips (2013) states that the World Wide Web has the potential to be the most “powerful distribution channel” as almost wherever the user is in the world, one is able to log on and access information. The mobility of the internet has increased even further, as internet access may be achieved through desktop computer, laptop, smartphone or tablet gadget to name a few, this make evident the growing use and usefulness of mobile technologies. Due to universal nature of the internet, users are able to access the diverse and informative sites globally.

2.2.2 Academic performance

Identifying the factors that influence academic performance is an essential part of academic research (Kassarnig, Mones, Bjerre-Nielsen, Sapiezynski, Lassen & Lehman, 2018). Previous studies have documented the importance of personality traits, class attendance and social network structure (ibid.), but in this study these three criteria are not used to measure academic performance because this researcher’s particular interest and focus was on how the sampled students used the internet for improving their academic performance. Therefore, the following definitions of academic performance are more relevant, practical and applicable to this study to define and measure academic performance. Questions asked in the questionnaire were also related to the four academic performance criteria discussed next.

Academic performance has always been associated with the *evaluation of test results [same as (a) hereunder]*, which are those corresponding to students’ intellectual quotient (IQ) and leaving aside other characteristics (e.g. emotional intelligence, management, facilitation, understanding and perception) (Noemy, Rodrigo Ines, Izquierdo Garcia & Ajenjo, 2017). This definition of academic performance is conceptual in nature because it offers a simplistic description of the term, which measures academic performance by the final marks earned by a student in a test, assignment, examination and module or course. This simplified meaning of academic performance is further offered by Williams (2017), who states that when people refer to academic performance, they often refer to a person’s grade point average (GPA), which is an American term meaning the final mark for a test or an examination. Williams (ibid.) also offers a multi-dimensional meaning of the construct of academic performance because this term is not only simple in nature but is better explained and understood when expounded in more concrete and abstract meanings. The extended

meaning of academic performance pronounced by Williams (2017) states that some of the main indicators of academic performance include the following:

- (a) *scholarly achievement and skills* (in this study the skills relate to how a student accessed and uses the internet towards studying and conducting academic research for one's courses and general studies). This meaning is the same as GPA (Williams, 2018);
- (b) *impressive test scores* (in this criterion, good pass marks are usually a result of massive study efforts on the part of a student and much time that a student invests in studying aspects of a course and passing tests and examinations that lecturers give that student to write; the internet could play a critical role in assisting student towards obtaining these impressive test scores, if a student uses the internet to access knowledge and skills required to pass a course);
- (c) *student leadership* (in this study student leadership could mean the rate at which and tendency of a student to play a leading a critical role to study hard about one's courses so that one can be ready to be assessed and pass the courses well when assessment time comes. This means that a student should exercise self-motivation, self-control and self-discipline to study one's courses well and adequately if one wants to pass those courses. The student should also play a critical role in communicating with one's lecturers about critical aspects of the courses when a need arises). The internet plays a critical role in assisting a student to conduct research and learn more about how to lead oneself and others, how to perform other in studies and extramural activities at university, e.g., sports activities. These sports activities contribute a lot to academic performance because a physically sound body results in a sound mind, reduces stress and mental fatigue and is important and critical for high academic performance or success. The aspect of student leadership considered for this study is that of self-motivation to use the internet to study about one's courses. Participation of a student in sport activities is not very critical in this study for use to measure academic performance even though sport is watched over the internet towards self-improvement and self-motivation physically and mentally.

This extended meaning of academic performance is adopted and used in this study, because this researcher is of the view that the factors identified by Williams (2017),

and Noemy et al. (2017) are all critical to state in explicating the meaning of academic performance with reference to students sampled for this research, i.e., students from the Universities of Limpopo, Venda and Tshwane University of Technology (Polokwane campus).

Another definition and explication of academic relevant for and adopted in this study because of applicability and operationability to the topic under review is that offered by Ahmad and Shahzadi (2011), which states that academic performance depends on *academic interaction* and academic interaction depends on study habits (e.g., study habits, hardworking, learning skills and academic interaction) and home environment. Academic interaction, therefore, is the fourth variable,

(d) that defines the construct of academic performance in this study. In this definition by Ahmad and Shadzadi (ibid.), the criterion of home environment was not considered in this study because students were communicated with while at university campus and were not questioned about home environmental issues. However, the aspect of academic interaction is critical for this study because students interact with lecturers and other students offline and online (e.g., by using email, mobile phones and social media) to discuss and chat about aspects of their courses. The internet forms a major part of these student-lecturer and student-student academic interactions towards improved or better student academic performance. The internet, including social media such as WhatsApp and Facebook, forms an important and critical communication tool between students and lecturers, and students and students to share information, knowledge and skills for the main goal of student support and student academic success.

2.2.3 Information Communication Technology

Information and communication technology (ICT) is an extended term for information technology (IT) which emphasises the role of integrated communications and the incorporation of telecommunications, computers, essential software, which permit users to access, store, communicate, and manipulate information (Girish & Sureshkumar, 2017). The concept ICT refers to the linking of audio-visual and telephone networks with computer networks through a link system. Nonetheless, ICT concepts, approaches and applications are continuously developing on a daily basis (Brown, Thomas, van der Merwe & van Dyk, 2008). The scope of ICT includes any

product that will keep, retrieve, manipulate, transmit or accept information by electronic means in a digital practice e.g. personal computers, email and other modern applications. The last few decades have experienced an impressive growth in the field of ICT in education, which has also somehow influenced the life of people, particularly students. The technology is visibly present in the use of computers, smart phones, information search, robotics and intellectual means (Nour, 2002). This progress has permitted to get rapid access to any essential information. In the field of education, ICT is being used to improve quality and value of education particularly through integration. Technology is playing a great part in universal access to information, the delivery of quality learning and teaching, academics' professional development and education management, governance and administration.

2.2.3.1 Information Communication Technology and Information Systems

Information and communication technology is often used as an extended synonym for information technology (IT), but is a more precise term that stresses the role of integrated communications and the incorporation of telecommunications, computers as well as essential software, storage, and audio-visual systems, which permit users to access, store, communicate, and manipulate information. The concept ICT is now also used to refer to the convergence of audio-visual and telephone networks with computer networks through a single cabling or wireless system (Yekini, 2014). The term infocommunications is used in some circumstances as a shorter form of information and communication(s) technology. Infocommunications is the development of telecommunications with the purpose of information processing and content handling on a digital technology setting.

Information technology is the application of computers and telecommunications equipment to store, retrieve, communicate and manipulate data. The term is generally used as a synonym for computers and computer networks, but it also comprises other information distribution technologies such as television and telephones. Trucano (2010) regards ICT as a powerful collection of elements which include computer hardware, software, telecommunication networks, workstations, robotics and smart chips, which is also at the root of information systems.

2.2.3.2 Information Communication Technology Literacy

Since students are regarded as an information society, they are expected to be ICT literate. The ICT literacy entails the following aspects:

- a) Awareness: As one studies computers, one becomes aware of their significance, resourcefulness, pervasiveness, and their potential for positive and negative effects in our society.
- b) Knowledge: One will learn what computers are and how they work. This entails learning some technical terminologies that will help to deal with the computer and with people that work with computers.
- c) Interaction: Which involves learning to use a computer to perform some basic tasks or applications.

2.2.3.3 Integration of technology in higher education

Since there has been a rapid growth of students registered for higher education (Moloi, Mkwanazi, & Bojabotseha, 2014; Luescher, 2016), attention should not only be focused on establishing more colleges and university, along with that effort primarily should also be in quality and making student to understand the subjects and concepts in an improved way by using technology and information in the process of teaching and learning. Technologies encompasses many technologies for locating, gathering, and effective way of spreading information. This includes the internet, wireless technology, mobiles and other communication applications which includes audio and videos (Girish & Sureshkumar, 2017). The internet has completely transformed and improved the field of education. According to psychology, research outcome shows that the trend of gaining knowledge and information in higher education has changed (Rana & Shahriar, 2015).

After knowing genuine truths of ICT, the academic communities have accepted the use and implementation of ICT in higher education. Information and communication technology is basically the use of technology and provide a basic idea on how to use the technology and gives idea where it can be applied also helps to analyses impact of that technology in classroom (Habib, 2017:2811). This technology is all about how the teacher and student communicate with each other, inquire about doubts, helps in making decisions and provides a proper road map to understand and solve particular

problems. This cannot only be applied in a classroom but can also be used in daily life.

2.2.3.4 The potential benefits of ICT for students

Information and communication technology affords an extensive benefit in supporting learning. Students become active and independent through the use of technology in learning. By having access to the internet at universities, students do not totally depend on their lecturers. Self-managed learning permits the students to be self-motivated and self-directed students who will be able to respond to the rapid change of information. The use of blogs, for example, can afford academics and students to be very acquainted to the issues and discussion in their fields. Technology also offers ways for dynamic and cooperative learning. By using the internet learning is not limited to the specific lectures, and our geographical locations. Students access the internet anytime and anywhere. As indicated by Uhomoibhi (2006:9), e-learning allows the students to get information quicker regardless of time and space. Information and communication technology also allows collaboration between students and scholars from various institutions of higher learning.

2.2.4 Search engines

Search engines are the programmes that are used to search the information on the World Wide Web and File Transfer Protocol (FTP) servers by using keywords (Jadhav, Gupta & Pawar, 2011). Back then, the concept search engine refers to the hardware used for searching text, however at present, search engines refer to the usage of software systems for information retrieval systems from massive databases using a set of searches (Crof, Metzler & Strohman, 2015). Search engine technology has advanced alongside with the establishment of Web site technology. The number of search engine users is likewise growing fast daily.

A search engine is a programme that searches documents for identified key words and returns a list of the documents where the keywords were found (Crof et al., 2015). Even though search engine is actually a general class of programmes, the concept is mostly used to specifically refer to systems such as Google, Alta Vista and Excite which permit users to search for documents on the World Wide Web and USENET newsgroups. Generally, a search engine works by sending out a spider to bring as

many documents as possible (Oyewole & Alegbeleye, 2018). Another programme, called an indexer, there after reads these documents and generates an index centered on the key words contained in each document. Each search engine uses a copyrighted system to create its indices such that only relevant and key words match results are returned for each search.

SimilarWeb and Alexa highlighted that in late 2017 and early 2018, Google was still the most accessed search engine by the cyber society per day (Net MarketShare, 2018). Top 10 search engines with the greatest market share in 2018 were Google (71.98%), Baidu (14.04%), Bing (7.76%), Yahoo (4.44%), Yandex (0.92%), Ask (0.33%), DuckDuckGo (0.23%), Naver (0.12%), American Online (0.05%) and Dogpile (0.04%) (Net MarketShare, *ibid.*). In the institutions of higher learning, one aspect of the valuation in a web-based university ranking emphasises the significance of the presence of an institution on the internet (Kurniasih, Hasyim, Wulandari, Setiawan & Ahmar, 2018). Thus, universities offer numerous information for the public online. Not only information about institutions, but student learning resources are also widespread on the internet. Al-Hariri and Al-Hattami (2015) emphasise that search engines have become entries used to track countless information required by students. Crof, Metzler and Strohman (2015) state that most students depend on search engines and other online learning resources.

Kimmon (2012) describes a search engine as a Web site that connects and organize contents from all over the internet. On the ground of these explanation, search engines can be defined as Web user assistants to locate and retrieve information. Like any other assistant, the extent to which they are able to help depends on the degree to which the users are able to seek information. Hence, communicating with search engines is a serious part of the search process. The acquaintance of how to issue search query is a key influence to getting the required information from the internet. The Spiders Apprentice (2004) as well as Jato and Oseriri (2013) identified and explained the following as ways by which search queries could be issued in order to find desired information on the internet: key word search: refining a search; relevance ranking; meta tags and concepts based searching as briefly described hereunder:

- a) Refining a search: Many search engines offer two different forms of searches; basic and advanced. In a basic search, one only has to insert a key word without

sieving through any menus of additional preferences. Advanced search options are different from one search engine to another, however some of the options embrace the capacity to search on more than one word, giving more weight to one search term than you give to another, and to eliminate words that might be likely to ruin the results (Jato & Oseriri, 2013).

- b) Relevancy ranking: Many search engines yield results with confidence of relevancy ranking. In simple terms, they list the results based on how closely they match the query (The Spiders Apprentice, 2004).
- c) Meta tag: some of search engines are now indexing web documents by the Meta tag in the documents' Hypertext Markup Language (HTML) at the beginning of the document in the head tag (Jato & Oseriri, 2013). This implies that the web page author can have some influence over which key words are used to index the document, and even in the description of the document that appears when it comes up as a search hit.
- d) Concept-based search: Different from key word search systems, concept based search systems attempt to determine what you mean, not just what you say. In simple terms, a concept based search returns results on documents that are about the subject and/or theme one is exploring, even if the key words in the document do not accurately match the words one entered into the search system (Crof, Metzler & Strohman, 2015).

2.2.4.1 Role of search engines in higher education

In order to conduct an effective search, the researcher should understand the structure of the several search engines. Search engines do not always afford the right information, but rather often subject the user to an overflow of disorganized inappropriate data. All search engines support single-word queries. The user only types in a keyword and presses the search button. Again, most engines also support multiple-word queries. However, the engines differ as to whether and to what level they support Boolean operators (such as "and" and "or") and the level of detail supported in the query. More precise queries will enhance the relevance of the user's results.

2.2.4.2 Students' use of search engines for academic purposes

There is a growing body of research regarding students' Web or databases use within the institution of higher learning. Some of the search engines are more used compared to others. There are numerous search engines being made available to the web. Nevertheless, the question still remains unanswered why very few of the online search engines are being used. Research has shown that university students face challenges when surfing the internet for information, and the most key challenge being evaluating search results, and selecting sources and information (Margeret, 2012).

The difficulty in finding specific information on the internet is because of the growth and collection of information held and the way the information is organised. Though there are several search engines that make Web searches slight easier to use, there are still navigational problems for students because intelligent search skills are required to enable them to obtain access to appropriate resources and information (Nikolopoulou & Gialamas, 2011).

In a study on information seeking behaviour of final year students in south western Nigeria University Eke, Faustina and Anne (2019) revealed that Google, Wikipedia and Ask.com are the three most dominant used search engines with Google taking first spot. Another study on comparative analysis on six search engines comprising of three English search engines; Google, Yahoo, MSN and three French search engines; Exalead, Voila and Dir.com (Dwivedi, 2018). The study found that Google and Yahoo were the best search engines compared to the rest.

Adithya, Mahadevamurthy and Hydar (2013) highlighted that level of awareness of numerous search engines to students in higher institution is very little. The survey also highlighted that students have very confused understanding of several search engines and its concept. Accordingly, many students are not using many available search engines. Oyewole and Alegbeleye (2018) posits that at the most basic level, undergraduate students lack the existence of the various search engines; many of the students according to Shearer are not familiar with the concept of various search engines. Onwuchukwa (2013) juxtaposed the performance of the major search engines, Google, Yahoo!, and MSN was found to be the greatest, with about 90 per cent of queries answered appropriately.

Shearer (2012) indicates that the search engine industry in Africa is constrained by low internet bandwidth and high dial-up tariff, as well as high cost of Personal computers. The cost of bandwidth in Africa is much more compared to most of developed countries and students are faced with the challenges of slow internet connectivity, many sites disappear without any notification or warning, slow access is also one of key common challenges when a large number of users are connected to the internet (ibid.). The prospective of the search engine is also being limited by slow data transmission speed and by the difficulties of information management and retrieval posed by the presence of such massive amount of information (ibid.).

Suhaimi and Hussin (2017) state that information has increasingly come unfiltered. This raised questions about authenticity, validity and reliability of information retrieved on the internet. Moreover, online information is available through various media, including graphical and textual. Users are faced with diverse and profuse information choices for their academic purposes. Information seeking involves uncertainty, which demand skills and efficacy when selecting some and leaving of the information. This is a problem, since the quality and aim may vary significantly. Musa (2014) investigated the impact of the internet on final year students' research projects and revealed that most of the students used Google (40%) as their search engine. The following search engines extremely used by students is Yahoo (28%) and MSN (14%). The study affirmed that the internet is one of a vital tool for research.

2.2.5 Electronic learning (e-learning)

The internet has become one of the significant ways to access resources for research and learning for both academics and students to share and obtain information. Technology-based e-learning involves the use of the internet and other essential technologies to access and disseminate information for learning. There has been broad discussion about a common description of the term e-learning. Current explanations according to Arkorful and Abaidoo (2014) tend to expose the specialisation and interest of the researchers. E-learning as a concept shelters an array of applications, learning approaches and procedures (Kwofie & Henten, 2011). Hence, it is challenging to find a universally accepted description for the term e-learning. Jethro, Grace and Thomas (2012) are of the view that there is no common explanation for the term. Holmes and Gardner (2006) likewise are saying that there

may be as several explanations of the concept e-learning as there are academic papers on the subject. Dublin (2003) attempting to find a collective meaning of the term e-learning asks the subsequent questions:

- (i) Is e-learning an on-line coursework for students at a distance?
- (ii) Does it mean using a virtual learning environment to support the provision of campus-based education?
- (iii) Does it refer to an on-line tool to improve, spread and reinforce collaboration?
or
- (iv) Is it an entirely on-line learning or part of intermingled learning?

Goya (2012) states that e-learning has changed from a fully-online course to using technology to deliver part or all of a course independent of permanent time and place. The European Commission (2001) defines, e-learning “as the use of new multimedia technologies and the internet to increase learning quality by easing access to facilities and services as well as distant exchanges and collaboration”. The following are also different definitions of e-learning:

E-learning involves the use of ICT to permit the access to online learning and teaching resources. In a brief sense, Mohamed and Peerbhay (2012) describe e-learning as any learning which takes place electronically, but nonetheless confined this explanation to mean learning that is empowered by the use of digital technologies. This meaning is more narrowed by some scholars as any learning that is internet-enabled or web-based (Hoijsink, 2015).

According to Isabirye and Dlodlo (2014), the term e-learning is applied in diverse perspectives, comprising of online-distance learning, as well as hybrid learning. The Organization for Economic Co-operation and Development (2005) explains e-learning as the use of ICT in various processes of education to support and improve learning in institutions of higher learning, and takes into account the usage of ICT as a complement to traditional classrooms, online learning or merging the two approaches. Dabbagha and Kitsantasb (2012) explain e-learning as an attainment and use of information that is mainly expedited and distributed by electronic means. E-learning happens through the use of computers and the internet. Bagarukayo and Kalema (2015) established that the features of e-learning process are primarily centred on the internet; global sharing and learning resources; information broadcasts and

knowledge flow by way of network courses, and lastly flexibility of learning as computer-generated environment for learning is created to overcome concerns of distance and time. Hoijtink (2015) argues that e-learning is proposed based on distance learning, as a result a transmission of lectures to distant locations by way of video presentations. Open Educational Resources Africa (2014) claims that the evolution of communications technologies, especially the internet, did develop distance learning into e-learning.

Other scholars (Brady et al., 2010; Freeman, 2014) described e-learning as a revolutionary method. Freeman (2014) defined the e-learning approach as centred on the learner as well as its design as involving a system that is interactive, repetitious, self-paced, and customizable. Brady, Holcomb and Smith (2010) likewise referred to the concept as the use of computer network technology, primarily through the internet, to provide information and instruction to students. Open Educational Resources Africa (2014) outlined e-learning based on the summaries of its features, which are:

First, they offer a multimedia environment.

Second, they integrate several kinds of information.

Third, e-learning methods support collaborative communication, whereby users including students have entire control over their own circumstances of learning.

Fourth, e-learning support networks for retrieving information.

Last, e-learning permits for the systems to be implemented freely on several types of computer operating systems.

According to Sangrà, Vlachopoulos and Cabrera (2012), this new setting for learning that is positioned on electronic networks has afforded students at institutions of higher learning to receive individualized support and to have learning programmes that are more apposite to them as well as separate from other students. This enables a great collaboration and interaction between academics and students than traditional settings for learning. E-learning for academics is characterized by the use of multimedia concepts and make the process of learning more dynamic, motivating and pleasant (Hough & Neuland, 2014). The key concepts that have made e-learning the most useful educational technology, according to Mohamed and Peerbhay (2012) comprise of service, cost, quality, and speed. It is evident that e-learning empowers students at

institutions of higher learning to obtain their education and at the same time going after their personal (Dabbagha & Kitsantasb, 2012).

2.2.5.1 Types of e-learning

There are different ways of categorizing the types of e-learning. Algahtani (2011) highlight that there have been some categorizations based on the degree of their engagement in education. Some classifications are also centered on the timing of interaction. Jethro, Grace and Thomas (2012) separated e-learning into two basic categories, viz. computer-based and the internet based e-learning. The computer-based learning embraces the use of a full range of hardware and software mostly that are available for the use of ICT. Computers are used instead of the traditional methods by providing interactive software as a support device within the class or as a tool for self-learning outside the classroom. In the computer-managed-instruction, computers are used for the purpose of storing and recovering information.

Internet-based learning (IBL) is a further enhancement of the computer-based learning, and it makes the information accessible on the internet, with the readiness of links to associated information sources. Bagarukayo and Kalema (2015) categorised IBL by the extent of such features use in education, mixed or blended more, assistant mode, and completely online mode. The assistant approach supplements the traditional method as needed. The entirely online method, which is the most complete improvement, includes the exclusive use of the internet for teaching and learning.

2.2.6 Internet Self-Efficacy

In general, self-efficacy refers to how assertive an individual feel about handling specific responsibilities, challenges, and situations (Bandura, 1997). Internet self-efficacy is broadly considered to be derived from Bandura's (1986) social cognitive theory (SCT). Bandura (1994) in Kuo, Walker, Belland, Schroder and Kuo (2014) describes self-efficacy as people's views "about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives". Individuals with higher self-efficacy observe difficult tasks as meaningful encounters, regardless of the fact that others may find similar responsibilities unfavorable (ibid.). In Bandura's (1994) understanding, high self-efficacy "fosters

intrinsic interest and deep engrossment in activities”, on the contrary, a lack of self-efficacy may cause people to have little ambitions, relax their efforts, and give up easily. Moreover, some scholars (e.g., Onal & Ibili, 2017) have further pointed out that students’ intellectual processes can be influenced by self-efficacy.

2.2.6.1 Self-efficacy in internet based learning environments

Different scholars have perceived students’ self-efficacy from a variety of standpoints (Girasoli & Hannafin, 2008; Alqurashi, 2016; Rezart, 2020). As a result, before describing relevant applications of self-efficacy in the internet Based Learning research, it is worthwhile to determine pertinent explanations for various kinds of self-efficacy. In wide-range, academic self-efficacy (ASE) refer to a student’s observation of academic learning (Onal & Ibili, 2017) whereas computer self-efficacy (CSE) is outlined as an individual’s perceived self-assurance concerning his/her ability to use a computer. Likewise, general internet self-efficacy defines people’s perceptions about their own capabilities to use the internet (Alqurashi, 2016) while internet based learning self-efficacy (IBLSE) embodies people’s self-assurance and self-belief in their aptitude in dealing with an online course or online learning activity (Rezart, 2020).

People's confidence in their capacity to perform certain responsibilities, or self-efficacy, has long been surveyed to envisage the extent to which they will participate in the task (Bandura, 1977). Internet self-efficacy refers to one’s confidence in one’s capability to organise and perform internet-related activities to complete online tasks or assignments (Kuo, Walker, Belland, Schroder & Kuo, 2014).

People with positive attitudes toward technologies are likely to have higher internet self-efficacy, compared to those with negative outlooks toward technologies. Internet training is useful to improve students’ internet self-efficacy, particularly for those with positive attitudes toward the use of ICT, and those with little computer anxiety (Torkzadeh, Chang, & Demirhan, 2006; Onal & Ibili, 2017).

2.2.6.2 Interaction, internet self-efficacy and student satisfaction

The findings of the relationship between internet self-efficacy and learning results such as performance and satisfaction are indecisive. Some studies pointed out that internet self-efficacy certainly correlates with or envisages students’ performance in Web-

based learning environments (DeTure, 2004; Thompson, Meriac, & Cope, 2009; Zimmerman & Kulikowich, 2016). For example, students with greater internet self-efficacy were found to have better information searching abilities and learn better compared to those with poor Internet self-efficacy (Alqurashi, 2016). Nonetheless, little is known about the effect of internet self-efficacy on student satisfaction when relying on the internet to access information for their academic purposes (ibid.). Yavuzalp and Bahcivan (2020) indicate that it is only few studies which has researched about the correlation between internet self-efficacy and satisfaction, and revealed that internet self-efficacy is not significantly associated with or predictive of satisfaction in web-based learning settings. Rezart (2020) established that internet experiences are positively associated with student satisfaction. Further, research is needed to examine the role of internet self-efficacy for student satisfaction in online synchronous education.

2.2.7 Social Media

The term 'social media' refers to the internet-based Web sites or applications that permit users to take part in generating content (Manning, 2014). As the word 'social' denotes, social media also connect audiences in certain ways by permitting them to communicate and interact directly with each other. The concept 'social media' was first used in 1994 (Bercovici, 2010). However, it became common only about a decade later with the intensification of Web 2.0 (ibid.). Social media can be defined as a collection of internet-based applications that build on the conceptual basics of Web 2.0, and which permit the construction and exchange of user-generated content (ibid.). Using these applications, users can create, share and exchange information, and come together in online spaces to form 'virtual' communities.

Greenhow and Lewin (2015) describe social media as Web-based services that engage users through cooperation and sharing, and also permit participation, connection and interactivity. In social media, people willingly share content through online platforms, using various internet applications. Fourie (2017) indicates that the concept social media signifies the nature of the content and the active social roles related to the creation and usage of the content.

Social media is a concept frequently used to denote to new types of media which encompass interactive participation (Manning, 2014). Time and again the development of media is divided into two different phases, the broadcast age and the interactive age. In the broadcast age, media were practically centralized where one broadcasting organization, print media company, or a movie production studio distributed messages to the majority of people. Feedback to media companies was in most cases indirect and delayed. Mediated communication between the public and the media organizations usually happened on a far slighter level, typically by means of letters and telephone calls amongst other means. With the upsurge of digital and portable technologies, communication on a great scale turn out to be at ease for people than in the olden days, and fundamentally, a new media age was born where interactivity was cited as significant of new media purposes. A person could now communicate with people with the possibility of an immediate feedback. The little cost and convenience of new technology permitted more choices for media consumption as compared to the traditional media, and instead of limited media platforms, people now have the choice to look for information from numerous sources and to exchange ideas with others through the media about the information displayed (Ansari & Khan, 2020). At the centre of this continuing revolution is social media.

2.2.7.1 Characteristics of social media

All social media embrace some sort of digital platform. Nevertheless, not all that is digital is necessarily social media. Two common features assist to describe social media. Foremost, social media permit some form of contribution (Devi, Gouthami, Lakshmi, 2019). Social media are at no time entirely passive, even though at times social networking sites such as Facebook, Instagram, Twitter, YouTube and others do permit passive viewing of what other users are writing (Van Den Beemt, Thurlings & Willems, 2020). Generally, a profile account must be created which will subsequently allow interaction. That feature alone sets social media separate from traditional media where personal profiles are not a requirement for one to participate in the platform. Second, and coherent with its participatory environment, social media include interaction (Van Den Beemt, Thurlings & Willems, 2020). This communication is mostly instituted with friends, family, associates or with new people who share mutual interests.

2.2.7.2 Common types of social media

There are various types of social media applications available, and some are used mostly for recreation, communication with family and friends, others for professional reasons. Some social media outlined by (Wright & Webb, 2011; Manning, 2014; Akçayır, 2017) are described forthwith:

a) Social networking sites

Facebook and other social networking sites are practically universal features in modern culture. An important unique feature that makes a social networking site is the list of users that one associates with, typically founded upon friendship, family, work relationships, and various relationships (Ansari & Khan, 2020). Mostly, social networking sites have become a great path to meet new people. The nature of information communicated through social networking sites permit a space for social or political perspectives to be displayed (Wright & Webb, 2011). This platform is sometimes used to communicate and share academic related information amongst students at institutions of higher learning. Students can make friendship with other fellow students from different institutions and share information among themselves.

b) Blogs

The word blog is resulting from the term Web log. A blog is a Web page where a group people can share information or ideas through the internet. It is not rare for a person to create a blog and then not update it again. Most of the most effective blogs are updated on a regular basis so the followers can identify when to anticipate new content (Wright & Webb, 2011). Blogs cover a wide range of topics, including political issues, entertainment, academic and social aspects. A common feature toward blogs is a response platform where, after reading a post, people can discuss with both the blog author and including those who have commented.

c) Mobile Applications

Mobile applications are not essentially social media oriented; but in many cases people can connect through apps through another type of social media, usually Facebook and apps have some kind of social aspect. One illustration is Grindr which is an app which affords gay men an opportunity to locate other gay men who are within

close vicinity. Like other apps, Grindr uses a smartphone position tracker to know where the user is and to outline the distance amongst other users (Manning, 2014).

2.2.7.3 Basic functions of social media

Social media have countless different purposes. Initially, they consent users to create their own identity profile. When people post profiles, it demands some sort of reflection (Gaile, 2013). Secondly, social media permits people to tend to their relationships in diverse ways. Research indicates that social media allow people who may not in a natural setting meet an opportunity to connect and interact (Richter & Koch, 2008). People also testify on creating their best friendship and even meeting their spouses through online communication platforms. Thirdly, social media permit people to execute work functions. In most cases, people communicate with work colleagues through social media sites, and they execute most of their work communication by means of the social media channels. Fourthly, social media let people to search for information or even share philosophies. Information can vary from political campaigns, entertainment, local issues, academic related content to fashion (Amedie, 2015). Again, and generally related to information sharing, social media users also offer ideas or consider the ideas of others via social media. Last but not least, social media users find entertainment through such online platforms.

2.2.7.4 Social networking sites and university students

The extensive rise of online technologies is remodelling the way academics connects, interconnect and cooperate with their varied stakeholders (Chugh, Grose & Macht, 2021). To expedite these connections, social media has swiftly come to the front. These includes but not limited to social networking sites, video sharing sites, photo sharing sites, bookmarking sites, discussion forums and wikis (Chugh & Ruhi, 2019). Social media is making has made its mark on academia as it unlocks new ways for students and academics to engage with a wide audience fellow students as well as academics within and outside their own discipline (O'Keeffe, 2019). Worldwide, there are more than 3.8 billion active social media users (Chaffey, 2020), this tallies to approximately half the world's populace and hence also includes learners at various educational levels: pupils of different ages and experiences actively use social media to search for content, share information, interact with others and enhance their skills

(Murphy, 2018), students and academic in higher education use social media to share content, promote social scholarship by making their research more available, contributing to comprehensive dialogues and permitting the public to become active participants in the creation of knowledge (Pausé & Russell, 2016). It is evident that social media usage has infiltrated in academia (Vandeyar, 2020), though it does not happen extensively. There is a growing body of scholarly literature on social media usage by students in institutions of higher learning (Al-Qaysi, Mohamad-Nordin & Al-Emran, 2020).

Forkosh-Baruch and HersHKovitz (2014) affirm that institutions of higher learning make use of social networking sites for their local management of educational matters. Zachos, Paraskevopoulou-Kollia and Anagnostopoulos (2018) reviewed studies which revealed the useful impact of social networking sites on higher education and established that Facebook and Twitter are the basic online social networking sites mostly used for educational purposes. In most cases, *Facebook* was either the only online social network being used, followed by Twitter, Myspace, Google+, LinkedIn and other social media networks.

2.2.7.5 Social networks and learning processes

Nowadays, new ways to search for knowledge using social networks in both formal and informal education have arose. Formal education is described as a scaled educational structure organised in successive time periods, from early childhood education, primary, secondary and tertiary education (Sobaih, Hasanein & Elnasr, 2020). Whereas informal education is considered as the learning procedure by which an individual learns and obtains knowledge, skills and values directly from one's everyday experience and social setting. This is also known as learning based on interaction or lifetime learning (Al-Rahmi, Alias, Othman, Marin & Tur, 2018). Several studies illustrate that students use online social networking sites mostly for socialising purposes, for exchanging opinions or ideologies, and also for entertainment (Pempek, Yermolayeva & Calvert, 2009; Tess, 2013; Sharma, Joshi & Sharma, 2016). While (Hew, 2011; Cheung, Chiu & Lee, 2011) indicate that students use Facebook mostly in order to increase their friendship, (Sturgeon & Walker, 2009; Cooke, 2017) assert that Facebook use affects their education. Likewise, in a related survey conducted at Islamia University in Pakistan, almost 90% of the participants indicated that they used

Facebook for their academic activities (Hussain, 2012). Furthermore, at University of Delhi, more than 70% of students indicated that they used Facebook to collaborate with fellow students in their research studies (Sobaih, Hasanein & Elnasr, 2020).

As much as Twitter is concerned, Camiel, Goldman-Levine, Kostka-Rokosz and McCloskey (2014) revealed that more than 60% of the respondents used Twitter to enhance their academic profile.

2.3. SUMMARY OF CHAPTER 2 AND OUTLINE OF CHAPTER 3

This chapter defined and operationalised the concept and constructs which have been mostly used in the study. This assist in circumventing any probability of misinterpretation on the part of reader of this work. Concepts which have been defined and operationalised include the internet, academic performance, ICT, search engines, e-learning, internet self-efficacy and social media.

Chapter 3 explains with emphases the contextualisation of technology in education. Some of the aspects include the use and application of technology in teaching and learning, factors influencing the use of the internet for information search, use and contextualisation of social media in education, the effectiveness of ICT which include instant messaging, learning management system and blogs among others.

CHAPTER 3

CONTEXTUALISATION OF TECHNOLOGY IN HIGHER EDUCATION

3.1 INTRODUCTION

There have been various studies conducted in the field of technology incorporation in education in different countries. In relation to this topic, literature is reviewed in this Chapter to indicate progress in research made concerning the use of ICT for teaching and learning. The literature reviewed provides a critical analysis of technology in terms of how it assists educators and students in enhancing teaching and learning, with reference to these themes: teaching and learning, ICT applications, teaching and learning technology.

The review of related literature involves the systematic identification, location, and analysis of documents containing information related to the research problem (Gay, Mills & Airasian, 2006). The term describes the written component of a research plan or report that discusses the reviewed documents. These documents can include articles, abstracts, reviews, monographs, dissertations, other research reports, and electronic media. In this Chapter, reviewed documents included South African Broadcasting Laws and reviews, and critique of these Laws by industry analysts and scholars. Academic and newspaper articles discussing the Laws were also mentioned and most of these article provide valuable critical of how the BDM processes have been slow and not that progressive.

In research of this magnitude, the purpose of literature review is to provide the reader with an overall framework for where a piece of literature fits in the big picture of what is known about a topic from previous research (Boote & Beile, 2005). Thus, the literature review explains the topic of the research and supports the rationale for investigating the problem that is studied by conducting research.

The literature review has several important purposes that make it well worth the time and effort for any study in social sciences research. The major purpose of reviewing the literature is to determine what research was conducted about a topic and what that research has yielded and failed to achieve so that new knowledge can be created by

conducting new studies about a topic of focus. This study serves this purpose of creating new knowledge about the use of technology at the sampled universities.

Furthermore, a researcher should understand how previous research conducted on a topic (or related to that topic) relates to one's topic, because this knowledge not only prevents the researcher from unintentionally duplicating another person's research, but it also offers the researcher the understanding and insight one requires to place one's topic within a logical frame. In other words, the review informs a researcher what has been conducted about a topic (e.g. the use of technology for education at institutions of higher learning in this study), and what research has not been conducted on that topic. This researcher noted that no South African study was conducted on the use of some (e.g. some digital) technology for education of students at the selected universities which are located in Limpopo Province. Therefore, this researcher, reviewed literature on the use of technology in the education of students at institutions of higher learning with a view to contribute towards the improvement of these technology deficiency at the selected universities.

Literature review has enriched this study in various ways stated by Creswell (1994) as the following:

- (a) It shares with the reader the results of other studies that are closely related to the study being reported. The studies are stated in this Chapter and also Chapter 3.
- (b) It relates a study to the larger, ongoing dialog in the literature about a topic, filling in gaps and extending prior studies.
- (c) It provides a framework for establishing the importance of the study.
- (d) It discovers research strategies and specific data collection approaches that have or have not been productive in investigations of topics similar to a researcher's. This information can help a researcher to avoid other researchers' shortcomings and profit from their unmet goals and shared experiences, and may suggest approaches and procedures that the researcher previously had not considered. The role of technology in education at universities is, therefore, the focus of the literature review in this chapters and it is critical that the meaning of information technology is explained.

According to Owusu-Ansah, (2015), information technology (IT) refers to all equipment, processes, procedures and systems used to provide and support information systems (both computerised and manual) within an organization. The concept 'information and communication technology' (ICT) was invented to reflect the whole convergence of digital processing and telecommunications (Negroponte, et al., 2006). Information and communication technology include hardware, processes and systems used for storing, managing, communicating and sharing information. Technology is crucial and have been accepted as part of the contemporary world especially in the industrialised society (Hawkins, 2002).

The following section describes uses and applications of technology in teaching and learning.

3.2 USES AND APPLICATION OF TECHNOLOGY IN TEACHING AND LEARNING

Teaching is the establishment of learning environments with long-term and short-term effects on students. Content, skills, instructional roles, social relations, kinds of activities, physical facilities and their use all add up to an environmental system whose parts interact with one another to force the behaviour of all participants (Bruce-Joyce, 2017). The diverse combinations of these components create environments prompting different educational outcomes. These outcomes are further distinguished as 'instructional' (content and skills gained by the student through activities which characterise a learning environment) and 'nurturing' (capacities and values which result from living in an environment). As a result, teaching is the process of carrying out those activities that experience has shown to be effective in getting students to learn (De Houwer, Barnes-Holmes, & Moors (2013).

Learning is a method by which one obtains, consumes, and stores or accepts information. Thus, people's experiences with learned information compose their bodies of knowledge. Learning is a unique process to each individual. Some learn fast, scanning the information and understanding the concept or skill without putting much effort, while others find it difficult to process information, taking much time to comprehend the concept or needing several lessons over a sustained period. Some individuals store the information they have learned indefinitely, cementing it in their memories, while others find that the information they have learned slips away quickly.

Some learn best through text, others through practice, and some through hearing. Learning styles are as unique and different as our personalities. Learning is a lifelong effort. As long as one is still alive, learning does not end.

The subsequent section discusses the relationship between internet and education.

