THE USE OF ELECTRONIC BOOKS IN ACADEMIC LIBRARIES: A CASE STUDY OF THE UNIVERSITY OF THE WITWATERSRAND

Mini dissertation

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MARGARET A. ATSANGO

14427584

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Atsango, M.A *14427584*

DECLARATION

I declare that this mini dissertation is my original work and that I have referenced all sources used. This mini dissertation has not been submitted to any institution of higher learning.

Signature…….. ……

Margaret A. Atsango 30 November 2015

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ABBREVIATIONS

ASCII	American Standard Code for Information Interchange
C-Books	Conventional Books
CCYN	Carnegie Corporation of New York
DoE	Department of Education
DRM	Digital Rights Management
DSpace	Wits Institutional Repository on Dspace
E-Pub	Electronic Publication
ICT	Information and Communications Technology
ILL	Inter-Library Loan
ISBN	International Standard Book Number
IT	Information Technology
ITU	International Telecommunication Union
JISC	Joint Information Systems Committee
MAMA	Mobile Alliance for Maternal Action
MARC	Machine Readable Cataloging Record
MDGs	Millennium Development Goals
MIT	Master of Information Technology
MoMaths	Nokia Mobile Mathematics
Mxit	Message eXchange it
OCLS	Online Computer Library Center
PC	Personal Computer
PDA	Patron Driven Acquisition
PDF	Portable Document Format
PIN	Personal Identification Number
TAM	Technology Acceptance Model

TAM2	Technology Acceptance Model 2
UN	United Nations
UNESCO	United Nations Organization for Education, Science and Culture
UP	University of Pretoria
URL	Uniform Resource Locator
VAT	Value Added Tax
Wi-Fi	Wireless Fidelity
Wits	University of the Witwatersrand
WWW	World Wide Web

ABSTRACT

Although electronic books are becoming a common place globally, they are not necessarily as widely used as other e-resources due to non-familiarity by many users. Academic libraries are important research centres, supporting the research activities of all disciplines, and seeking to establish and cultivate initiatives which address research output challenges. Traditionally, libraries are the best agencies for collecting, organizing and preserving print information resources for effective use, and for the advancement of knowledge. However, the evolution of electronic information resources and electronic books, has forced librarians in developing countries to rethink collection development policies, and to assess accessibility and convenience. The period since 2005 has seen growth in print and electronic resources, and the development of new clientele relationships, which has changed user information needs as a result of the development of an advanced modern electronic networked environment, that supports the distribution of information content and facilitates its use.

The purpose of this research was to conduct a case study research in the University of the Witwatersrand, to explore the use of e-books among undergraduate students in its Faculty of Engineering, to assess levels of e-book use; attitude and perception, check user viewpoints on favourable and unfavourable characteristics of e-books; whether there are any preferences for print versus e-books; the impact of e-books on studies; the purpose they choose to use or not use e-books and to assess any challenges. This study utilised questionnaire and interviews to collect data.

The findings indicate that Wits engineering students have preference for print; however, e-books are essential as complementary resources for research. The slow uptake can be attributed to various challenges such as lack of awareness among students; inadequate technology infrastructure; intermittent power outages; different platforms requiring passwords; eye fatigue while reading on the screen; lack of subject specific e-books, and publisher restrictions. The study concludes that it is essential to involve the faculty and lecturers, to increase awareness and usage amongst specific target population.

Key words: Electronic books, E-books, Academic libraries, undergraduate students, information seeking.

Chapter 1 : INTRODUCTION

1.1 Introduction

The history of e-books can be traced back to 1945, when Vannevar Bush proposed the Memex, a semblance of a personal computer, which was thought to one day be used as a tool for organising personal information (Walters, 2014:86). In 1971, Michael Hart developed *Project Gutenberg,* an invention which aimed to distribute free electronic books to anyone with access to the World Wide Web (WWW) (Project Gutenberg, 2014). The first electronic book added to Project Gutenberg collection was the American "*Declaration of Independence*", an e-text distributed in the American Standard Code for Information Interchange (ASCII), for ease of access in any software and format (Project Gutenberg, 2014). This was followed by the Oxford Text Archive (Walters, 2014:86).

The NetLibrary became the first e-book vendor, later acquired by online computer library center (OCLC) in 2002, and EBSCO information services in 2010 (Walters, 2014: 86). Thereafter, there was a lull in the market, but the availability of information in electronic and digital formats, and the Amazon e-reader re-ignited interest in e-books (Chiarizio, 2013:624), leading to a global shift that has changed the way academic libraries collect and disseminate information. A number of libraries in developed countries were early adopters of e-books in support of teaching and learning. This was done by integrating e-books in the collection as a result of new technological innovations (Mulholland and Bates, 2014:492).

Many users in developed countries have access to mobile devices such as laptops, tablets, iPads and smartphones; such devices have changed the way users search and access electronic resources (Rojeski, 2012:228; Chiarizio, 2013:625). E-books have some attractive features such as the ability for remote users to access information anytime and anywhere, saving library space and multiple access by simultaneous users (Rojeski, 2012:228; Muir and Hawes, 2013:260). In the United Kingdom, the Joint Information Systems Committee (JISC) collection of e-books was developed in 2009 to address convenience and access needs for vocational training students and academic staff (Mulholland and Bates, 2014:492). The move resulted in an increase in the usage of e-books, although the uptake in the United Kingdom was slow compared to the United States of America due to reluctance by publishers

to produce e-books (Vasileiou, Rowley and Hartley, 2012:218; Muir and Hawes, 2013:260). In Africa, the uptake of e-books by academic libraries in Nigeria, as an example, has been slow, hampered by lack of access to technological infrastructure and acceptance by users (Olasina and Mutula, 2014:20). In South Africa, few academic libraries have adopted e-books. There is little or no research on the attitudes and perceptions of e-books by users in Africa.

Wits University as an academic institution aspires to be embedded among the top 100 research intensive universities in the world by 2022, through ground-breaking research and innovation (University of the Witwatersrand, 2013:2). Wits libraries in response to the strategic plan have the responsibility to acquire and facilitate access to quality scholarly print and electronic resources in support of academic research (University of the Witwatersrand, 2012:2).

E-books have become part of electronic resources as complementary sources to information in print format, to facilitate timely and seamless access to scholarly research materials. Provision of adequate information and communications technologies (ICTs) infrastructure should stimulate research and innovation, because the library commits substantial amount towards acquisition of electronic resources.

1.2 Aim of the study

ICTs and emerging technologies are changing the role of the 21st century academic libraries. The aim of this study was to investigate the use of electronic books by undergraduate students in the Faculty of Engineering at Wits University, to solicit views from students as users, and identify experiences in terms of strengths, weaknesses, opportunities and challenges in using e-books on and off campus. The focus was on the decision to use or not to use e-books, if users can access electronic resources (remote and onsite) through adequate provision of infrastructure to facilitate seamless access to resource discovery, favourable and unfavourable features, awareness on the availability of e-books and challenges experienced in accessing e-books. There is a dearth of literature on this topic in the South African academic institutional context, arising from the fact that few academic libraries have chosen to adopt e-books.

1.3 Rationale or purpose of the study

No single academic institution can claim to be successful without libraries. Research and innovation in the digital age means that libraries are expected to provide relevant information resources to meet changing user needs. Wits library has embraced emerging technologies in an effort to provide seamless access to information. The purpose of this research was to conduct a case study, to explore use of e-books among undergraduate engineering students. The study sought to assess levels of e-book usage; attitude and perception; check user viewpoints on favourable and unfavourable characteristics of e-books. The study also sought to identify any preferences for print versus e-books; the impact of e-books on undergraduate studies; the purpose for choosing to use or not use e-books; and to assess challenges in accessing e-books.

1.4 The objective of the study

To keep abreast with technological advancements globally, libraries are adapting new trends to provide quality service, and provision of seamless access to information resources in an effort to meet user demands.

The objective of this study was to evaluate the experience of undergraduate engineering students in the use of e-books, and whether library users prefer print over e-book versions. Some schools within Wits Engineering Faculty are investigating the option to have e-books as prescribed text for students.

1.5 Value of research to Wits library

This study could be valuable to librarians and library management in Wits library, the library faculty committee to understand the impact of e-books on students, other university libraries in South Africa, e-book publishers, manufacturers of e-reading devices, and for further future research purposes. It is a voice through which engineering students express their views on e-books, and what the library can do in terms of resource allocation to enhance e-book use and experience.

1.6 Research question

To understand how e-books are used by undergraduate engineering students, the following main research question and sub-questions were formulated to assist with the collection of relevant data:

Why do students choose to use or not to use e-books?

1.6.1 Sub-questions

How do students perceive the use of e-books in the University of the Witwatersrand?

What are the barriers in accessing e-books?

How does the library promote the use of e-books?

1.7 Literature review

The literature review phase explored concepts and studies undertaken in relation to e-books, by highlighting user attitudes and perceptions, some of the obstacles in the adoption of e-books, as well as licensing models on offer and how they inhibit access. The literature search covered relevant documents written on the field of inquiry, these included books, annual reports and journal articles.