3.2.1 The relationship between the internet and education

Throughout the years, the improvement in digital technologies and the increasing number of new media platforms have changed the way in which people communicate and share information. Auwal (2015) affirms that technological innovation specifically the internet has improved and extended the boundaries of communication and information reception and dissemination in the world. The ICT, precisely the internet, have positively impacted teaching and learning on the institutions of higher learning. Almarabeh, Rajab and Majdalawi (2016) point out that indeed majority of students (77%) agree that education will not be effective without ICT tools in general and the internet in particular. Many students indicate that the internet has a positive effect on their academic performance. It has developed to be the world's main library where retrieval of scientific resources using a mouse provides an array of information in a short space of time (Srujan et al., 2016). The internet serves as an important learning tool by providing latest information to students, however it would be a false impression if the students lack the necessary computer skills.

Mujgan and Seda (2015) and Srujan et al. (2016) state that almost 90% of students on North American colleges and universities believe that ICT including the internet is a significant contributor to their success. Students uses the internet to prepare coursework, they also use Web-based material to supplement textbooks.

The following section focuses factors influencing the use of the internet for information search.

3.3 FACTORS INFLUENCING THE USE OF THE INTERNET FOR INFORMATION SEARCH

The internet is a valuable tool for information search since it is user-friendly and available for research at any time of the day, depending on the students' needs.

Nevertheless, there are other aspects that influence a person to use the internet to search for information. Personal characteristics of individuals could affect their use of the internet. For example, age often indicates generational gaps whereas income differentiates people according to their economic power, and educational level measures individuals' academic development. These aspects are likely to affect people's use of the internet. The internet is mostly chosen by university students as a source of information because of its speediness in delivering information, and also the potential it gives them to connect with fellow students around the world for the purpose of sharing information. The younger generation which know how to use the internet often search for information online instead of going to the books, and this tendency have extended to the manner they search for information regarding academic purposes (Ahmed, Hanif & Meenai, 2015). The study also mentions that there are differences among age groups in what they do online. However, it could not conclude that there is uniformity in internet use within age groups.

The subsequent section explains the use and contextualisation of social media in education.

3.4 USE AND CONTEXTUALISATION OF SOCIAL MEDIA IN EDUCATION

Social Software, Web 2.0, Social Media or social Web technology are networked tools or technologies that accentuate the social features of the internet as a channel for communication, interaction and collaboration (Dabbagha & Kitsantasb, 2012). Educational Social Software is Social Software intended for educational purposes. Social media as described by Anderson (2019:6) is the use of networked tools by individuals, groups and sets of people to consume, produce and share information. Hence, it comprises large platforms such as Facebook, Skype, Wiebo, WeChat, and in some instance WhatsApp as well as individual Web and blog sites. During the last two decades of the "social media period", scholars have revealed and, in numerous cases, argued for the advantage that social media can or could bring to higher education. Research also shows ongoing and expanding use of social media mainly by youth including students at institutions of higher learning and, at least, findings signifying important educational benefits.

The basics of Web 2.0 technology, which includes wikis, blogs, podcasts, RSS feeds, social networking sites, social bookmarking sites, instant messaging, and virtual office applications afford users with easy-to-produce Web content and interaction (Ayooluwa, 2016). Web 2.0 tools with apps for teaching and learning include Facebook, Wikis, Delicious, Podcasts, and YouTube amongst others. Social Networking Sites include Facebook, Twitter, Myspace, Flickr, and Friendster, with basic features of interaction, collaboration and the social aspect. The uses of these sites include communication and literacy skills, e-portfolios and e-safety learning. Searching and retrieving material may have led to shift of learning styles, to more collaborative environments and more hands-on inquiry-based approaches (Bosch, 2009). Web-based learning leads to the availability of the learning content.

Social software expedites self-governed, problem-based and collaborative activities by providing learners with personal tools for free production of information and engagement in social networks (Dalsgaard, 2014). Social Software tools allow independent work, and actively enable interactions between students and lecturers and support the flexibility of open-ended activities, unlike an LMS; they include personal tools owned and controlled by students and used for construction of information, and tools for navigating the web to develop understanding and solve problems, which lead to lasting learning using social web technologies. Social media are part of an everyday communication system; thus, institutions of higher learning needs to accommodate Social media platforms to ensure students are ready as skilled digital citizens (Freeman, 2014). Social media enhances learning, user generated content, sharing of information, engagement, ICT skills, students' empowerment and activities that nurture knowledge production; hence it is effective for learning. Students should be assisted to employ various networks to support eLearning activities, which drive to gain access to more resources through friends, lecturers and academics. Social Software inspires students to develop individual networks for interactions established on specific interests and needs. Learning and network are related and students should be connected. A learning network leads to a constant lifetime process, which leads to continuous learning due to social networking sites participation.

The subsequent section explores and describes ICT effectiveness for teaching and learning.

3.5 INFORMATION AND COMMUNICATION TECHNOLOGIES EFFECTIVENESS FOR TEACHING AND LEARNING

There are enormous technologies and internet applications which are available and can be used for teaching and learning. This section explores some of these technologies which are being used by the three universities under study, and also those which are not being used, but could be helpful if utilised.

3.5.1 Technologies being used for teaching and learning at the three universities under study

a) Learning Management System

A learning management system (LMS) is an online portal that connects lecturers and students (Adzharuddin & Ling, 2013; Alokluk, 2018). It provides a platform for classroom materials or activities to be shared easily. It is also a portal that allows lecturers and students to interact out of the classroom, having discussions through forums that could otherwise take up too much of the time supposed to be spent learning in the classroom. Learning Management Systems provide lecturers an online space for each of their courses. These systems offer the capacity to post lecture notes, send announcements, oversee reviews and empower talks (Ofosu-Appiah 2017:30). Lecturers can contact students and closely monitor their development in online assignments.

Some prominent LMSs integrate Blackboard, WebCT and Moodle. Blackboard is incorporating the two organisations' product bundles. On the other hand, Moodle is a free open source programming bundle that has as of late developed as a rival in the advanced education LMS domain. In this contemporary world where information is dispersed rapidly through the internet, the LMS is a critical tool for university students as they can keep updated with their coursework and get immediate announcements with regard to their academic activities. Subsequently, lecturers have an easy way of reaching out to their students out of class hours and can instantly update them through the Learning Management System about issues regarding coursework. Universities are expected to provide proper training and guidance for students and lecturers using the Learning Management Systems (Alokluk, 2018). The three universities under

study have been using Blackboard as part of teaching and learning process. Initially, Blackboard was used to upload study materials and give notices to students. However, the advent of Covid-19 changed the status quo in terms of using this platform. Academics went through formal training in order to maximise the use of Blackboard for teaching and learning. Academics and students started to arrange online classes through the use of Blackboard, and the platform proved to be useful for teaching and learning.

b) Instant messaging

Instant messaging, usually called chatting, is a form of immediate, direct, text-based communication between two or more people using personal computers or other devices, such as mobile phones (Njoku, 2015). The user's message is carried over a network, such as the internet. Yahoo Messenger is one of the most used of Instant messaging applications. There are also America Online (AOL) and Windows Live Messenger. A number of other free e-mail providers, like Google, incorporated Instant messaging facility into their e-mail. Users can log into their e-mail account and communicate with contacts right from there. Skype is also one of many Instant messaging applications. Jordan and Mitchell (2020) indicate that Skype transmits text, voice and video, making it possible for one to speak to and see others and be heard and seen in real time. Instant messaging is being used progressively more by students of institutions of higher learning for communication and sharing pictures and videos. It has become such an important part of students' lives that many universities are working to move it beyond the social sphere into teaching and learning (Ngalomba, 2020).

Through instant messaging (IM), academics can meet with students for interactive sessions. Seminars and conferences could be held between academics and students, and amongst students themselves using instant messaging. One remarkable benefit of IM is that students who travel out of the school environment for reasonable cause and will miss such seminars when held in a physical classroom are provided an opportunity to participate. A student can communicate online with a lecturer to gain more understanding into a subject area which was not well addressed in the classroom lecture. One of the instant messaging social media used by students is WhatsApp application.

WhatsApp is a free messenger application that works across multiple platform and is being widely used among students to send multimedia messages like photos, videos, audios along with simple text messages (Gon & Rawekar, 2017). WhatsApp is one of the most widely used social messaging platforms in the world, with over one billion people now using the service (Coleman & O'Connor, 2019). WhatsApp allows users to freely share text and audio messages, and form groups related to mutually interesting topics. In other words, WhatsApp offers a useful, lightweight communication tool on a mobile platform. A great number of people, especially, youths and students use social networking sites (Baishya & Maheshwari, 2020), therefore its presence and influence become inevitable in academic context.

The application has been in the market since 2010; with aim of replacing the SMS platform of instant messages (Ibrahim, Hafiz & Musa, 2018), and to help students to fully participate in learning process as declared by the developer of the application (Coleman & O'Connor, 2019). Baishya and Maheshwari (2020) also argued that WhatsApp is used in teaching and learning process to serve four main purposes: communicating with students; nurturing the social atmosphere; creating dialogue and encouraging sharing among students; and as a learning platform. Due to the affordability and less-complex nature of WhatsApp, it is widely accepted and used for teaching and learning at different hierarchy of educational system from basic education up to higher education. Despite the fact that WhatsApp is observed as an application that negatively effect on students writing skills (Reeves, Alkhalaf & Amasha, 2019), distracts students' attention in the class (Robles, Guerrero, Llinás & Montero, 2019) and wasting students' time (Ngalomba, 2020), it is however found to be effective tool for enhancing students' academic performance (Meenakshi, Anitha & Lakshmi, 2019; Rambe, Chipunza & Ng'ambi, 2020), motivation, learning engagement, as well as other benefits related to schools themselves.

WhatsApp has become the platform chosen by students for both educational organisation and information dissemination. With the high level of mobile phone usage (Alanzi, Bah, Alzahrani, Alshammari & Almunsef, 2018), the educational sphere needs to understand and develop ways to exploit this phenomenon in order to support the potential that such social media channels provide. Reeves, Alkhalaf and Amasha (2019) are of the view that WhatsApp increases and supports both document sharing

and coordination of educational information. Education systems had to evolve constantly to cope with the rapid advancement of digital technologies (Ngalomba, 2020). Universities could not simply return to the normal contact lecture sessions due to Covid-19 pandemic. Since the advent of Covid-19 pandemic in South and in the world, the education sector was negatively affected by the imposed lockdown. Teaching and learning methods with the universities under study changed with immediate effect. Academic used to engage and upload academic content for students through WhatsApp even before the arrival of Covid-19. However, academics had to enhance the use of this platform for teaching and learning. WhatsApp group chats were created for teaching and learning purposes. Lecturers in one hand would record themselves and upload the lecture sessions together with academic materials. Students on the other hand would listen to the lecture sessions and download academic materials through WhatsApp. This method of teaching and learning proved to be beneficial for both students and academics.

3.5.2 Technologies which could be useful for teaching and learning at the three universities under study

a) Social networking Web site

Social networking Web sites, normally known as social media or Web 2.0, are valuable to learning and teaching. As reported by United Nations Educational, Scientific and Cultural Organization (2008), the use of social media used by students could have significant academic value for students since they discuss issues with other students of different universities on similar courses. Social Networking Sites (SNSs) are essentially internet based tools that expedite communication, content exchange and collaborate in multiple ways (Sharma & Godiyal, 2016). Its main attention is to build social networks among people who share interests and/or activities. In the United Kingdom (UK), Social networking sites are used regularly and, according to a survey (Joint Information Systems Committee, 2017) 73%–84% of students informally discuss academic issues using these sites. More than 90% of the students strongly agreed that such sites were useful in enhancing their learning.

Facebook is used to ask questions and receive answers. For example, when one asks a question and one's friends answer or follow, the friends can see and answer it, too,

and so on (Jordan & Mitchell, 2020). Friends of academics and students in one institution of higher learning include their counterparts from another institution. Questioning through *Facebook*, therefore, results in advanced cooperation and sharing of information which is likely to create a profound pool of very useful knowledge. One can, however, narrow the participants to be class members only, where the question is specifically for them. The whole class can be given assignments and other activities in this manner, and the distance between the lecturer and the student can never be an obstacle. One can use “Privacy Settings” on “Account” menu to create this. More appropriately, an academic or a students’ group leader can create a course discussion group within Facebook (Rwodzi, De Jager & Mpofu, 2020). Moreover, Suhaimi, Mohamad and Yamat (2019) allude that students often create their own group on *Facebook* and invite their lecturers to be part of it. However, social networking site such as Facebook has not been maximized for teaching and learning at the three universities under study even during amid Covid-19 pandemic. This could be resulted by the lack of proper integration of this platform for teaching and learning at these universities. Facebook afford the recording, uploading and live sessions where academic and students can meet virtually. There is a need for universities to take into account the use of such platforms for teaching and learning, nonetheless, this is still lacking from the three universities under study.

b) Twitter

Bista (2015:83) defines Twitter as a social networking site that offers micro blogging services to interact via Twitter posts, also called tweets, on smartphones, laptops, iPods, and any devices with internet access. A micro-blog is a form of blog that permits typically smaller contents (than a bog) such as short sentences, individual images or video links (Baggyalakshmi, Kavitha & Marimuthu, 2017). Twitter is used for different purposes in many different industries and scenarios. Twitter is used in higher education, for cooperation and for sending urgent academic messages from lecturers to students and also amongst students themselves. Short text messages showed on a Twitter user’s profile page are called tweets. If one uses Twitter without changing its settings, tweets will be viewed by everybody who log in, but senders of tweets can change settings to keep them visible only to other Twitter users that subscribe to their tweets; these are referred to as followers (Luo & Franklin, 2015).

Twitter is a useful tool to 'follow' and share information between students, academics and researchers from the same school of thoughts (Klar, Krupnikov, Ryan, Searles & Shmargad, 2020). When a lecturer or a student sends tweets and students follow along with other followers, there is a pool of ideas that enhance teaching and learning (Malik, Heyman-Schrum & Johri, 2019). Additionally, the use of this technology is a skill, which many students will find very useful after graduation. However, with so much advantages that are brought by the social media in education, there exists challenges which hinder its use. For example, at the University of the Western Cape, Dzvapatsva, Mitrovic and Dietrichet (2014) report that some of the factors that work against the use of social media include for educational purposes include lack of technical skills that students experience when learning or using portals of social media, inadequate technological infrastructure and bandwidth which results in students abusing it. This problem is similar with the one discovered by Chawinga and Zinn (2016) at Mzulu University in Malawi. Universities under study have not been using Twitter for teaching and learning due to lack of technical skills on both students and academic which are needed to use the platform.

c) Learning Content Management System

Learning content management system (LCMS) is practically the same as LMS. Their difference is however, as stated by McIntosh (2006:4) when writing, the focus of the LCMS is the management of course content rather than learner activity. Learning content management system can create, store and deliver personalised content in the form of learning objects (LOs). Free Technology Academy (2011) described an LO as a self-contained unit of instructional material having three components, *viz.*, a performance goal, the learning content and evaluation. A LCMS stores LOs in a central learning object repository (LOR). Additionally, learning object repository enables instructional designers to search, to retrieve and to assemble contents into personalized courses. With LCMS, academics can perform the following tasks:

- (i) gather contents from different sources and easily and quickly create new learning content;
- (ii) manage and edit e-Learning content;
- (iii) produce dynamic page appearance;
- (iv) schedule courses and define learning path;

- (v) administer students effectively; and
- (vi) make communication possible through e-mail, chatting and forums.

d) Online community or internet forum

Online community or internet forum services allow people to create online groups and collectively create and maintain their own Web sites, commonly hosted free-of-charge on the service providers' internet domains. Groenewegen and Moser (2015:464) describe it "as a virtual community that exists online and whose members enable its existence through taking part in membership ritual". Applications that are used to build online communities are legion. They include Google Groups, Google Sites and Yahoo Groups. Countless Web site designs are provided by these applications to suit various group purposes, including education (Khlaif, 2017). Users only need to choose the template that relates to their group's nature and replace the contents with theirs, following easy steps provided. Google Sites will be of particular interest to institutions of higher learning for both academics and students. People whose institution's e-mail portal is on Gmail platform, like at the University of Limpopo, or whose private e-mail is gmail.com, are fortunate, because one should have a Gmail account to use Google sites.

Academics should monitor this site as they normally create content, start uploading, as attachments, word-processed lecture notes and other important articles and/or books they downloaded from Web sites. Then they will invite all the students in the class or group and give them co-owner right, so that they can participate in discussions, and also upload their completed work and other relevant documents (Kraleva, Kralev & Sabani, 2019). Co-owner right also permits students to ask questions, answer questions, read and post announcements and do other activities. With this, a classroom has been expanded to Google Sites. An internet forum, can be used by academics and students to form networks with their counterparts within the same university and also with other universities including the experts in the subject area. This platform is also used for online professional development and it allow students to improve their literacy skills. University of Limpopo, Venda and Tshwane University of Technology – Polokwane campus should start considering the use of such platforms for teaching and learning.

e) Online chat rooms

An online chat room is a type of online or virtual community. It allows participants to communicate to one another at the same time. Because the room is on the internet, the people must connect to the internet before they can enter it (Rapanta, Botturi, Goodyear, Guàrdia & Koole, 2020). Questions can be asked and answered immediately, regardless of the geographical locations of the participants. The participants in a chat room must all have unique usernames and passwords with which they log in. This means that an online chat room can be created and limited to selected people, and this feature makes it a very useful tool with which academics and students can draw maximum gain (Hodges, Moore, Lockee, Trust & Bond, 2020). Communication in a chat room is usually undertaken by typing and sending text.

f) Wiki

Wiki is a Web site which permits users to create and edit web pages using a web browser. The major Web browsers are Microsoft Internet Explorer, Mozilla Firefox, Google Chrome, Opera and Apple Safari (Kurt, 2017). The pages are interlinked; that is, one can move from one page to another and to another. Helly (2018:64) described wiki as “essentially a database for creating, browsing, and searching through information.” A wiki invites all users to edit any page or to create new pages within the wiki Web site. It strongly welcomes scholarly citations, which makes it an authoritative source of knowledge. A wiki is a flexible, always updated online encyclopedia. They are created using wiki software. Wikis are already being used in many institutions of higher learning for educational purposes, and are one of the tools being used to generate ‘open’ content (Zheng, Niiya & Warschauer, 2015). A very popular wiki is *Wikipedia*. However, students are always encouraged to use information accessed through Wikipedia for reading and understanding purposes, and not for research and assignments, since anyone can upload, change and edit the information. Students are already using *Wikipedia* as a source of academic information, and intervention is required from academic to guide students on how to use information from Wikis. Academics can collaboratively create wikis around the courses they teach, however, this has not yet been implemented in universities under study.

g) Web Information Systems

A Web Information System (WES) is an information system that uses internet Web technology to deliver information and service to users (Pearlson, Saunders & Galletta, 2016: 1). Thus, it is a software system whose main purpose is to publish and maintain information through the use of hypertext-based principles. Web Information Systems have turned to be so critical in the education sector. As a collection of programming applications that collect information from a unified database, Web Information Systems are essential to students and academics alike, as they rapidly get access to information through a web programme from any internet-connected computer (Khwaldeh, et al., 2017). As a result, Teräs, Suoranta, Teräs and Curcher (2020) indicate that students and academics can also utilise Web Information Systems for their school related activities and research. One of the most essential Web Information Systems used by educational systems worldwide is the Banner Unified Digital Campus worked by SunGard Higher Education in the year 2010. This Web Information System can be incorporated and customised to a specific establishment. Moreover, the Banner framework integrates with several other well-known educational developments, increasing its expediency.

h) Web blogs

A Web-blog, usually shortened to blog, is a frequently updated, personal web site featuring diary type commentary and links to articles or other web sites (Spera, 2020). This refers to Web sites that maintain an ongoing narrative of information. They establish an ongoing discourse within a specific community on a regular basis. Blogs afford a diverse, alternate sources of information for students at institutions of higher learning. Ngalomba (2020) once perceived that web-blogs are a tool that can be used by academics and students for a diverse range of educational purposes. Academics and students can produce a web-blog generation and sharing of information and knowledge on various subjects. In European countries, academics create blogs and occasionally post brief articles on them in a way that motivates students to freely express, in the “Comments” section, their own opinions and findings (Alsamadani, 2018). Students therefore also encouraged to search for and read blogs which are significant to their courses and comment on them. Comments by other readers, many of whom are experts in the disciplines, will surely offer more understandings and assist

students to assess their own comments. Creating and using a blog is known as blogging. The three institutions under study have not yet adopted the use of blogs as a formal educational tool

i) Social bookmarking Web site

Social bookmarking is a system for internet users to organise, store, manage and search for bookmarks of resources online. Bookmarks are used in Adobe Acrobat to link a specific page or section of a Portable Document Format (PDF) file (Scerbakov, Kappe & Schukin, 2018). They permit one to quickly access that portion of the document by clicking on the linked phrase. The bookmarks are simply referencing the resources; users do not share the resources themselves. Social bookmarking can be associated with compiling and using bibliographies, which many students and academics at institutions of higher learning are familiar with. Descriptions may be added to the bookmarks, such as explanations are added to a bibliography. Scerbakov, Kappe and Schukin (2018) allude that these descriptions assist users particularly students to understand the content of the resource without first download it for themselves. Such explanations may be free text comments, votes in favor of or against its quality, or keywords.

Usually, users save links to Web pages that they want to remember and share. Academics and students can use social bookmarking to compile, store, share, search for and use lists of books, journals, lecture notes, videos, pictures and other media on subject-specific topics. Academics can also liaise with their institution's libraries so that the libraries can use social bookmarking to supply lists of Web sites relevant to courses being offered. Scerbakov, Kappe and Pak (2018) are of the view that this will reduce the difficulties in accessing and sharing of information within institutions of higher learning.

3.6 SUMMARY OF CHAPTER 3 AND OUTLINE OF CHAPTER 4

Using current technologies including the internet at institutions of higher learning necessitates inspirations of adoption, integration and onward involvement of the technological tools and facilities. Efficiently incorporating technology into classroom practices poses more challenges to academics, students and institutions as compared to connecting computers to a network and setting up a computer laboratory. What ICT

actually is, and the benefits of incorporating ICT into institutions of higher learning have also been explored and discussed. For successful integration of ICT into teaching for enhancement of quality education, this chapter through relevant literature has outlined and highlighted factors which influence both academics and students' use of ICT including the instant messaging, learning management system, social media websites, online chats rooms and blogs among others.

Chapter 4 explores and examines the use of internet for teaching and learning at various parts of the world. Institutions of higher learning from Europe, Africa and South Africa in particular have been discussed in the following chapter. The chapter also elucidate the benefits and challenges of access and utilisation of online information resources.

CHAPTER 4

THE USE OF THE INTERNET FOR TEACHING AND LEARNING AT UNIVERSITIES IN SELECTED PARTS OF THE WORLD

4.1 INTRODUCTION

The continuing reflection on education and technology points to the diverse effect of technology on education. This chapter highlights the status on the use of ICT, e-learning in general and the internet in particular at institutions of higher learning from Europe, Africa and specifically South Africa. The chapter also identifies both possible challenges and opportunities offered by the integration of internet and education. A consideration on both the opportunities and challenges offered by the internet in an educational setting either prevents or motivates the overuse or underestimate the value of the internet in education. It is critical to comprehend the complex nature of the internet in order to integrate it efficiently and in an accountable manner into quality education.

The subsequent section describes developments in and the status of e-learning in some European universities.

4.2 STATUS OF E-LEARNING IN VARIOUS EUROPEAN UNIVERSITIES

The internet, as a medium of information and communication, plays a significant role in social and academic life of university students in numerous societies. Sędkowski (2015) focused on the opportunities and challenges that come with the use of social media in University of Lodz in Poland. The research focus was to explore how the university adopted social media platforms as communication media with students and other stakeholders. Polish citizens including students have access to all freely accessible social networks and there are no limitations in this matter. The study revealed that the university lacks competence to conduct real time communication with its stakeholders. The study results indicated that for universities to make an appeal to stakeholders, they should leave their comfort zones of standard official messages, and

take social media more seriously and create more dynamic and engaging messages for stakeholders.

Dogruera, Eyyamb and Menevis (2011) investigated the students' use of internet in their academic studies in Eastern Mediterranean University, in Republic of Cyprus. In broad sense, it was found that majority of the students believed they are well acquainted with the use of the internet as an educational tool. The study established that students felt contented when using various internet search engines to search for academic information. Importantly, the study also revealed that students also use social Web sites to share knowledge and chat about the school work. However, (Dogruera, Eyyamb & Menevis, 2011) also found that some of the participants are not well acquainted in using other e-learning portals including blogs, wikis, and online library resources for academic purposes. Thus, it is imperative to afford these opportunities for students to learn how to use various internet applications to enhance their academic performance.

Braimllari and Sala (2017) analysed the use of internet for academic learning by undergraduate students of University of Tirana in Albania. The study confirm that the internet plays a significant role in meeting the needs for information and communication of academic institutions. They also affirm that in spite of the widespread use of the internet, poor level of use of electronic resources including the electronic journals and online databases which are crucial for learning and research is prevalent (Braimllari & Sala, 2017:8). Other challenges experienced by the participants when using the internet for academic purposes include time consuming, low speed of Internet, and information overload amongst others.

Buhaş and Bălăţescu (2013) study meant to close the gap in the Eastern European empirical analyses, by affording a descriptive and explanatory picture of the university students' internet usage patterns. The study established that Hungarian students spend more time online daily than their Romanian counterparts. The study also revealed an interesting point that gender, financial situation and educational level among other actors affect university students' internet consumption patterns (Buhaş & Bălăţescu, 2013). The general findings of the study established that Hungarian students spend more time on internet for academic purpose than Romanian students. Romanian students lean towards communication and socialising, entertainment and

leisure. Coman, Tîru, Mesesan-Schmitz, Stanciu and Bularca (2020) discovered that higher education institutions in Romania were not prepared for completely online learning amid Covid-19 pandemic. Therefore, the advantages of online learning including teaching students at the comfort of their own space, and recording of sessions for future use among others seem to weaken in value, while disadvantages become more noticeable. The order of problems that arise in online learning changes in the background of the crisis caused by the pandemic. Technical issues are the most significant, trailed by academics' lack of technical skills and their teaching method unsuitably adapted to the online setting.

The next section describes the status of e-learning in some African institutions of higher learning.

4.3 STATUS OF E-LEARNING IN VARIOUS AFRICAN UNIVERSITIES

Numerous studies have been conducted on status of e-learning in universities in Africa. Hollow (2009) highlighted that e-learning is still developing in Africa, though very few lecturers are well trained on how to use it. Financial constraint is one of the major hindrances in meeting the cost of bandwidth and other e-learning infrastructure.

Kamba (2009) surveyed the status of e-learning in 18 selected universities from different specialisation areas in Nigeria. The study displayed a high grade of awareness of e-learning among the universities. Nonetheless, the study also highlighted that adoption of e-learning was hindered by a little investment and lack of commitment to develop e-learning applications. What was exciting is the fact that majority of staff and students in the universities were using internet related e-learning sites primarily for accessing related information for their research and assignments, since their libraries could not manage to provide them with sufficient and up-to-date information. The study also found out that some of the universities have Web pages that are used for e-learning activities. Encouraging though was the fact that some of the universities were planning to increase investment in e-learning.

Walimbwa (2016) observes that despite e-learning growing quickly worldwide, East African universities were yet to maximise its potential. This study was conducted in Makerere University (Uganda), University of Dar es Salaam (Tanzania), and University of Nairobi (Kenya). The study established that lack of skills and sufficient human

capacity heavily contributed to low e-learning implementation. Inadequate internet bandwidth and lack of policies were also major aspects that were deterring e-learning from rising in these institutions of higher learning from East Africa.

In a related study, Kasse and Balunywa (2013) evaluated the employment of e-learning in Ugandan institutions of higher learning. Universities in question were Makerere University Business School (MUBS), Kampala International University (KIU); Makerere University of Kampala (MUK), and the Islamic University in Uganda (IUIU). These institutions were chosen based on the fact that they are the highest-ranking institutions in Uganda in terms of their quality of education, the use of ICT and student population. The study found that e-learning was regularly used as a means of distributing learning material (80%), as a platform to conduct discussions (12%), and to conduct assessment (2%). The survey also discovered major infrastructural and technical incompetence by both academics and students which limited complete implementation of e-learning in these institutions. Some of the infrastructural challenges comprised of lack of electricity and unavailability of internet connectivity.

A survey conducted in some universities in Tanzania established that, like other African countries, the implementation of e-learning was still very low regardless of the opportunities provided by the open source technology and the supportive environment created by the Government (Sanga, Sife, & Lwoga, 2017). Among the 10 universities included in the survey, the University of Dar es Salaam (UDSM) was the only institution which managed to implement e-learning platforms such as WEBCT and Blackboard, which are e-learning proprietary software. The Open University of Tanzania (OUT), Sokoine University of Agriculture (SUA) and Mzumbe University enjoy basic ICT infrastructure such as computers, internet, Compact Disc (CD), Digital Versatile Disc (DVD) and a local area network (LAN) services which basically form the basis for the establishment of e-learning platform; but, the implementation of e-learning was marginal.

Broad research on the acceptance of e-learning at institutions of higher learning in Tanzania established numerous elements that challenge its implementation (Ndume, Tilya & Twaakyondo, 2018). For example, the latter study identified lack of capacity analysis before online e-learning programs as a key challenge facing its adoption in the country. A negative learning culture towards e-learning was also highlighted to be

another hindrance encumbering its implementation. Electricity outages and insufficient ICT infrastructure for e-learning were also found to be a main challenge. Nonetheless, there was an existing initiative by the government collaborating with the private sector and the nongovernmental organizations (NGOs) to improve ICT infrastructure. The study established that decrease of taxes on computers and other electrical appliances had permitted many students to purchase their own personal computers and laptops (Ndume et al., 2018).

Nyerere, Gravenir and Mse (2016) investigated the status of and the various challenges that hinder comprehension of the full potential of Open Distance and E-learning (ODEL) in Kenya. University of Nairobi and Kenyatta University being the case study, the survey established that provision of ODEL in the two universities encountered several challenges that hindered its successful implementation. The acknowledged challenges included non-optimal utilization of program facilities, delays in production of study materials, inadequate funding, and low teaching staff levels. The other key problem was the lack of policy to guide that efforts of the ODEL providers in Kenya, and that poses a challenge in resource mobilization and program quality issues.

Odhimbo (2009) juxtaposed the perception of e-learning in Jomo Kenyatta University of Agriculture and Technology (JKUAT) and the United States International University (USIU). The purpose of the study was to establish explanations for the low rate of acceptance and usage of e-learning by students in the two universities. The survey concentrated on interactivity and usability of the WebCT and Moodle learning management systems (LMSs) used by the two institutions. The study found that audio-visual forms of content delivery, which have the prospective of increasing effective learning, are not being fully used in the universities. As an alternative, lecturers put too much emphasis on the uploading of reading material to the LMS.

The same observations were made by Ali, Hossain and Ahmed (2018) who highlighted that developing modern e-learning programmes is much more than digitising books and lecture notes. Ali et al. (ibid.) further indicate that the point of departure in the development of any e-learning programme is the individual (student and lecturer) and not the computer as appears to be the case in most universities. This suggests that fashioning a learning culture is a social process and involves changing behaviour and

improving performance. Accordingly, students are not vigorously engaged in learning and majority of them do not use e-learning as much. An investigation on the e-learning practices and methods used suggests that there is still not a particularly high level of sophistication in the usage of e-learning among the majority of the students in the African continent (Ali et al., 2018).

Mutisya and Makokha (2016) established that public universities in Kenya are implementing e-learning in their effort to increase the accessibility of university education. Nonetheless, the adoption of e-learning was still at an early stage, as supported by the fact that only two out of the seven public universities had accepted e-learning policies; quite few lecturers (32%) and students (35%) used e-learning. The management of various universities also confirmed the slow implementation of e-learning in public universities. The challenges contributing to the idle implementation and utilisation of e-learning and the internet in public universities in Kenya are of the reasons that the bandwidth as well as the number of hotspots to access the internet were unsatisfactory. In this regard, academics and students ranked insufficient internet connectivity the second most serious challenge impeding the adoption of e-learning in public universities. The senior managers of the universities elucidated that the cost of internet was high, prohibitive, and this being the key reason for the lack of sufficient internet connectivity in most of the universities. Additionally, the isolated location of some areas, away from internet signals, was defined as a main restriction to internet connectivity. Mutisya and Makokha (2016) conducted a study on the use of e-learning by students amongst seven public universities in Kenya. Although over 90% of the participants were aware of e-learning, only about 35% of them used it. There was not a remarkable difference on the usage of e-learning among students in the seven public universities.

The following section describes the status of e-learning in some South African institutions of higher learning.

4.4 THE STATUS OF E-LEARNING IN SOUTH AFRICAN UNIVERSITIES

E-learning was first implemented in South African institutions of higher learning in the 1990s (Ravjee, 2007). E-learning is an ICT-enhanced practice in universities including the use of e-mail, online journals, and networked libraries, for teaching, research and

administrative systems. Moll, Adam, Backhouse and Mhlanga (2007) describe e-learning as flexible learning using ICT resources, tools and applications, focusing on accessing information, interaction among teachers, learners, and the online environment collaborative learning, and production of materials, resources and learning experiences. Millham, Thakur and Malan (2014) indicate that e-learning is crucial for the enhancement of students' performance, encourages active participation and self-regulated learning, which enables shaping of own learning-pace, adjustment and gives desired performance.

The South African National plan for Higher Education stresses that 'university activities' develops an information society, through the use of technology, for knowledge progression to improve education and support the new education system (Bagarukayo & Kalema, 2015:169). Hence, it was essential to integrate ICTs in general and the internet in particular in South African universities to meet the global standard, be advanced and address the learning methods and inclinations of digital natives, who wants to maximise the use of technology in education.

Venter, van Rensburg and Davis (2012) state that students in South African universities greatly appreciate the use of technology and the internet to enhance their academic performance. Mlitwa (2006) describes e-learning as a Social Technical Network (STN), as it comprises of technologies for construction and collaboration by users. Through learning management systems (LMS), e-learning qualifies as a STN that integrates computers, internet, applications, learning materials, students and academics. Sibanda and Donnelly (2014) mention the impact of e-learning on performance, stating that student academic performance improved after the introduction of online learning as they became acquainted with the use of the internet and other technologies.

Students in South African universities are faced with challenges which are comprised of different backgrounds, race and languages; and access issues to technology amongst others (Bagarukayo & Kalema, 2015). It is not easy to employ different teaching approaches and gain insight into students' challenges, particularly in large classes. Consequently, students from disadvantaged backgrounds may find it difficult to keep up with the pace of learning. These academic challenges require a mixed approach like blended learning which is innovative to resolve difficulties of class and

cultural diversity. The e-learning approach affords equal opportunities, which has proved to be the biggest challenge in South Africa which is comprised of unequal society. Brown, Thomas, van der Merwe and van Dyk (2008) endorse collaboration, cooperative research ventures and sharing of good approach to resolve these challenges.

Isabirye and Dlodlo (2014), are of the view that higher education in South Africa lacks institutional support, is characterized by non-integration of e-learning strategy, absence of e-learning culture, marginalization of academia from e-learning development programs, bad attitude of some of academics in using e-learning, poor ICT infrastructural challenges, lack of pedagogical policies, high cost and quality and lack of policies in some of institutions. These challenges are confirmed by the Open Educational Resources Africa (2014) which indicates that there is a shortage of ICT skills, lack of resources; low computer and internet access in some of the institutions. However, many institutions of higher learning in the country have traveled a milestone in employing e-learning and the use of the internet for academic purposes.

The University of South Africa (UNISA) is fairly advanced in using e-learning for teaching and learning. Academics at UNISA use e-learning technology to distribute resources to students and facilitate lecturer-student interaction and use internet technology for student communication. Thousands of students are enrolled on the *myUnisa* platform which enables them to access learning materials, communicate with academics and submit assignments (OERAfrica, 2014), which uses the Open Source Software (OSS) Sakai platform, created to cater for the needs of students, administrative functions, academic collaboration and tuition linked communication (Venter, van Rensburg & Davis, 2012).

Since 2010, the University of Kwazulu-Natal (UKZN) has been using the Moodle platform for teaching and learning for academics and students (Sibanda & Donnelly, 2014). Lecturers use the medium to upload notes and deliver assignments, announcements, discussion platforms and other collaborative exercises.

At Tshwane University of Technology (TUT), the Electronic Campus was the primary LMS in 2011 (ibid.). However, it was substituted by Blackboard (MyTutor), a content warehouse where academics upload lecture notes, assignments and give feedback to

students. Tshwane University of Technology also has systems for online video tutorials access, TUT4life for students to access to TUT mail and wireless internet, one for checking grades and a lecturer portal for lecture-related material (ibid.).

The extensions of the lockdown due to the Covid-19 pandemic in South Africa forced universities and other institutions of higher learning to switch exclusively to remote learning. The reality of the lockdown has forced many institutions of higher learning to switch to online learning (Mhlanga & Moloji, 2020). Several universities in South Africa switched to online learning even though some universities did not officially announce the move. For instance, the University of Johannesburg, the University of Cape Town, the University of Pretoria and the three universities under study announced to their students and academics that they would conduct learning online in their second semester of the academic year of 2020 to ensure social distance (Universities South Africa, 2020). Various tools which were used for online learning include but not limited to internet websites, YouTube, Microsoft Teams, Skype, WhatsApp groups, Zoom and Google meet among others (Mhlanga & Moloji, ibid.).

The following section focuses on the relationship between the internet use and academic performance.

4.5 THE INTERNET AND STUDENTS' ACADEMIC PERFORMANCE

Students use the internet when they need to gather further information when it comes to understanding lectures and ideas for assignments. There are opposing views from researchers on whether the internet is a great tool for students to search for information, as some agree, while some disagree with this idea. Billions of students in the world can connect to the internet from their tertiary institutions. A lot of funds have been spent to provide such access with the anticipation that the information and communication resources the internet offers will improve educational outcomes. However, Schofield and Davison (2016) contend that educational benefits do not flow automatically from internet access. Attitudes, expectations, technical knowledge, classroom culture and internet culture, curriculum design and implementation all have effect on what lecturers and students can achieve with the internet. Schofield and Davidson (ibid) refer to the circumstances where students who have access to internet might take advantage of it, or not at all, depending on how the platform is put to use.

If students do not have basic computer skills, such as switching on the computer and using a web browser, then the internet is useless to them as a tool for information search. Oskouei (2015) states that is a need to cope with examination stress among female students, and they do so by using social networking web sites. The study illustrate that the internet may attest to be good and destructive for students as they can use it for their academic purposes, but unfortunately may also get preoccupied by other attractions on the network.

The following section describes at the benefits of internet in higher education.

4.6 BENEFITS OF ICT AND THE INTERNET IN HIGHER EDUCATION

Use of ICT and the internet in education offers an exclusive opportunity to solve a multitude of challenges with regard to access and dissemination of information. Lalitbhushan, Arunita and Alka (2014); Manisha (2014) and Habib (2017:2811) emphasize some major advantages of using the internet as an academic tool at institutions of higher learning:

a) Motivating Factor

The internet serves as an inspiring tool for many students. Young people are very fascinated with technology (Habib, 2017:2811). Academics must take advantage of this interest excitement and enthusiasm about the internet for the purpose enhancing learning. For already enthusiastic students, the internet provides them with extra learning activities not readily available in the classroom.

b) Fast communication

The internet stimulates fast communication regardless of geographical barriers. Students can join collective projects that comprises students from different countries in the world (Manisha, 2014). The internet affords students an easy way to communicate with fellow students in other institutions of higher learning. This can stimulate collaboration and sharing of resources among students.

c) Cooperative learning

The internet facilitates cooperative learning, instigates dialogue and creates a more engagement within student and their lecturers (Habib, *ibid.*). For example, learning management systems like Blackboard allow students to get involved in class discussions and share content and information, which is not possible without the internet. Academics are also able to share information with students, and be part of discussion by offering guidance.

d) Locating research materials

Apart from communication, research is what takes many people to the internet (Lalitbushan, Arunita & Alka, 2014). There are many resources on the internet than the school library can offer. Students are expected to embark on research projects, and without the internet, it could prove to be difficult to conduct a genuine study. The internet affords students with array of online resources

Thus, ICT in higher education, and the internet in particular, improves teaching and learning processes, affords the facility of online learning which include access to information to millions of students who cannot enjoy the benefits of higher education due to several factors such a time, cost, geographical location and other factors.

The application of e-learning has imperative impacts on higher education. at this point in time, students can openly choose the most suitable learning approach in accordance with their preferences and/or commitments. Literature reveals that effective e-learning execution is a way to resolve realistic issues of learning and achievement (Govindasamy, 2002). This section highlights main advantages of e-learning as encapsulated from literature (Zhang, Zhao, Zhou & Nunamaker, 2004; Derouin, Fritzsche, & Salas, 2005; Sife et al., 2007; Al-Din & AlRadhi, 2008):

- a) Information accessibility: students are able to access learning content regardless of time and space. Another thinkable advantage of information accessibility is that learning technologies can serve learners' special needs.
- b) Adaptivity and adaptability: it could be very challenging to accommodate teaching approaches, content presentation, and learning trails to an individual student in a traditional learning style, but this is possible through e-learning.

- c) Efficient interaction: e-learning provide additional and alternative interaction opportunities between students and academics out of campus, and even after normal work hours.
- d) Cooperation and collaboration: both can be improved using available communication tools in LMSs such as forums, wiki, and chat as well as assigning students into different groups to work together.
- e) Teaching and learning in a synchronous or an asynchronous mode: lecturers and students can choose the most applicable means to disseminate and obtain information.
- f) Reducing cost: e-learning eliminate traveling costs, and save time and effort.
- g) Promoting teaching quality: e-learning functionalities are used to incorporate pedagogical philosophies and models and make lectures more interactive.

Student enrolment at institutions of higher learning in many countries, including South Africa, is on the rise. It is common to see an academic lecturing 500 or more students in a class. With adverse shortage of resources in terms of books and other relevant materials, this compromises the quality of teaching and learning. Thus, it is of significance to invest on the use of ICT and the internet in particular which comes with an array of information and unlimited sources and materials for students.

As revealed by the UNESCO (2011) and the Intel World Ahead Program (2009), internet-based teaching and learning empowers students to, among others, become more motivated to learn and be more involved in the subjects they study, develop technology-skills, team skills and other 21st century skills that produce higher quality work, improve research and problem-solving skills, acquire better knowledge about a subject and to develop creativity and higher-order thinking.

The UNESCO (2007) reported that cooperation on sharing and dissemination of information through the internet has proved to be an effective way in which academics and students can communicate with their counterparts from other countries. For society, integrating ICTs and the internet into teaching and learning creates economic progress occurs from the better-educated workforce and from direct job creation in the ICT industry; education is tailored to the needs and abilities of learners, and so drop-out rate reduces; and lifelong learning is permitted and promoted, resulting in

education being more available to everyone, at all ages (International Institute for Communication and Development, 2010).

When ICT is employed in education given the right circumstance, they enhance, improve, and expand basic skills in reading, writing, and they can encourage and engage students to learn and become more independent and responsible for their learning. Moreover, (Onodugo, 2016) highlights that ICT assists to relate academics to the practices of today's work. Technology, the internet in particular, supports active learning, inspire innovative teaching, reduce the isolation of academics, and encourage lecturers and students to become active researchers and learners.

Other benefits of ICT and internet integration in education is that it can be used in retrieving essential instructional content of subjects, and collaboration can be ensured with academics in the world. In addition, academics and students can also have up to date knowledge of a subject area.

The internet contributes to academic growth, for instance, e-learning can be used for both initial and continuing development through courses, workshops, and other activities, where students and lecturers learn about integrating ICT and the use of the internet across curriculum to support learning. (Anderson, 2019:2) indicate that there are numerous international gateways of on-line resources to support academics' development, which include the ICT in education, established by UNESO, Paris; Education Network of Australia, advanced by Education Institute, Adelaide; Institute of Education Technologies in Education, established by UNESCO, Moscow among others. These portals afford opportunities for users to ask questions, post materials, submit assignments and sharing of information between academics and students worldwide.

Additionally, ICT in and the internet in particular shifts attention from teacher-centered to student-centred learning, where students become active participants in the learning practice, develops and share information, contribute and learn in collaboration with other students in the world. As a result, academics become learning facilitators, mentors, and co-learners and not just providers of information (Anderson, 2019).

The internet with an array of information on every subject, extensively improve students' problem-solving abilities, offer opportunities for student-constructed

learning, increase the preparation of students for most careers and abilities, and improve confidence and attitude of students (Cakir, 2012). The best predictors for achievement gain in the use of ICT and the internet had positive attitudes towards the use of the internet by both academics and students, consistent access to the technologies, and training in the use of technology, among others (Al-Hariri & Al-Hattami, 2016).

Emanating from that view, ICT and the internet are important for modern educational development for any country in the world. Thus, developing countries including South Africa should recognise and enhance the fundamental roles of ICT, and ensure the better use of the internet in the institutions of higher learning. This recognition could bring about development of specific ICT related policies so that the country's education system could take advantage of the importance of ICT and the internet for educational purposes.

The subsequent section discusses the challenges related to access to online information resources.

4.7 CHALLENGES OF ACCESS TO ONLINE INFORMATION RESOURCES

Regardless of the overwhelming advantages of online information resources, users particularly the students still face some difficulties with the use of these resources. Array of studies have explored students' challenges with the use of online resources (Okiki, & Asiru, 2011; Aregbesola & Oguntayo, 2014; Omosekejimi, Eghworo & Ogo, 2015; Azadeh & Ghasemi, 2016; Campbell, 2017; Sohail & Ahmad, 2017). Some of the challenges identified include poor information technology infrastructure development (De Groote, Shultz & Blečić, 2014); lack of knowledge on how to use electronic journal, lack of facilities, lack of time and awareness (Eftekhar & Hayati, 2016); lot of irrelevant information, the need to sieve the results from search, failure to get relevant information, insufficient search skills, high cost of access, inaccessibility of some online resources and problems in circumnavigating through online resources (Eke, Omekwu & Agbo, 2014; Omosekejimi, Eghworo & Ogo, 2015); improper guidance on use of online resources, non-payment of subscriptions and lack of personal computers (Freund, 2015; Lo & Chu, 2015) and slow downloading and blockage of Web sites (Makinde, 2018).

According to Annuobi (2009) the difficulties in using online information resources arise mostly from information overload, information insecurity, sociotechnical issues and possible lack of control over access to some of the irrelevant information. The study further indicate that information overload ascends from dysfunctional distribution of information that is caused by firstly the volume of information offered that surpasses the aptitude of students to scrutinize, sieve, and to assimilate relevant information, and secondly, by providing incorrect information resulting in inappropriate decisions. Ugwu and Orsu (2017) highlight that the increase production of sources for articles and the amount of information accessible may be confusing to some students, since retrieving too much information is a problem, as students may get lost and not knowing when to quit searching. In a similar observation, Gbaje (2007) state that the almost limitless availability of information due to developments on the digital space, is creating information anxiety and new behavioural patterns. Case and Given (2016), mention that lack of information technology knowledge hinders effective use of internet for academic purposes by students.

In a study, Ray (2018) states that students at one institution of higher learning criticized the low access to online information resources which eventually hindered their academic career. Even though not many of the students agreed to deterrents as they did to enhancements, the top three hindrances mentioned comprise; online access is time consuming if they lack skills to navigate through the internet. Further difficulties of online information resources and services which directly affect most African states as defined by Chandel and Saikia (2012) comprise poor and insufficient telecommunication facilities, poor level of computer literacy among many university students, poor level of awareness of internet facilities, poor computer facilities, and lack of implementation of policies in enhancing the use of ICT and the internet in particular for academic purposes. Okonoko, Njideka and Mazah (2015) are of the view that the funding of higher education in some of the African countries has been relatively poor. The consequence is that academic libraries are unable to acquire and install ICT facilities.

Johnson and Simonsen (2015), describe the following challenges as hindering students' access to online information resources: financial constrictions, lack of proper training on how to browse the internet, little and/or lack of knowledge of web sites and

search engines in searching for information on the internet, slow speed of the students in typing, lack of concern from some of the students, and lack of knowledge on how to use computers efficiently. Pain (2016) records a study on the difficulties that students had with regard to accessing online information resources validates the above argument by established that 33% of participants specified inadequate use of computers, 28% highlighted lack of knowledge on how to evaluate information obtained through online resources. In trying to alleviate the challenges students are facing with the use of online resources. Ford (2015) is of the view that libraries must play a vigorous role in providing subject access to information on the internet, and creating convenient resources for students.

Several researchers state how such factors like effective leadership, current trends in Library and Information Services field and self-development could assist in improving students' use of online resources (Pareek & Rana, 2013; Pontis, et al., 2017; Makinde, Jiyane & Mugwisi, 2019). According to Mole (2017), proper governance, elimination of corruption, and sufficient funding of institutions of higher learning will go a long way in improving students' use of online information services. Brown and Malenfant (2017) suggested that ministries of education, science and technology; libraries of institutions of higher learning, and special research institutions should embark on networking, web site designs and computerization of their libraries.

In the framework of this subject, the above challenges are characterised into direct and indirect factors. Direct factors are defined as the problems that students come across while using online resources. Such aspects comprise insufficient online resources, lack of skills to use online resources and constrained access to some of the online resources. The indirect factors are regarded as factors which deals with human interactive dimensions which play part to students' technical hitches with the use of online information resources. For example, if a student finds it difficult to access online resources because of some direct factors, there may be other secondary factors such as lack of instructional and emotional support from academics, and students' features that contribute also to this problem. The students' characteristics comprise of age, gender, specialty, computer literacy, ownership of laptops or computer systems, and access to internet at home (Shaquor & Daher, 2010). Previous researchers have

revealed positive relationships between these factors (direct and indirect) and students' use of online information resources.

The next section describes the challenges and opportunities of using social media in education.

4.8 THE CHALLENGES AND BENEFITS OF USING SOCIAL MEDIA IN EDUCATION

The following section focuses on the advantages and disadvantages of using social media for academic purposes using *Facebook* as a popular social networking site.

4.8.1 The use of Facebook for educational purposes

Facebook is at present the most popular social networking site worldwide and it is getting incorporated into diverse facets of life. The popularity of Facebook and its affordance have raised debatable opinions among scholars on applying Facebook to education (Rwodzi, De Jager & Mpofu, 2020). As much as the African continent is playing a catchup to the rest of the world with regard to technology adoption, research on this platform remains insufficient and mostly limited within social or psychological standpoints. While the continent is still trying to improve its long-criticised education system and catch up with global trends of integrating new technologies into learning-teaching contexts, there is a gap of understanding on the use of social media in relation to education.

Ansari and Khan (2020) are of the view that Facebook has resilient background in the academic community, since it was established as a university project. In 2007, the Facebook version of the Blackboard LMS was executed with new course feed application, supplying users with course newsfeed (Bosch, 2009). However, in 2008, it was phased out, when Facebook calls on developers to build other educational platforms.

Different from an LMS, social networking sites offer instant feedback through such features as comments. According to Bosch (2009), universities should change their LMS's attention from information delivery to collaboration, cooperation and communication between lecturers and students. The social networking sites features

can be incorporated into existing LMSs without building new systems, example, Elgg and Mahara have inbuilt social networking sites features to support learning. University of Cape Town (UCT) students are more engaged with Facebook, as compared to the Vula LMS (Bosch, 2009). The UCT academics says it is quicker to communicate to students on Facebook than finding them in class if they wanted to pass a message or instruction. The Facebook functions for UCT students include social networking, looking for peer support, community building on campus, student activism, general communication, sharing information and sustaining group and personal communication on public spaces. The students access their lecturers in formal environments with less pressure and felt more at ease in the shared space. Students asked questions they would not feel comfortable to ask in class, they felt lecturers were more sociable after online communications and specified the scope to cover prior to the lecture, which led to class time spent efficiently. Facebook benefits students with low self-confidence and low life satisfaction and it cannot be overlooked as a potential educational tool because of its effective ways to teach large classes, like through groups discussions (Bosch, 2009).

4.8.2 Benefits of using Facebook for educational purposes

Facebook can be used for different reasons at an educational setting. These initiatives can be grouped under three subtitles, namely for collaboration, which include working on assignments and research projects); for sharing (to share information and documents through Facebook); and for communication (Liu, McKelroy, Kang, Harron, & Liu, 2016; Toker & Baturay, 2019).

4.8.2.1 Educational use of Facebook for collaboration

Facebook permits individuals to exchange ideas, share information and work cooperatively with the people who share the same interests and needs. It is presumed that students create virtual communities on Facebook to work together on research projects, group assignments, and for the development of a team work.

Toker and Baturay (2019) found that students held a perception that Facebook was used mostly for social reasons and not for academic purposes. Students were described to be fascinated in making new friends, staying connected with their friends and family at home and also for planning social events. To students' perceptions,

Facebook was quite different from a learning environment. Students thought that Facebook is normally used for social reasons. However, to Davidovitch and Belichenko (2018) students' also held the view that collaboration through academic communities is the most significant prospective values of Facebook in academic activities. Students also indicated that Facebook permits them to get involved in a supportive learning community among themselves (Wang & Mark, 2018). Moreover, Aaen and Dalsgaard (2016) indicated that students' Facebook groups which were established without the monitoring by their lecturers could be identified as a blend for social life and academic purposes. Davidovitch, and Belichenko (2018) also found that Facebook groups had an educational prospective for students to learn among themselves. Collaborative working of students, which is conducted through SNSs like Facebook, is projected to create a sense of classroom community in which students feel social connectedness. This feeling is identified to be a critical component of online learning (Sutherland, Davis, Terton & Visser, 2018) and it may occur in any educational context like Facebook. Similarly, the results of the study by Clark, Fine and Scheuer (2017) specified social presence as a significant factor for using Facebook for teaching and learning. When users share mutual interests with their group members, they would like to use Facebook more. Toker and Baturay (2019) and Lambić (2016) indicated that academic collaboration on Facebook was associated with academic performance, perceived support from actual Facebook friends, commanding internet use skills, and significant support from Facebook friends.

4.8.2.2 Educational use of Facebook for information sharing

Facebook can be used for educational information sharing through sharing of resources, materials, projects and documents. Facebook facilitates the sharing with its abilities of uploading and exchanging videos, audios, visual materials, and links. Students are said to be enticed with the information-sharing abilities of social networking sites for learning purposes (Clark, Fine & Scheuer, 2017). Facebook can be used as part of learning management system supports this finding. Sutherland, Davis, Terton and Visser (2018) reported that students were comfortable with the LMS implementation since sharing of information could be done through Facebook group page.

4.8.2.3 Educational use of Facebook for communication

Gwena, Chinyamurindi and Marange (2018) indicated communicating as the key motives for using Facebook. Concerning students' use, he indicated that Facebook stimulates communication between students and academics, and it is a helpful technology for students as they always engage with their lecturers. Educational use of Facebook for communication were described as the activities empowering communication among students and their academics, which include but not limited to class discussions; announcements about classes and other important messages; delivery of assignments and other school projects by academics. Liu, McKelroy, Kang, Harron and Liu (2016) labelled these activities under administrative use of Facebook with a different grouping and indicated that majority of the educational use of Facebook was established on the activities which include announcing lecture schedules and assignment requirements; which were, nonetheless, explained to be far away from the academic use of Facebook such as inquiring and commenting on particular course-related subjects or issues. Toker and Baturay (2019) indicated that the many students spent extensive time on Facebook to stay connected with friends and family, to share profiles, photos, and less time for academic studies. They stressed that unless students get clear messages, they would not be satisfied to study through Facebook. The results of the study by García-Domingo, Aranda and Fuentes (2017) may be an elucidation for students' unpleasantness on studying through Facebook. The revealed that there is a lack of Facebook's direct support for any academic activities. Moreover, the study demonstrated that Facebook was often believed to be a break or distraction from study. This indicates that just a desire for the educational use of Facebook is insufficient and students together with academics should be encouraged and educated about using it for academic purposes.

4.8.3 Disadvantages associated with using Facebook for educational purposes

As a social network, Facebook affords all distinctive functions of social collaboration and entertainment that are described by Nguyen (2017:15) as "major selling points for attracting people to search it." Consequently, students are simply distracted by other entertaining contents engulfing on Facebook while they are working on educational activities (Lund, 2020). Another consequence of incorporating Facebook in academia is the partial convergence of private and academic life, which has been described

uncomfortable by a number of students (Chugh & Ruhi, 2018). Furthermore, in their study of control groups of more than 1000 students, Dyson, Vickers, Turtle, Cowan, and Tassone (2015) established that Facebook application in the teaching and learning process does not bring a better understanding and involvement among students. They also submitted that the success of integrating social networking sites into academia is deeply subjected to “a complex interaction between a number of factors including the timing of content delivery, the integration of social media content with course assessment and the students’ own perspective on using social media for academic purposes” (Dyson, et al., 2015:303).

On one hand, Facebook with various functions supporting production and distribution of and access to digitalised information, the participatory values among students is enhanced significantly. On the other hand, information accessed through Facebook is not certainly verified before it is published. Consequently, a challenges of connected to the huge amount of information in Facebook is the lack of critical online information literacy (Rowan-Kenyon, Alemán & Savitz-Romer, 2018), which may result into misunderstanding and usage of incorrect information among students. The negative correlation between use of Facebook and academic performance is well documented in literature which include (Kolan & Dzandza, 2018; Ahmadi & Zeinali, 2018; Azizi, Soroush & Khatony, 2019), asserting that students who spend more time using Facebook regularly for general purposes tend to perform academically poorer. Last but not least, the incidents of cyber-bullying among students have been revealed in different studies (Peruta & Shields, 2017; Nguyen, 2017; Singh, Kumar & Sadeeq, 2018; Hobbs & Roberts, 2018). Thus, making it difficult for students to fully support Facebook integration into academic. Also, in the research of Willems and Bateman (2011), cyber-bullying was attested as a noticeable drawback of integrating Facebook in academia.

4.8.4 The use of YouTube for educational purposes

The use of YouTube for academic purposes has the prospective to assist students to achieve varied learning outcomes, comprised of cognitive, social, emotional, and psychomotor outcomes (Neumann & Herodotou, 2020). The content of the videos on YouTube assist students to improve their cognitive ability by attaining knowledge like learning a new language or becoming proficient at new skills to find solutions for

mathematical equations and calculations, science formulas and other important subjects. Moreover, the use of YouTube involves users' social skills, for instance reacting to comments provided by other users and giving feedbacks to the content developer. The use of YouTube also trains users to use numerous functions which need to be managed by the users, including downloading the video, sharing the video or skipping the advertisement. Wang and Chen (2020) submit that learning on YouTube is flexible, interesting, and interactive; hence, integrating YouTube videos to teaching and learning activities is found to be useful to students. Thus, Mustafa, Taha, Alshboul, Alsalem and Malki (2020) indicate that it is of significance to encourage lecturers to create videos and upload them on YouTube to improve the learning experiences of their students.

The following section explains the issues of internet addiction and academic performance.

4.9 SUMMARY OF CHAPTER 4 AND OUTLINE OF CHAPTER 5

This chapter provided a discourse and deliberated on the opportunities and challenges associated with the use of ICT and the internet at institutions of higher learning. The discussions were focusing on Europe, Africa and Particularly South African institutions of higher learning. Literature also highlighted the advantages and disadvantages of using the internet in higher education. Since many students are using social media, institutions of higher learning should take advantage of these platforms and use them for the benefit of student academic performance. Through relevant literature, the chapter also examined and interrogated the challenges posed by the excessive use of the internet by students at institutions of higher learning, with a view to guide students towards a more productive use of social media for academic purposes and success in higher education.

Chapter 5 explicates the research methodology applied in the study. Some of the key aspects discussed on the following chapter include the research methods, research design, population and sampling, data collection and analysis, quality criteria and ethical considerations.

CHAPTER 5

RESEARCH METHODOLOGY

5.1 INTRODUCTION

Research methodology is the foundation of any research, a study without an appropriate methodology has annulled its chances of producing credible findings (Lapan, Quartaroli & Riemer, 2012; Creswell, 2013). In this chapter, the emphasis is on explicating the research methodology used for this study. Both qualitative and quantitative research methodologies were employed in this study to produce trustworthy findings. In terms of the sampling method, probability and non-probability sampling methods were selected and applied. The relevant sampling techniques are defined. Most significantly, research methodologies which are a blueprint of this research are described. The following section describes the research methodology applied in this study.

5.2 RESEARCH METHODOLOGY

Both qualitative and quantitative methodologies, mostly known as the mixed method approach have been employed to collect and analyse data for this study. According to Wimmer and Dominick (2014) the mixed method approach draws from the strengths of both qualitative and quantitative approaches. Qualitative research methodology addresses the what, how and why questions of the study. While quantitative research methodology attempts to answer the 'how many' and 'how much questions of the survey (Creswell, 2013). The amalgamation of these approaches assisted the researcher to address the research problem from different scientific procedures, and that is regarded as one advantage of mixed method research. The researcher applied the mixed method approach to enrich the depth and trustworthiness of the results. The execution of two methods is evidenced by the use of different data collection tools such as focus groups and questionnaires (Neuman, 2011). Triangulation is the application of quantitative and qualitative research approaches in a single research study towards examining a phenomenon (Hussein, 2009).

According to Patton (2002), qualitative methodology is about explicating properties, values, and features of a particular notion as they are. In terms of data, qualitative research involves kinds of non-numerical or qualitative data, such as information collected through the use of interviews, written texts or documents, visual images observations of behaviour, case studies and so on. On the other hand, in quantitative methodology researchers usually observe the world using instruments including structured survey questionnaire which produces quantitative measurements or numerical data (Remler & Van Ryzin, 2015). In terms of analysis, qualitative research relies on various methods of interpretation since making sense of the data involves interpreting their meaning. Bitsch (2005) and Creswell (2013) submit that qualitative study is an investigation practice of understanding the social or human problem.

The combination of qualitative and quantitative research approaches was chosen to understand the use of the internet in enhancing students' academic performance at the institutions of higher learning. This investigation represents the social problem in such a way that students at these institutions of higher learning are expected to empower themselves with relevant knowledge to face the social ills faced by society. The provision of information through the internet has become an integral part of education and development in some part of the world. It is, therefore, significant to highlight the qualitative paradigm in addressing the research problem because it permits the researcher to gather information from the students regarding the use of various internet platforms in searching for information.

Bless, Higson-Smith and Kagee (2006); Du Plooy (2017) affirm that the quantitative research method depends on calculations, capacities and measurements. The researcher used a questionnaire to collect quantitative data to attempt and answer questions that could not be dealt with by the qualitative technique which is the focus group. The basic calculations are prevalent in this study, which is a key feature of the quantitative part of the study. The calculations indicate the frequency of internet usage amongst the students, the amount of time spent on the internet for academic purpose, and the rate at which various internet applications including social media are used to search for information. Emanating from the above statement, and the fact that the use of various internet application such as social media for educational purposes is a

relatively new concept, the researcher regarded it suitable to employ quantitative methodology in this study.

The next sub-sections describe the elements of the methodology applied in this study, starting with the research design.

5.2.1 Research design

The study employed the exploratory and descriptive research designs to explore and describe, respectively, the use of the internet in enhancing students' academic performance at institutions of higher learning. The study describes the manner in which students at selected institutions of higher learning use various internet applications for academic purposes. The exploratory design is associated with phenomenology that focuses on qualitative investigations addressing a phenomenon particularly in the field of social sciences (Goddard & Melville, 2012). Thus, this study examines the use of the internet in enhancing students' academic performance at selected universities hence a need for this design.

The descriptive design is associated with survey research method (Creswell, 2014). For that reason, the description of factors that affect the use of various internet applications for academic purposes amongst the students is significant in this study. Creswell (2014:155) clarifies that the survey method provides a quantitative numeric description of trends, attitudes, or opinions of a population by studying a sample of that population.

5.2.2 Population and sampling

According to Higher Education and Training (2019) there are 26 public universities and 123 private universities in South Africa. Some of these public institutions, such as Tshwane University of Technology (TUT), have several campuses in various provinces. However, for this study, the Universities of Limpopo, Venda and TUT Polokwane campus, based in Limpopo Province, were sampled through the purposive sampling technique, which is a non-probability sampling method. The selection and use of this sampling technique was informed by the fact that in Limpopo Province, these universities are the largest institutions admitting full-time students, some of

which stay at student hostels. These universities' characteristics were an advantage for the researcher to gain access to these students. According to Leedy and Ormrod (2004), Bless, Higson-Smith and Kagee (2006), Wimmer and Dominick (2014), purposive sampling is a form of non-probability sampling whereby units to be observed are sampled on the basis of a researcher's privilege about their relevance and importance thereof. Moreover, the purposive sampling technique was employed because the researcher is familiar with these campuses, especially the Universities of Limpopo and Venda since one was a student at both institutions.

Participants who are students at the three selected universities were sampled for this study. The convenience sampling technique, sometimes called accidental sampling, a non-probability sampling method was used to sample 48 students who took part in focus groups interviews. Remler and Van Ryzin (2015) refer to the convenience sampling technique as a situation in which a researcher takes advantage of a natural gathering or easy access to people who can be recruited to participate in a study. This sampling technique is suitable for this study because the nature of the study affects students at institutions of higher learning. Any student regardless of age, gender or field of study could take part in the study.

Furthermore, 450 participants were sampled through stratified random sampling, a form of probability sampling. Bless, Higson-Smith and Kagee (2006), and Creswell (2013) state that stratified random sampling dictates that the researcher should have prior information regarding certain characteristics of the population's composition before embarking on random sampling. Remler and Van Ryzin (2015) state that stratified sampling has advantages when there are known subgroups (strata) in that population that share characteristics of relevance to the study. The researcher with the help of research assistants grouped the participants into different groups (strata) of Faculties and Schools before randomly selecting the participants to take part in the study. The key interest of the researcher was to select students from Faculties and Schools which the participants belonged to. To this end, the researcher selected students from those convenient Faculties and Schools. For this study, the stratified random sampling procedure was also informed by the availability of the participants in different strata (i.e. Faculties and schools).

5.2.3 Data collection methods

5.2.3.1 Qualitative data collection

A focus group interview is one of the two selected data collection tools used to examine the research problem. A focus group interview is a data collection tool for understanding people's behaviour and attitudes (Wimmer & Dominick, 2014; Creswell, 2013). The researcher, with the help of research assistants, moderated six focus groups from the selected universities. The research assistants were selected by the researcher randomly at the University of Limpopo and they were Master of Arts degree registered students. All three institutions had two groups each, comprising of eight members per group. This selection was administered to avoid bias in sample selection. Lapan, Quartaroli and Riemer (2012) advocate that in the academic contexts, focus groups often occur with five to 10 participants. Again, Remler and Van Ryzin (2015) posit that typically a focus group interview involves six to 12 members in each group. The number of participants should be enough to make the discussion rigorous, but not so many that the size of the group obstructs engagement. Normally when administering this data collection method, the participants should sit around the table, along with the moderator who asks questions and guides the group discussion. The researcher recorded the discussion with a mobile phone for later analysis.

The study employed the focus group to examine the use of the internet in enhancing students' performance at the three selected institutions of higher learning. The crucial objective of employing this research tool to explore the behaviour, attitudes and the patterns of internet use by students at the Universities of Limpopo, Venda and TUT Polokwane campus. Focus groups also focused on unearthing the opinions of the subjects concerning the usefulness of the internet particularly social media and online library resources for information search. In this case, focus groups were used to determine the manner in which various internet applications, including social media, were used for academic purposes. With the permission of the participants, focus group interview sessions were audiotaped by using a mobile phone and transcribed.

Wimmer and Dominick (2014:136), and Neuman (2011:459), mention that there are four significant aspects that strengthen a focus group interview as a data collection tool, namely:

- a) Focus groups should comprise of handful of participants (6-12 participants).
- b) The participants should have mutual features and a similar understanding of certain facets of life. For example, the participants may be users of various internet applications or belong to a particular level of study or to a specific Faculty. In the setting of this study, the participants were all students, and they belonged to various Faculties of the universities.
- c) Focus groups produce qualitative data. Data collected through a focus group interview are used to stimulate understanding and to come up with diverse views stemming from the focus group interviews that may be unprecedented to the researcher. This can be achieved when at least four or more focus group interviews are conducted to reach an appropriate sample size.
- d) The conversation of the focus groups is more focused. The questions are addressed in an order. Moreover, the questions may be structured and predetermined. The questions should be designed in such a manner that would make certain that the goal of the study is accomplished. The moderator has an opportunity to use a diverse approach, particularly when the participant come up with pertinent data.

These characteristics are in line with the important feature of focus group interviews technique within the setting of this study.

i. The advantages of a focus group interview

A focus group is one of the most suitable data collection tools within the qualitative research paradigm. Modern researchers prefer using this method of gathering data because it is cost effective. Researches or studies in the corporate world, finds it costly to use focus groups as data collection methods. Nonetheless, academics use it because it is affordable in nature (Leedy & Ormrod, 2010).

Based on the nature of the subject under investigation, six group interviews were conducted to enable the researcher to collect adequate data. As a matter of research principle, the nature of a study determines an appropriate data collection method. The

accurate selection of data collection tools empowers the study to produce reliable findings.

Focus groups are useful in nature and the researcher has a freedom to change the structure and order of the questions. Another key benefit is that focus group interviews permit the researcher to collect primary data to strengthen other key facets of the research (Wimmer & Dominick, 2014). The data collection process of focus group interviews allows the researcher to create follow-ups on important features of the conversation.

The researcher using focus group interviews has great prospective to generate more responses. The group conversation allows other members to draw attentiveness from participants who are vigorously sharing their opinions on the matter discussed. Subsequently, all members of the group end up contributing to the conversation because they are encouraged by the outspoken participants. The more the respondents take part in the focus group sessions, the researcher would get lot of data to draw conclusions from. For this study, the moderator (i.e. the researcher), allowed the participants to alternate between English and a home language to express their honest ideas. Individuals were advised to express themselves in a home language that they felt empowered to express their views in.

It is significant to mention that in the focus groups; some members of the group were keen to respond to remarks from the other members. The arguments that emerged from these explanations permitted the moderator to ask follow up questions. Wimmer and Dominick (2014:137) state that “a skilled moderator also can detect the opinions and attitudes of those who are less expressing the opinions noting facial expression and other nonverbal behaviour while others are speaking”. The moderator should have sufficient skill to notice those who are not talking but communicating nonverbally with facial expressions which could suggest that they agree or disagree with comments from other participants.

The focus group discussions were beneficial for this study. The main purpose of using the focus group was to explore the use the internet in enhancing students' performance at institutions of higher learning. The researcher appointed six moderators to assist in the management of the six groups. Because the study focused

on students, the moderators were also students and in the same age group as the participants. In all meetings, the participants were profoundly involved and with the support of the researcher, the moderators asked follow-up questions. The focus was on the use of various internet applications for educational purposes.

The participants in all six focus groups were captivated by the subject under examination. They were given consent forms to complete and all of them reacted positively to that request. They all agreed to take part in the focus groups. The moderators used a recording device (i.e. a mobile phone) to record the sessions and the group members consented to be recorded and recordings were transcribed. Considering their age group and that they came from different Faculties, some of the participants were outspoken and offered a lot of opinions and understanding about the subject at hand in all sessions. The quiet participants were inspired by the outspoken members of the group but were encouraged by the researcher to air their views on the subject under discussion.

The other key advantage of focus groups was that the moderator was proficient to certify that they draw responses from the subjects. Even though a few participants were dominant during the focus group interview meetings, the moderator was able to deal with that by clarifying that it was significant for all participants to voice their views, and no opinion is of a less important during the discussion. The moderator had adequate expertise to rearrange the questions to permit continuous conversation.

To some extent, in some groups, participants were well conversant because they were acquainted with using various internet applications including online journal databases and user-generated content in social media sites such as YouTube to search for information. The participants were familiar with features and habits including information literacy, use of key words and referral sources that are important in using the internet for academic purposes.

ii. Disadvantages of focus group interview instrument

Focus groups as a data collection tool have their own impediments. The weaknesses of focus groups are numerous hence it is significant for any researcher to address these difficulties. Focus groups do not suffice, particularly when the researcher

presumes to produce more data. This study addressed the “why” question concerning the reasons why students prefer to use a specific internet application over the other as a medium to search for academic information. Then again, the “how” question is underlined to investigate the manner in which the students use different internet applications to search for information, to the degree of exploring how convenient are certain internet applications for information search.

In most instances, the outspoken participants in a group may suppress the other members and discourages them from voicing out their opinions regarding the subject at hand. According to Wimmer and Dominick (2014:137) “a self-appointed group leader who monopolizes the conversation and attempts to impose his or her opinion on other participants dominates some group”. This could jeopardise the whole group, and, in turn, may defeat the primary purpose of the focus group discussions. It is the role of the moderator to ensure that such self-imposed leaders are dealt with in an appropriate manner in the interest of the participants and aim of the study.

Failure to have a sufficient number of groups, which is more than four according to (Lapan, Quartaroli & Riemer, 2012; Wimmer & Dominick, 2014; Remler & Van Ryzin, 2015), would have adverse effects on qualitative research. However, if the groups are less than four in total, the researcher would be compelled to use another data collection instrument to supplement data collected from the small groups. If the researcher fails to have a sufficient number of groups (four groups or more), that would have a detrimental effect in a qualitative study. Nonetheless, if the groups are less than four, it is significant for the researcher to use another data collection instrument to complement focus group.

It is commended for a research study to cover many questions in order to produce in-depth findings. Another disadvantage is that unskilled moderators could struggle to lead a discussion appropriately. Inexperienced moderators may fail to point out irregularities when members of the group are discussing irrelevant topics.

The focus groups may deal with a small fraction of the sampled population which could not be a true reflection of the entire population. If the sample is too small, the findings of the study cannot be generalised in the entire population (Bless, Higson-Smith & Kagee, 2006). It is unlikely for focus groups to produce meticulous information needed

in a study. Nonetheless, when an adequate number of groups is sampled, focus groups may generate precise data.

Though this researcher sampled six groups, the participants were sometimes late for the meetings. Some of the sessions would take more time before they could start because participants were late for the meetings. This would literally mean that sessions were delayed and this prolonged the data collection processes. On one occasion, two participants of three different groups could not come to take part in the sessions, which resulted in those groups having six members instead of the initial plan of eight members per group. Nonetheless, through the guidance of the researcher, the sessions continued since six participants per group is quite reasonable and acceptable.

To a certain extent, the moderators succeeded in inspiring the discussion and the non-participating members started to voice out their opinions. In any group, the moderator is likely to come across silent members and outspoken ones. In this circumstance, the outspoken participants are likely to share their opinions with the silent participants.

The outspoken participants could play a vital role in anchoring the discussion and also encouraging silent members to take part in the conversation. This is what happened during the focus group meetings in this study. Since each focus group interview had three sessions, this planning presented a different challenge, which was that in the first and second sessions, all the six groups had eight members, but in the last meeting, three groups had six members each.

The instability aspect in attendance had negative effects on three groups. For example, the outspoken participant in one group at TUT did not take part in one session. Subsequently, the session was not interesting like the first two sessions because one person who led the conversation was not part of the discussion. In spite of all these drawbacks, the researcher managed to address the discussions in all focus groups in an amicable manner. The moderator (researcher) encouraged the available members to take part in the conversation.

5.2.3 Quantitative data collection

The researcher employed a questionnaire to examine the use of the internet for enhancing students' performance at institutions of higher learning. The closed ended questionnaire was employed in this study. According to May (2011:103), a survey questionnaire offers a relatively cheap method of data collection over the personal interview. Moreover, Goddard and Melville (2012) state that compiling an effective questionnaire has proven not to be easy, since effectiveness requires planning beforehand to ensure that the data can be objectively analysed afterwards. Pre-coding a questionnaire is a significant aspect of compiling a good questionnaire, because it facilitates the eventual analysis and processing of data through the use of statistical package or tabulation (ibid.). Du Plooy (2009) affirms that the pre-coding of a questionnaire should take place when it is compiled and before it is distributed to the participants. Hence, for this study, the researcher ensured that the questionnaire was pre-coded and tested before it was distributed to the respondents.

Through the help of the research assistants, the researcher administered 450 questionnaires to students at the Universities of Limpopo, Venda and TUT Polokwane campus. The questionnaires were divided equally into 150 per university because the researcher opted to select a considerable amount of respondents per university to collect large amounts of quantitative data. However, participants from UL returned 120 questionnaires, UNIVEN returned 113 and TUT returned 110 questionnaires. In total, 343 completed questionnaires were returned back to the researcher, which represents 76% of the responses.

i. The advantages of the questionnaire

The key benefit of a questionnaire is that it is quick to administer and analyse the data. Furthermore, it is cost-effective to administer questionnaires. Though the research assistants do not require exhaustive training to run the distribution and collection of the questionnaires and informed consent forms, they do need to be trained on the required questionnaire administration etiquette, which include friendliness, honesty and trustworthiness when engaging with the participants (Bless, Higson-Smith & Kagee, 2006; Remler & Van Ryzin, 2015). The questionnaire as a quantitative data collection tool offers the researcher adequate information about a topic under

investigation. These advantages proved to be beneficial for this study as the researcher ensured that one exhausted all of them.

ii. The disadvantages of the questionnaire

There are limited disadvantages regarding the use of a questionnaire in research. Nevertheless, some these disadvantages have negative effects on data collection.