Internet access has made it possible for users to access numerous titles anytime, anywhere. Technology affords users access to a number of e-book features. E-books have great potential in enhancing learning and the ability for remote online access at the time of need (McLure and Hoseth, 2012:137; Smyth and Carlin, 2012:177), and users cannot accumulate fines or deface the books as opposed to print versions (Lim and Hew, 2014:34; Smyth and Carlin, 2012:177). To thrive in today's competitive market, academic libraries have had to adapt to changing user needs. E-books are relatively new to libraries in Africa as opposed to developed countries. Their growth has been slow compared to other electronic resources such as journals (Vasileiou, Hartley and Rowley, 2009:520; Nasser Al-Suqri, 2014:280), a phenomenon referred to as "*self-sustaining take off*" by Smyth and Carlin (2012:176-192).

Studies undertaken in developed countries reveal that although e-books have been in existence for a while, users still prefer print book versions (Nasser Al-Suqri,

2014:279; Smyth and Carlin, 2012:177). In order to meet changing user needs for remote access to electronic information resources, libraries are rethinking library collection development policies, library spaces and resource allocation formats. There are challenges in the acquisition models of electronic books as opposed to journals. Some of the pricing models such as pay-per-view or patron-driven acquisition, make it difficult for users to access books depending on user licenses (Kahn and Underwood, 2013:12).

1.8 Method of research

An exploratory approach for case study method was used (Creswell and Clark, 2011:187). Research tools consisted of questionnaires and interviews. In-depth interviews were used to collect specific data from individual interviewees (Pickard, 2013:196). Data was analysed for in-depth understanding of e-book adoption using multiple sources as evidence. Participants were undergraduate engineering students, and interviewees were professional librarians who hold senior portfolios within Wits libraries. The prime reason for conducting a small study was to try and understand the views and impressions of users at a micro-level, which were still broadly overlooked.

Case studies provide for sensitivity and flexibility towards participants, and examines contemporary phenomenon within real life setting (Yin, 2003:13). The choice of a qualitative study was a result of the need for an in-depth understanding of e-book usage and perceived challenges experienced by users, with the hope that the results will lead to an all-encompassing research to influence policies.

1.9 Sampling techniques

Purposive sampling was used to select interviewees. Purposive sampling provides for in-depth information gathering (Creswell and Clark, 2011:174; Pickard, 2013:64), and interviewees who met the criteria were incorporated into the study. For respondents, only students who were available at the time of data collection participated in the study.

1.10 Data collection

According to Creswell and Clark (2011:175), it is important to get permission prior to the commencement of any research. This research was conducted after obtaining

permission from the University of Pretoria, Department of Information Science Research Committee; the University of the Witwatersrand Academic Registrar, and the University of the Witwatersrand Human Research Ethics Committee (non-medical). The purpose of the study was explained to the participants and interviewees before commencement.

Using semi-structured interviews, it is possible to get a better understanding of an interviewee's point of view (Pickard, 2013:199–200), making it easier to categorize data. Interview questions were designed for in-depth information gathering.

1.11 Data analysis and interpretation

Data was analysed qualitatively using thematic content analysis description. Pickard (2013:197) asserts that research purpose should be clarified to establish theme structures. Themes were coded based on categories meant to capture predominant ideas (Creswell and Clark, 2011:208), from the questionnaires and interviews through comparison of findings with prior research results from the literature review.

Table 1-1: Summary of research methodology

Title	Description
Research approach	Qualitative research
Research strategy	Case study
Participants/interviewees	Professional librarians as policy makers as interviewees; Engineering students as participants/respondents
Sampling method	Purposive sampling
Data collection instruments	Semi-structured interviews (Library staff), self-administered semi-structured questionnaire (students); and document analysis

Data analysis	Categorisation of data into themes for analysis; content analysis and coding to interpret data; and use of Microsoft Excel spread sheet

1.12 Ethical considerations

This study commenced after approval from the University of Pretoria, Department of Information Science Research Committee; the University of the Witwatersrand Academic Registrar, and the University of the Witwatersrand Human Research Ethics Committee (non-medical). Students and staff as participants were informed of the purpose of the study to obtain their consent. Participants were informed of their right to withdraw from the study at any time, and all conditions for participating in the research were in writing see Appendix A: Questionnaire and Appendix B: Interview schedule. Pseudonyms were used to protect the identity of participants (Pickard, 2013:93), and results will be used for academic research purposes.

1.13 Limitations of the study

This study has a number of limitations. One of the limitations was that the study targeted a specific faculty and does not speak for the whole university. A more comprehensive study should be carried out in future to fully assess general feelings of e-book usage university-wide.

The study also targeted sighted students only who had visited the library when data was collected from 12th – 20th August 2015. Future studies should also include visually challenged students to find out their views.

Part-time students were excluded from the study, as remote access users, it is important to incorporate their views.

Results from this study should not be generalised, but views should be considered in future studies to determine the exposure to e-resources and the effectiveness of marketing strategies to further e-book research. The study focused more on the attitudes and usefulness of e-books. The use of pre-determined answers might have influenced feedback from respondents.