Ethically, participants have a right to take part or withdraw from the study during the data collection process. In some occurrences, this can work against the research process, where the participants can decide to withdraw in the middle of the process. It is rare that researcher can receive a 100% return of questionnaires distributed to the participants. While some of the respondents may choose not to complete the whole questionnaire based on personal circumstances, some may decide not to return them the altogether (May, 2011). In this study, though the researcher through the help of research assistants, ensured that the respondents completed the questions by providing clarity if they came across difficulties. Nonetheless, 103 respondents did not return the questionnaires to the researcher, hence the researcher captured the data from the available 343 questionnaires out of 450 to proceed with the study. Data collection for this study started in the month of February 2020. However, the process was disturbed by the arrival of the Coronavirus pandemic and ultimately the lockdown imposed by the government. The data collection was paused since the researcher was caught not prepared to collect the data through other means. However, data collection process was then resumed and concluded in the month of June 2020. The researcher together with research assistants ensured that Covid-19 regulations which include the wearing of masks, keeping safe distance between one another and ensuring a small group of people at a time were all followed. Both qualitative and quantitative data were collected simultaneously in order to save time and travel costs.

The following sub-section describes the data analysis procedure within the context of this study.

5.2.4 Data Analysis Methods

5.2.4.1 Qualitative data analysis method

The data collected through focus group interviews were analysed through thematic analysis. According to Lapan, Quartaroli and Riemer (2012:129) “thematic content analysis is a method of analysis for coding or scoring verbal materials to make inferences about characteristics and experiences of persons, social groups, or historical periods”. The primary analytic goal in thematic analysis is to make inferences from messages, analysed in the form of text in written transcripts. The themes were based on the three objectives of the study and the other themes were produced from the data. All the focus group meetings were audiotaped with a mobile phone and transcribed by the researcher. The data collected were recorded and analysed based on the objectives of this study.

Qualitative data were analysed by using the following steps:

a) Familiarisation with the data

In this first phase, the researcher took enough time to study the data in detail, in an attempt to confirm that the data were in line with the aim of the study. Braun and Clarke (2006) state that if the researcher has collected the data through interactive means, one comes to the analysis with some sort of initial analytic interests or thoughts. However, it is significant that the researcher immerses oneself with the depth of the content. This involves repeated reading and listening the data in an active way, searching for meanings and patterns. Thus, it was very important for the researcher to familiarise oneself with the data. The focus group interviews were comprised of six to eight members and each group had three discussion sessions. Different questions concerning the use of the internet for in enhancing students’ academic performance at the universities were asked during the focus group sessions. All sessions were audio recorded with a consent of the participants. The researcher listened to the audio recordings and transcribed them in detail. The process of transcribing data, while it may be perceived time-consuming, is an exceptional way to start familiarising oneself with the data (Clarke & Braun, 2013).

Nonetheless, the themes of the questions asked in the focus group meetings were established from the objectives of the study. Accordingly, the researcher familiarised oneself with the collected data in the recordings, in this case, focusing on the three objectives of the study. However, the study managed to develop some of the themes from the collected data. Since this researcher adopted the mixed method research methodology, this first phase allowed the researcher to analyse data collected through focus groups. The appropriate familiarisation with data equipped the researcher with basic principles to generate initial codes.

b) Generating initial codes

According to Maguire and Delahunt (2017:3355), “in this phase the researcher starts to organise the data in a meaningful and systematic way”. The refinement of data is not facilitated in a vacuum, and coding reduces data to small pieces of meaning. There is a need for the collected data to pass through checkpoints before one can generate trustworthy findings which can be tested through the use of a present theory. The generation of initial codes is one of the frontiers. Codes help to identify a feature of the data that appears interesting to the researcher, and refer to the basic segment of the raw data or information that can be assessed in a meaningful way regarding the variable studied (Braun & Clarke, 2006). The focus group data helped to establish the initial codes. Regardless of the fact that data had introduced codes, the central codes were emanating from the objectives of this study. The generation of these initial codes anchored the search for themes since the researcher had performed thematic analysis.

c) Searching for themes

In this phase, data analysis starts to take shape as the researcher moves from codes to themes. This step involves sorting the different codes into potential themes, and collating all the relevant coded data extracts within the identified themes (Braun & Clarke, 2006). The categorised data permitted the researcher to pinpoint the initial codes and some of the codes represent the fundamental perceptions for the themes. By doing this, the researcher is analysing the codes and considering how different codes may combine to form themes. If this stage is done properly, the researcher will end up with a collection of themes, and even sub-themes, and all the extracts of data

that have been coded in relation to them (Braun & Clarke, 2006; Maguire & Delahunt, 2017). These are a series of check points which the data should pass through before they can produce initial codes and themes respectively. The following objectives of this study, known as the guiding themes of qualitative research were set:

- (i) to identify the manner in which students at institutions of higher learning uses the internet to enhance their academic performance;
- (ii) to establish the opportunities and challenges faced by students when using the internet for academic purposes; and
- (iii) to analyse the way students use and reasons for using different internet search platforms for academic purposes.

In spite of the above-mentioned guiding themes, other themes were established from the data.

(d) Reviewing themes

During this phase the researcher review, adjust and improve the initial themes that have been identified during the previous stage (Maguire & Delahunt, 2017). This phase encompasses two levels of reviewing and refining themes. The first level involves reviewing at the level of coded data extracts. This means the researcher should read all the collected extracts for each theme, and determine whether they seem to form a comprehensible pattern (Braun & Clarke, 2006). The second level requires the researcher to determine the validity of individual themes in relation to the data set. In this stage, the researcher is required to re-read the entire data for two purposes. The first stage is to ascertain whether the themes work in relation to the data set, and the second stage is to code any additional data within themes that could have been missed during the preceding stage.

The main purpose of reviewing themes was to examine the use of the internet for students' performance at the universities. The reviewing procedure did not withhold the fact that the internet comprises multiple applications including search engines, electronic databases and social media, to mention but a few. It was significant to review themes taking into consideration the relevant aspects involved in using the internet for academic purposes. Other aspects include online information literacy, computer and internet skills and other important facets of the internet in education.

The researcher embarked on this process in order to review and confirm the existence of the three objectives of this study. The stated objectives were not reviewed in isolation but in tandem with the aim of the study, with the understanding that this study should generate new knowledge and contribute to the existing body of knowledge. Thus, it is significant to review and refine the themes. This had to be done to strengthen the thematic approach as the apt data analysis technique employed into this study. The subsequent step was the definition and labelling of the reviewed themes.

(e) Defining and naming themes

This is the final refinement of the themes and the aim is to identify the 'essence' of what each theme is about (Braun & Clarke, 2006; Fereday & Muir-Cochrane, 2006). In this phase, the researcher defined and further refined the themes to be presented for analysis. A good thematic analysis will ensure that each theme has a singular focus; themes are related but do not overlap, so they are not repetitive, and themes should directly address the aim and objectives of the study (Clarke & Braun, 2013; Maguire & Felahunt, 2017). The themes of this study were generated through the objectives of the study and the collected data, and they are stated hereunder.

- (i) The impact of the internet on students' academic performance.
- (ii) Challenges and opportunities of the internet towards enhancing students' performance at institutions of higher learning.
- (iii) The analysis of the use of different internet search applications for academic purposes.
- (iv) Convenience of using social media for academic purposes.
- (v) Students' information literacy in surfing the internet for academic information.

5.2.4.2 Quantitative data analysis method

This researcher employed the Statistical Package for the Social Sciences (SPSS) and computerised software (Microsoft Excel) to analyse quantitative data collected. According to May (2011), statistical analysis focuses on the use of computerised software to analyse survey data. For this study, the researcher administered 450 questionnaires and captured the received 384 through the use of SPSS version 26. Moreover, the questionnaires addressed quantitative aspects such as the amount of

time spent by the students on the internet for academic purposes, challenges faced and the students' acquaintance in using various internet application to enhance students' performance.

The next section describes the quality criteria implemented by the researcher while conducting the study.

5.3 QUALITY CRITERIA

Quality criteria are an integral part of research to ensure transparency and credibility of research activities undertaken by a researcher while conducting a study.

5.3.1 Quality criteria for qualitative data

5.3.1.1 Credibility

The researcher ensure that credibility of study was observed. According to Lapan, Quartaroli and Riemer (2012) credibility in research is established when the researcher ensures sustainable involvement in the study by staying in the research field for an adequate time, guard against bias and use of multiple data sources. In order to achieve this, the researcher ensured that sufficient time is spent on the research field by conducting multiple focus group sessions, to build trust so as to overcome the effects of misrepresentation. Anney (2014) states that this process puts confidence in the truth of the research findings.

5.3.1.2 Transferability

Lapan, Quartaroli and Riemer (2012), Anney (2014) and Moon et al. (2016:18), are of the view that transferability is accomplished by the provision of details about the research participants and setting so that readers of the study can make their own determination as to whether or how the findings from a study might transfer to their own setting. As alluded before, the researcher ensured that students from all levels of study, both undergraduate and postgraduate and from all the Faculties within a university were included in the study. The comprehensive and complete explanation of the setting in which the data have been collected were provided in this study with an attempt to uphold transferability.

5.3.1.3 Dependability

Moon et al. (2016:17) state that dependability refers to the consistency and trustworthiness of the research findings and the degree to which research processes are documented, allowing other researchers to follow and critique the research process. The audit trail was undertaken by checking and tracking data to their sources. The researcher checked the analysed and interpreted data and traced them back to the extracted summarised information, and to the taped data collected from the participants.

5.3.1.4 Conformability

The findings of this study were established on the views of the respondents and settings in the form of data collected through focus groups. Confirmability is similar to reliability in quantitative research. Furthermore, the present literature was used as proof that endorses the findings to conform to features of confirmability. According to Lapan, Quartaroli and Riemer (2012), and Anney (2014), confirmability is based on the provision of a chain of evidence such that the reader can see the source of the data and illustrative examples from the data that support the researcher's conclusions.

5.3.2 Quality criteria for quantitative data

5.3.2.1 Validity

Validity is described as the amount to which the data collection instrument employed is precisely measured in a quantitative study (Remler & Van Ryzin, 2015:106). This aspect determines whether the instrument sufficiently measures the content that it should with regard to the variables. To ensure the validity of this study, the researcher conducted a pilot study before the actual investigation commence, to ensure that the instrument (questionnaire) would measure what it was intended to measure. Questionnaire was applied to deal with the use of the internet in enhancing students' performance at institutions of higher learning, particularly the manner and how frequently they used various internet applications for academic purposes.

5.3.2.2 Reliability

Reliability is concerned with the extent to which a measurement of a phenomenon provides stable and reliable results (Remler & Van Ryzin, 2015:118). It refers to the consistency of a measure, and it is directly related to the concept of random error and noise. Reliability may be measured with retest method, whereby the same scale or measure is administered to the same participants at two separate point in time (ibid.). The researcher ensured that the reliability of this study was considered by using a method applicable for quantitative studies, and thus, retest reliability can be applied to measure the accuracy of the instrument used in this study. The questionnaire as a quantitative instrument is reliable and can be effective in numerous other studies.

The succeeding section states and describes the ethical considerations of the study.

5.4 ETHICAL CONSIDERATIONS

Ethical considerations are one of the most important aspects in research because they explain the importance of why the researcher should be honest when conducting a study because is about carrying out the right and not the wrong in research activities and procedures. In this section, ethics considered by this researcher are described to indicate the respect offered by this researcher to participants.

5.4.1 Seeking permission for the Study from the University

For this study, the researcher sought research approval from the Turfloop Research and Ethics Committee (TREC) of the University of Limpopo before collecting data. This is significant to protect the rights and well-being of participants, reduce the risk of physical and mental anxiety, protect the rights of the researcher, carry out a genuine study and minimise the possibility of claims of negligence against the researcher (Kruger, Ndebele & Horn, 2014). The study was approved by the research ethics committee. This study observed the critical steps of research ethics outlined by the University of Limpopo.

5.4.2 Informed consent

According to Remler and Van Ryzin (2015:19) “participants in a study have a right to be provided with full information about the research, and doing so in a way that subjects can genuinely understand”. The research participants were informed about the nature of the study and the main aim of embarking in the study. The researcher also explained to the participants that their participation was voluntarily and that they could withdraw if they wanted to do so. Thus, participants were given Consent Letters which they completed before embarking in answering the questionnaire and participating in the study.

5.4.3 Confidentiality and anonymity

The researcher ensured that confidentiality and privacy of the participants were protected by asking the respondents not to reveal their identity or names during the research process. It is significant to ensure that the participants’ identifying information is known only to the researcher and is not publicly associated with their responses (Remler & Van Ryzin, 2015:232; Bless, Higson-Smith & Kagee, 2006:142). Since the study employed focus groups and a questionnaire to collect data, the privacy of the participants was respected at all times because the names of the participants were not disclosed but code letters (e.g. Respondent C3), were used to identify the participants during the data collection and interpretation processes.

5.4.4 Aftercare of the participants

Safety of the participants was guaranteed during the data collection process because the researcher ensured that respondents did not experience any harm, either mentally or physically.

The subsequent section provides a critical analysis of the methodology.

5.5 CRITICAL ANALYSIS OF THE METHODOLOGY

This research employed two data collection instruments from two different research paradigms, namely focus groups (qualitative method) and a questionnaire (quantitative method) to collect data. The main problem with regard to the focus groups was that three participants did not come to the last session of the data collection

process. However, the moderator encouraged participation from the participants who were available during the meetings. It is significant to mention that some of the participants could not respond to some of the questions such as “mention some of the electronic databases you mostly use to search for information”. This was because they were not aware of such concepts.

It is imperative to find a right approach to encourage energetic participation in the focus groups. The use of a recording device during the sessions helped the researcher to gather all responses needed for the questions asked. Though focus group interviews have both advantages and disadvantages because they are a significant tool towards establishing discussion amongst participants in social science research in general and mass communication in particular. The emerging scholars ought to ensure that all participants produce crucial data during focus groups.

The researcher also experienced challenges during quantitative data collection through questionnaires. Of the 450 questionnaires distributed to the participants, 66 were not returned to the researcher and the researcher analysed the returned questionnaires. This will remain a challenge when using questionnaires as a data collection tool. However, the researcher accomplished the task that the study was aimed at, and gathered a lot of responses pertaining to the study objectives with the returned questionnaires. With the limited challenges experienced by the researcher in this regard, questionnaires remain an efficient data collection tool for a quantitative research study.

5.6 SUMMARY OF CHAPTER 5 AND OUTLINE OF CHAPTER 6

This chapter explained the research methodologies employed and how they were executed in this study. The researcher deliberated on the research designs and research methods used to collect and analyse data for this study. Focus groups and questionnaires were used to collect data for this study. Thematic analysis and SPSS version 26 were employed to analyse qualitative and quantitative data respectively. The chapter also elucidated quality criteria that were observed in the study, including validity and reliability. The chapter also explained how an ethical clearance certificate was applied for by the researcher from the Turfloop Research Ethics Committee

(TREC). Ethical considerations respected by the researcher before collecting data and during the entire research process were also explicated.

Chapter 6 presents on qualitative data and provides an analysis of data collected through focus groups. The chapter also elucidates how thematic analysis was employed to analyse the data.

CHAPTER 6

QUALITATIVE DATA PRESENTATION AND ANALYSIS

6.1 INTRODUCTION

This chapter presents and analyses qualitative data collected through focus group interviews. This process ensures that the data is systematically analysed in order to address the aim and objectives of the study. Thematic analysis has been employed to unpack the data and gives it a meaning. Forty-two students from three universities i.e. the Universities of Limpopo (UL) and Venda (UNIVEN) and Tshwane University of Technology Polokwane campus (TUT) formed part of focus group interviews. Students were divided into six groups, which made two groups from each university. Three groups were comprised of eight members each, while the other three groups comprised six members each. The sub-headings and themes presented in this chapter contribute to the achievement of the following study objectives:

- a) identify the means in which students at institutions of higher learning uses the internet to enhance their academic performance;
- b) establish the opportunities and challenges faced by students when using the internet for academic purposes; and
- c) analyse the manner in which and reasons for the students use different internet search platforms for academic purposes.

The next section presents and analyses focus groups data.

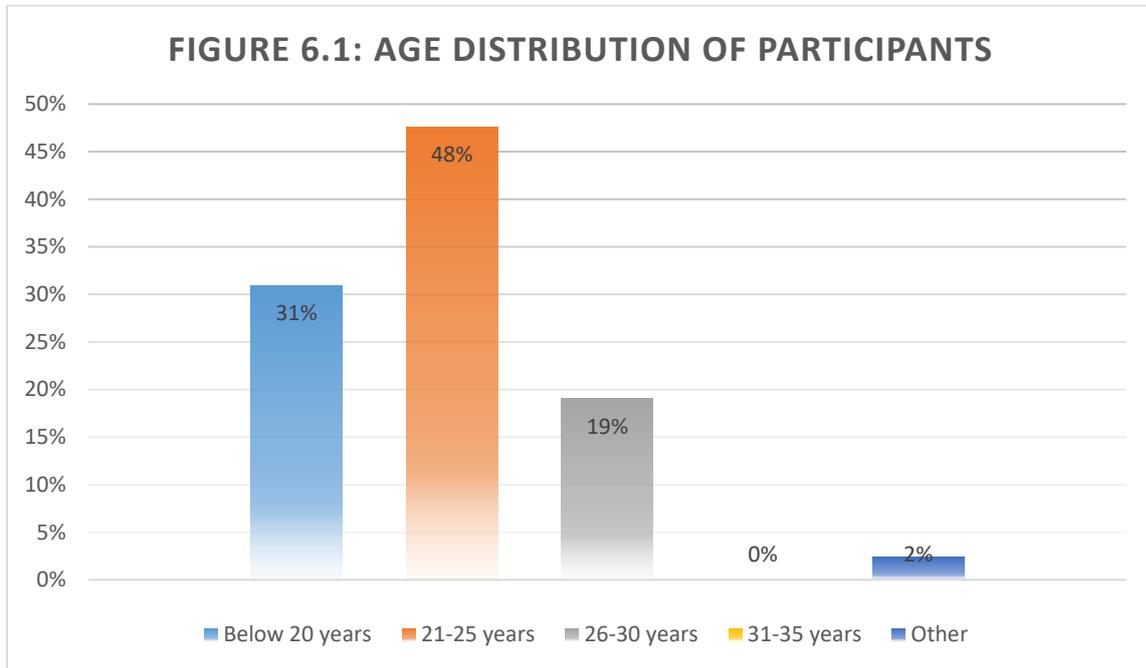
6.2 QUALITATIVE DATA PRESENTATION AND ANALYSIS: FOCUS GROUPS INTERVIEWS

6.2.1 Demographics of the participants

A: Age group:

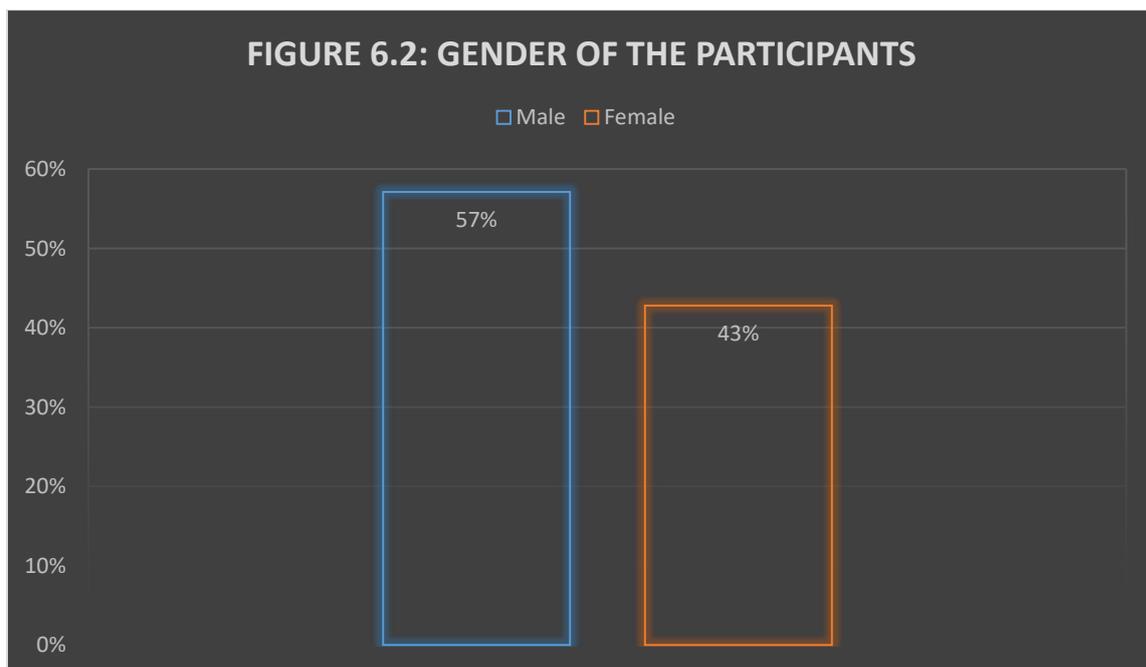
Forty-two students from the selected universities took part in the focus groups interviews. Out of 42 participants, 13 (31%) were 20 years old. The majority of the

participants 20 (48%) were between 21-25 years old of age. Eight participants (19%) were aged between 26 and 30 years, while one participant (2% of the sample) was 36 years old. Figure 6.1 provides a detailed analysis.



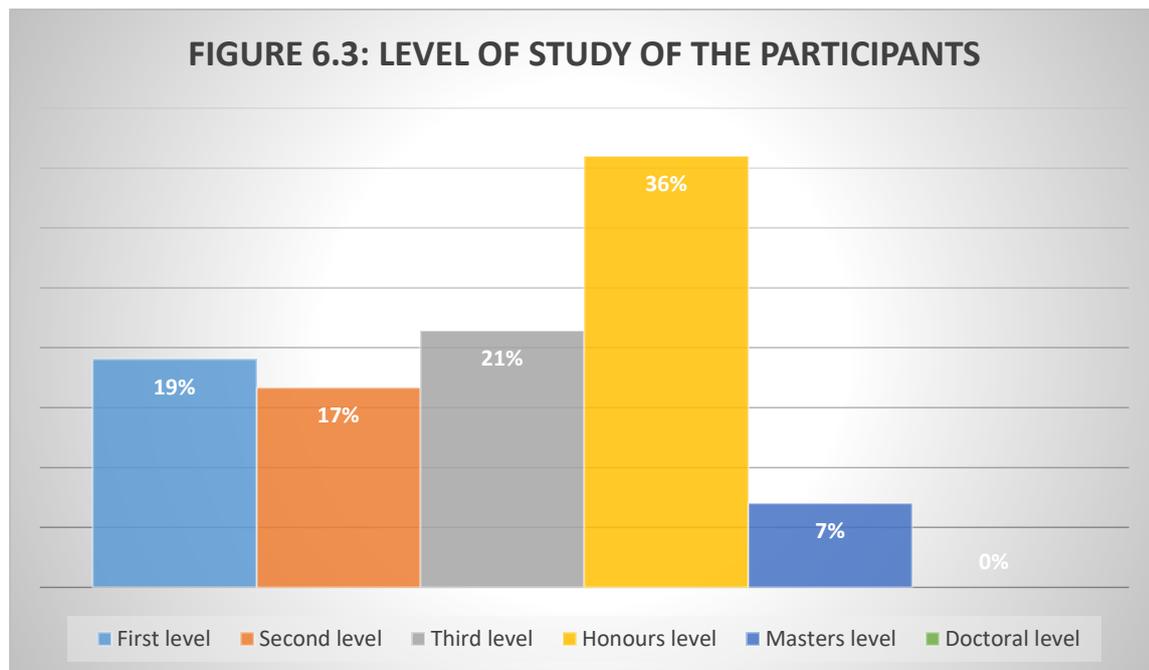
B: Gender:

The majority of the respondents 24 (57%) were male, and only 18 (43%) were female. Figure 6.2. illustrates respondent gender data



C: Level of study:

The study results indicate that six participants (19% of the sample) were on their first year level of study, three persons (11% of sample) were registered for second year level and nine (21%) were on their third year level of study. Fifteen respondents (36% of the sample) were studying at Honours level, and three participants (7% of the sample) were Masters students. Figure 6.3 presents these results.



The following sub-section summarizes the themes identified in relation to the study objectives.

6.2.2 Identification of the means by which students at institutions of higher learning uses the internet to enhance their academic performance

Theme 1: Time spent on the internet for academic purposes

Students who participated were asked to estimate the time they took when using the internet for academic purposes per day. Participants indicated that time spent on the internet will differ on a daily basis and also depending the kind of work there are doing on a given time. Some of the participants indicated that they use approximately spend six hours on the internet doing academic work, including preparing for tests and/or

when they face challenges on what they are have been taught in class. This is how some of the participants they expressed their views:

“Yeah, I use approximately six hours per day for academic purposes, because I use internet particularly when I study, so when I encounter any difficulties I go to the internet” (Respondent C3)

“Apparently normally during the day, I can estimate that I use it for six hours because, sometimes I can log in for thirty minutes when I’m doing my research, but normally I’m quite sure that it can make six hours per day” (Respondent C4)

Participants also indicated that they sometimes intend to spend many hours on the internet doing academic work, however, they easily deviate from doing academic work to entertainment and social media. In most cases, they indicate that they spend one hour doing academic work and spend close to four hours downloading movies and music, and also engaging on social networking sites. This is how some of the students conveyed their views:

“I spend more than five hours, four hours for entertainment and one hour for studying. This because I like watching music videos on YouTube and music” (Respondent A3)

“Sometimes I would intend to spend five hours at computer lab, but then I’ll end up using it less than an hour because I get distracted easily, I will be watching videos on YouTube every time” (Respondent B5)

“I use it to gather information for my research and assignments, to download movies and songs, so I spend about two to three hours on the internet” (Respondent A4)

“I use it to gather information for my research, and also use social media to collect data for my research so I collaborate, so I spend like roughly two to three hours a day” (Respondent F6)

Students also noted that the kind of work they performed at a given time normally dictates how much time they spent on the internet for academic purposes. Participants indicated that they take much time on the internet when conducting research for assignments and research projects, and they will spend less time when preparing for tests or exams. The following extracts from the participants support the above discussion:

“It depends on what kind of work I’m doing, if I’m preparing for tests, I can spend about two hours and it’s not every day, but if it’s an assignment I can spend like four hours because it demands that you engage with lot of information, and during exams I spend like two hours” (Respondent D3)

“Mmm, close to five hours, when I’m doing research, I can log in for two hours in the morning, and when I don’t get what I want, I’ll log in for another two hours, and before I sleep I’ll use it for another two hours” (Respondent C5)

“I do not have the exact time, it depends. If I’m doing research, that’s where I take most time, it could be five or six hours, for assignment I can take about an hour” (Respondent A5)

“I spend like two hours on the internet especially when I’m doing my research, I’m trying to find previous studies which goes along with my topic, and sometimes when I do my assignments” (Respondent A2)

“I spend three hours per day because I’ll be busy with my research finding information, and also when I have an assignment, I use internet especially things like Google Scholar to find information” (Respondent A1)

On the other hand, participants also indicated that they use the internet not only to download information, but also to watch *YouTube* videos to supplement what they were taught in class. This assists them to get clarity on any difficult subject they might be working on. This is how one participant expressed one’s view:

“I spend roughly two hours, mostly after the lecture I still go to the internet or YouTube to check on anything related to what transpired at the lecture session to see if I can get something” (Respondent F2)

The participants also indicated that there are students who spend less than an hour on the internet for academic purposes. These students normally use the internet for learning management system such as Blackboard to download lecture notes and to check announcements by lecturers concerning their modules. Some of the participants expressed their views as follows:

“It also depends on what I’m doing, if I’m simply downloading notes on Blackboard it will be less than thirty minutes, but if I’m researching something concerning my assignment, it will be more than thirty minutes” (Respondent E4)

“Well, I would say I can use thirty minutes on the internet for academic purposes. I usually use it when I want to download notes from Blackboard” (Respondent E3)

“Let’s just say five minutes, because my lecturers can teach, thus I don’t have to get worried and end up opting for internet in most of the times” (Respondent B8)

Participants also indicated that they normally do not use the internet for academic purposes unless they have an assignment to write. Participants highlighted that most of undergraduate students would wait until they are given an assignment or a project to do before they can use the internet for academic purpose. This is because undergraduate students have not embarked on research projects like postgraduate students. Thus, they do not see the need to use the internet constantly for academic purposes. This is how one participant articulated one’s opinion:

“I cannot really say I have exact time. I only use internet for academic purposes when I have an assignment or research, if not, then I do not use the internet for academic purposes” (Respondent A6).

The findings revealed that students spend different times on the internet for academic purposes, have different motivations for spending specific time on the internet. Some students use the internet for academic reasons only when they have assignments, research projects and tests to prepare. Most of the students get swayed away from using the internet for academic purposes into entertainment including downloading music and movies, and also for social media.

Theme 2: Search engines and online information search

Participants were asked to mention how often do they different internet search engines when searching for information on the internet. Respondents indicated that they use different search engines amongst them include Google, Yahoo, Bing, MSN, Mozilla Firefox. Many participants noted that they use Google and Yahoo more often than any other search engines. This is how some of the participants conveyed their comments:

“I also prefer Google the most, because that’s what I’ve known since I started using the internet, that if I want to search something on the internet, I have to use Google. I’ve tried many search engines and I don’t see the difference, the only difference is connection” (Respondent E1).

“More often I normally use Google, Yahoo, Bing and MSN, but not AltaVista” (Respondent C5).

Participants also indicated that they use Google often than any other search engine because they have email accounts with the engine, making it more popular than other search engine. One participant expressed one’s opinion as follows:

“I use Google every day, and believe lot of us we use Google because we even have an accounts with Google, like we have Gmail accounts, so the most thing we do every day we log into our emails, so Google is the most used search engine because we have accounts with it. It saves times” (Respondent B3).

Participants stated different opinions when comparing the effective of different search engines. Some are said they prefer using Google because Yahoo comes with lot of

online advertisements which disturbs when they are working, while others indicated that they prefer MSN as compared to Google. Some of the participants also noted that they prefer using Mozilla Firefox when searching for information on the internet. This is how some of the participants expressed their opinions in this way:

“I use Google less and Yahoo more because I trust Microsoft more than Google” (Respondent B7).

“More often I normally use Google because in Yahoo there’s lot of advertisement there and useless things, so I’ll stick with Google” (Respondent C1).

“I normally prefer Firefox. When comparing Google and Firefox, if you put the same search query, they won’t outline the same responses, the order of webpages and/or links are not exactly the same” (Respondent E2).

“I use Google, and MSN when I’m at the computer labs” (Respondent D1).

“I use Google a lot, that’s where I start, but in my personal computer, I also use Bing” (Respondent D6).

Other participants specified that they used specific search engine for a particular purpose. They will mostly use MSN to read news trends in the public domain, and they will use Mozilla Firefox to connect to the learning management system like Blackboard. Students indicate that it is easier to connect to Blackboard through Mozilla Firefox than Google or nay other search engine. Some of the participants conveyed their opinions in this manner:

“Google is the best, these other search engines like MSN, I use it when I’m reading trends, and Mozilla Firefox for Blackboard” (Respondent F7).

“I always use Google all the time. I only use Firefox when I want to access Blackboard and only when I’m at the computer lab” (Respondent E4).

“Here at school, whenever I go to the internet I use Google and MSN, because they are default search engines, but when I’m using my mobile phone and the personal computer, its Google” (Respondent D3).

“The one I use frequently is Yahoo because if you have a problem with a particular aspect, you can just post your problem and you will find responses from different people, it works like a blog. I normally use MSN when I want to read about current affairs, however, I haven’t tried Bing. Well with Google, everyone is used to it, we use Google accounts. I use Firefox whenever I want to download something from YouTube” (Respondent E6).

Interestingly enough, most of the participants indicated that they only use Google to search information on the internet simply because they do not know other search engines which could be used to search for information on the internet. Students indicate that they were only exposed to Google when they start to use the internet, and they only learned about these other search engines at a later stage. This is how some of the participants expressed their concerns:

“Most of us have google accounts, so we normally use google search engine to search for anything in the internet” (Respondent F6).

“To be honest I only know google and I always use google to search for information” (Respondent A6).

“Often times I use Google and the rest I don’t know them” (Respondent C6).

“I’m a person who uses Google and these others ones I don’t know them” (Respondent C2).

“Well, Google is famous, that’s the search engine we were introduced to when we started to know about the internet” (Respondent F6).

“I normally use Google every day, because these other ones like AltaVista I don’t know them” (Respondent C3).

“To add on what A2 said about knowing those ones such as Yahoo and everything, the most common ones that I use is google and Google Scholar. The other ones, because I do not have the knowledge about them, like I’ve never been exposed to them so I don’t how they work, maybe they will help me in future if someone can teach me about them, for now I only use google” (Respondent A5).

Other participants indicated that they have decided not to use ‘simple search’ when searching for information on the internet. Students indicate that the information accessed through the use of simple google search or Wikipedia can be easily edited by anyone, hence the information cannot be trusted in the academic field. One participant expressed this view:

“When doing my academic work, I never use them because as I’ve explained before that anyone can just edit or put her opinion on Google, Yahoo or Being, that means that information is not well researched so its someone’s opinion, then for academic stuff I never use it” (Respondent A1).

The study has established that Google is the mostly used search engine when searching for information among students. Other search engines such Yahoo, MSN, Bing and Mozilla Firefox are rarely used because students are not familiar with them as compared to Google. Search engine such as Mozilla Firefox is mostly used when students want to connect to the learning management systems like Blackboard. Yahoo and Bing and MSN are mostly used for reading news trends in the public domain.

Theme 3: Students’ acquaintance in using the internet for information search

From their observation, participants were asked to indicate whether they feel that students are well acquainted in using the internet to search for academic information. It is not surprising that participants have different opinions over this matter. There are those who think many students are well conversant with using different internet applications for information search. Some of the participants stated students are well always seen in computer labs doing assignments, and they have access to Wi-Fi

internet outside computer labs, thus it can be said that they know how to use various internet applications to search for information. Other participants indicated that they have been oriented on how to use internet applications and other platforms for educational purposes. This is how some of the participants conveyed their views:

“Students are oriented and they are taught, it’s just that there is a high level of ignorance by students, when you go there instead of listen you do not focus. There was a time where when we were oriented we were taught on to use these things on how to get information, how to cite and everything, your Google Scholar and RefWorks, even this year when we register a module for research, we were taken to the library, we were oriented on how to access sources, and to reference” (Respondent B4).

“I think students are acquainted, in my first year, there was a module which taught us on how to use computers and library services to access for information in our field of study” (Respondent F6).

“We all have smartphones, the information is in our fingertips, we don’t even have to walk to the library, so I feel like students are well acquainted” (Respondent D1).

Students also indicated that most of them own personal computers and smart phones which they sometimes use to search for academic information. This is how they expressed their sentiments:

“I feel they are well acquainted, we have gadgets which we can use to search for information, and if one doesn’t have such, there is a library with well advanced computers to assist us to access information, and there’s also Wi-Fi connection for everyone to access the information” (Respondent D3).

“I think student are well acquainted in using the internet, if you can check on the computer labs, they are always full of students especially during assignments and tests times” (Respondent F2).

On one hand, participants stated that they are well knowledgeable in using the internet for academic purposes. However, on the other hand, there were those participants who looked beyond accessibility of ICT and the internet as equivalent to being well acquainted in using them for academic purposes. Most of the participants highlighted that as much as students have access to computers and the internet, they still lacked proper skills needed for academic purposes. Students have noted that majority of them use only one method of typing a question on the google search, then copy and paste the content they retrieve from the internet. Participants felt that they still lack enough knowledge on how to use various internet applications such as Google Scholar and other online library resources to access educational information. Some participants expressed their views thus:

“I can say they are not because since from first year, the only thing we know on how to search information was googling, we were not exposed to other features like Google Scholar which are the perfect engines to search information. And the fact that the university only teaches the first year on how to use the computer, and only the basics, the mouse the keyboard, I don’t think it gives them too much exposure on how to use internet because even in my final year, when I was given an assignment I didn’t know how to cite, I think I learned how to cite this year and only a bit, I’m not that perfect. They only show you that when you want to search for information you only go to google and type in what you want and you get the information, we copy we paste that’s it. So I don’t think the students are well acquainted with using the internet” (Respondent A2).

“No, there thing is that most of us, especially black students, as much as we have smartphones and all the resources, but if we can’t use them then what’s the use, some of us we can’t access the information because we don’t know how to use these resources. The inability of students in using these resources is a detrimental factor” (Respondent D4).

“I agree with A2, I think students are not that much acquainted when using internet for academic purposes because roughly students use internet for social networks, then when coming to academic they don’t, because I can judge from

their performance, if maybe really we are using internet for academic purpose I think we could be doing well in our academic” (Respondent A1).

“I know that we have been taught, we were made familiar with these things, but then if you do not use it as often as you should, you tend to forget on how to manoeuvre through the internet, how to get your information and stuff like that. So the more you don’t practice, the more you forget what you were taught during orientation” (Respondent B5).

Some participants stated that students were somewhat familiar with using the internet for academic purposes. They indicated that as much as they were not aware of multiple methods in using the internet for information search, they were able to get the job done whenever they had to write assignments and research projects. Some participants expressed the following opinions:

“I can say is 50/50 but I’m not satisfied, like myself I’m doing honours but still I cannot access what A3 has been talking about, like Ebscohost, I don’t know them but I’m at honours level so it’s not good” (Respondent A6).

“I’m not quite sure, but from a distance look, I can say most of people whom I’m close to them they are not because they do not move with times and technological advancement when it comes to using the internet” (Respondent C1).

“No, students don’t know how to use the internet, for us internet it’s there so that we get what we want then we leave. We don’t care about the ‘dos’ and the ‘don’ts’. Even if they say you must read and sign for something, you will even agree without reading the information” (Respondent E3).

Some participants indicated that they were not well accustomed in using the internet for academic information search because they did not receive continuous e-skills training. They mentioned that they had to teach themselves through ‘trial and error’ to navigate through different internet platforms. This participant expressed one’s opinion as follows:

“I can say they are not well equipped, because my friends and I we taught ourselves on how to use the internet. There are lab assistants at computer labs, but they do not assist you on how to search information, they only assist you to get logged on the computer” (Respondent C6).

The study results established that students had different views regarding their e-skills for academic purposes. There were those who stated that they were well conversant with using the internet for information search, and those who mentioned that access to ICT was not equivalent to acquaintance in using it for educational purposes.

6.2.3 The opportunities and challenges faced by students when using the internet for academic purposes

Theme 4: Effective and affordable academic materials

Participants of this study has described the internet as an effective academic tool and also provides affordable academic content. They have indicated that the internet saves their time through easy access of educational materials whenever they are doing school work. Students also indicated that they are no longer forced to physically go the library in order to do their assignments and research projects. Students also indicated that they sometimes access google books, which makes it easier than buying expensive textbooks for their courses. The following extracts demonstrate respondent views:

“Internet is very helpful because firstly it saves time, one can just type key words on Google Scholar or any database to find information within short period of time. It helps to find information which is accurate and relevant to his or her topic. It helps one to find information which has been researched by scholars or experts on that particular field” (Respondent A1).