1.14 Structure of the thesis

The overall structure of this research report has been divided into five chapters, consisting of preliminary pages with a brief overview below:

1.14.1 Chapter 1: Introduction

Chapter one lays the foundation of this study as the introductory chapter, giving an introduction to the problem statement and sub-questions, aims, objectives, scope and significance of the study. The chapter also outlines the history of e-books, importance of the research and concludes with ethical considerations for the study.

1.14.2 Chapter 2: Literature review

This chapter reviews literature published on e-book adoption by various academic libraries and users globally, highlighting various aspects of e-books. The assessment focused on e-book advantages and disadvantages, features, e-books in academic libraries globally and the adoption by some academic libraries in Africa. Also included in the discussion is the e-book pricing models, challenges emanating from digital rights management (DRM), availability of e-books on mobile applications, e-books and collection development policies and, challenges of owning e-books. The chapter concludes with institutional background of Wits University on the adoption of e-books.

1.14.3 Chapter 3: Research methodology

Chapter three discusses important components in the design of methods and procedures. This chapter provides a description of tools and methods used in the study, with detailed information on the research method, research design, research strategy, questionnaires and interviews as tools which guided the research.

1.14.4 Chapter 4: Research results

Chapter four provides a detailed analysis of collected data, and a discussion on the research findings. Limitations of the study are also discussed.

1.14.5 Chapter 5: Conclusion and recommendation

Chapter five concludes the study and reviews analysed data from previous chapters, giving recommendations for further research. This chapter also contains the list of references and appendices.

1.15 Conclusion

This chapter presented an overview of what the study on e-books aims to achieve. The study provided short history of e-books, the aim and objective of the study, rationale, outline of research methodology and concluded with ethical considerations for the research.

Chapter 2 provides discussion on literature consulted for the purpose of this study, comparing what has been published by authors from different countries.

Chapter 2 : LITERATURE REVIEW

2.1 Introduction

This chapter reviews articles in relation to e-books in academic libraries, to identify what has been written on the topic under study, and gaps in the research base of the literature.

Global competition has stimulated academic renewal and revitalisation of the role of research in higher education on the African continent. Some of the drivers for this renewal are internationalisation of educational goals and standards, expansion of higher education with an African footprint in global creation of research leaders, and the need to provide superior research as centres of excellence in knowledge production (MacGregor, 2015). Most academic institutions are repositioning themselves as research-led universities, highlighting the need to harness technology and research networks in partnership with global collaborators, manifest in quality output and improved research measures.

Technological innovations have transformed the learning discourse in the higher education landscape, and led to an integration of online learning, hybrid learning, web-learning and blended learning (Johnson et al., 2014:10–11). The online presence means that users can access variety of information using various devices. To meet access demands, libraries have been forced to offer research resources in various formats, to accommodate multiple user access needs. The World Wide Web (WWW) capabilities have empowered users to create and disseminate information without the constraints of boundaries and time. The 2014 Horizon report by Johnson et al., (2014:34–35) has identified a number of emerging technologies for adoption in the higher education landscape as internet, enabling, learning, digital, consumer, social media and visualization technologies. These technologies and the gradual transition from print to electronic resources foster strong academic research programmes, and the changing role of academic libraries. Virtual learning platforms present an opportunity for librarians to provide links and access to various electronic resources such as e-books for research, reference and coursework. The competitive nature of these technologies has led to improved service offerings to patrons in some academic institutions.

2.2 Technology acceptance model (TAM2)

Originally coined by Fred Davis (1989), technology acceptance model (TAM) is the first theory in information technology research. This theory is a measure used to envisage acceptance by people of the need to use a new application, and has been used extensively on studies dealing with information technologies. TAM foundation lies with user behaviour, and actions or belief with emphasis on two attributes of *usefulness* and *ease of use,* measures used for any type of technology as core factors (Venkatesh and Bala, 2008:275; Letchumanan and Tarmizi, 2011:514; Aharony, 2014:107; Jin, 2014:472; Nasser Al-Suqri, 2014:277; Poon, 2014:52). It was developed as prediction to reasons behind the attitude by individuals in adoption of technology, and advantageously using technologies to improve job performance (Park, Sung and Cho, 2015:121;122), or rejection of such technologies. There are varying factors that influence acceptance of the need to use technology such as beliefs, attitudes and intentions (Aharony, 2014: 07; Poon, 2014:52).