“It makes thing simple because you don’t have to go to the library or ask around about certain information, you just have to type whatever you want” (Respondent A3).

“The internet saves time because I don’t have to go to the library, I can access it anywhere” (Respondent E4).

“I think internet is very important because when you are doing research you have to find articles, and to find articles, I don’t really go the library, but the internet. It’s also very mobile because you can use it whenever you are, unlike carrying lot of books. When you are doing research, you need different opinions of authors on a matter” (Respondent C4).

“It helps at some point, because sometimes you fail to access some of the information because of lack of resources such as books from the library, so with internet you get variety of information from different sources” (Respondent D7).

Some participants mentioned easy access and saving time through internet use to be a vital key benefit of using the internet for academic purposes. Students highlighted that in academia it is important to have access to recent information. With shortage of printed materials in libraries, the internet came in handy and supplemented the little information at their disposal. Participants acknowledged that research projects require lot of recent external sources and the internet makes it easy for them to access the necessary information. This is how some of the participants expressed their views:

“Oh, it’s really helpful because I find information which is related to my studies or the previous researches which I use to compare with my research and I also find information on the study that I’m doing, for instance, I’m doing research about radio, so I always look for information on the previous researchers and what they have found out in that topic” (Respondent C1).

“I use it because there are lot of credible sources in the internet and it’s quite easy to manoeuvre information on the internet than the traditional way when you are using a book, so on the internet you search specifically for what you want and you get it than having to go through a pile of books” (Respondent B3).

“Most of the research and assignments that we do they require the external source of information and the only way to access that is through the internet and also for accreditation purposes” (Respondent B7).

“It is very important when you are doing research and assignments, because lot of updated information can be accessed through the use of the internet than books” (Respondent C2).

Participants declared that easy access to the internet has expanded their knowledge concerning research, since they learned to use various internet applications to access recent scholarly work. Some of the participants conveyed their opinions in this manner:

“For me it’s very helpful, because for any work that I’m given, I always do it through the help of the internet and I’m able to access lot information from different authors. It expands my knowledge as far as research is concern” (Respondent D3).

“It is very helpful because I can get access to many things from catalogues, journals JSTOR or whatever I want without doing much work” (Respondent F7).

Theme 5: The internet and academic performance

Participants acknowledged that indeed the internet play a crucial role for their academic achievement. Some students stated that the internet provides recent and updated information as compared to a book which has been published many years ago. They also indicated that most of the information they use either in tests, assignments and examination is from the internet, and they had been performing better compared to when they relied only in books. Some conveyed their views as follows:

“I could say it does because it gives me an opportunity to read recent materials unlike when I go for hard copies that’s been written in 1994 but someone who really passed on, and also it gives me an opportunity to narrow my search or my topic while at the same time it also saves time unlike going to the library and

go through pages, there just type and it pops up information then I read” (Respondent A1).

“They are effective for me because they help me to be more knowledgeable and improve in my performance” (Respondent F1).

“Yeah, it does help in terms of like you gain more knowledge because you are always constantly reading information from the internet and it’s easily accessible so yeah” (Respondent A4).

“Yeah, it helps a lot because if I can look at this year, most of the things which I wrote in tests came from the internet, for instance even in the previous test lecturers gave us slides and everything, so if I were to compare how I used to write in the previous years where I used books and slides, but this year I relied too much on the internet, if you give me information I will go to the internet because sometimes the internet simplifies it” (Respondent A5).

“I would say its effective because whenever I do not understand the methods the lecturer is using; I go to the internet to find alternative information” (Respondent B8).

“Yes, they are, mostly 95% of the things which I’ve done, the information was from the internet and I’ve done very well” (Respondent C1).

“I think it does help, because usually in class I don’t write notes, I just write key topics and I search on the internet” (Respondent C6).

“Yeah, it also helps me, in most cases I don’t attend classes, I sometimes don’t understand when lecturers are teaching since I have a hearing problem, so opt for YouTube videos, then look for more information from the internet, as I’m speaking I qualify with distinction because of the internet” (Respondent D5).

Some participants referred themselves as visual students, who preferred to learn using pictures and videos. Thus, the internet provides such platforms where they could

engage in visual content including videos and pictures, and they were performing better by using those platforms. One participant stated:

“Like I said, I’m a visual student, so whenever I access the information from the internet, and also from YouTube, it helps me to perform better” (Respondent B5).

Some participants provided a different view regarding the use of the internet for academic performance. They indicated that the internet did not really assist students in performing better academically, because they had not mastered the required e-skills for using the internet for educational purposes. Students mentioned that many of them were “copying and pasting” most of the content they got from the internet. This did not make them proud of their academic work, and they mostly got punished for academic theft. Some expressed their views as follows:

“No, because normally I use it for assignment and that’s it, but when I’m studying I don’t use the internet” (Respondent E2).

“No, the only time I use it is when I copy and paste for an assignment so I can’t say it’s helpful” (Respondent E3).

Theme 6: Personal extra lessons

Participants indicated that the internet afforded them personal extra lessons. Students were able to use internet content to as a supplement before or after the lecture sessions. This made it easy for them to understand what was taught in class. They indicated that they use content from the internet for revision purposes before they wrote tests and examinations. Some participants stated that the internet remained the only tool for catch-up when they had missed classes. Some respondents stated the following about the issue:

“It makes everything easier for one to understand. If you didn’t understand something in class, content from internet, either in a form of a video or articles becomes your second lesson and it makes things better. You are able to

comment there, for clarity and etc. however, Facebook can't work for academic purposes because not everyone has it, and it depends on your friends there" (Respondent E3).

"They very effective, because for me sometimes as she has said, you don't understand your lecturer, but with YouTube you can repeat it ten times" (Respondent D1).

"I normally do that, especially in Economic, I watch calculations, and read lot of articles. Even if I miss a class, I'll know how to calculate. I would say yes Facebook does assist since you can search a page such as 'Mindsets' and ask a question there, and they will refer you to a relevant source" (Respondent E6).

"It helps a lot, in most cases we even use it for revision because by the time you write exam, you have forgotten some of the things so with YouTube helps with tutorials and you start to remember what you did in the course of the year" (Respondent D8).

"YouTube helps a lot because I'm able to catch-up what I didn't hear during the lecture lesson. One can pause, stop and revisit which you can't do in a class" (Respondent F4).

Theme 7: Poor information and communication technology infrastructure

Participants indicated the poor ICT infrastructure as a major challenge when using the internet for academic purposes. They mentioned that the poor internet connections have detrimental effects on their academic journey. Where there is Wi-Fi access, it is limited into specific times and the connection is poor.

"We still have digital divide in this university, because in some of the residences there's no internet" (Respondent A1).

"Our internet is very weak, because where I stay sometimes it works sometimes it doesn't work. The university internet routers do not cover the whole campus

so it's quite difficult when we are doing a group work where we should meet in a neutral venue where there is no internet" (Respondent A5).

"The online system is very poor, you might that you have an assignment to do, but when you get to the labs there is no internet...there is no network actually they will tell you that the network is poor come later" (Respondent A6).

"Challenge number one, there's poor internet connection, the Wi-Fi is not properly working" (Respondent E4).

Participants also indicated that internet access in its state is poor, and they can only easily access learning management system such as Blackboard and the universities' Web sites. These platforms do not normally offer platform to access widespread information on the internet except information uploaded by lecturers. Some participants expressed their sentiments as follows:

"Right now you can't do anything via our current Wi-Fi, you can access Blackboard and the university's web site only and there's not information" (Respondent E6).

"Yeah, I support what A5 and A4 said, our internet is weak...yeah...that's the challenge we are having, you end up giving up because our internet is very weak" (Respondent A2).

"In most cases, we experience poor internet connection, the Wi-Fi is not accurately working" (Respondent F6).

Theme 8: Firewall restrictions

Participants indicated that some of the challenges faced by students when using the internet for academic purposes is a network security system that monitors and controls incoming and outgoing network traffic otherwise known as firewall restrictions. Students stated they were denied access to some of the Web sites, this had a detrimental effect in their academic performances. They also mentioned that they

acknowledged that universities could be trying to protect students against dangerous Web sites. However, some of the networks were significant for academic purposes. Some participants expressed their ideas as follows:

“The network is very slow, and some of the web sites are encrypted, there are lot of firewalls” (Respondent C4).

“We struggle to access information because the university has blocked some of the web sites” (Respondent B6).

“It’s either the internet is slow, or the web site which is supposed to help me is blocked. Sometimes you want to get information just for knowledge, but web sites are blocked” (Respondent B5).

“Like what she said, some of the web sites we use are blocked, but another one is that some of the information on the internet is not accredited, it’s become an enemy to our academic progress” (Respondent B7).

“Yeah blocked web sites and poor internet connection, but I’m mostly affected by the blocked sites because it also negatively affects my research. They normally block web sites which carries sexual content like pornography, and sometimes what if someone is doing research related to that” (Respondent C1).

“There are certain web pages which can’t access, I don’t know but it seems like they are being blocked” (Respondent E3).

Participants highlighted that except firewall restrictions, universities did not subscribe to some of the important journals. Students are saying at times; they have to pay from their pockets in order to access some of online journal articles, which negatively affected their work and how they performed academically. The following extracts demonstrate their views:

“The issue of accreditation of some certain web sites its’ giving us problem, you can’t access everything using this internet” (Respondent E5).

“Sometimes to access some of the information I have to subscribe to certain journals and pay an amount of money and that’s a challenge” (Respondent F2).

Some participants recommended that universities should try and ensure that students were not limited in accessing various internet web sites since they come very hand for their academic success. One participant expressed this view:

“One of the challenges which I think most of us have already mentioned is that the university internet limits us to access certain electronic journals, so I think if the university can allow us to access any information we need for academic purposes” (Respondent F5).

“I recommend that the intranet should be free from any blockages, well I understand that they are trying to monitor the content which we consume, but sometimes what they are blocking is very important to us” (Respondent F5).

Theme 9: Lack of online information literacy

Participants indicated that in as much as they enjoyed access to the internet, at times they experienced difficulty in finding the appropriate and essential information, and sometimes were not able to identify quality and reliable information for their assignments and research. They acknowledged that in most cases when they used the internet to search information, retrieve a lot of information, making it hard to choose the best from the rest. Some admitted that when they faced such challenges, they usually “copy and paste” whatever they thought would work for them. This is how some participants expressed views in this regard:

“I think the only time one do not use Google search is when they just copy and paste, because on Google Scholar you will need credible sources, but with simple Google search, you can just copy, paste and submit” (Respondent B4).

“Well, I’m anti-internet but then the only time when the internet is useful for me it’s when I do copy and paste, but most of times I prefer books, I just believe books are more helpful” (Respondent D4).

“Yes, I find everything that I need there, I just copy and paste, every information that I want, I don’t have to go up-and-down” (Respondent E3).

“The only time I use it is when I copy and paste for an assignment so I can’t say it’s helpful” (Respondent F3).

Regardless of the fact that they had access to the internet, participants stated that a certain level of information literacy is crucial in order to use the internet effectively. Participants indicated that they used various ways to filter the retrieved content from the internet, ranging from the order of appearance, the year of publications, familiarity of the authors and last but not least, checking of the key words used to search for the content. Some participants stated the following:

“Myself I check the recent articles and try to read them, because I think the recent articles tried to cover the loop holes which were there in the past articles of hundred years ago or so. I try to read the recent articles and I take it from there” (Respondent A1).

“I usually check the author, for example if I’m researching about Mass media theory and I find out that author is McQuail I’m taking it, and I find that the other material is from not a familiar author, no, I’ll go with McQuail. I also open the links, and read the articles I have retrieved, I will see if its relevant or not, I even check the year it was published. I also check the literature review. Again on Google Scholar, the information which is there is from the authentic authors, unlike when you go to google or Wikipedia, Google Gcholar is accurate” (Respondent A2).

“To add on what A2 has said, to narrow my search, I research about citizen journalism and social media, so I will type citizen journalism and social media

to avoid information overload, so it just gives me the information which I'm looking for" (Respondent A1).

"I just use the year of publication to determine which information I take. Mostly we set a scale that we don't take any information which is older than five years. The credibility of authors also contributes much on the information you are having. You also need to check the introduction and conclusion to see if the addressed concepts are what you are looking for" (Respondent B4).

"Normally, I check the authors and the dates...that's how I chose, because if I'm searching for something which requires recent updates that's where I'll focus on. Then if its general, I'll use the web sites that I'm familiar with" (Respondent E6).

"I just feel it that...well this is from me, I just feel it that this information is enough, I'll first read the information and check which one I understand, then I'll take it and leave the rest" (Respondent E5).

6.2.4 An analysis on how students use different internet search platforms for academic purposes

Theme 10: The use of "advanced search" when using search engines for academic purposes

Participants were asked if whether they used advanced search options when using search engines to search for academic information. Students indicated that they did use advanced search engines to search for academic information. They indicated using Google Scholar as the most used advanced search engine of their choice. Participants stated that Google Scholar provided them with lots of information from journal articles published by scholars. Most participants who indicated using this platform were postgraduate students. Students indicated that information accessed through Google Scholar could be trusted as compared to a Google search. They also said google search would literary lead them to Wikipedia and the information in this platform could not be trusted for academic activities. However, with Google Scholar,

updated and recent information from scholars was readily available. Some participants expressed their ideas as follows:

“Yeah, I have used advanced search options such as Google Scholar, Google books and Google maps, using these options help me to get credible information for my academic purposes, and when I search straight from Google, I end up getting some useless information like in Wikipedia. It has a positive impact in our academic journey, because the information is more advanced and it has been published by the registered publisher, hence in Wikipedia it’s just general information which anyone can write and post it there” (Respondent C1).

“Yes, the advantage is that firstly you get relevant information that is well researched by a certain scholar, it also gives one an opportunity to acknowledge other people’s work, it also helps to check if ever the topic I’m research has been done by someone before, what are the findings, and where to take it from there, also the loop holes so that one does not repeat the same topic which has been researched before” (Respondent A1).

“Yes, it minimises the overload of work, because when you use the advanced search, you get relevant information and not unnecessary irrelevant information that you are not looking for.... Yeah and it saves time” (Respondent A2).

“One of the impact is that it reduces plagiarism, because on Google Scholar the authors are well referenced so it’s easier for any user to work on it. When you doing research you can put a bit of in-text referencing to make your work more accurate” (Respondent F6).

“I normally use Google Scholar for accessing information because if you go to Google, you must proceed to Google Scholar to get well research information in a form of different articles which are related to your research topic, so yeah I prefer using Google Scholar because it has references, bibliography and everything. The reason they say Google Scholar is advanced is because the information which is posted there is well researched, you don’t easily amend the information unlike in Wikipedia. With Google Scholar, you can only update

the information by publishing another article with the publisher, which can now be uploaded into Google Scholar, and it's good with reference" (Respondent C4).

"Yes, and the advantage is simplicity, because it simply everything unlike google where you have lot of information. So when I use Google Scholar, I find the information that I want, unlike google when I type my research topic, it gives me lot of things, and when I'm doing my research I only want pdf files from Google Scholar" (Respondent A5).

"In terms of my research, I always use the Google Scholar, so I don't really use the google or the other ones. But I'm very familiar with google because I use it sometimes when I do my assignments" (Participant A4).

"Google Scholar has articles which relates to our course, so I use it more when I'm writing reports than the assignments" (Respondent B7).

"The information on Google Scholar is real, its verified unlike the one you get on simple search, where anyone can edit and put something" (Respondent E1).

"I'm using Goggle Scholar to reference everything. With this one you get to know the author of a certain article and the year of publication, Google Scholar also provides recommendations to various other sources which might be helpful for one's assignment and research. It's easy to reference when one uses Google Scholar" (Respondent E2).

As much as advanced search option come with lot of advantages for students, some of them indicated that they have never used such a platform when searching for information from the internet. These participants indicated that they have never been exposed to such options, and some of them admitted that they first heard about such platforms during the data collection process of this study. The following excerpts from illustrates this point:

"I don't even know what Google Scholar is" (Respondent C2).

“I feel like there is no reason, because I get what I want from the simple Google search, without visiting Google Scholar” (Respondent B2).

“Honestly because I was never aware that there’s advanced search option” (Respondent C2).

“Well, I don’t them so I have never tried to use them” (Respondent D4).

“I don’t know about Google Scholar, I only search on Google search” (Respondent D6).

“Truly speaking I haven’t use Google Scholar” (Respondent C3).

However, some of the participants indicated that they have never used google Scholar claiming that their line of education does not demand much research articles. One participant said that numerical subjects including Mathematics and Science does not demand lot of research articles, and such they normally use calculations and formulas for their subjects. Another participant noted that one’s course was too broad that it dealt with daily activities, thus they could easily access information through Google search without proceeding to Google Scholar. These respondents stated the following:

“No, I’ve never used Google Scholar, maybe because I’m from Mathematics, and as an undergraduate we never do research, it’s just questions which need to be solved using formulas” (Respondent F2).

“I don’t use Google Scholar because the course which I’m doing is very broad, it deals with day-to-day activities, so I can find anything I need on Google just like that” (Respondent B2).

Theme 11: The use of social media for academic purposes

Another benefit mentioned by the participants when using internet for academic purposes is the use of social media. Students acknowledged that they welcomed the use of social networking sites for academic purposes. One of the most used social

media for academic purposes include YouTube. This is a user-generated content, in which people generate content in a form of audio and video and share it with people. Students indicated that they sometimes used YouTube to watch academic related videos to supplement what they had learned in class. Some participants stated that YouTube videos assisted them so much especially when related to calculations and formulae. Some participants stated the following views:

“They are very effective because when it comes to YouTube I just see and understand much better than when I’m reading and I don’t understand anything so they are very effective. I think Facebook can help and it cannot help, as for research you can collect data via Facebook and ask people on what are they saying about this particular topic, but then the responses may be negative” (Respondent A3).

“They are very effective, normally if there’s a chapter which I do not understand, I’ll go to YouTube and type that chapter, there are lot of videos which will be explaining on those matters. I understand better when I’m watching than when I’m just reading” (Respondent C2).

“I think YouTube is very helpful. Normally I collaborate the information I access from google, together with the one I watch from YouTube, especially when I’m studying Mathematics” (Respondent C3).

“They are very effective; I think I would give them 10 out of 10. Some of us have very little concertation span, and in class is one source, if you don’t understand him even if he explains ten times you won’t get it, but with YouTube if you don’t get to this one, you go to another one” (Respondent B5).

“Yeah, watching videos in the internet helps a lot, for me most of the things need calculations, so demonstrations from YouTube helps a lot” (Respondent D6).

Participants also acknowledged that social media helped them to share academic content amongst themselves. Social media help students to create virtual

communities, sharing same values and having same goals to achieve academically. One participant stated:

“Sometimes I don’t understand what the lecturer was saying, so I get the clarity by watching related videos on YouTube. Facebook can work because friends can exchange information which they have accessed from different sources”
(Respondent E2)

As much as on one hand some students acknowledged the use of social media for academic purposes, on the other hand, others were against it. Participants indicated that indeed the social networking site Facebook was good for sharing content, it also depended on who one’s ‘friends’ were in the virtual setting. Students stated that it was sometimes difficult to get what they were looking for simply because their friends were not conversant in the given matter. Thus, social media had some negative effects with regard to students’ academic achievements. Some participants stated that they only used Facebook to communicate with friends, and YouTube for entertainment. Students also indicated that some content generators on social media were not experts in the fields, posing a threat of misleading students or whoever was consuming such content. Thus, they would not recommend the use of social media for academic purposes to anyone but preferred engaging with their lecturers and the content they received in class rather than using social media for academic purposes. The following extracts demonstrate respondent views:

“It’s very much effective. I think Facebook can be used for academic purposes but like he said, not always will you get relevant answers for what you will be looking for” (Respondent A6).

“It’s minimal, because we use books, articles, slides, and we interact with our lecturers in class so that we can understand very much better because some of the material on YouTube are not prescribed materials for reading and for teaching and learning within your school” (Respondent B4).

“I only go for written material. I only use YouTube for entertainment and everything because I think watching academic related materials in YouTube is

time consuming. If I go into internet and research for information to read, I determine my pace of reading the information, for YouTube it's very difficult because someone is reading or interpreting for you, for instance I can give an example, yesterday I wanted to number my assignment so I went to YouTube and then I wanted the tutorials which took so long, then I switched off the YouTube and went to google and typed and I read, which was fast and quick. So I won't recommend YouTube to anyone and I don't use it for academic purposes. Facebook can be used for academic purposes but I think for us as blacks is very difficult, because if you are doing research and you post a topic and you want people to comment, you want to have their views, for black is all about fun and jokes if not jealousy, they won't give you that information you are looking for. But then for whites, I have seen it when they want information could it be homework, they post in their timelines and people will be commenting positive stuff, so I think it works but with us there's limitation" (Respondent A5).

Theme 12: The utilisation of online library resources

Participants were asked if whether they used online library resources for academic activities. Students indicated that they had some knowledge about electronic databases from their respective libraries. Most of the electronic databases mentioned by the students include Ebscohost, Sabinet and Science direct amongst others. Participants indicated that online library resources assisted them to access recent and updated information in a short space of time. Most participants who used these platforms were postgraduate students who stated that electronic databases were effective especially for their research projects since they provided many research articles published by scholars. Some participants expressed these views:

"I normally use Ebscohost and Sabinet, and the one Science Direct, they usually give us credible information on a related research topic, and it doesn't waste time unlike library catalogues where you have to go through lot of books. But with these ones, I can access more than three hundred articles in space of less than one hour, so yeah I normally use them at least twice a week" (Respondent C4).

“Whenever I do my academic work like assignments and research, I always use online databases, they are very simple, they just give you what you want according to the key words you use. I use Ebscohost and Science direct” (Respondent A3).

“Mostly I use Ebscohost, Sabinet and Science Direct, they are very much helpful especially when you need information, you just type the key words maybe on “Social Media and what...what...” then it will give you lot of information about social media” (Respondent C5).

“I only use it when I’m with A3, since she is the one who exposed to me Ebscohost yeah, I only use it when I’m doing research with her and it helps us when it comes to referencing. We only use them when we’re at the lab, we find it hard to access them when working from my rooms so yeah...” (Respondent A2).

“I use more, because you don’t only access it when you are in library, but even when you are outside the library, particularly when you check the university’s portal and e-resources databases where the university has subscribed to a number of accredited journals and books where one can research, you can find the information that you need when you conduct research or whatever assignment you are doing” (Respondent B4).

“The electronic databases are more like an advanced search, because within the databases there are web addresses which directs you to the information that you are in need of so I would say I use it most of the time when I go to the library” (Respondent B7).

“I never use them because mostly I use Google Scholar to search any information so I could say I never came across any work which requires me to go directly to online databases, maybe in future but for now I never used them” (Respondent A1).

Some participants also acknowledged that electronic databases provided by their respective libraries play a significant role for their academic performance. Some

mentioned that they understand that universities are investing in these platforms for student achievements, since students cannot afford to subscribe to journals on their own. The following views were expressed:

“Yeah, they make things easier whenever you want academic information. They are rich with lot of articles which one can use for research or even assignments. They also help us when we want to reference our work, I tend to use them a lot” (Respondent A3).

“They play a vital role because for those databases the university subscribe to these journals where on our own we couldn’t get access to them, but the university ensure that we get access to this information” (Respondent C4).

“There information there is very broad, there’s a database called Ebscohost, it’s rich with academic information, as long as you are using university credentials, you can access lot of information from it. It plays a huge part because the information is just in your fingertips” (Respondent D1).

“I use electronic databases when I can’t find reference” (Respondent E4).

However, some participants indicated that they had never used online library resources because they were not aware of such platforms. Most participants had heard about electronic databases for the first time during the data collection of this study. The majority of these participants were undergraduates, thus, they were not exposed to such platforms since they were not doing any research projects except conducting research for writing assignments. In this regard, the following views were expressed:

“Eish, I have never used electronic databases, it’s new to me, I have never used them because I have never been taught about them” (Respondent C1).

“Well I’m also not too familiar with databases, I mostly use Google Scholar. I would appreciate to learn how to use such platforms since I’m also planning to do my masters in the future” (Respondent F2).

“Aah, I don’t know anything about electronic databases” (Respondent D7).

“I don’t know what those databases are” (Respondent D4).

“I don’t know about the electronic databases” (Respondent D5).

“Eish, yeah I have never used that thing, I’m always in my room with my laptop I’m sorted” (Respondent D8).

Some participants indicated that they used online library resources for wrong reasons. These students mentioned that they normally used journal articles to get references for their assignments. Some students indicated that they would first “copy and paste” information from other sources such as Wikipedia, then used references from articles since they were discouraged to use information from Wikipedia for their academic work. One participant expressed the following:

“I only use them to avoid plagiarism, I’ll fabricate the sources. Majority of us we don’t use it because we don’t have much information about it, we had a meeting with the librarians, we were discussing about this, that the university is spending lot of money, but we’re not using it because we don’t know it” (Respondent E3)

Theme 13: Recommendations for university management and academics on the use of the internet to enhance students’ academic performance

Participants recommended technological interventions that could help students at institutions of higher learning to use the internet to improve academic performance. Students recommended that universities should improve their ICT training programmes and stated that universities do not provide students with enough training in using various internet applications for academic purposes. Initially, universities provided orientation programmes for first year students at the beginning of the year, and students argued that the training was not enough since most of them came from a poor background without computer skills. This made it difficult for them to grasp the

necessary e-skills in using the computer and internet for academic purposes. The following extracts expressed some respondent views:

“The university should improve in teaching students on how to use the computer, then later on how to search for information on the internet. I think they should stop blocking the other web sites, because I’m doing Media Studies, I’m doing film, to law students watching movies might not be important, but for me watching a movie is important, we were asked to watch “Tsotsi” so that we can critique, it was a test, you just going to watch a movie and you are going to talk about the movie, then if you try to go to the web site and try to watch a movie and find that it’s blocked it’s like you are taking me back and not to go on with my academic. So they should know that some things might not be important to them but important to other people” (Respondent A2).

“The institution should introduce a programme which could teach us how to use social media for academic purpose, and I think it can also help us to improve academically” (Respondent A1).

“The Computer literacy is not comprehensive enough to equip students in using the internet to access information, more effort should be put in this module” (Respondent D4).

“To add on what they have said, I agree with them because it’s very difficult to find out that students are not familiar with those internet databases and whatsoever so it’s better if there is a module whereby it is compulsory for everyone to do that module. This will help them to have skills on how to access internet and information” (Respondent A3).

Participants also highlighted that most computer programmes in use were old and should be upgraded timeously (or in good time). Students indicated that updated and recent computer windows make it easy to navigate the computer and search for information without the computer experiencing glitches. They reasoned that universities take much time without updating computer systems and this management error had a detrimental effect on their academic work and ultimately their academic

performance. Shortage of computer laboratories and Wi-Fi routers in student hostels makes it difficult for students to use the internet for academic purposes. The following statements were expressed by some participants:

“They should upgrade the system, computer labs are being upgraded to the recent windows and systems” (Respondent B7).

“More dedication into ICT could help, and it should be specific with the relevant school. Computer literacy should be a compulsory module” (Respondent D3).

“The university should provide enough computer labs; the Wi-Fi must be available everywhere” (Respondent B5).

“I recommend that the university must provide effective Wi-Fi routers in all students’ residences because it’s very important” (Respondent C3).

Apart from initiating programmes to teach students and upgrading the ICT infrastructure, participants indicated that students should “take it into their own hands” and “start using other available platforms including social media to download and share academic content amongst themselves”. This could help and strengthen their virtual communities by connecting with many students even from different universities (and countries). The existing social networking sites could be used to their advantage for academic purposes. Students acknowledged that they did engage between themselves on social media, however, for communication and entertainment purposes. Students also encouraged lecturers to lead them in identifying reliable internet applications to be used for academic purposes. They also recommended that lecturers should record lecture sessions and upload them on Blackboard for students to catch-up later for revision purposes.

Some participants expressed these views:

“I recommend that students should create WhatsApp groups where they share information, they should download relevant information from the internet, and there after they discuss ideas amongst themselves” (Respondent F8).

“I think the students need to learn how to use the internet, like F8 said, students need to know how to search for information, which will work for them to get more marks or to excel in their academic activities. If they know how to use it, they will get the right information” (Respondent F4).

“The very same way which lecturers uses Blackboard to communicate with students, they can also do the same in referring students to useful web sites and links for academic purposes. They can also record their lecture sessions and upload them on Blackboard for students to catch up later” (Respondent E6).

6.3. SUMMARY OF CHAPTER 6 AND OUTLINE OF CHAPTER 7

This chapter addressed the analysis and interpretation of qualitative data collected through focus group interviews. Data, in this chapter, were analysed through thematic analysis. Six separate focus group interviews from the three universities under study were administered for this study. All group information was analysed collectively.

Themes were identified in relation to the objectives of the study, while extracts drawn from the data were identified and also discussed as themes. Among the study objectives attained are the analysis assessed the role of the internet for academic purposes of the sampled students, the use of search engines for information search by the students, students' acquaintance with the use of the internet for information search and student information literacy about the internet.

Chapter 7 presents quantitative data and provides an analysis of the data. The chapter provides the descriptive data which presents the description of the respondents through frequencies and valid percentages. The chapter also explains the inferential statistical analysis which is meant to derive inferences, possible generalisations between the various respondent categories. The chapter also provides the analysis of variance (ANOVA) which is a two-way analysis of variance, to establish if there are significant statistical differences between the two or three independent or unrelated groups in relation to a specific continuous variable.

CHAPTER 7

QUANTITATIVE DATA PRESENTATION AND ANALYSIS

7.1 INTRODUCTION

This chapter presents and analyses quantitative data collected through questionnaires. The researcher ensured that the data were systematically analysed and interpreted in order to address the aim (and objectives) of the study. The Statistical Packages for Social Sciences (SPSS) version 26 and Microsoft Excel were used to capture and analyse data. This chapter divided the analysis into three subsections, namely: the descriptive analysis, the inferential statistical analysis and the analysis of variance.

The quantitative data collected through the questionnaires were analysed by the SPSS software in order to address the following aspects or issues:

- a) The knowledge and skills possessed by the students on the use of the internet for academic purposes, and the lack of ICT skills which has a detrimental effect on maximising its full potential in enhancing students' performance;
- b) The academic use of various internet applications for academic purposes by students which could increase their academic performance;
- c) The level of education which influences the use of the internet for academic purposes; and
- d) The lack of internet connection which hinders the use of this resource for academic purposes.

The following section presents the captured data.

7.2 DESCRIPTIVE ANALYSIS

Descriptive data presented in this section provide a description of the respondents through frequencies, percentages and other statistical tests mentioned in this chapter. Various aspects including the demographics of the participants, the level of student access and skills on the use of computers and the internet, the use of online databases, the level of use of internet search engines usage, the student satisfaction

levels with educational ICT available to them for academic purposes, and the challenges experienced by the students when using the internet for academic purposes, among other aspects, have been analyzed in this section.

7.2.1 Demographics of the Participants

I: Age group:

Table 7.1 illustrates that the majority of the participants in the study were between the ages of 21 and 26. Out of 343 participants who completed the questionnaire, 50% were in this age group. Thirty-six per cent (36%) of the participants were between the ages of 26 and 30. Thirteen per cent (13%) were 20 years old and under. Three participants (1%) indicated to be between 30 and 35 years old. Table 7.1 presents this information.

TABLE 7.1: AGE DISTRIBUTION OF THE PARTICIPANTS					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below 20 years	43	12.5	12.5	12.5
	21-25 years	172	50.1	50.1	62.7
	26-30 years	125	36.4	36.4	99.1
	31-35 years	3	.9	.9	100.0
	Total	343	100.0	100.0	

II: Gender:

The majority of the participants (53%) were male, while 47% of the participants were female. Table 7.2 reflects this result.

TABLE 7.2: GENDER OF THE PARTICIPANTS					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	180	52.5	52.5	52.5
	Female	163	47.5	47.5	100.0
	Total	343	100.0	100.0	

III: University distribution:

Table 7.3 indicates that from the three universities under study, 35 per cent of the participants who completed the questionnaire were from the University of Limpopo, followed by 33% from the University of Venda, 32% of the participants were from Tshwane University of Technology Polokwane Campus.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	UL	120	35.0	35.0	35.0
	UNIVEN	113	32.9	32.9	67.9
	TUT	110	32.1	32.1	100.0
	Total	343	100.0	100.0	

Faculty distribution of participants from the UL:

Of the 120 participants from the University of Limpopo, 37% were from the Faculty of Humanities, 27% from the Management and Law Faculty and 12% of the participants were from the Faculty of Health Sciences.

Table 7.4 indicates this result.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Humanities	44	12.8	36.7	36.7
	Management and Law	32	9.3	26.7	63.3
	Science and Agriculture	29	8.5	24.2	87.5
	Health Sciences	15	4.4	12.5	100.0
	Total	120	35.0	100.0	
Missing	System	223	65.0		
Total		343	100.0		

School distribution of participants from the UNIVEN:

Of the 113 participants from the University of Venda, 27% were from the School of Human and Social Sciences, followed by Agriculture with 19%. The third largest group of participants were from the School of Management Sciences contributing 17% of the participants, followed by the Faculty of Education members who represented 11% of

the group. The School with the least participants was Environmental Sciences with 4% of the group.

Table 7.5 provides these results.

TABLE 7.5: SCHOOL DISTRIBUTION OF THE PARTICIPANTS AT UNIVEN					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Human and Social Sciences	30	8.7	26.5	26.5
	Management Sciences	19	5.5	16.8	43.4
	Agriculture	21	6.1	18.6	61.9
	Health Sciences	11	3.2	9.7	71.7
	Law	8	2.3	7.1	78.8
	Environmental Sciences	5	1.5	4.4	83.2
	Mathematical and Natural Sciences	6	1.7	5.3	88.5
	Education	13	3.8	11.5	100.0
	Total	113	32.9	100.0	
Missing	System	230	67.1		
Total		343	100.0		

Faculty distribution of participants from TUT:

Of the 110% participants from Tshwane University of Technology, 34% of them were from the Faculty of Humanities, followed by the Faculty of Economic and Finance with 27%. Twenty-nine percent of the participants were from the Faculty of Management Sciences, and the Faculty with the least participants was Information and Communication Technology with 11% of the group.

Table 7.6 provides an inclusive analysis of these statistics.

TABLE 7.6: FACULTY DISTRIBUTION OF THE PARTICIPANTS AT TUT					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Economic and Finance	28	8.2	25.5	25.5
	Humanities	38	11.1	34.5	60.0
	Information and Communication Technology	12	3.5	10.9	70.9
	Management Sciences	32	9.3	29.1	100.0
	Total	110	32.1	100.0	
Missing	System	233	67.9		
Total		343	100.0		

Level of study:

The majority of participants (45%) who completed the questionnaire were registered at the third level of study, followed by second year students represented by 23%. Fourteen per cent of the participants were postgraduates; eight per cent (8%) representing Honours students while six per cent (6%) were Masters students.

Table 7.7 illustrates the analysis of the level of study of the participants.

TABLE 7.7: LEVEL OF STUDY OF THE PARTICIPANTS					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	First level	28	8.2	8.2	8.2
	Second level	78	22.7	22.7	30.9
	Third level	156	45.5	45.5	76.4
	Fourth level	36	10.5	10.5	86.9
	Honours level	26	7.6	7.6	94.5
	Masters level	19	5.5	5.5	100.0
	Total	343	100.0	100.0	

7.2.2 Students' access to a computer

The study findings established that students at the selected universities owned at least a laptop, desktop and/or a tablet. Eight-one percent (81%) of the participants owned an electronic gadget which worked in equivalence to a computer and did not rely on computer laboratories to have and use a computer. On the other hand, 19% of the participants indicated that they relied on university computer laboratories to access a computer. Only one participant indicated that she mostly used the computer at home since she travelled to campus daily.

Table 7.8 indicates data on the participants' access to computers.

TABLE 7.8: PARTICIPANTS' ACCESS TO A COMPUTER					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes, on the computer laboratories on campus	65	19.0	19.0	19.0
	Yes, I own a laptop/desktop/tablet	277	80.8	80.8	99.7
	Yes at home	1	.3	.3	100.0
	Total	343	100.0	100.0	

7.2.3 Students' access to the internet

A majority of the participants preferred accessing the internet through Wi-Fi connections. About 62% of the participants opted to access the internet from students' residences at their respective universities. Twenty-four per cent (24%) of the participants preferred accessing the internet on computer labs since some of their hostels did not have Wi-Fi routers.

Table 7.9 illustrates information about the participants' levels of access to computers.

TABLE 7.9: PARTICIPANTS' ACCESS TO THE INTERNET					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes, on the computer laboratories on campus	81	23.6	23.6	23.6
	Yes, via Wi-Fi at the students' residences	214	62.4	62.4	86.0
	Yes, via Wi-Fi at the premises of the university	48	14.0	14.0	100.0
	Total	343	100.0	100.0	

7.2.4 Time spent on the internet by the students for academic purposes

The majority of the participants (47%) indicated that they spent between two and three hours on the internet for academic purposes. The study also established that 24% of the participants spent at least two hours on the internet strictly for academic work, while three per cent (3%) spent less than an hour doing academic work on the internet.

Table 7.10 illustrates this result.

TABLE 7.10: TIME SPENT ON THE INTERNET FOR ACADEMIC PURPOSES					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 1 hour	10	2.9	2.9	2.9
	1-2 hours	82	23.9	23.9	26.8
	2-3 hours	163	47.5	47.5	74.3
	3-4 hours	61	17.8	17.8	92.1
	More than 5 hours	27	7.9	7.9	100.0
	Total	343	100.0	100.0	

7.2.5 Training on the use of the internet

Table 7.11 illustrates that 36% of the participants learned to use internet for academic purposes through self-study, otherwise known as 'trial and error', 34% of them learned to use the internet for academic purposes from fellow students and friends, 31% of them gained internet skills through orientation workshops provided by their respective universities. Table 7.11 provides this result.

TABLE 7.11: TRAINING ON THE USE OF THE INTERNET					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Trial and error / self-study	125	36.4	36.4	36.4
	From fellow students	111	32.4	32.4	68.8
	Workshop offered by the university	107	31.2	31.2	100.0
	Total	343	100.0	100.0	

7.2.6 Use of search engines for information search

Participants were asked to rate how they used internet search engines when searching for information. Table 7.14 illustrates that 89% of the participants used search engines 'more often', one per cent (1%) of them indicated that they used search engines less often.