A number of studies have been carried out on the usefulness of TAM to evaluate systems, some have focused on e-learning (Park, 2009), use of e-mail in the workplace (Mutlu and Efeoglu, 2013), factors affecting student attitudes towards m-learning (Park, Nam and Cha, 2012), the use of cloud services through mobile devices (Park and Kim, 2014), e-book adoption by college students in Korea (Jin, 2014), e-book use by undergraduate engineering students in Malaysia (Letchumanan and Tarmizi, 2011), and factors which motivate library professionals and students to use e-books (Aharony, 2014).

However, there were some criticisms which led to an enhancement by Venkatesh and Davis (2000), resulting in the formulation of technology acceptance model 2 (TAM2), to address shortcomings in TAM. In TAM2 by Venkatesh and Davis (2000), perceived usefulness and ease of access were retained. Additional features included cognitive process (output quality, result demonstrability, job relevance, and perceived usefulness), and social process (subjective norms, image and voluntariness). For this study, TAM2 was adopted to determine user acceptance, where perceived usefulness, ease of use and subjective norms were used in designing the questionnaire, to determine the degree with which students are comfortable and motivated to use e-books.

2.3 Definition of e-books

E-books are digital content in print format (Letchumanan and Tarmizi, 2011:513), accessed using components such as e-readers. An e-book is a digital text or content incorporating book features accessed through an electronic environment. Carreiro (2010:220) refers to an e-book as a supplement to a paper book, a result of innovation; although this view has since been superseded as e-books are now complementing print.

Glossary of some terminologies used in this study

Respondents/participants - these terms have been used interchangeably referring to engineering students who participated in the survey.

Interviewees – this term refers to the University of the Witwatersrand library staff members who participated in the survey.

2.4 E-books in academic libraries

E-books are predominantly used by academic institutions in the United States of America (USA), Australia, United Kingdom (UK) and India. The usage is attributed to the adoption of the format by publishers as a viable option for revenue generation (Camarero, Antón and Rodríguez, 2014:543). Some of the drivers in the growth in usage can be attributed to reduced cost of e-readers and accessibility through mobile/handheld applications (Shen, 2011:181). E-books have the potential to re-ignite academic renewal through embedding in teaching and learning functions, where libraries have aligned technology infrastructure to match the teaching, learning and research needs for users. Internet and multiple reading devices are a catalyst for the growth of e-books and have made it easy for publishers to avail mass production of books in developed countries. The rapid growth of information and communications technologies (ICT) is used to capture, process, and disseminate information.

Massive open online courses as learning resources address the needs for distant learners, providing remote access for online learning platforms as effective learning tools that reduce physically visits by patrons to libraries. A key factor as determinant in the adoption of e-books is the stakeholder market which includes vendors, library patrons and the nature/need for academic libraries to be competitive (Vasileiou,

Rowley and Hartley, 2012:221). Libraries have had to form consortia and embrace collaboration as a strategy to negotiate affordable pricing options. For some academic libraries, faculties have been influential in determining resources to be used by students through recommendation by lecturers as major stakeholders (Simon, 2011:265). Research undertaken by various authors reveal that although e-books are gaining momentum, electronic resources are still more popular in academic institutions (Jindal and Pant, 2013:317; Walters, 2014:93). Walton (2014:267) investigated reasons behind the use of e-books by students, and found that leisure reading, convenience and research were determining factors for the preference of e-books.

The decision to acquire e-books hinges on a number of reasons ranging from seamless access, availability, navigation, compatibility and use of portable devices (Shepherd and Arteaga, 2014:17). Some academic libraries have acquired e-books driven by global competition and the need to provide access to all, including remote users. In their study on perception and use of e-books by academic staff, Mulholland and Bates (2014:492) identified lack of awareness, unavailability of subject-specific e-books and integration with courses as some of the major factors hindering the uptake in usage of e-books. To thrive in today's competitive market, academic libraries have had to adapt to changing user needs. The uptake has been slow partly due to reluctance by some publishers in developing some subject specific e-books. Most publishers are unsure of uncertainties on how their revenue will be affected in the long run (Vasileiou, Rowley and Hartley, 2012:218).

The release of Amazon Kindle in 2007 made e-books a viable option for creating financial gains by publishers (Hao and Fan, 2014:1017). This led to an exponential spike in the sale of e-books in America amounting to $2.07 billion in 2011, accounting for 15.5% in revenue collection by publishers in comparison with hardcover and paperback books; by 2013, the sales had increased to 22.55% (Jin, 2014:471). In Taiwan, the growth was slow, with only 3.5% of the total sales (Lin, Chiou and Huang, 2013:282). Korean e-book sales in 2015 are expected to increase by 9.8 per cent, with total revenue of $4.1 billion. Global projection of e-book sales in 2015 was expected to contribute $12.3 billion of the total book publishing revenue (Jae-Young et al., 2014:523). Such increases can be attributed to better access,

awareness and user friendly interfaces, with the introduction of features favourable by users.