Table 7.12 illustrates this result.

TABLE 7.12: USE OF SEARCH ENGINES FOR INFORMATION SEARCH					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less often	5	1.5	1.5	1.5
	Often	34	9.9	9.9	11.4
	More often	304	88.6	88.6	100.0
	Total	343	100.0	100.0	

7.2.7 Use of search engines for information search

The study also sought to assess and understand how students used various internet search engines when researching for information on the internet.

Table 7.13 illustrates that 97% of the participants used Google more often than any other search engine.

TABLE 7.13: GOOGLE					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Often	9	2.6	2.6	2.6
	More often	334	97.4	97.4	100.0
	Total	343	100.0	100.0	

Forty-seven percent (47%) of the participants indicated that they 'often' used Yahoo as their preferred search engine when using the internet for academic purposes. However, 8% of them noted that they did not prefer this search engine.

Table 7.14 summarises this result.

TABLE 7.14: YAHOO					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less often	110	32.1	32.1	32.1
	Often	161	46.9	46.9	79.0
	More often	32	9.3	9.3	88.3
	Not at all	40	11.7	11.7	100.0
	Total	343	100.0	100.0	

Table 7.15 elucidates that 26% of the participants did not prefer using Microsoft Service Network as their preferred search engine, 58% of the participants mentioned using this search engine less often.

Table 7.15 reflects this finding.

TABLE 7.15: MICROSOFT SERVICE NETWORK (MSN)					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less often	200	58.3	58.3	58.3
	Often	41	12.0	12.0	70.3
	More often	13	3.8	3.8	74.1
	Not at all	89	25.9	25.9	100.0
	Total	343	100.0	100.0	

Table 7.16 demonstrates that 41% of the participants did not prefer using Bing when searching information on the internet, one per cent (1%) of the participants mentioned

using Bing 'more often', while 44% indicated that they 'less often' used Bing to search for information.

TABLE 7.16 BING					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less often	150	43.7	43.7	43.7
	Often	47	13.7	13.7	57.4
	More often	5	1.5	1.5	58.9
	Not at all	141	41.1	41.1	100.0
	Total	343	100.0	100.0	

All the participants indicated that they had never used AltaVista as a search engine to search for information for academic purposes.

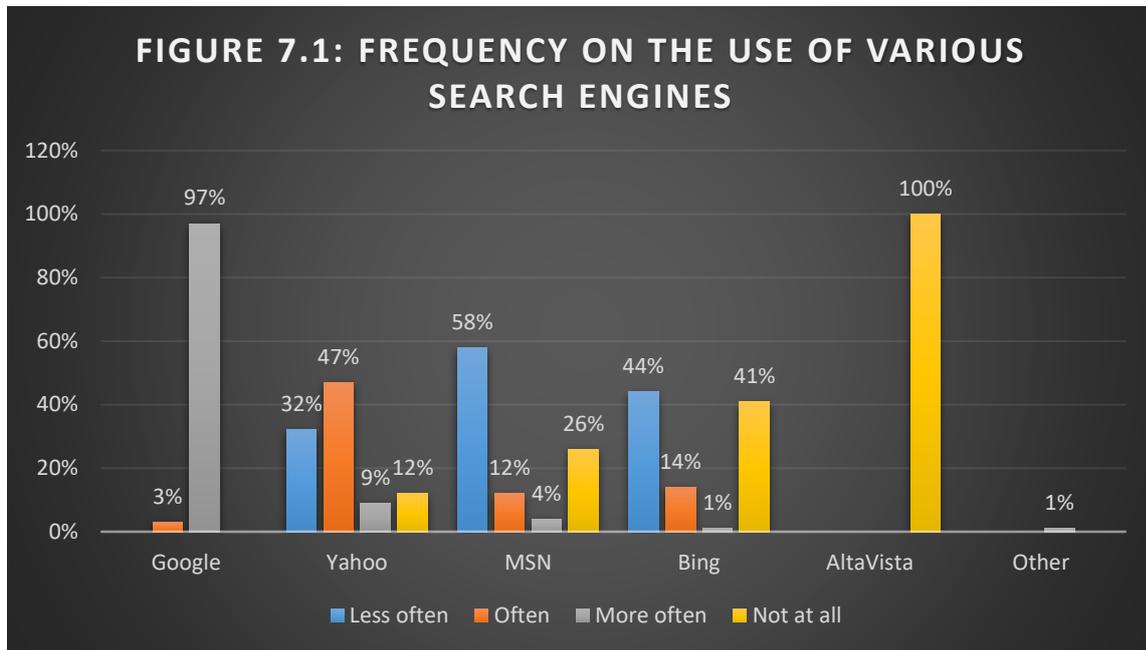
Table 7.17 indicates this result.

TABLE 7.17: ALTAVISTA					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at all	343	100.0	100.0	100.0

Table 7.18 demonstrates that there were other search engines that were used by students to search for information on the internet. One participant indicated that one preferred Mozilla Firefox as a search engine to look for information. Another participant indicated that one preferred Wikipedia. However, it should be indicated that Wikipedia is not a search engine. It is an encyclopedia which is a Web-based free content.

TABLE 7.18: OTHER SEARCH ENGINES USED FOR INFORMATION SEARCH					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		341	99.4	99.4	99.4
	Mozilla Firefox	1	.3	.3	99.7
	Wikipedia	1	.3	.3	100.0
	Total	343	100.0	100.0	

Figure 7.1 provides a comprehensive analysis on the frequency on the use various search engines.



7.2.8 Options mostly applied when using search engines for information search

The study sought to establish whether students were aware of the ‘advanced search’ option when they were searching for information on the internet. Fifty-eight per cent (58%) of them indicated that they mostly used ‘simple search’, while only 14% indicated that they sometimes opted for ‘advanced search’ such as Google Scholar when they were searching for information on the internet.

Table 7.19 provides this result.

TABLE 7.19: OPTIONS MOSTLY USED WHEN USING SEARCH ENGINES					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Simple search	198	57.7	57.7	57.7
	Advanced search	47	13.7	13.7	71.4
	Both	98	28.6	28.6	100.0
	Total	343	100.0	100.0	

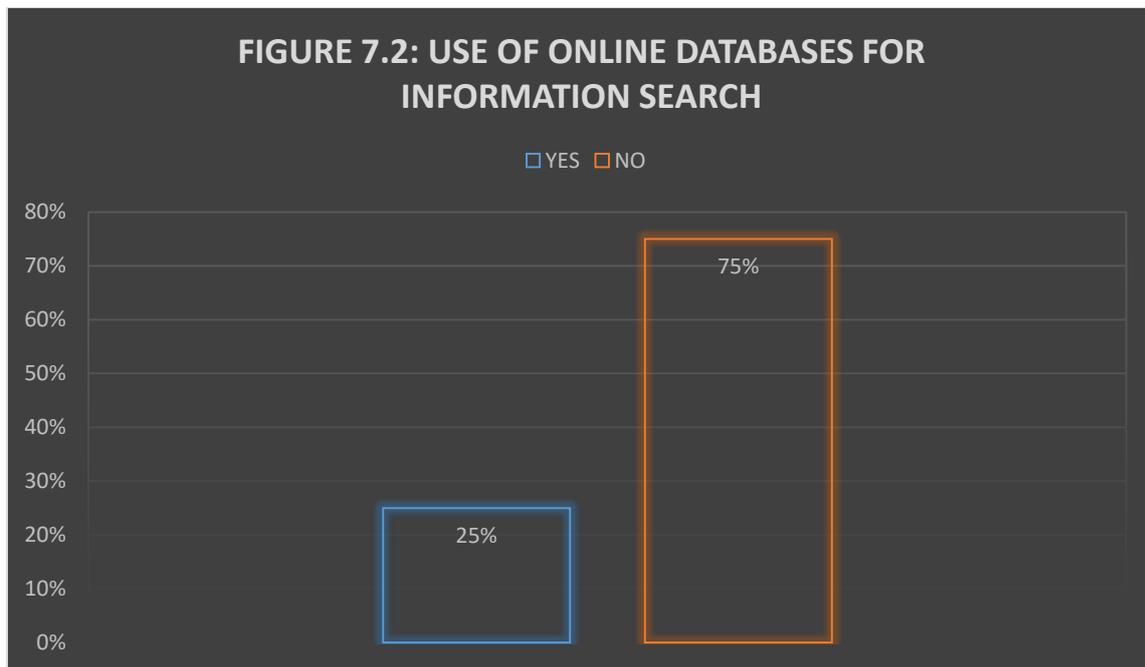
7.2.9 Use of online databases for information search

Of the 343 participants, only 25% indicated that they used online databases when searching for academic information on the internet. On the other hand, most of them (75%), the majority being undergraduate students, indicated that they did not use online journal databases when searching for academic information.

Table 7.20 reflects this result.

TABLE 7.20: USE OF ONLINE DATABASES FOR INFORMATION SEARCH					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	86	25.1	25.1	25.1
	No	257	74.9	74.9	100.0
	Total	343	100.0	100.0	

Figure 7.2 provides a thorough analysis on the use of online databases for information search.



7.2.10 Frequency on the use of various online databases

The study sought to establish how students used different online databases for academic purposes. From 86 participants who mentioned using online databases, 74% of them indicated that they preferred using Ebscohost more often than any other database. Only seven per cent (7%) of them mentioned that they did not use these online databases to search for information.

Table 7.21 below provides a complete analysis of this result.

TABLE 7.21: EBSCOHOST					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less often	9	2.6	10.5	10.5
	Often	7	2.0	8.1	18.6
	More often	64	18.7	74.4	93.0
	Not at all	6	1.7	7.0	100.0
	Total	86	25.1	100.0	
Missing	System	257	74.9		
Total		343	100.0		

Table 7.22 illustrates that Sabinet is another preferred online database when students searched of information over the internet. Seventy-four percent (74%) of the participants indicated that they preferred using this database. However, 9% of them said they had never used Sabinet to search academic information.

TABLE 7.22: SABINET					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less often	7	2.0	8.1	8.1
	Often	7	2.0	8.1	16.3
	More often	64	18.7	74.4	90.7
	Not at all	8	2.3	9.3	100.0
	Total	86	25.1	100.0	
Missing	System	257	74.9		
Total		343	100.0		

Table 7.23 illustrates that 69% of the participants who used online databases for information search did not prefer Springerlink when searching for information over the

internet. Only 5% of the participants indicated that they preferred Springerlink more often than any other database.

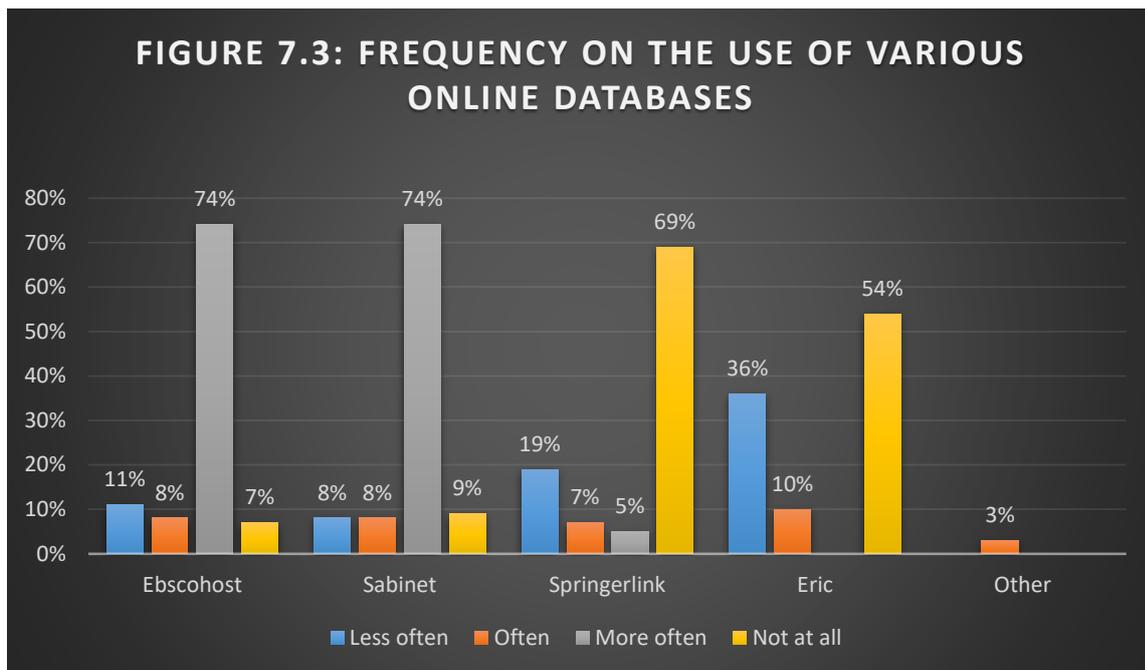
TABLE 7.23: SPRINGERLINK					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less often	16	4.7	18.6	18.6
	Often	6	1.7	7.0	25.6
	More often	4	1.2	4.7	30.2
	Not at all	60	17.5	69.8	100.0
	Total	86	25.1	100.0	
Missing	System	257	74.9		
Total		343	100.0		

Table 7.24 illustrates that 36% of those using online databases used Eric less often, while 10% of them often used Eric to search for academic information. Fifty-four percent (54%) of these participants had never used this online database to search information.

TABLE 7.24: ERIC					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less often	31	9.0	36.0	36.0
	Often	9	2.6	10.5	46.5
	Not at all	46	13.4	53.5	100.0
	Total	86	25.1	100.0	
Missing	System	257	74.9		
Total		343	100.0		

Other online databases which were also used by students to search for information. These databases included Emerald, JSTOR, LawSA, Science Direct and Medscape and Clinical key.

Figure 7.3 provides a comprehensive analysis on the use of various online databases for information search.



7.2.11 Satisfaction on the use of the internet for educational purposes

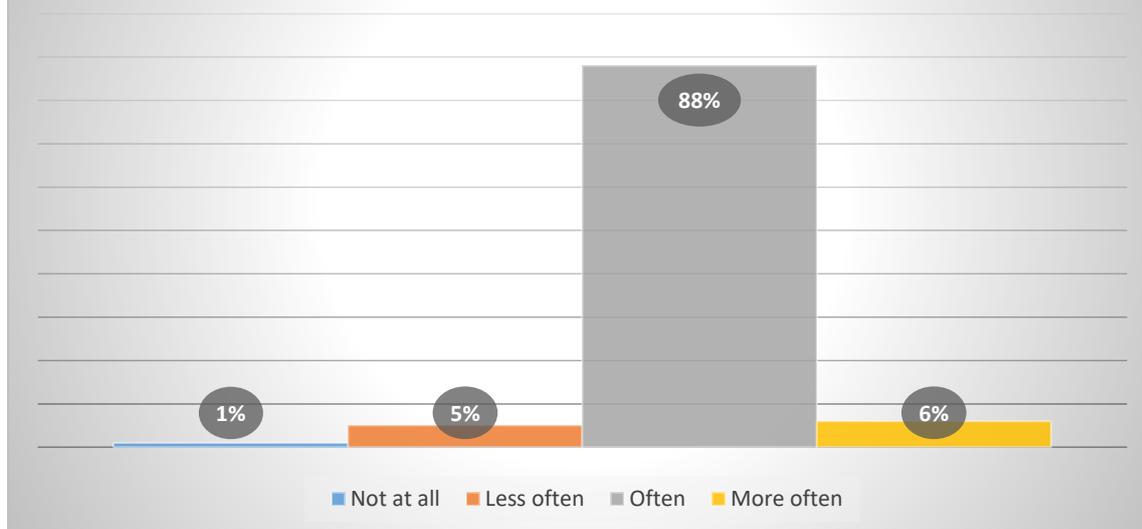
Regardless of the challenges faced by students when using the internet, the majority of the student (88%) stated that they were often satisfied by the results they got when using the internet for academic purposes. Six per cent (6%) indicated to be more often satisfied, while another 6% of them indicated that they were not satisfied by the results they received from the internet when doing academic work.

Table 7.25 provides this result.

TABLE 7.25: SATISFACTION ON THE USE OF THE INTERNET FOR ACADEMIC PURPOSES					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at all	2	.6	.6	.6
	Less often	17	5.0	5.0	5.5
	Often	303	88.3	88.3	93.9
	More often	21	6.1	6.1	100.0
	Total	343	100.0	100.0	

The following Figure 7.4 provides this result on the students' satisfaction when using internet for academic purposes.

FIGURE 7.4: SATISFACTION ON THE USE OF THE INTERNET FOR ACADEMIC PURPOSES



7.2.12 Importance of online information for academic purposes

The majority of the participants (87%) agreed that the internet remained a vital asset for their academic journey, three participants (1%) indicated that the internet was not important for their academic purposes because they preferred printed textbooks over the internet.

Table 7.26 provides this result.

TABLE 7.26: IMPORTANCE OF ONLINE INFORMATION FOR ACADEMIC PURPOSES					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very important	299	87.2	87.2	87.2
	Important	41	12.0	12.0	99.1
	Not important	3	.9	.9	100.0
	Total	343	100.0	100.0	

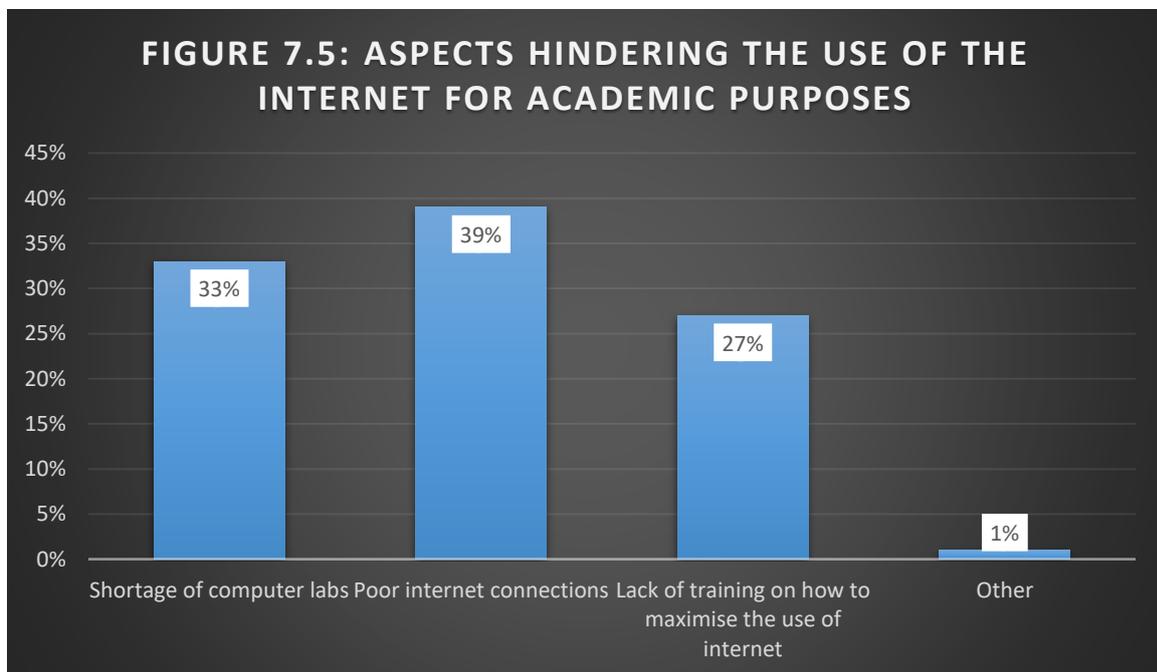
7.2.13 Aspects hindering the use of the internet for academic purposes

The study sought to establish some of the aspects which are hindering the students' use of the internet for academic purposes. Thirty-nine per cent (39%) of the participants highlighted poor internet connections and shortage of computer laboratories as major setbacks for using this platform for academic purposes.

Furthermore, 27% of the participants highlighted that there was lack of training on how to maximise the use of internet for academic purposes. Three participants (1%) indicated blockage of some of the web sites, otherwise also known as firewalls restrictions as challenges hindering students to use internet for academic purposes. The following table states this result.

TABLE 7.27: ASPECTS HINDERING THE USE OF THE INTERNET FOR ACADEMIC PURPOSES					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Shortage of computer labs	114	33.2	33.2	33.2
	Poor internet connections	133	38.8	38.8	72.0
	Lack of training on how to maximise the use of internet	93	27.1	27.1	99.1
	Other	3	.9	.9	100.0
	Total	343	100.0	100.0	

Figure 7.5 offers an in-depth analysis on the aspects hindering the use of the internet for academic purposes.



The respondents stated that the factors that contributed as barriers to internet usage were the shortage of computer labs, poor internet connections, lack of training on how to maximize the use of the internet and other unidentified factors – as reflected in Figure 7.5.

7.2.14 Recommendations for effective use of the internet to improve students' performance

Participants were asked to provide recommendations that could help universities to use the internet effectively to improve students' academic performance. A majority of the students (58%) recommended the improvement of the ICT infrastructure comprising of computer laboratories and internet access. Eighty-seven participants (25%) recommended the enhancement of ICT training (e-skills) training on the use of both computers and the internet for academic purposes. Nine per cent (9.3%) of the participants suggested that the three universities should intensify the marketing and promotion strategies of electronic and online resources for academic purposes.

Table 7.28 provides this result.

TABLE 7.28: RECOMMENDATIONS FOR EFFECTIVE USE OF THE INTERNET TO IMPROVE STUDENTS' PERFORMANCE					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Improve access to computers and the internet	201	58.6	58.6	58.6
	Service training in the use of both computers and the internet	87	25.4	25.4	84.0
	Regulatory mechanism to ensure maximum use of internet for educational purposes	23	6.7	6.7	90.7
	Marketing of electronic resources and online databases by the library	32	9.3	9.3	100.0
	Total	343	100.0	100.0	

7.3 INFERENCE STATISTICAL ANALYSIS

Data presentation in this section is meant to derive inferences, explain relationships between variables, for instance age, gender and level of study and university distribution of participants against a variety of continuous variables such as access and skills of computer and internet use. In this section, a few inferential statistics are computed and reported, e.g., the Pearson chi-square and the analysis of variance

(ANOVA) which are meant to test the relationship between two continuous variables, for example level of study versus use of online databases. The chi-square tests for nominal variables with two categories and the ANOVA for variables with more than two categories. For any differences to be considered significant the chi-square test (Asymptotic significance [2 sided]) should equal 0 or be lower than 0.05.

A key component inferential statistics is the calculation of statistical significance of a finding. On the measure of statistical significance, Muijis (2004) states that the chi square test measures statistical significance of variables and gives a significance level or p-value. O'Leary (2004) states that in order to be able to state that the relationship studied is statistically significant, the p-value is less than 0.05 (which corresponds to a confidence level of 95%), e.g., a p-value of 0,002 is statistically significant.

The following sub-sections present these statistical findings and tests.

7.3.1 Relationship between university distribution of participants and access to a computer

The results illustrated in Table 7.29 indicate the relationship between the participants' university distribution and their access to a computer. Thirty-seven per cent (37%) of the participants from the University of Venda, and 19% from the University of Limpopo accessed a computer from a computer laboratory on campus. Ninety-six per cent (96%) of the participants from TUT and 80% from the University of Limpopo either owned a laptop or a tablet.

TABLE 7.29: UNIVERSITY DISTRIBUTION AND ACCESS TO COMPUTER						
			PARTICIPANTS' ACCESS TO A COMPUTER			Total
			Yes, on the computer laboratories on campus	Yes, I own a laptop/desktop/tablet	Yes at home	
UNIVERSITY DISTRIBUTION OF THE PARTICIPANTS	UL	Count	23	96	1	120
		% within UNIVERSITY DISTRIBUTION OF THE PARTICIPANTS	19.2%	80.0%	0.8%	100.0%
	UNIVEN	Count	38	75	0	113
		% within UNIVERSITY DISTRIBUTION OF THE PARTICIPANTS	33.6%	66.4%	0.0%	100.0%
	TUT	Count	4	106	0	110
		% within UNIVERSITY DISTRIBUTION OF THE PARTICIPANTS	3.6%	96.4%	0.0%	100.0%
Total		Count	65	277	1	343
		% within UNIVERSITY DISTRIBUTION OF THE PARTICIPANTS	19.0%	80.8%	0.3%	100.0%

TABLE 7.30: Chi-Square Tests - University distribution and access to computer			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	34.543 ^a	4	.000
Likelihood Ratio	39.220	4	.000
Linear-by-Linear Association	7.169	1	.007
N of Valid Cases	343		
a. 3 cells (33.3%) have expected count less than 5. The minimum expected count is .32.			

As the Asymptotic Significance (2-sided) value is .000, this indicates that there are statistically significant differences between the participants' university distribution and their access to a computer. This indicates that the technological infrastructure of the three universities had a direct influence towards students' access to a computer. The University of Limpopo and University of Venda had two computer laboratories respectively, while Tshwane University of Technology Polokwane campus had a single computer laboratory.

7.3.2 Relationship between university distribution of participants and access to the internet

The results in Table 7.31 show the relationship between the participants' university distribution and their access to the internet. The study has discovered that 78 per cent of the participants from University of Limpopo access the internet through Wi-Fi connections at students' hostels, while 39 per cent of the participants from University of Venda access the internet from computer labs. Eighteen per cent of the participants from TUT access the internet through Wi-Fi connections at the premises of the university.

TABLE 7.31: UNIVERSITY DISTRIBUTION AND ACCESS TO THE INTERNET						
			PARTICIPANTS' ACCESS TO THE INTERNET			Total
			Yes, on the computer laboratories on campus	Yes, via WI-FI at the students' residences	Yes, via WI-FI at the premises of the university	
UNIVERSITY DISTRIBUTION OF THE PARTICIPANTS	UL	Count	22	94	4	120
		% within UNIVERSITY DISTRIBUTION OF THE PARTICIPANTS	18.3%	78.3%	3.3%	100.0%
	UNIVEN	Count	44	60	9	113
		% within UNIVERSITY DISTRIBUTION OF THE PARTICIPANTS	38.9%	53.1%	8.0%	100.0%
	TUT	Count	21	69	20	110
		% within UNIVERSITY DISTRIBUTION OF THE PARTICIPANTS	19.1%	62.7%	18.2%	100.0%
Total		Count	87	223	33	343
		% within UNIVERSITY DISTRIBUTION OF THE PARTICIPANTS	25.4%	65.0%	9.6%	100.0%

TABLE 7.32: Chi-Square Tests - University distribution and access to the internet			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	31.717 ^a	4	.000
Likelihood Ratio	30.875	4	.000
Linear-by-Linear Association	3.177	1	.075
N of Valid Cases	343		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 10.58.

As the Asymptotic Significance (2-sided) value is .000, this means that there are statistically significant differences between the participants' university distribution and their access to the internet. This indicates that university distribution of the participants had direct influence concerning their internet access. Therefore, the findings presented in Table 7.32 support those of Table 7.31 in the sense that there were more students from UNIVEN who access the internet through computer labs, while majority of participants from TUT access the internet through Wi-Fi connection in the premises of the university.

7.3.3 Relationship between participants' level of study and computer skills

The results in Table 7.33 indicate the relationship between the participants' level of study and their computer skills. The study revealed that 57 per cent of the participants at first year level and 10 per cent of students at second year level rated their computer skills as "moderate". However, 94 per cent of the participants from the third year level rated their computer skills as "good". Thirty-nine per cent of participants from the fourth year level, 31 per cent from the Honours level and 53 per cent from the Masters level rated their computer skills as "excellent".

TABLE 7.33: LEVEL OF STUDY AND COMPUTER SKILLS OF THE PARTICIPANTS

			COMPUTER SKILLS OF THE PARTICIPANTS				Total	
			Poor	Moderate	Good	Excellent		
LEVEL OF STUDY OF THE PARTICIPANTS	First level	Count	1	16	11	0	28	
		% within LEVEL OF STUDY OF THE PARTICIPANTS	3.6%	57.1%	39.3%	0.0%	100.0%	
	Second level	Count	0	8	67	3	78	
		% within LEVEL OF STUDY OF THE PARTICIPANTS	0.0%	10.3%	85.9%	3.8%	100.0%	
	Third level	Count	0	1	147	8	156	
		% within LEVEL OF STUDY OF THE PARTICIPANTS	0.0%	0.6%	94.2%	5.1%	100.0%	
	Fourth level	Count	0	1	21	14	36	
		% within LEVEL OF STUDY OF THE PARTICIPANTS	0.0%	2.8%	58.3%	38.9%	100.0%	
	Honours level	Count	0	0	18	8	26	
		% within LEVEL OF STUDY OF THE PARTICIPANTS	0.0%	0.0%	69.2%	30.8%	100.0%	
	Masters level	Count	0	0	9	10	19	
		% within LEVEL OF STUDY OF THE PARTICIPANTS	0.0%	0.0%	47.4%	52.6%	100.0%	
	Total		Count	1	26	273	43	343
			% within LEVEL OF STUDY OF THE PARTICIPANTS	0.3%	7.6%	79.6%	12.5%	100.0%

TABLE 7.34: Chi-Square Tests - Level of study and computer skills of the participants

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	198.559 ^a	15	.000
Likelihood Ratio	137.815	15	.000
Linear-by-Linear Association	93.520	1	.000
N of Valid Cases	343		

a. 14 cells (58.3%) have expected count less than 5. The minimum expected count is .06.

The Asymptotic Significance (2-sided) value is .000, with expected level of 0.05, which demonstrates that there are statistically significant differences between the participants' level of study and their computer skills. This confirms that the educational level had an impact on participants' computer skills. Thus, the majority of the participants especially from the lower levels rated their computer skills as moderate, while participants from the senior levels rated their computer skills as good and excellent.

7.3.4 Relationship between participants' level of study and internet skills

The findings in in Table 7.35 indicate the relationship between the participants' level of study and their internet skills. The study findings revealed that 36 per cent of the participants at first level rated their internet skills as being moderate, while 25 per cent from the second year level and 91 per cent from third year level rated their internet skills as being good. Nonetheless, 22 per cent of the participants from the fourth year level, 27 per cent from Honours and 26 per cent from masters' level rated their internet skills as being excellent.

TABLE 7.35: LEVEL OF STUDY AND INTERNET SKILLS OF THE PARTICIPANTS

			INTERNET SKILLS OF THE PARTICIPANTS			Total	
			Moderate	Good	Excellent		
LEVEL OF STUDY OF THE PARTICIPANTS	First level	Count	10	17	1	28	
		% within LEVEL OF STUDY OF THE PARTICIPANTS	35.7%	60.7%	3.6%	100.0%	
	Second level	Count	5	71	2	78	
		% within LEVEL OF STUDY OF THE PARTICIPANTS	6.4%	91.0%	2.6%	100.0%	
	Third level	Count	4	140	12	156	
		% within LEVEL OF STUDY OF THE PARTICIPANTS	2.6%	89.7%	7.7%	100.0%	
	Fourth level	Count	4	24	8	36	
		% within LEVEL OF STUDY OF THE PARTICIPANTS	11.1%	66.7%	22.2%	100.0%	
	Honours level	Count	0	19	7	26	
		% within LEVEL OF STUDY OF THE PARTICIPANTS	0.0%	73.1%	26.9%	100.0%	
	Masters level	Count	0	14	5	19	
		% within LEVEL OF STUDY OF THE PARTICIPANTS	0.0%	73.7%	26.3%	100.0%	
	Total		Count	23	285	35	343
			% within LEVEL OF STUDY OF THE PARTICIPANTS	6.7%	83.1%	10.2%	100.0%

TABLE 7.36: Chi-Square Tests - Level of study and internet skills of the participants			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	71.677 ^a	10	.000
Likelihood Ratio	55.493	10	.000
Linear-by-Linear Association	34.103	1	.000
N of Valid Cases	343		

a. 8 cells (44.4%) have expected count less than 5. The minimum expected count is 1.27.

As the Asymptotic Significance (2-sided) value is .000, this indicates that there are statistically significant differences between the participants' level of study and their internet skills. This finding means that educational level had direct influence on students' internet skills. Thus, the findings presented in Table 7.36 support those of Table 7.35 in the sense that there were more participants from first year level who rated their internet skills as being moderate and majority of the participants from senior levels rated their internet skills as being good and excellent.

7.3.5 Relationship between university distribution and use of online databases

The findings in Table 7.37 demonstrate the relationship between university distribution of the participants and the use of online databases. The study findings revealed that 66 per cent of the participants from the UL and 74 per cent from the UNIVEN indicated that they used online databases when searching academic information on the internet. Nonetheless, 86 per cent of the participants from TUT indicated that they did not use online databases for information search.

TABLE 7.37: UNIVERSITY DISTRIBUTION AND USE OF ONLINE DATABASES					
			USE OF ONLINE DATABASES FOR INFORMATION SEARCH		Total
			Yes	No	
UNIVERSITY DISTRIBUTION OF THE PARTICIPANTS	UL	Count	41	79	120
		% within UNIVERSITY DISTRIBUTION OF THE PARTICIPANTS	34.2%	65.8%	100.0%
	UNIVEN	Count	29	84	113
		% within UNIVERSITY DISTRIBUTION OF THE PARTICIPANTS	25.7%	74.3%	100.0%
	TUT	Count	16	94	110
		% within UNIVERSITY DISTRIBUTION OF THE PARTICIPANTS	14.5%	85.5%	100.0%
Total		Count	86	257	343
		% within UNIVERSITY DISTRIBUTION OF THE PARTICIPANTS	25.1%	74.9%	100.0%

TABLE 7.38: Chi-Square Tests - University distribution and use of online databases			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	11.793 ^a	2	.003
Likelihood Ratio	12.245	2	.002
Linear-by-Linear Association	11.689	1	.001
N of Valid Cases	343		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 27.58.

The Asymptotic Significance (2-sided) value is .003, which means that there are statistically significant differences between university distribution of the participants and their use of online databases when searching for academic information on the internet – because the Asymp. Sig is less than 0.05, the level of significance. This implies that participants' university distribution had a slight influence on the use online databases for information search. The findings in Table 7.37 indicate that most of the participants from the UL and TUT agreed that they used online databases when searching for information, while 37 per cent of the participants from TUT indicated that they did not use online databases when searching for information.

7.3.6 Relationship between level of study and use of online databases

The findings in Table 7.39 indicate the relationship between the level of study of the participants and the use of online databases. Of the 28 participants who studied at first year level, only one (4%) indicated that one used online databases. Seventy-eight per cent (78%) of the participants from the third year level indicated that they did not use online databases when searching for information through the internet. Of the 26 participants who were enrolled for Honours degrees, 92 per cent indicated that they used online databases to search for academic information. Seventy-nine per cent (79%) of participants at Masters level agreed that they used online databases when searching for academic material.

TABLE 7.39: LEVEL OF STUDY AND USE OF ONLINE DATABASES					
			USE OF ONLINE DATABASES FOR INFORMATION SEARCH		Total
			Yes	No	
LEVEL OF STUDY OF THE PARTICIPANTS	First level	Count	1	27	28
		% within LEVEL OF STUDY OF THE PARTICIPANTS	3.6%	96.4%	100.0%
	Second level	Count	3	75	78
		% within LEVEL OF STUDY OF THE PARTICIPANTS	3.8%	96.2%	100.0%
	Third level	Count	34	122	156
		% within LEVEL OF STUDY OF THE PARTICIPANTS	21.8%	78.2%	100.0%
	Fourth level	Count	9	27	36
		% within LEVEL OF STUDY OF THE PARTICIPANTS	25.0%	75.0%	100.0%
	Honours level	Count	24	2	26
		% within LEVEL OF STUDY OF THE PARTICIPANTS	92.3%	7.7%	100.0%
	Masters level	Count	15	4	19
		% within LEVEL OF STUDY OF THE PARTICIPANTS	78.9%	21.1%	100.0%

Total	Count	86	257	343
	% within LEVEL OF STUDY OF THE PARTICIPANTS	25.1%	74.9%	100.0%

TABLE 7.40: Chi-Square Tests - Level of study and use of online databases

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	118.408 ^a	5	.000
Likelihood Ratio	114.522	5	.000
Linear-by-Linear Association	94.155	1	.000
N of Valid Cases	343		

a. 1 cells (8.3%) have expected count less than 5. The minimum expected count is 4.76.

The Asymptotic Significance (2-sided) value is .000, this indicates that there are statistically significant differences between the participants' level of study and their use of online databases for researching academic information. This indicates that students' level of study had direct influence on the use of online databases to search for academic material. Thus, the findings presented in Table 7.40 support those of Table 7.39 in the sense that there was a majority of participants from undergraduate level who indicated that they did not use online databases when searching for academic information.

7.3.7 Relationship between gender and use of the internet for academic purposes

The results in Table 7.41 indicate the relationship between gender of the participants and their satisfaction on the use of the internet for academic purposes. The study findings discovered that 88 per cent of participants were often while six per cent (6%) were more often satisfied with using the internet for academic purposes for both males and females respectively.

TABLE 7.41: GENDER AND SATISFACTION ON THE USE OF THE INTERNET FOR ACADEMIC PURPOSES							
			SATISFACTION ON THE USE OF THE INTERNET FOR ACADEMIC PURPOSES				Total
			Not at all	Less often	Often	More often	
GENDER OF THE PARTICIPANTS	Male	Count	2	8	159	11	180
		% within GENDER OF THE PARTICIPANTS	1.1%	4.4%	88.3%	6.1%	100.0%
	Female	Count	0	9	144	10	163
		% within GENDER OF THE PARTICIPANTS	0.0%	5.5%	88.3%	6.1%	100.0%
Total		Count	2	17	303	21	343
		% within GENDER OF THE PARTICIPANTS	0.6%	5.0%	88.3%	6.1%	100.0%

TABLE 7.42: Chi-Square Tests - Gender and satisfaction on the use of the internet for academic purposes			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	2.011 ^a	3	.570
Likelihood Ratio	2.779	3	.427
Linear-by-Linear Association	.087	1	.768
N of Valid Cases	343		

a. 2 cells (25.0%) have expected count less than 5. The minimum expected count is .95.

As the sample Asymptotic Sig. (2-sided) value is .570, this statistic means that there were no statistically significant differences between the gender of the participants and their satisfaction on the use of internet for academic purposes – because the Asymp. Sig is more than 0.05, the level of significance. This denotes that the gender of the participants could not have an influence on their satisfaction when using the internet for academic purposes.

7.3.8 Relationship between university distribution and challenges on the use of internet

The results in Table 7.43 indicate the relationship between the participants' university distribution and the challenges they faced when using the internet for academic purposes. The majority of the participants from UL (67%) indicated that one of the main challenge they encounter when using the internet for academic purposes is retrieving lot of information and links, which makes it hard to select the best out from

the rest, otherwise known known as information literacy. Thirty-six per cent (36%) of the participants from the UNIVEN indicated that they did not get enough information from what they expected, while 44% of the participants from TUT indicated that one of the main challenges they encountered was retrieving irrelevant information from the internet.

TABLE 7.43: UNIVERSITY DISTRIBUTION AND CHALLENGES ON THE USE OF THE INTERNET FOR ACADEMIC PURPOSES							
			CHALLENGES ON THE USE OF THE INTERNET FOR ACADEMIC PURPOSES				Total
			Little information	Not relevant information	Lot of information, making it hard to select	Other specify	
UNIVERSITY DISTRIBUTION OF THE PARTICIPANTS	UL	Count	12	28	79	1	120
		% within UNIVERSITY DISTRIBUTION OF THE PARTICIPANTS	10.0%	23.3%	65.8%	0.8%	100.0%
	UNIVEN	Count	41	50	22	0	113
		% within UNIVERSITY DISTRIBUTION OF THE PARTICIPANTS	36.3%	44.2%	19.5%	0.0%	100.0%
	TUT	Count	24	49	37	0	110
		% within UNIVERSITY DISTRIBUTION OF THE PARTICIPANTS	21.8%	44.5%	33.6%	0.0%	100.0%
Total		Count	77	127	138	1	343
		% within UNIVERSITY DISTRIBUTION OF THE PARTICIPANTS	22.4%	37.0%	40.2%	0.3%	100.0%

TABLE 7.44: Chi-Square Tests - University distribution and challenges on the use of the internet for academic purposes

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	61.990 ^a	6	.000
Likelihood Ratio	63.386	6	.000
Linear-by-Linear Association	21.057	1	.000
N of Valid Cases	343		

a. 3 cells (25.0%) have expected count less than 5. The minimum expected count is .32.

As the Asymptotic Significance (2-sided) value is .000, this indicates that there are statistically significant differences between participants' university distribution and the challenges they encountered when using the internet for academic purposes. This indicates that several factors within the different universities had direct influence towards challenges faced by the students when using the internet for academic purposes. Therefore, the findings presented in Table 7.44 support those of Table 7.43 in the sense that there were more participants from the UL who encountered a challenge of lack of information literacy, while the majority of the participants from the UNIVEN experienced a challenge of little information from what they expected to retrieve on the internet.

7.3.9 Relationship between participants' level of study and challenges on the use of internet

The results in Table 7.45 indicate the relationship between the participants' level of study and the challenges they faced when using the internet for academic purposes. Fifty per cent (50%) of the participants from first year level and 57% from second year level respectively indicated that it was difficult to select information once it was retrieved from the internet. Forty-two per cent (42% of Master of Arts degree students indicated that sometimes they retrieved irrelevant information.

TABLE 7.45: LEVEL OF STUDY OF PARTICIPANTS AND CHALLENGES ON THE USE OF THE INTERNET FOR ACADEMIC PURPOSES

			CHALLENGES ON THE USE OF THE INTERNET FOR ACADEMIC PURPOSES				Total	
			Little information	Not relevant information	Lot of information, making it hard to select	Other specify		
LEVEL OF STUDY OF THE PARTICIPANTS	First level	Count	4	10	14	0	28	
		% within LEVEL OF STUDY OF THE PARTICIPANTS	14.3%	35.7%	50.0%	0.0%	100.0%	
	Second level	Count	13	20	45	0	78	
		% within LEVEL OF STUDY OF THE PARTICIPANTS	16.7%	25.6%	57.7%	0.0%	100.0%	
	Third level	Count	41	68	47	0	156	
		% within LEVEL OF STUDY OF THE PARTICIPANTS	26.3%	43.6%	30.1%	0.0%	100.0%	
	Fourth level	Count	9	13	14	0	36	
		% within LEVEL OF STUDY OF THE PARTICIPANTS	25.0%	36.1%	38.9%	0.0%	100.0%	
	Honours level	Count	8	8	10	0	26	
		% within LEVEL OF STUDY OF THE PARTICIPANTS	30.8%	30.8%	38.5%	0.0%	100.0%	
	Masters level	Count	2	8	8	1	19	
		% within LEVEL OF STUDY OF THE PARTICIPANTS	10.5%	42.1%	42.1%	5.3%	100.0%	
	Total		Count	77	127	138	1	343
			% within LEVEL OF STUDY OF THE PARTICIPANTS	22.4%	37.0%	40.2%	0.3%	100.0%

TABLE 7.46: Chi-Square Tests - Level of study of the participants and challenges on the use of the internet for academic purposes

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	37.736 ^a	15	.001
Likelihood Ratio	26.737	15	.031
Linear-by-Linear Association	1.455	1	.228
N of Valid Cases	343		

a. 7 cells (29.2%) have expected count less than 5. The minimum expected count is .06.

7.4 ANALYSIS OF VARIANCE

This section presents data based on the analysis of variance (ANOVA), which is a two-way analysis of variance, to establish if there are significant statistical differences between the two or three independent or unrelated groups in relation to a specific continuous variable. According to Muijis (2004), ANOVA is a method that allows one to compare the mean score of a continuous (or ordinal with many scale points) variable between a number of groups. Therefore, in this study, the ANOVA tests were executed to test whether there were any differences between the three groups of students (i.e. from the three universities), pertaining to certain variables. For any differences to be considered significant the ANOVA test should equal to 0 or be lower than 0.05.

7.4.1 The influence of gender and duration on the satisfaction on the use of internet

This sub-section provides and analyses the influence of the gender of the participants, and the duration on the use of internet in relation to the satisfaction on the use of the internet. In this research, the time spent using the internet was viewed as significant for students' gratification when using it for educational purposes. However, the ANOVA Table 7.47 confirms that these two variables are not so important and do have influence on the students' satisfaction when using the internet.

TABLE 7.47: ANOVA test - The influence of gender and duration on the satisfaction on the use of internet						
Dependent Variable: SATISFACTION ON THE USE OF THE INTERNET FOR ACADEMIC PURPOSES						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1.603 ^a	9	.178	1.336	.217	.035
Intercept	1308.513	1	1308.513	9814.415	.000	.967
TIME SPENT ON THE INTERNET	.522	4	.130	.979	.419	.012
GENDER	.439	1	.439	3.292	.071	.010
TIME SPENT ON THE INTERNET * GENDER	1.234	4	.308	2.314	.057	.027
Error	44.397	333	.133			
Total	3133.000	343				
Corrected Total	46.000	342				

a. R Squared = .035 (Adjusted R Squared = .009)

Table 7.47 indicates that there is no statistically significant difference on the dependent variable, satisfaction on the use of the internet for academic purposes for the independent variable duration on the use of internet, the statistically not significant 0.419 is more than 0.005 which should be the alpha level. There is also no statistically significant difference on the dependent variable, satisfaction on the use of the internet for academic purposes for the independent variable gender. The statistical insignificant value of 0.071 is greater than 0.005. This suggest there is no difference on the satisfaction on the use of the internet by gender. The statistically insignificant value of 0.057 suggests that there is no statistically significant difference between satisfaction on the use of the internet and interaction effects of the duration on the use of the internet and gender of the participants.

7.4.2 The influence of gender and level of study on the satisfaction on the use of internet

This sub-section provides and analyses the influence of the gender and the level of study of participants in relation to the satisfaction on the use of internet. In this study, the level of study is one of the important variables since it indicates the level of knowledge and experience of students in using the internet for educational purposes. However, the ANOVA Table 7.48 confirms that these two variables did not have an influence on the students' satisfaction when using the internet.

TABLE 7.48: ANOVA test - The influence of gender and level of study on the satisfaction no the use of internet

Dependent Variable: SATISFACTION ON THE USE OF THE INTERNET FOR ACADEMIC PURPOSES						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1.891 ^a	11	.172	1.290	.229	.041
Intercept	1566.909	1	1566.909	11758.249	.000	.973
LEVEL OF STUDY	1.452	5	.290	2.179	.056	.032
GENDER	.092	1	.092	.687	.408	.002
LEVEL OF STUDY * GENDER	.161	5	.032	.242	.944	.004
Error	44.109	331	.133			
Total	3133.000	343				
Corrected Total	46.000	342				

a. R Squared = .041 (Adjusted R Squared = .009)

Table 7.48 demonstrates that there is no statistically significant difference on the satisfaction on the use of the internet for the independent variable duration on the use of internet, the statistically insignificant value of 0.056 is more than 0.005 which is the accepted alpha level. There is also no statistically significant difference on the dependent variable, satisfaction on the use of the internet for the independent variable gender. The statistically insignificant value of 0.408 is greater than 0.005, which suggests that there is no difference between students at the three universities on the satisfaction on the use of the internet by gender.

7.4.3 The influence of age and gender on the satisfaction on the use of the internet

This sub-section provides an analyses of the influence of age and gender of the participants in relation to the satisfaction on the use of the internet. In this study, the age difference and gender were significant to the use of technology for academic purposes. Nevertheless, the ANOVA Table 7.49 validates that these two variables did not have an influence on students' satisfaction when using the internet.

TABLE 7.49: ANOVA test - The influence of age and gender on the satisfaction on the use of internet

Dependent Variable: SATISFACTION ON THE USE OF THE INTERNET FOR ACADEMIC PURPOSES						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	.915 ^a	6	.152	1.136	.341	.020
Intercept	601.348	1	601.348	4481.597	.000	.930
AGE	.477	3	.159	1.185	.316	.010
GENDER	.039	1	.039	.292	.590	.001
AGE * GENDER	.453	2	.227	1.689	.186	.010
Error	45.085	336	.134			
Total	3133.000	343				
Corrected Total	46.000	342				

a. R Squared = .020 (Adjusted R Squared = .002)

Table 7.49 proves that there is no statistically significant difference on the dependent variable, satisfaction on the use of the internet for the independent variable of age of the participants, the statistically insignificant value of 0.316 is more than 0.005 which is the alpha level. There is also no statistically significant difference on the satisfaction on the use of the internet for the independent variable gender. The statistically insignificant value of 0.590 is greater than 0.005. This suggests that there is no difference between the students on the satisfaction on the use of the internet by gender.

7.4.4 The influence of university and level of study on the satisfaction on the use of internet

This sub-section states an analyses on the influence of university and level of study of the participants in relation to the satisfaction on the use of internet. The university and level of study were viewed as significant factors when students used the internet for academic purposes. Nonetheless, the ANOVA Table 7.50 validates that these two variables did not have an influence on students' satisfaction when using the internet for academic purposes.

TABLE 7.50: ANOVA test - The influence of university and level of study on the satisfaction on the use of internet						
Dependent Variable: SATISFACTION ON THE USE OF THE INTERNET FOR ACADEMIC PURPOSES						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	4.548 ^a	14	.325	2.571	.002	.099
Intercept	1507.794	1	1507.794	11930.955	.000	.973
UNIVERSITY	.375	2	.188	1.484	.228	.009
LEVEL OF STUDY	.787	5	.157	1.246	.287	.019
UNIVERSITY * LEVEL OF STUDY	1.304	7	.186	1.474	.175	.031
Error	41.452	328	.126			
Total	3133.000	343				
Corrected Total	46.000	342				
a. R Squared = .099 (Adjusted R Squared = .060)						

Table 7.50 demonstrates that there is no statistically significant difference on the dependent variable, satisfaction on the use of the internet for the independent variable university where participants are studying, the statistically insignificant value of 0.228 is more than 0.005, which is the alpha level. There is also no statistically significant difference on the satisfaction on the use of the internet for the independent variable level of study of the participants. The statistically insignificant value of 0.287 is greater than 0.005. This suggests that the level of study of the participants did not have any influence on the satisfaction when using the internet for academic purposes.

7.4.5 The influence of university and level of study on the challenges on the use of internet

This sub-section provides an analyses on the influence of university and level of study of the participants in relation to the challenges the students faced when using the internet for academic purposes. The university and level of study were regarded as essential factors when students used the internet for academic purposes, and different universities are assumed to have unique challenges of ICT infrastructure and internet connections. Thus, the ANOVA Table 7.51 validates that the university could have an influence on the challenges faced by students when using the internet for academic purposes. However, the level of study of the participants did not have an influence on the challenges on the use of the internet for academic purposes.

TABLE 7.51: ANOVA test - The influence university and level of study on the challenges on the use of internet						
Dependent Variable: CHALLENGES ON THE USE OF THE INTERNET FOR ACADEMIC PURPOSES						
Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	49.718 ^a	14	3.551	7.386	.000	.240
Intercept	852.718	1	852.718	1773.446	.000	.844
UNIVERSITY	21.187	2	10.593	22.032	.000	.118
LEVEL OF STUDY	6.147	5	1.229	2.557	.027	.038
UNIVERSITY * LEVEL OF STUDY	9.668	7	1.381	2.872	.006	.058
Error	157.711	328	.481			
Total	1843.000	343				
Corrected Total	207.429	342				
a. R Squared = .240 (Adjusted R Squared = .207)						

Table 7.51 validates that there is a statistically significant difference on the dependent variable, challenges on the use of internet for the independent variable university where participants are studying, the statistically significant value of .000 which is lower than the alpha level of 0.005 proves that university distribution of the participants had influence on the types of challenges faced by students when using the internet for academic purposes. However, there is no statistically significant difference on the satisfaction on the challenges when using the internet for the independent variable level of study of the participants because the statistically significant value of 0.027 is greater than the alpha level of 0.005. This suggests that for this study, the level of study of the participants did not have an influence on the challenges faced by the participants when using the internet for academic purposes.

7.5 RELIABILITY TESTS

This section reports results of the Cronbach Alpha reliability test(s) conducted as part of checking the reliability of the study's findings. According to Vale et al. (1997) and Gorforth (2015), Cronbach alpha is a measure of internal consistency, that is, how closely related a set of items are as a group. It is a measure of reliability. For this study, the scale on the use of online library databases by university students was tested. Cronbach alpha is a statistic normally employed by researchers to demonstrate that

tests and scales that have been constructed or adopted for research projects are appropriate for purpose.

Table 7.52 demonstrates the process summary of the Cronbach's Alpha test which was conducted. The test focused on the use of online databases which were mostly used by the students when searching for academic information. The test included 86 participants, mostly postgraduate students who indicated that they used online databases to search for information. This number can be confirmed by the data in Table 7.20. Thus, 257 participants were excluded in the test because they indicated that they did not use online databases for information search.

TABLE 7.52: Cronbach's Alpha - Case Processing Summary			
		N	%
Cases	Valid	86	25.1
	Excluded ^a	257	74.9
	Total	343	100.0
a. Listwise deletion based on all variables in the procedure.			

The key factor in the Table 7.53 is the Cronbach's alpha value. The more the value is closer to 1, that value is considered to be more reliable and the more likely that the items tested are measuring the same construct.

TABLE 7.53: Cronbach's Alpha - Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.605	.649	4

With reference to Table 7.53, if the alpha value is above 0.7 that means it can be considered adequate, and anything above .8 is considered to be optimum and the closer it gets to 1 the better. However, if the items being tested are less than 10, alpha value of greater than 0.5 is considered reliable. For this test, four items which are the online library databases were tested and Cronbach's Alpha value is at .605, which is an acceptable level of reliability. Taber (2017) indicates that the Alpha value of 0.6 is satisfactorily acceptable.

TABLE 7.54: Cronbach's Alpha - Item Statistics			
	Mean	Std. Deviation	N
Ebscohost	2.7791	.72601	86
Sabinet	2.8488	.69481	86
Springerlink	3.2558	1.20963	86
Eric	2.7093	1.42140	86

Table 7.54 above provides the Cronbach's Alpha item statistics, focusing on the mean and standard deviation. The mean of all the items should be in a similar range to be acceptable. The data reveal that the mean for all these items is above 2.7, with only one item which is greater than 3.

TABLE 7.55: Cronbach's Alpha - Inter-Item Correlation Matrix				
	Ebscohost	Sabinet	Springerlink	Eric
Ebscohost	1.000	.423	.454	.165
Sabinet	.423	1.000	.313	.157
Springerlink	.454	.313	1.000	.386
Eric	.165	.157	.386	1.000

Table 7.55 addressed the issue of correlation between items being tested. It is significant to make sure that the correlations between items are always high. When the correlations are above 0.3 or 0.4, they are considered to be at appropriate level, if the level is less than 0.3 it means those items are not correlating well with other items and probably not measuring the same thing. Table 7.55 demonstrates that Ebscohost, Sabinet and Springerlink have high correlation of above 0.3 towards one another. However, Eric indicates to have low correlation with the other items.

TABLE 7.56: Cronbach's Alpha - Item-Total Statistics					
	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Ebscohost	8.8140	6.130	.435	.294	.529
Sabinet	8.7442	6.475	.357	.199	.571
Springerlink	8.3372	4.108	.540	.316	.394
Eric	8.8837	4.222	.339	.151	.621

Table 7.56 demonstrates how the Cronbach's alpha value would be if the item with less correlation was removed. Originally the Cronbach alpha value with all the items

included is .605. The data in Table 7.56 reveals that if Ebscohost could be removed, it would make the reliability worse by taking the alpha value to .529, the same applies to Sabinet and Springerlink. However, if Eric could be removed, it would increase the reliability from .605 to .621. This means that removing this item would have been appropriate as far as making the measurement tool strong.

7.6 SUMMARY OF CHAPTER 7 AND OUTLINE OF 8

This chapter presented the analysis of quantitative data collected through questionnaires. As evidenced by the presented Tables and Figures, the researcher employed the SPSS Statistics 26 and the Microsoft Excel software to analyse and interpret the data. The criteria analysed included the measurement of the skills possessed by students regarding the use of internet for academic purposes, the levels of use of various search engines and online databases, comparisons of the challenges faced by students when using the internet for academic purposes and also tests of the importance of the internet in enhancing students' academic performance.

The final chapter summarises and concludes the study. Chapter 8 also elucidates the theoretical interpretations of the findings, the contribution of the study to the field of Media Studies which includes the creation of a model for technology use by students to advance academic performance, and contribution to the existing ICT policies related to the use of technology for educational advancement.

Chapter 8 also mentions the recommendations of the study and other recommendations for future studies.

CHAPTER 8

PRESENTATION OF FINDINGS, RECOMMENDATIONS AND CONCLUSION

8.1 INTRODUCTION

This study strived to examine the use of the internet for students' performance at institutions of higher learning. The previous chapters outlined the overview and the contextualisation of the study. The researcher employed scientific methods to present reliable findings that are required to add to the current body of knowledge. This chapter, therefore, summarises the results and thesis chapters, and discourse of the objectives. The study also explicates the contribution of the study through the creation of a model and also provides significant information which can be used in the amending the existing ICT policies at institutions of higher learning. The study also provides the recommendations and conclusion.

The next section outlines the summary of the findings.

8.2 SUMMARY OF THE FINDINGS

The findings encapsulate the results of this study as analysed and interpreted in Chapter 6 and 7. Both qualitative and quantitative findings are summarized underneath:

8.2.1 Access to a computer and the internet

The study results established that most of students have access to a computer and the internet. Some of them own either a laptop or a tablet. However, the study also found that shortage of computer laboratories is a detrimental factor which is hindering the use of the internet as an educational tool amongst students. This could be as a result of a number of students being admitted at the institution each year, without improving its ICT infrastructure. Some of the computer laboratories are not in a proper state to support students in enhancing their academic performance. The study has also discovered that students have access to the internet through computer laboratories and WI-FI connection. Students prefer to have internet access through WI-FI at their hostels and around the premises of the university. However, it is vital to

also highlight that not all students' hostels have WI-FI routers. Students are limited in terms of internet access because of poor infrastructure. The study also found that students cannot access WI-FI in some part of the university premises. All this has a negative effect on how students uses the internet as an academic tool.

8.2.2 Computer and internet skills

Majority of students rate their computer and internet skills as being 'good'. Most of them learned on how to use the internet through 'trial and error', where they taught themselves after owning a computer. Some of the students indicate that they have been taught on how to use the internet by their friends. Computer and internet skills are significant if students are to maximise the use of the internet to enhance their academic performance. The study results established that students assume to know how to maximise the use of the internet for academic purposes. However, in the actual fact they do not poses enough knowledge in this regard. The e-skills training received through is not good enough for one to know how to use various internet applications for educational purposes. This is proved by their search skills they use whenever they surf the internet for academic information. The fact that many students only rely on Google search engine, without the knowledge of using Google Scholar is a reason enough to conclude that students do not poses critical skills needed to use the internet to enhance their academic performance.

8.2.3 Time spent on the internet for academic purposes

The study findings revealed that many students spent more than two hours on the internet for academic purposes. Some students indicated that five hours was too much for them to be spent on the internet for academic purposes, rather they spent between two to four hours on the internet doing academic related work. It is worthy to note that time spend on the internet did not determine that one knew how to use it for academic purposes. The time spent on the internet for academic purposes had no direct impact on the students' performance. This is proven by the lack of skills and knowledge by students in maximising the potential benefit of the internet for improved academic performance. Many students could be spending many hours on the internet but not using it for academic purposes. The study also highlights the need for proper e-skills training and awareness of using the internet for academic purposes.

8.2.4 Use of search engines for information search

The majority, if not all the students, used Google as the most reliable search engine when surfing the internet for academic purposes. Yahoo, MSN, Bing and Mozilla Firefox were considered by very few students, compared to Google. Students highlighted that Google was the first search engine they were introduced to when they started to use the computer and the internet. Others also indicated that Google was the 'most reliable' search engines since most of them also had mail accounts with it. This was supported by reviewed literature which indicated that Google is the most used search engine when students search for information on the internet.

8.2.5 Use of online databases for information search

The study has found that students were not exposed to online databases which could be used to search for information. Majority of them had merely heard about online databases for the first time during the data collection for this study. Few postgraduate students knew about the online databases. These students also stated that they received fair satisfaction by using these platforms. The study also discovered that few students were using online databases as an information search platform because they were not fully exposed to such platforms. Participants indicated that they had received single e-skills training since they came to the university, which made it difficult for them to comprehend the skills they were taught during such training. Students could not be expected to use such platforms to search for information if they did not receive regular training on how to use it. Postgraduate students were expected to use online databases more often since they also embark on research projects. However, few students used this platform. Students' regular training on the use of online databases was urgently needed. This will assist in students comprehending the necessary skills needed to use such platforms for educational purposes.

8.2.6 Use of social media for academic purposes

This research has also found that the majority of students were not using social media for academic purposes. Students were not well exposed to the use of various social media networks including Facebook and YouTube for academic purposes. The study revealed that there was lack of proper integration of social media and academia. Many students have various social networking sites pages, but few had used them for

academic purposes. However, the study found that the few students who used social media for academic purposes tended to benefit from such usage. Few participants watched academic related material through YouTube. These students gained an advantage of extra lessons provided via social media. Students also indicated that they enjoyed watching academic related material on YouTube since they were not restricted by time, space and the volume of the content accessed online. These students also indicated that since they started to supplement the content they received in class with the content from social media, they tended to perform better academically, as compared to when they relied only on the content received from class.

8.2.7 Satisfaction on the use of the internet for educational purposes

The results of this study revealed that more than eighty per cent (80%) of the participants were 'often' satisfied by using the internet for academic purposes. The study also found that six per cent (6%) of the participants were 'more often' satisfied by the results they get when using the internet for academic purposes. The majority of the participants were often satisfied by what they got from the internet based on their knowledge and expectations of the potential of the internet in enhancing their academic purposes. However, participants' satisfaction should not be linked to the internet potential in assisting students. Participants were found by the researcher to be struggling in maximising the use of various internet applications for academic purposes. The study also concludes that students' perceptions of the potential of the internet in enhancing their academic performance could change provided they fully know how to use various internet applications available for academic purposes.

8.2.8 Challenges on the use of the internet for academic purposes

The study results exposed that many students are struggling with lack of information literacy whenever they used the internet for information search. The majority of students struggled to choose the best information from an array of content they retrieved on the internet. Thus, they spent many hours on the internet for academic purposes, with little knowledge on how best to retrieve it. The study has also found that shortage of computer laboratories, poor internet connections, lack of training on the use of the internet for academic purposes, and encryption of some of the content

by university management are some of the challenges hindering students to use the internet for academic purposes.

8.2.9 Importance of online information in the academia

Despite the challenges students faced when using the internet as an academic tool, they still regarded the platform as important in the academic world. The majority of the students regarded online information as significant for their academic journey. The study found that students needed more and requested regular training on using various internet applications including online databases, social media and other significant applications in order to enhance their academic performance at these three universities.

The following provides a theoretical interpretation of the results.

8.3 THEORETICAL INTERPRETATION OF THE FINDINGS

This section explicates the theoretical re-evaluation of the aims of the study for reinforcement of the study. The chapter concentrates on the research objectives to reflect on the data. The topics presented in this chapter emanate from the objectives stated in Chapter 1. The theoretical framework forms part of the foundation for the analysis of the results on theories.

8.3.1 Analysis of theoretical framework

This section details the analysis of the theoretical framework against the backdrop of the data. The assumptions and claims of the theories are affirmed against the research results. As described in Chapter 1, there are theories that are part of the analysis, including the practice theory and the uses and gratifications theory. The findings of this study are derived from the objectives of the research which were, namely,

(a.) to identify the manner in which students at institutions of higher learning uses the internet; and

(b.) to establish the challenges and opportunities of the internet towards improving students' academic performance.

The findings of this study revealed many students appreciated the use of the internet to search for academic information. The internet with its array of applications provides a great opportunity for students at institutions of higher learning. Students have various internet platforms in their disposal to search for information. Those who indicated to have maximised the use of various platforms including social media and online academic databases, confirmed that it enhanced their academic performance. If they can be correctly used, social media can play a significant role in academia, especially because students are always on their social networking sites pages.

Academics and the ICT staff can influence students to maximise the use of social media for academic purposes, by ensuring that academic information is available through social media. Thus, students can then embrace the opportunity of the availability of academic material through social media and use it to their advantage. However, students in this study indicated that they lacked the required skills to maximise the use of social media and online databases for information search.

The study established that lack of training in the use of internet is still a challenge at these institutions of higher learning. Many students learned to use the internet through 'trial and error' and others from fellow friends, who were not experts in using the internet for academic purpose. Lack of essential support, either in terms of infrastructure or supervision proved to be a great challenge which hindered students in using the internet for academic purposes. The findings of the study revealed that there is shortage of computer laboratories, poor WI-FI connections at some of the student hostels and outdated software, hence it is a serious challenge when one has to use the internet for academic purposes.

The study also found that the students' orientation at the beginning of each academic year, is the only platform where students are taught on how to use various internet applications for academic purpose. Students can perfect their internet skills, only when they keep on practising the use of various internet platforms mainly for academic purpose.

8.3.2 Philosophical perspective: Constructivism

The centre of this study is on constructivism as a philosophical foundation of this study. Researchers need to take a position regarding their observations and research results,

in this case how students at the three universities view how they use ICT to advance their academic performance. The results of this study construct or indicate the reality of the students in relation to how they access ICT at the three universities and how lack of ICT access at these universities impacts negatively on their academic performance. Students revealed that they also constructed solutions to lived challenges and found alternative solutions to lack of ICT training by the universities and sought e-skills training, for example, from peers or friends.

The researcher worked from the general information with regard to the use of the internet by students at universities, to the more specific information received from the respondents on how technology improved their academic performance and did not improve their learning (e.g. in instances where web sites are blocked by the universities which inhibits active learning by students).

The results of this study have generated new knowledge about the use of technology by students at the three universities (which are not often researched about by some scholars) for improving academic performance. Comments from the students in this study enabled this researcher to produce new knowledge about how technology is used and managed at these universities by the students towards contributing to their academic improvement. The rationality through which the research was conducted recapitulates collective evidence in such a manner that impels recognition of the conclusions.

8.3.2.1 Information and communication technology as mediational tools

This study adopted the use of ICT, and the internet in particular, as mediational and education tools. Romiszowski and Mason (1996:438); McCormick and Scrimshaw (2001) have described this concept as a computer mediated communication. This concept is about group of people who use computer mediated communication networks to learn together, at the time, place and pace which suits them

(McCormick & Scrimshaw, *ibid.*). This view holds that learning does not take place in void, however it occurs within an environment which not only brings with it the history, tradition and wisdom of a particular society, but also provides the students with resource from other students, each with their own knowledge, experience and expertise, to share ideas and work towards shared understanding. In this concept, the

learning process is not understood as the transmission of knowledge from those who knows to the ones with less knowledge, but as an engagement in authentic participation in a community of practice (Lim, 2002).

Epistemologically, knowledge is socially-constructed through participating in the process of knowledge creation. Conducting research of this kind contributes to knowledge creation or knowledge construction. Additionally, Sutherland, Armstrong, Barnes, Brawn, Breeze, Gall, Matthewman, Olivero, Taylor, Triggs, Wishart and John (2004:415) elaborate that both students and academics bring forth perspectives to any new learning situation and these influence what they pay attention to and thus the knowledge they construct.

Practically, the use of the internet as a mediational tool is predicted simply on the availability of ICT, and internet connectivity, which proves to be a problem in the historically disadvantaged institutions of higher learning studied through this research. This study discovered that some of student hostels did not have internet connectivity, which illustrated that ICT access was still a major challenge. The knowledge, skills and expertise to use ICT, especially the internet, is critical if one needed to take part in the construction of knowledge through the platform. Lack of access to ICT, the internet in particular, may be limiting students from engaging in the opportunity to the quality education afforded by ICT. Thus, it is significant for students to access the internet and its services at all times, and also possess enough e-skills and expertise to use various internet applications for academic purposes.

8.3.3 The practice theory

The practice theory embraces an outlook regarding the way in which people use media and the purposes thereof (Couldry, 2004). The theory has moved beyond the old debates about media effects, political economy, the ideological nature of the media, and active versus passive audiences (Fourie, 2010:180). Rather, the theory seeks to focus on the media as practiced in life, and how the media as a practice anchor and organise other human practices and experiences. The technological revolutions brought about new media such as social media, including social networking sites and content sharing sites amongst others. Technological revolutions are primarily centred on the internet.

The apposite facet of this theory within the views of the study is the liberty that consumers have on the internet in general and new media landscape in particular. The internet has a direct relationship with society, and in the case of study, the students (Fourie, 2010). The contextualisation of the theory is explained by the study results. This study employed scientific research paradigms to address its objectives in examining the use of the internet for students' performance at the institutions of higher learning.

The mixed method research paradigm was applied to identify the manner in which students at institutions of higher learning uses the internet and opportunities and challenges towards improving students' academic performance. The findings of the two objectives are reviewed to afford rationale within the context of this study. The analysis was placed on the following aspects:

- (a). how students at institutions of higher learning use the internet for academic purposes; and
- (b). the challenges and opportunities experienced by the students towards improving academic performance.

The advent of the internet and its recent revolution thereof brought about change in the way people search for information. During the non-technology era, people relied mostly on the printed books and journals for information. It is therefore, crucial to engage the assumptions of old media theories regarding the information search within the new media landscape. The main facet of practice theory is on the consumption patterns of the media by the consumers themselves. The theory also focuses on the growth and development of media and the experiences of media users.

The significant factor is that the study discovered that media consumers (students) have shifted from the old ways of searching for information and have adopted the internet as a gate way for information. The study discovered that majority if not all students at institutions of higher learning rely mostly on the internet than any other platform when searching for academic information. This study also discovered that students have a positive attitude towards using the internet as a platform for information search. This discovery indicates that consumers embrace the availability of the internet to enhance their academic performance. In the ancient days, printed

books and journals were the only sources of information in the academic community, however, the internet changed the status quo by affording various applications which can be used to search for information. The study was conducted to investigate the use of the internet to enhance students' performance at the institutions of higher learning. Through two different data collection tools, the researcher revealed that to a certain degree, with their positive attitude, students did not take full advantage of various internet platforms to enhance their academic performance.

The presented findings in the preceding chapters (Chapter 6 & 7) illustrate that students do utilise internet search engines to search for academic information on the internet. Google was the mostly used search engines before Yahoo, MSN, Bing and Mozilla Firefox among others. It is evident that social media platforms (Facebook and YouTube) were not popular with regard to searching for academic information among students. Very few students decided to use social media for academic purposes. The consumers of social media spent a larger proportion of their time active on various social media platforms, and visit various internet sites. The study further confirmed that the majority of undergraduate students were not aware of online educational databases which can be used for information search to enhance learning.

The imperative outcome is that students did not use various internet applications to their advantage. Many students did not watch academic related videos from YouTube, Facebook and other social networking sites. Many indicated that they mostly visited YouTube for entertainment than for academic purposes. Students did not use Facebook for academic purposes because there was not perfect integration for this social networking site to cater for academic purposes. One had to rely on who one 'likes' and 'follows' in order to share content, hence it cannot be trusted in the academia. However, though YouTube provides an opportunity for students to watch academic related videos, they still did not maximise its potential to enhance academic performance.

The practice theory expresses the power of the media users over that of owners. Contrary to this assumption is the challenge of blockage or encryption of some documents on the internet, restricting students to access certain information without paying or subscribing to certain journals. The conspicuous aspect is the fact that some academic related internet documents are encrypted, and students cannot get hold of

the information on their own. Another challenge is that there is not clear integration between social media and academia. YouTube provides a platform for consumers to watch videos of any content, however, anyone can upload an academic related video on YouTube and share it with the world. The platform does not demand any identifications or specific academic profile, making it difficult for students to trust the content. These significant findings do not echo the assumption of this theory. The opportunities provided by the internet and social media are such that students could use them to enhance their academic performance.

The findings of the study demonstrate that the majority of students used the internet and social media platforms mainly for communication, socialising and entertainment. The constant use of these platforms for academic purposes could enhance their performance at institutions of higher learning.

The other significant opportunity is that the users of social media may use the existing platforms to integrate them with academic world. Perfect integration of social media and academia would play a pivotal role in enhancing students' performance at these institutions of higher learning. This type of integration could change the way students use social media which is mainly for socialising and bring another interesting angle of education. Social media and education integration could make it easier for students to access, share and engage content which is vital for academic purpose. The practice theory supports this claim as it stands for growth and extension of new media and their relationship with the society.

8.3.4 The uses and gratifications theory

This theory places more focus on the ability of the media users who are regarded as active towards their chosen media content. The uses and gratifications theory (UGT) embraces an assumption relating to the consumption of the internet, which is more relevant to this study (Fourie, 2007:237). The significance of this theory is affixed by the personal relation assumption which claims the fact that internet users are normally active on the platform to establish which applications they use on a specific purpose.

This assumption suggests that people use internet to search for information and seek for friends with mutual interest and further postulates that people use the internet for interaction and personal gratification. There are considerations regarding the

pertinence of this theory within new media based researches. The contextualisation of the UGT was essential in this study.

a) The uses and gratifications theory and how students at the selected universities use the internet

The results of this study assert that students at the selected universities seek for friendship and entertainment from the internet. The study results also confirm that the students prefer the internet as a suitable tool for information search. Students have revealed that in its nature, internet is quick in bringing out the results whenever they search for information. The majority of the participants indicated that they were satisfied with the results they get when using the internet as a tool for information search. However, very few used internet databases and social media platforms to search for academic related information. This limited their potential of accessing critical information for academic purposes.

The UGT is important as online databases and social media are concerned because of the personal relation assumption which validates the nature of sharing in the platforms. Online databases are designed in such a way that they limit some of the encrypted content for those who can afford to subscribe and pay for such content. Thus, the majority of the students do not use online databases as a tool to search for information, regardless of its richness of reliable information from reliable authors and journals. Again, the social media platforms are designed in such a manner that does not integrate socialisation with academia. Social media do not contribute much in accessing and disseminating academic related information because amongst other factors, there is no perfect integration between the two.

b) The uses and gratifications theory and the challenges of accessing the internet towards improving students' academic performance

The findings of the study demonstrate that the gratification process through the internet is to a certain degree limited to the skills possessed by the internet user, and the selected internet applications used. The challenge is that as much a student uses the internet to search for information, without the required skills, the exercise could be fruitless. Another challenge is that the nature of social media has adversely neglected educational integration making it difficult to use social networking sites such as

Facebook and Twitter for academic purposes. For instance, Facebook and Twitter in their nature, they depend on the circle of one's friends to get certain information. With YouTube, there is not specific segmentation for academic related videos which students can freely rely on, one has to search and watch whatever the results comes out. Thus, students have to become the judges of the content they retrieve, unlike the internet databases where the information is arranged by in a credible manner.

The opportunities are there as well since through the gratification process, students have the liberty to use array of applications which comes with the internet. That is endorsed by the findings of this study, which outline that there are few students who prefer online databases whenever searching for academic information on the internet. The participants allude that this has proved to be the best way of accessing credible and reliable information for their academic purposes. Some of the participants also indicate that academic related YouTube videos puts them in an advantage since they can watch countless times until they understand the concepts they are dealing with in class. Many students indicated that they were always on social media and this is an opportunity to integrate the platform to also cater for academic purposes in credible and reliable ways.

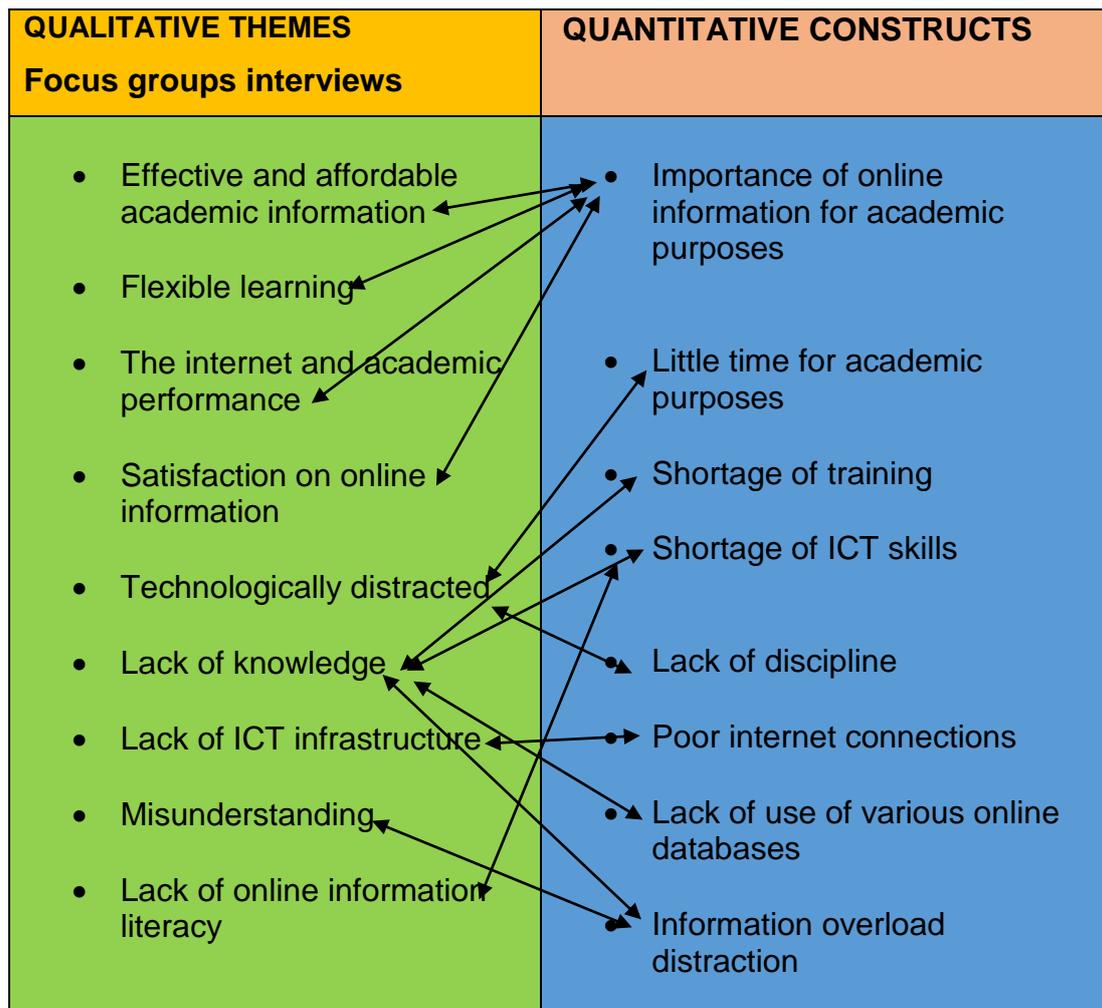
The following section presents the merging of qualitative and quantitative results.