Studies examining undergraduate use of e-books have determined that virtual students or *millennials* have access to a broad range of digital content enabled by a multitude of digital devices, and are prone to multitasking using various devices (Johri et al., 2014:288; Poon, 2014:52). Jae-Young et al., (2014:523) undertook a study to examine the increase in e-book subscriptions and usage among universities in Korea. The study revealed that there was some awareness among users of the existence of e-books through the library catalogue, although the usage levels were varied. It was expected that instructions for teaching and learning would increase e-book usage (Jae-Young et al., 2014:538–539). Another study on e-book usage patterns revealed that most students used e-books for convenience, to skim, scan and browse content, as opposed to in-depth reading (Chou, 2014:4). However, the availability of e-books and other online resources has not deterred, but reinvented the library as space (Letchumanan and Tarmizi, 2011; Collins and Stone, 2014).

Technological devices, information platforms and information ecology have profoundly changed information seeking behavior by users, putting the spotlight on library information literacy training. Apart from provision of resources, there is an increase in demand for training due to newer technologies in libraries, to ensure that users seek and use information effectively (Fourie and Fourie, 2014:166; Johri et al., 2014:286). Provision of resources alone is not sufficient; information seeking in the digital world requires deep understanding of retrieval systems, and training on retrieval skills, through segmentation of the target group, a motivation that promotes collaboration and participation by users (Fourie and Fourie, 2014:168; Fourie and Julien, 2014:191; Johri et al., 2014:287). Most libraries regularly change their websites, when this happens, the focus should be to train users on an ongoing basis, to increase awareness on the value and use of information communication technologies (ICTs) for information retrieval and competitive advantage, (Fourie, 2012:361).

2.4.1 Academic libraries in Africa and e-books

E-books in African academic institutions are a viable option, but regarded as still on an experimental level by some. For Ilorin University in Nigeria for example, the e-book collection and usage is minimal as a result of digitization projects, offered through electronic packages as part of the subscription (Olasina and Mutula, 2014:19). In Kenya, usage of e-books and conventional books (c-books) can be attributed to acceptance by students, improved technological infrastructure, faster internet, free broadband access in colleges and ease of access using various devices and platforms (Neyole, 2014:1). Asunka (2013:36) investigated the level of awareness and perception of e-books among undergraduate students in Ghana. The study revealed some awareness, but the degree of acceptance and use was restricted to reference sources.

The slow uptake in Ghana and Nigeria has been attributed to a lack of awareness or clarity among stakeholders, and lack of proper technological infrastructure such as e-readers. Intermittent power, low bandwidth, financial constraints, reluctance to embrace technological innovations by librarians, and restrictions emanating from institutional policies are additional challenges (Posigha, 2012:798; Nwagwu and Okafor, 2014:87). Currency fluctuations and inflation-related costs make e-books costly since most are sourced from international publishers. The recent inclusion of value added tax (VAT) by the South African Government makes acquisition of e-books from foreign publishers largely unsustainable.

E-books are relatively new, and their introduction in academic libraries is still a viable option for Africa as opposed to developed countries. There are many challenges and issues to address in terms of collection development policies, copyright and intellectual ownership, cataloguing standards and preservation functions. The poor adoption rate has been slow compared to other electronic resources such as journals (Vasileiou, Hartley and Rowley, 2009:520; Nasser Al-Suqri, 2014:280; Poon, 2014:52), a phenomenon referred to as "*self-sustaining take off*" by Smyth and Carlin (2012:176–192). In South Africa, the slow uptake can be attributed to lack of academic textbooks in e-format (Zinn and Langdown, 2011:110).

A number of libraries across the South African higher education landscape have links to e-book collections on various platforms. A quick scan across some of the

leading Carnegie-affiliated universities in South Africa revealed some awareness, although the uptake for some has been slow. The University of Pretoria has a link to e-books available at: http://www.library.up.ac.za/ebooks/collmain.htm. The University of Johannesburg provides a link to open access e-books available at: http://www.uj.ac.za/library/informationsources/Pages/open-access.aspx. University of Cape Town library users can access e-books through the Worldcat link resolver, available at: http://uct.worldcat.org/openurlresolver/search. University of KwaZulu Natal library has e-books on various platforms available at: http://library.ukzn.ac.za/e-books-Collections.aspx, University of the Witwatersrand library e-books available at: http://www.wits.ac.za/library/researchresources/498/e_books.html, and Stellenbosch University library available at: http://library.sun.ac.za/English/search/Pages/e-books.aspx.

Contrary to their popularity, studies undertaken in some developed countries also reveal that although e-books have been around for a while with great amount of awareness, users still prefer the print version over digital (Smyth and Carlin, 2012:177; Chou, 2014:2; Nasser Al-Suqri, 2014:279). The tangible preference for print books baffles many industry players, raising many questions such as:

- Should libraries in developing countries adopt e-books even though there has been extensive research on the pros and cons?
- Can academic libraries manage to provide a balanced collection with the financial constraints faced by most institutions in Africa?
- Can libraries acquire e-books just because everybody is doing it?
- Should libraries acquire e-books based on user focused approaches?

These are some of the question requiring critical review before adopting e-books.

2.5 E-book features

There are distinct differences between print and e-books. E-books require certain components for access such as internet as the delivery mode, e-reader devices (hardware), and the content (Carreiro, 2010:220). Some of the attractive features for e-books include multimedia functions, hyper-text links, portability, linking of references, ability to search full-text using keywords and cross referencing (Nwagwu and Okafor, 2014:87; Poon, 2014:52). Internet access has made it possible for users

to access numerous titles anytime, anywhere. Other features are user friendly interfaces, interoperability, integration with other sources and ease of access (Carreiro, 2010:222).

2.5.1 Advantages of e-books

E-books are flexible and present users with the opportunity for multiple access using different devices without restrictions of space and time, save on storage space, are searchable, contain hyperlinked text for reference, and text to speech features (Jindal and Pant, 2013:315; Cottrell and Bell, 2014:144; Jin, 2014:472). Acquisition of e-books reduces production costs depending on license restrictions (Besen and Kirby, 2014:129–130), they are downloadable in various formats such as portable document format (PDF), as the most common format (Carreiro, 2010:225). Information in e-format can be easily accessed, stored, retrieved and shared (Jindal and Pant, 2013:314). E-books are not exposed to the physical wear and tear in comparison to print versions, and e-book carbon footprint is environment friendly. E-books save time for library staff and frees up physical library spaces (De Oliveira, 2012:538). E-books have great potential in enhancing teaching and providing the ability for remote online access at the time of need (McLure and Hoseth, 2012:137; Smyth and Carlin, 2012:177). Users cannot accumulate fines or deface the books as opposed to print versions (Smyth and Carlin, 2012:177; Lim and Hew, 2014:34).

2.5.2 Disadvantages of e-books

Restrictions by publishers placed on printing, downloads, loan periods and embargos in accessing new titles limit access by users (Besen and Kirby, 2014:133–134). E-books are technology and power-dependent; their success also depends on affordability, accessibility, navigation and ease of use. Internet access and electricity supply are mandatory for downloads. Users cannot access e-books through one preferred interface. Most e-books are incompatible with the various e-readers on the market (Brahme and Gabriel, 2012:181).

Lack of standard features from publishers and vendors with different platforms creates a navigation nightmare for users and libraries (Brahme and Gabriel, 2012:182). Different e-book reading devices and formats are a challenge to libraries and pose collection development difficulties (Kahn and Underwood, 2013:15). According to Falc (2013:3), reading comprehension is greatly affected and learners

cannot easily retrace related ideas. The research also found that learners are restricted to reading using particular devices; there is as yet, no universal e-reader.

Compatibility with devices, restrictions on downloads and lack of sharing between devices makes it difficult for libraries, meaning that there is need for more skilled staff to handle e-reading devices. Also different platforms require different reading devices which lead to frustrated users.

Walters (2014:89) undertook a survey to examine challenges experienced by users in the access and discovery of e-book titles. Among the challenges identified were various levels of aggregation, lack of unique international standard book number (ISBN) identifiers, and restrictions by digital rights management (DRM). Other challenges include different vendor platforms which require passwords from patrons, inadequate machine readable cataloging record (MARC) and metadata records that allow users to search records using title, author and subject terms (Vasileiou, Rowley and Hartley, 2013:519; Walters, 2014:87).

In comparison to print, e-books cause eye fatigue (Asunka, 2013:45; Chou, 2014:9), and lack standards across publishing houses. For developing countries, the challenges include adoption of emerging technologies, inadequate technological infrastructure, erratic power outages, skills shortage, budgetary constraints, high exchange rates, bandwidth costs and internet access (Asunka, 2013:38). Incompatibility in terms of software, content and hardware makes it impossible to access e-books. The non-operability is a major contributor to the slow adoption of e-books.

2.6 E-book platforms and price model

Different publishers have different e-book platforms, posing challenges to academic institutions on the management and need for navigation through multiple platforms. Various elements within the e-book pricing models are a source of dilemmas for libraries, ranging from lending restrictions, exorbitant pricing and untimely release of e-books by publishers (Besen and Kirby, 2014:128; Pinto, Costa and Cordón-García, 2014:476). Some of the pricing models such as pay-per-view or patron-driven acquisitions (PDA) make it difficult for users to access e-books depending on user licenses (Kahn and Underwood, 2013:12). For some e-books, licensing is contracted

to third-party online websites, with provision of access through a number of licenses per library (Pinto, Costa and Cordón-García, 2014:476).