8.4 MERGING OF RESULTS

The presentation of the study findings led to the merging of the results.

Table 8.1 summarizes the merging of the two sets of data.

Table 8.1: A schematic presentation of the merged data



Qualitative data indicate that students appreciate the effectiveness of the internet and the affordability of academic information. The study results established found that students applauded the fact that they were not forced to buy books and/or always compete for the limited books in the library, instead they opted to use the internet whenever they required information. Qualitative data also established that the internet brings flexibility to students since they chose what to search for as information, and to watch related academic videos on YouTube and other social media networks. Thus, it

was also established that the internet plays a vital role in the students' academic performance. These qualitative findings relate to quantitative findings which indicated that students regarded the internet as a 'very important' tool in their academic journey.

However, though the internet plays a crucial role in students' academic performance, qualitative data indicated that students are sometimes distracted between spending time on the internet for academic and for leisure purposes. In most cases, students spend little time on the internet doing academic work than for entertainment. Some of the leisure activities they indulge on include social media, downloading of movies, music and games. This correlates with the quantitative data which indicated that the majority of the participants spend between 2 to 3 hours on the internet doing academic activities.

Qualitative data also indicated that students did not have adequate knowledge for using the internet for academic purposes. This was evidenced by the fact that most of the participants had never been exposed to the use of online databases which were accessed through online libraries. This resulted from the lack of training in using the internet for academic purposes, where quantitative data indicated that the majority of the participants (36%) learned to use the internet for academic purposes through 'trial and error'. This resulted in students lacking basic ICT skills in maximising the use of the internet for academic purposes. Thus, quantitative data also indicated that one of the problems experienced by the students when using the internet was information overload. In this case, students retrieved a lot of information on the internet, and struggled to choose what was suitable for their academic activities, which is normally known as online information literacy.

The succeeding section looks at the discourse of the objectives of the study.

8.5 DISCOURSE ON OBJECTIVES OF THE STUDY

The discourse that follows focuses on the objectives of the study viewed through the lens of the qualitative findings:

8.5.1 The use of the internet at the selected institutions of higher learning to enhance academic performance

The internet consists of various applications which can be used to search for information. These applications include amongst others, search engines, online databases and social media sites. Students at institutions of higher learning use these platforms to search for academic information. The study established that search engines such as Google, Yahoo, MSN and Bing were popular among students. Many students are aware of the availability of 'advanced search' platforms such as Google Scholar through the search engine. Online databases are barely used as information search platforms among most of the students. Social media sites are mostly used for social interacting rather than searching for information. However, user generated content platforms, such as YouTube, have the potential to positively contribute to enhancing students' academic performance. YouTube is an easy platform to use since one does not need to create a profile in order to consume the content. Students need to take advantage of its accessibility for their own benefit.

8.5.2 Opportunities and challenges faced by students when using the internet for academic purposes

There are opportunities that students can exploit concerning using the internet to enhance their academic performance. The internet consists of array of applications which can be used as platforms to search for information. The primary advantage of using the internet as a tool to search for information is that one gets to access the information regardless of the difference in space and time. Online databases provide peer reviewed journal articles into the fingertips of the students and academics. Social media platforms like YouTube provide virtual content making it easy for students to understand what they are studying.

The other opportunity is that due to their nature, social media platforms can be used to share and promote academic content amongst students within various institutions of higher learning. However, there are existing challenges that hinder the use of internet for academic purposes. Not all internet platforms are easy to use for academic purposes. Some of online academic journals need one to subscribe and pay before getting access to their content. The use of search engines need one to be information

literate, since overload of information can also pose a threat to the users. Some of the internet applications such as social media platforms were not initially meant for academic purposes. Hence, lack of proper integration between social networking sites and academia is still a challenge for students. Many students are always on social media, however, few can use these platforms to enhance their academic performance.

8.5.3 Ways in which students use different internet search platforms for academic purposes

The findings of this study indicate that the majority of students prefer to use search engines as compared to other applications when they search for academic information on the internet. They argue that search engines are convenient because they do not demand lot of technical abilities for one to retrieve information. Nevertheless, there is a significant number of students who also use online databases and social media platforms to search for academic information. Some of the students pointed out that they use different applications including search engines, online databases and social media platforms. Some of the students indicate that when searching for information through search engines, they will consider the first appearing content based on the list of retrieved links. This indicate a serious information illiteracy among students. Some students also consider using content from Wikipedia, which is a free, open content online encyclopaedia. This poses a threat to the uses who consider information from this site for their assignments because content from Wikipedia can be created and edited by anyone without considering their profile and credibility in contributing to the existing body of knowledge.

Students who preferred to use online databases seems to have an understanding on how to use of key words when searching for information. These students understand that they need to use proper key words in order to get the required results. Students also indicate that after retrieving lot of journal articles, they will read the content in order of their appearance from the search. The content which matched the key words used to search will be considered. This helps the students to narrow their content to exactly what was required. Those students who preferred using YouTube to search for information, indicate that they will use different phrases to search for content. Students will use their knowledge to choose which videos match their search, and they will ultimately watch various videos before considering which one to use. Students also

highlight that they use YouTube content to supplement what they receive in class. They also indicate that content from YouTube come with lot of demonstrations and examples, which ultimately enhance academic performance.

The following section summarises the chapters of this thesis.

8.6 SUMMARY OF CHAPTERS

8.6.1 Chapter 1

Chapter 1 stated the background of the study. The aim, objectives, significance of the study, and the nature of this study was described. The chapter also encapsulated the rationale of the study, scope and the role of the theory in the study.

8.6.2 Chapter 2

Chapter 2 was the initial chapter to review the literature within the theoretical perspectives of the study. The main aim of this chapter was to provide an overview of the key concepts such as the internet, search engines, e-learning, internet self-efficacy, internet addiction and social media. This overview highlighted the concepts based on their meanings and how they are used in the context of media and education. Some of the outlined concepts focus on the types, characteristics and the use of social media for education purposes.

8.6.3 Chapter 3

This was the second literature review chapter. The key objective of the chapter was to explain the contextualisation of the internet in education. The history of the internet, the development of the internet in South Africa, the development of the World Wide Web and internet search engines were stated. The chapter outlined ICT that is effective for teaching and learning in institutions of higher learning.

8.6.4 Chapter 4

This was the final chapter focusing on literature review which reviewed crucial concepts pertaining to possible challenges and opportunities that the integration of internet into education pose and offer, and the status of internet use in the institutions

of higher learning in various parts of the world was discussed. The chapter also presented the major ICT initiatives which have been taken. Additionally, the relationship between social media and education, its importance, benefits, and disadvantages were reviewed. The chapter dealt with the concept of internet addiction and its effect on academic performance.

8.6.5 Chapter 5

The main aim of this chapter was to elucidate the research methodology and design. The study employed both qualitative and quantitative research methodologies. Exploratory and descriptive research designs were adopted for this study. On one hand, focus group interviews were employed as a data collection tool for qualitative data. Thematic analysis was used to analyse data collected through focus group interviews. On the other hand, a questionnaire was used to collect quantitative data. Statistical Package for the Social Sciences (SPSS) was used to analyse data collected through survey questionnaires. This chapter also outlined the qualitative criteria for both qualitative and quantitative research paradigms. The other scientific facets that the chapter dealt with include sampling methods, refinement of data and ethical considerations amongst others.

8.6.6 Chapter 6

This chapter focused on qualitative data analysis. The researcher employed thematic analysis to analyse data collected through focus group interviews. Tables were used to separate the transcribed data from analysis of the themes. The data were analysed in a chronological order as per the questions appearing on the interview guide.

8.6.7 Chapter 7

Chapter 7 presented and analysed quantitative data. The researcher used SPSS to analyse data collected through survey questionnaire. Tables and figures were used to display and report data.

8.6.8 Chapter 8

Chapter 8 summarised the results of the study and stated the study recommendations, contribution of the study to the field of Media Studies and conclusion.

The subsequent section explicates the contribution of the study to the existing body of Media Studies, and in particular New Media, knowledge.

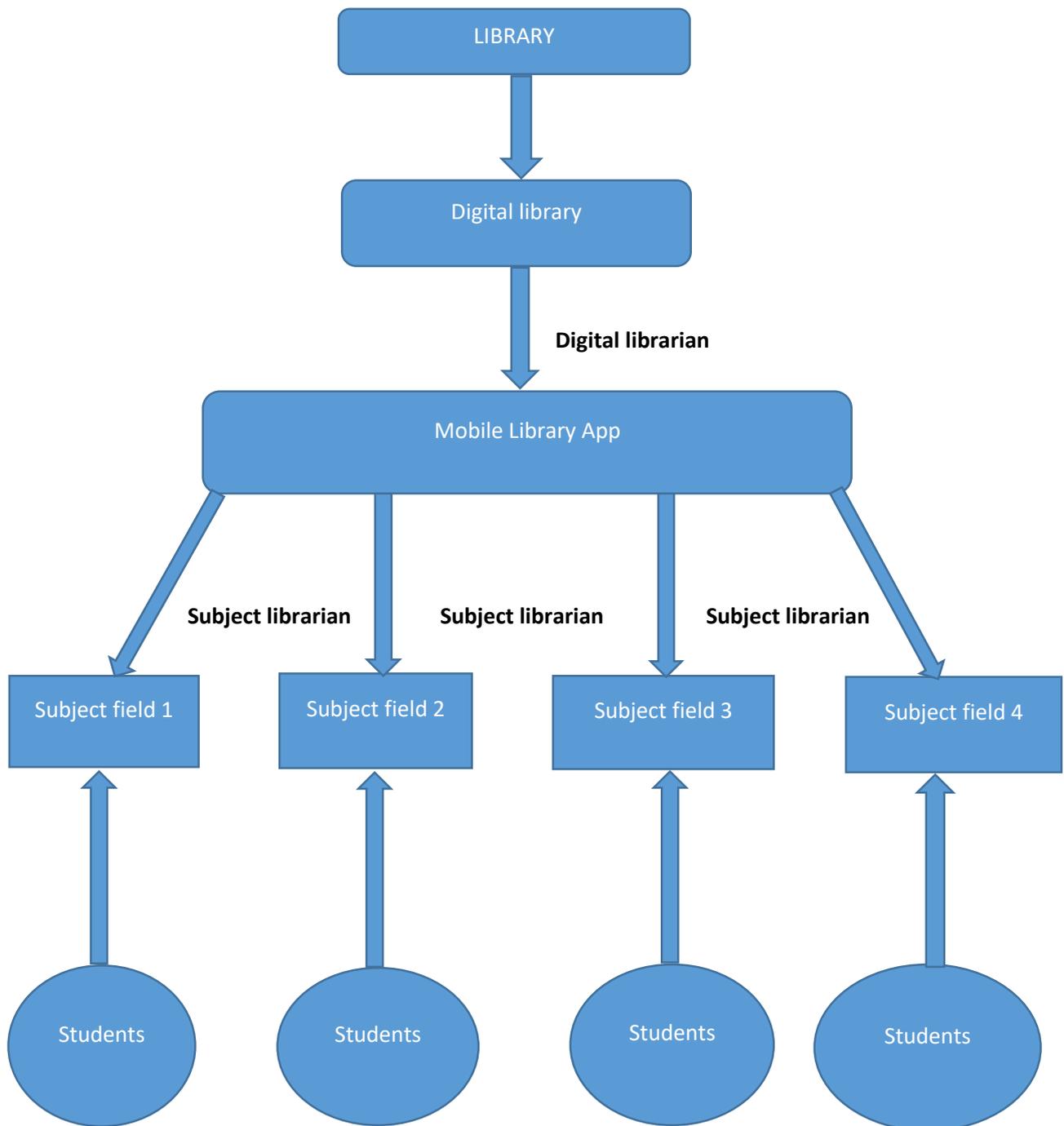
8.7 CONTRIBUTION OF THE STUDY

The researcher examined the use of the internet in enhancing academic performance of students at institutions of higher learning. The results of the study established that students mostly use google simple search engine to search for information. Few students use online journal databases and social media platforms. The study proposes that institutions under study should create a Mobile Library Application (App) which will be linked to their online libraries. This application should assist students to easily access updated and recent academic information in respective fields. The App should also assist students to share and have conversations regarding the published scholarly information. This application should be administered by professional digital librarians who will constantly share and update information as and when it is available. Registered students should be provided with passwords in order to have access to the academic application. The study also provides significant information which could be used for creation and/or amending existing ICT policies for academic purposes.

8.7.1 Creation of a model

The researcher has created a schematic model to assist in using the internet to enhance students' academic performance at institutions of higher learning. Anderson, White and Sullivan (2005) indicate that Schematic models have been used variously in research to provide a pictorial, or flow chart style, diagrammatic representation of relationships between variables. Seddiki and Chaouki (2017) submit that the use of a schematic or diagrammatic form provide clear and definite structure of the model that would otherwise remain hidden in an excess of words. The model is informed by the findings of the study and the concerns raised by the participants. One of the major findings of the study is that students often struggle to locate the relevant academic online information which can be used for their assignments and research projects. Some of the participants indicated that they often find it difficult to surf the internet and select the most important information for school projects. Thus, the researcher considers it necessary to create a model which will counter these aforementioned challenges faced by students in accessing academic information.

Figure 8.1 Mobile Library App model



a) Overview of the model

Theory is defined as a creative and rigorous structuring of ideas which reveal an essential, purposeful and systematic view of a phenomena (Chin & Kramer, 2013; Ngulube, 2020). Furthermore, Kivunja (2018) describe theory as a “set of interrelated concepts, definitions, and propositions that present a systematic view of phenomena by specifying relations among variables, with the purpose of explaining and predicting the phenomena”. In this study, a schematic model was described indicating how students can be assisted to access online academic information within the framework of university libraries. The model was based on the findings of the study.

b) The purpose of the model

This model intends to reveal how access to online academic information can be easily made available for students at the University of Limpopo, University of Venda and Tshwane University of Technology Polokwane campus in Limpopo province. The digital librarian and subject librarians through the use of mobile library application creates a conducive way for students to access study materials in the comfort of their private places, by using mobile library application which they can download using their mobile smart phones. It is anticipated that students would easily navigate through the mobile application to access certain information which has been segmented through the subject area in the system. Students should be made aware of and oriented on the use of the mobile library application and its different sections. The model also addresses the issue of information scarcity and information illiteracy.

c) The Structure of the model

The structure of the model comprises of fundamentals that are viewed as significant for it to function. The model entails five sections of the model contexts. The first section is the main library, the second section is the digital library, the third section is the Mobile library application, the fourth section encompass the subject fields, and the last section comprises of students. The library is responsible to ensure that students have access to academic material within universities. Libraries through the use of the digital library section should establish a mobile library application which can be downloaded by the students and academics using mobile smart phones. Subject librarians should be responsible to upload and update academic content into various subject sections.

Different subject fields could include Humanities and/or Social sciences, Science and Agriculture, Management and Law amongst others. This can be done based on the faculties and schools which exists within a particular university. Students would easily navigate through the mobile application in order to access any available academic information. Through the use of a mobile library application, students would know which section of the app they could visit in order to access specific information. This will also help students to avoid using any available information they come across in the internet. The study has found that students also struggle with online information literacy, where they fail to evaluate whether certain information can be used for academic purposes or only for reading. The mobile library application will assist in directing students to accredited online Journals and acceptable online information. These sections are connected to one another, and for the smooth operation of these mobile applications, it is significant for digital librarians, subject librarians, students and academic to work together to use information for study available online.

d) Assumptions of the model

The model is based on the following assumptions:

- (i) Universities have their own expectations on how students use the internet for academic purposes.
- (ii) Students are concerned with the effectiveness and the kind of services they receive from universities regarding the availability and quality of ICT for academic purposes.
- (iii) The universities' ICT infrastructure contexts where teaching and learning takes place impact on the students' behaviour towards the use of the internet for academic purposes.
- (iv) Effective facilitation of the ICT services provided by the universities to the students may promote the use of various internet applications for academic purposes.

8.7.2 Contribution to the ICT policies

In terms of policy, the study provides universities' authorities with the necessary information to amend the existing ICT policies in order to support the integration and use of other internet applications, including social media applications for teaching and learning. The study has discovered that students and academic are already using

communication platforms including YouTube, WhatsApp, and other social media platforms for teaching and learning. It is of significance that universities draft new policies which will guide and formalise the use of these communication platforms for academic purposes.

Youth between 25 and 35 years of age are regular users of social media (Ocansey, Ametepe & Oduro, 2016; Phoon, 2017; Talkwalker, 2020) and most of students belong to this range of age group. Thus, if the correct academic information could easily be accessed through social media platforms, it will benefit the students to have relevant and recent information to perform better in their academic journey. The use of social media platforms in academia should be embraced by students and all members of the academic community. Universities under study have not maximised the use of social media for academic purposes and this is could be implemented in order to enhance students' academic performance.

The study also contributes to the academic community by providing the academics and students with various types of internet applications and social media networks and thereby creating awareness on their usefulness for academic purposes. The study of this nature have not been conducted at the three universities under study.

The next section focuses on the delimitations of the study.

8.8 LIMITATIONS OF THE STUDY

The limitations of this study are summarized next:

8.8.1 The researcher selected three institutions of higher learning in Limpopo, namely: The University of Limpopo, University of Venda and Tshwane University of Technology Polokwane campus. All these institutions share similar attributes that they admit many fulltime students compared to other institutions including Technical and Vocational Education and Training (TVET) Colleges in the province. Institutions under study also serve students from disadvantaged backgrounds.

8.8.2 The other delimitation is that the study selected various internet applications to focus on, namely, internet search engines, online databases and selected

social media platforms (Facebook and YouTube). There are various other available applications including online Learning Management Systems, and many social networking sites which are being used for academic purposes. The expansion of these internet applications could have fortified the findings of this study.

Emanating from these factors, it is, therefore, clear that the findings of the study cannot be generalised to 26 South African universities because South African universities have different structural characteristics, opportunities and challenges.

The succeeding section outlines the recommendations of the study.

8.9 RECOMMENDATIONS OF THE STUDY

This study aimed at examining the use of the internet for students' performance at institutions of higher learning. The following recommendations emanate from the results of the study:

8.9.1 Intensifying the access and use of computers and internet for academic purposes at the selected universities

Institutions of higher learning should intensify the access and students' use of computers for academic purposes. Participants in this study indicated that there is a shortage of computer laboratories for students. Institutions should ensure that students have access to computers by building more computer laboratories which could cater for all students. Institutions of higher learning could also supplement the shortage of computer laboratories by purchasing and handing out tablet devices to students. This could assist in a long way in resolving the challenge of lack of infrastructure which is hindering the use of the internet in enhancing students' performance.

Institutions of higher learning should also ensure that all students have access to the internet within institutional premises. Some of the students in the study highlighted that they prefer to surf the internet while in the comfort zone of their hostels than queuing for a computer at the computer lab. Internet access is of vital significance in the academia and it should be regarded as a basic need especially for academic and students. Institutions of higher learning should also come with mechanism which will

ensure that the internet provided by the institutions is mostly used for academic purposes. The study has found that students mostly use internet for social purposes than academic purposes. Students should be encouraged to maximise the use of the internet essentially for academic purposes, and this could help in enhancing academic performance.

8.9.2 The Establishment of more academic social network sites

Following the success of social media platforms such as Facebook, Twitter and the user-generated content sites such as YouTube, an array of online services including Academia.edu, ResearchGate, and Mendeley were established in order to bring the benefits of online social networking to an academic audience. However, these platforms are not popular to the majority of students at the selected institutions of higher learning. The lack of multiple online platforms which have been created mainly for academic purpose suggests that students cannot take advantage of these platforms for their academic endeavour. More academic social networking sites should be established for academics and students. This will afford academic community to create, collaborate and share content through social media platforms which are purely dedicated for academic purposes.

It is of paramount importance that students are exposed to these kinds of online platforms, since they are regarded as regular users of social media. This also suggests that students will be benefiting by using social media for both socialising and education. Academic social networking sites break the barrier of distance between students from various institutions globally. The establishment of more academic social networking sites has a potential to change the attitude and perceptions of some people at these universities on the use of social media for only socialising. In other words, the enhancement of these applications will have an immense contribution towards enhancing students' performance at institutions of higher learning.

8.9.3 Proper integration of social media and education is necessary

Proper integration of existing social media platforms and education is necessary. The study established that the majority of students could not use social networking sites for academic purposes, because it is not easy to use them specifically for education. Some of the participants indicates that social networking site such Facebook is not

made for educational purposes, thus it is easy for one to search and find academic content through Facebook. Participants also indicate that they have tried to pose an academic related question on Facebook, however, the responses were not that pleasing, since anyone who wish to comment can do so regardless of their expertise and knowledge on the field. Content which one can access through Facebook depends mainly on who one follows and not what is being researched on the platform. However, the user-generated content sites like YouTube perform better than other social networking sites, since it focuses on content.

Few participants who indicated that they do search for academic information on YouTube, highlighted that they are satisfied on how YouTube works. Nonetheless, it is also vital to indicate that YouTube provide content based on the key words one uses, regardless of the whether those who created the content are regarded as credible authors for any subject area. It is significant that social media platforms create some pathways where only credible and trusted authors can provide content for consumption. This will encourage student to take advantage of social media in enhancing their academic performance. Proper integration of social media and academic would stimulate the participation of more authors and researchers and they could share their publications for wider consumption. There are many people who are not on social media because they do not value being part of virtual community for socialising, but might participate if the platforms could be used for something valuable like education.

8.9.4 Apposite marketing strategy of various internet applications being used for academic purposes

The study recommends that institutions of higher learning should intensify their marketing strategies to make known of various online applications being used as tools to search for formation. At the beginning of each academic year, participants indicate that the institution embarks on orientation programme, of which part of it is to teach the first entering students on how to use various available online applications for educational purposes. This is an important programme for students, however, participants also highlight that this is only done at the beginning of the year, without proper monitoring to ensure that all students take part in the orientation. Again,

students need frequent training on how to use internet application for academic purposes.

Single training at the first year of university students does not assist a lot in grasping the necessary skills needed to use the internet as an academic tool. Some of the participants mentioned that by the time they were at postgraduate level, they could not remember what they taught during the orientation programme as the first year students. Hence, the study recommends that institutions of higher learning should embark on recurring training campaigns to equip students when it comes to using the internet for academic purposes. This can be done through organising workshops by the libraries, working hand-in-hand with the ICT departments and faculties.

The following section offers recommendations for future research on this topic.

8.10 RECOMMENDATIONS FOR FUTURE STUDIES

The following statements are recommendations for future research:

8.10.1 From a national point of view, a comprehensive study should be conducted about the use of the internet in enhancing students' performance at other institutions of higher learning.

8.10.2 A study could be conducted to explore the best teaching and learning strategy that could be employed for the integration of social media and academic activities.

8.10.3 There is a need to conduct a study to focus on the measurement between students' use of the internet and their academic performance.

8.10.4 A research should be undertaken to investigate and record the impact of the 4th Industrial Revolution on generating and sharing of information in the academic community.

The next section presents the overall conclusion of the study.

8.11 CONCLUSION

In conclusion, the internet in general and its various applications, including online databases and social media, have a great potential to enhance students' performance at institutions of higher learning. However, it is important to note that these platforms can be of great potential provided students pose required critical skills of using the internet. The critical aspect concerning the students' use of online databases is the awareness and skills needed to do so. This study identified an unfavourable factor in using the internet for academic purposes. The detrimental factor is the lack of knowledge in using various internet applications as academic tools. Students' lack of knowledge on the use of internet makes it difficult for them to take advantage of the platform to enhance their academic performance. Students are expected to be responsible in using various internet applications for enhancement of their academic performance.

The manner in which students engage themselves in social media at the present moment does not in any way enhance their academic performance. Students are regarded as regular users of social media, however, the study established that they have not maximised the use of social networking sites for academic purpose. Establishment of more academic social networking sites and integrating the existing social networking sites into academia is a critical factor in the environment where many things take place within the cyber space. More academic social networking sites will afford critical space to generate and share the content amongst scholars and students. Proper integration of social media and academia could go a long way in encouraging students to participate in creation and generation of knowledge through the use of social media. This is because students are already engaging themselves in social media, hence valuable content should follow them where they can be easily found. As much as students enjoy the benefits which come with social media, it is important that they should start including education as one of the critical aspects which could be addressed using such platforms.

Access to recent information is of significance within the academia and the maximum use of various internet applications including online library resources and social media platforms is necessary. With the world rapidly shifting to the 4th Industrial Revolution (4IR), the use of advanced technology and media platforms including the internet for

academic purposes should be taken into consideration if the academia is to continue playing a significant part in the national (and global) economy.

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APPENDIX A: LETTER OF INVITATION TO PARTICIPATE IN THE STUDY

University of Limpopo
School of Languages and Communication Studies
Private Bag X1106, Sovenga, 0727, South Africa
Tel: (015) 268 3633, Fax: (015) 268 2868
E-mail Address: cedrick.baloyi@ul.ac.za

To: Research participant

From: Mr NC Baloyi
PhD student
University of Limpopo

Date: 12 OCTOBER 2018

INVITATION TO PARTICIPATE IN THE STUDY

My name is Nhlayisi Cedrick Baloyi, a PhD student at the University of Limpopo at the Department of Communication, Media and Information studies. I am conducting research study which aims to examine the students' use of the internet for academic purposes at institutions of higher learning.

I am inviting you to participate in this research. Your valuable input in improving our understanding of the internet use for academic purpose among students is highly needed. On the basis of the results, recommendations will be made towards improving the use of the internet as an academic tool by students. Your participation is thus very significant.

I obligate myself to keeping the data you provide confidential. You have the right to withdraw at any point of the study, for any reason, and without any prejudice.

Please read and complete the provided consent form before taking part in this study.

Your contribution to the study is highly appreciated.

Yours faithfully

Mr. N.C. Baloyi (Researcher) _____

APPENDIX B: INFORMED CONSENT FORM FOR RESEARCH PARTICIPANTS

Name of Researcher: BALOYI NHLAYISI CEDRICK
Student number:
Qualification: DOCTOR OF PHILOSOPHY IN MEDIA STUDIES
Title of Study: <i>THE USE OF THE INTERNET FOR STUDENTS' PERFORMANCE AT INSTITUTIONS OF HIGHER LEARNING</i>

I, the undersigned, confirm that (please tick box as appropriate):

1.	I have read and understood the information about the research.	<input type="checkbox"/>
2.	I have been given the opportunity to ask questions about the project and my participation.	<input type="checkbox"/>
3.	I voluntarily agree to participate in the research.	<input type="checkbox"/>
4.	I understand that I can withdraw at any time without giving reasons and that I will not be penalised for withdrawing nor will I be questioned on why I have withdrawn.	<input type="checkbox"/>
5.	The procedures regarding confidentiality have been clearly explained (e.g., use of names, fictitious name, codes, etc.) to me.	<input type="checkbox"/>
6.	The use of audio recorder during the sessions of interviews have been explained to me.	<input type="checkbox"/>
7.	The use of the data in research publications, sharing and archiving has been explained to me.	<input type="checkbox"/>
8.	I voluntarily agree to take part in this research study, and thus, I sign and date this informed consent form.	<input type="checkbox"/>

Participant Number:

_____ Date

Researcher:

_____ Signature

_____ Date

APPENDIX C: INTERVIEW GUIDE FOR FOCUS GROUPS

Name of Researcher: <i>BALOYI NHLAYISI CEDRICK</i>
Title of Study: <i>THE USE OF THE INTERNET FOR STUDENTS' PERFORMANCE AT INSTITUTIONS OF HIGHER LEARNING</i>
Synopsis of the study: <i>The aim of this study is to examine the use of the Internet for academic purposes by students at institutions of higher learning. The study seeks to understand how students uses various internet applications for academic purposes. The study wishes to identify challenges and opportunities provided by the internet to enhance students' academic performance.</i>

Confidentiality and Anonymity

This interview guide is a data collection tool for a PhD research. The information provided will be used for this research project. The rights of the participants are always respected. All the research ethical principles such as anonymity and privacy, amongst others, are taken into consideration in this study. The research participants have the right to be treated with dignity and honour. Their right to remain anonymous and privacy are well-maintained by the researcher during and after data collection procedure. Participants are not going to be forced to complete this questionnaire. Confidentiality, as a key ethical principle, will be respected in this research. You are kindly requested to be honest towards completing this survey.

SECTION A: DEMOGRAPHIC DETAILS

1. Age

20 years and below	1
21 – 25 years	2
26 – 30 years	3
31 – 35 years	4
Other, please specify	5

2. Gender

Male	1
Female	2

3. Level of Study

3.1 Undergraduate

First level	1
Second level	2
Third level	3
Fourth level	4

3.2 Postgraduate

Honours level	1
Masters level	2
Doctoral level	3

SECTION B: INTERNET USE FOR ACADEMIC PURPOSES

4. How many hours do you spend per day on the Internet for academic purposes? Why?
5. Elaborate on how is the internet helpful when conducting research for your assignments and or research projects.
6. Explain how the Internet meets your expectations for your academic purpose.
7. How often do you use search engines (e.g., Google, AltaVista, Yahoo, Bing, MSN and etc.) when searching for information on the internet?
8. When using search engines, have you ever used the advanced search options (e.g. Google Scholar) in accessing for information? Why?
9. If you have never use the advanced search option, what could be the reason?
10. How often do you use electronic databases available in the library when using the internet as your research tool? Why?
11. How are the electronic databases playing a role in accessing information for your academic purposes?
12. Would you consider the electronic databases and the Internet search engines effective? How?

13. List electronic databases you mostly use to search for information.
14. Do you sometimes struggle to get desired results when searching for information on the Internet? Why?
15. What do you do when failing to get the desired results while searching for information on the internet?
16. Do you sometimes retrieve lot of information when researching through the internet?
17. Which criteria do you apply to select the best information from the rest?
18. Explain how acquainted are students in using Internet to get academic information.
19. Do you watch academic related materials from *YouTube* and other social networking sites?
20. How effective are these materials in enhancing your academic performance?
21. Is the information from the Internet in any way assisting you to perform better in your academic activities? Explain.
22. What challenges do you face as university students when searching for information on the internet?
23. What do you think could be done to help students to be at ease in using the internet as an academic tool?
24. What are your recommendations for effective use of the internet to improve students' performance at the institutions of higher learning?

=====

THE END

APPENDIX D: QUESTIONNAIRE

Name of Researcher: <i>BALOYI NHLAYISI CEDRICK</i>
Title of Study: <i>THE USE OF THE INTERNET FOR STUDENTS' PERFORMANCE AT INSTITUTIONS OF HIGHER LEARNING</i>
Synopsis of the study: <i>The aim of this study is to examine the use of the Internet for academic purposes by students at institutions of higher learning. The study seeks to understand how students uses various internet applications for academic purposes. The study wishes to identify challenges and opportunities faced by students when using the internet to enhance their academic performance.</i>

Confidentiality and Anonymity

This questionnaire is a data collection tool for a PhD research. The information provided will be used for this research project. The rights of the participants are always respected. All the research ethical principles such as anonymity and privacy, amongst others, are taken into consideration in this study. The research participants have the right to be treated with dignity and honour. Their right to remain anonymous and privacy are well-maintained by the researcher during and after data collection procedure. Participants are not going to be forced to complete this questionnaire. Confidentiality, as a key ethical principle, will be respected in this research. You are kindly requested to be honest towards completing this survey.

SECTION A: DEMOGRAPHIC DETAILS

Please indicate all your selections with a cross in the suitable square under the description which best describes your answer.

1. Please select the age group which applies to you.

20 years and under	1
21 – 25 years	2
26 – 30 years	3
31 – 35 years	4
Other, please specify.....	5

2. Please select the gender which applies to you.

Male	1
Female	2

3. Please select the university you belong to.

University of Limpopo	1
University of Venda	2
Tshwane University of Technology Polokwane campus	3

4. State the faculty/school in which you study

4.1 University of Limpopo faculties

Humanities	1
Management and Law	2
Science and Agriculture	3
Health Sciences	4

4.2 University of Venda schools

Human and social sciences	1
Economic and management sciences	2
Agricultural Sciences	3
Health Sciences	4
Law	5
Environmental Sciences	6
Mathematics and Natural Sciences	7
Education	8

4.3 Tshwane University of Technology faculties

Economic and Finance	1
Humanities	2
Information and Communication Technology	3
Management Sciences	4

5. What is the level you're studying at?

5.1 Undergraduate – Please select the choice that applies to you in the list provided hereunder

First level	1
Second level	2
Third level	3
Fourth level	4

5.2 Postgraduate – Please select the choice that applies to you in the list provided hereunder

Postgraduate certificate/diploma	1
Honours level	2
Masters level	3
Doctoral level	4

SECTION B: ACCESS AND USAGE PATTERNS OF THE INTERNET

6. Do you have access to a computer?

Yes, on the computer laboratories on campus	1
Yes, I own a tablet/laptop/desktop	2
Yes at home	3
No	4

7. Do you have access to the Internet?

Yes, on the computer laboratories on campus	1
Yes, via Wi-Fi at the students' residences	2
Yes, via Wi-Fi on the premises of the university	3
No	4

8. How do you rate your computer skills?

Poor	1
Moderate	2
Good	3

Excellent	4
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9. How do you rate your internet skills?

Poor	1
Moderate	2
Good	3
Excellent	4

10. How many hours do you spend on the Internet for academic purposes per day?

Less than 1 hour	1
1 – 2 hours	2
2 – 3 hours	3
3 – 4 hours	4
More than 5 hours	5
Other, please specify.....	6

11. How did you learn to use the Internet for academic purposes?

Trial and error / self-study	1
From fellow students	2
Workshop offered by the university	3
Other, please specify.....	4

12. How often do you use search engines to get information from the Internet?

Not at all	Less often	Often	More often
1	2	3	4

13. From the list provided below, rate how you often use the following search engines.

Search engines	Less often	Often	More often	Not at all	Other
Google	1	2	3	4	5

Yahoo	1	2	3	4	5
Microsoft Service Network (MSN)	1	2	3	4	5
Bing	1	2	3	4	5
Altavista	1	2	3	4	5
Other, please specify.....	1	2	3	4	5

14. When using search engines, which options do you use?

Simple search	1
Advanced search	2
Both	3

15. Do you use online databases (e.g. Ebscohost, Sabinet etc.) in your subject area via the Internet?

Yes	1
No	2

NB: If your answer to question 15 is no, do not answer question 16 and 17.

16. If your answer to question 15 is yes, how often do you use the following online databases?

	Less often	often	More often	Not at all	Other
Ebscohost	1	2	3	4	5
Sabinet	1	2	3	4	5
Springerlink	1	2	3	4	5
Eric	1	2	3	4	5
Other, please specify.....	1	2	3	4	5

17. Are you satisfied by the results you get when searching for information using online databases

Yes	1
No	2

18. What challenges do you encounter when searching for information using the Internet?

Little information	1
Not relevant information	2
Information overload, making it hard to select	3
Other, please specify.....	4

SECTION C: IMPORTANCE OF THE INTERNET FOR EDUCATIONAL PURPOSE

19. How often do you find the information you want when using the Internet?

Not at all	Less often	Often	More often
1	2	3	4

20. How important is the Internet information to your studies?

Very important	1
Important	2
Not important	3

21. What do you regard to be aspects hindering the use of the Internet for academic purposes at the university?

Shortage of computer labs	1
Poor internet connections	2
Lack of training on how to maximise the use of internet	3
Other, please specify.....	4

22. What are your recommendations for effective use of the Internet to improve students' performance at the university?

Improve access to computers and the internet	1
Service training in the use of both computers and the internet	2
Regulatory mechanism to ensure maximum use of internet for educational purpose	3
Marketing of electronic resources and online databases by the library	4
Other, please specify.....	5

THE END

THANK YOU FOR COMPLETING THE QUESTIONNAIRE

Appendix E: TREC Ethical Clearance Certificate



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TURFLOOP RESEARCH ETHICS COMMITTEE

ETHICS CLEARANCE CERTIFICATE

MEETING: 6 March 2019

PROJECT NUMBER: TREC/57/2019: PG

PROJECT:

Title: The Use of the Internet for Students' Performance at Institutions of Higher Learning.

Researcher: NC Baloyi

Supervisor: Prof NC Lesame

Co-Supervisor/s: N/A

School: Language and Communication Studies

Degree: PhD Media Studies



PROF P MASOKO

CHAIRPERSON: TURFLOOP RESEARCH ETHICS COMMITTEE

The Turfloop Research Ethics Committee (TREC) is registered with the National Health Research Ethics Council, Registration Number: **REC-0310111-031**

Note:

- i) This Ethics Clearance Certificate will be valid for one (1) year, as from the abovementioned date. Application for annual renewal (or annual review) need to be received by TREC one month before lapse of this period.
- ii) Should any departure be contemplated from the research procedure as approved, the researcher(s) must re-submit the protocol to the committee, together with the Application for Amendment form.
- iii) PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES.

Appendix F: Letter from the Editor



28 May 2021

Pretoria, South Africa

To whom it may concern,

I hereby confirm that I undertook the language editing for the PhD thesis,

***THE USE OF THE INTERNET FOR STUDENTS' PERFORMANCE AT INSTITUTIONS OF HIGHER
LEARNING***

by

BALOYI NHLAYISI CEDRICK

A handwritten signature in black ink, appearing to read 'P. Swart'.

Petrus Johannes Cillie Swart BA (Harvard) MBA
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