With single-use licenses, patrons are put on the waiting lists when e-books are checked out. Patrons may check out e-books for longer than expected, making them unavailable to other users. Whereas limits on the total use of an e-book regardless of usage license benefits the publisher, it does not make it a viable option for academic libraries in comparison to print (Besen and Kirby, 2014:131–132, Walters, 2014:90); inevitably, libraries are left with many frustrated users.

Some platforms such as Ebscohost allow users to check-out e-books, and for the duration the book is out, other users cannot access or download any content depending on user licenses as shown in Figure 2-1:

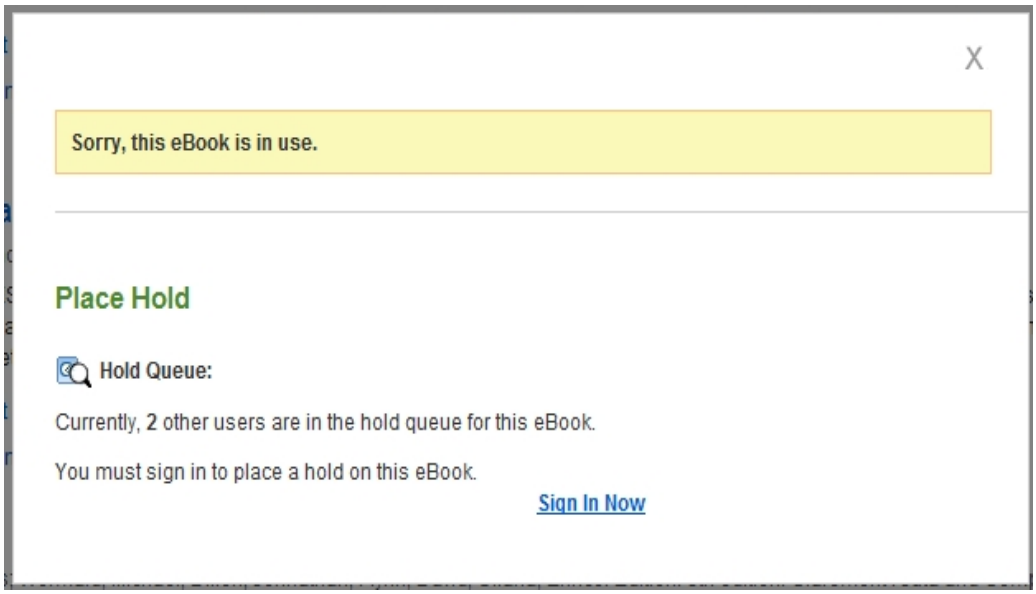


Figure 2-1 Screen shot of a pop-up message on the non-availability of an e-book

Figure 2.1 shows a one user license e-book from the Ebsco database, which allows users to check-out e-books for a certain duration, accessed from Ebscohost database, University of the Witwatersrand normal browser: available at: http://0-web.b.ebscohost.com.innopac.wits.ac.za/ehost/detail/detail?vid=4&sid=90ed3434-64bd-42bf-93c5-52525d4a0854%40sessionmgr110&hid=106&bdata=JnNpdGU9ZWhvc3QtbGl2ZQ%3d%3d#db=nlebk&AN=944635 [accessed on the 24/07/2015]

The economic slump has greatly affected library budgets, leading to careful consideration in terms of e-resources. Models such as single-use, non-linear, multi-

user or short-loan access present different challenges to users. Although some publishers such as *Springer* have options for interlibrary loans facilities, a number of obstacles such as lack of proper institutional policies, technical challenges and licensing restrictions impede the provision of interlibrary loans (Zhu and Shen, 2014:62).

2.7 Mobile revolution and availability of e-books on mobile applications

Mobile applications have the ability to empower people of all ages. As a powerful tool enabling learning and knowledge creation, mobile technology has revolutionised and transformed Africa's economy. The accelerated growth and adoption can be attributed to cheap manufacture of basic smartphones (Palumbo, 2014:180), improved telecommunication infrastructure and access. According to a recent survey by International Telecommunication Union (ITU), the global subscription of mobile phones was estimated to surpass 6.9 billion users by end of 2014, with most subscriptions in developing countries (Broadband Commission, 2014:12). There is a total of 1.9 billion smartphone subscriptions worldwide, with education sector leading in mobile services on offer (Broadband Commission, 2014: 13).

The African diaspora has had a breakthrough in the use of hand-held devices especially mobile applications. For example, the 2007 inception of M-Pesa banking initiative revolutionised the banking sector, and significantly improved e-money transfer services and economic activities for most Kenyans (Mbiti and Weil, 2011; King, 2012:3). Mobile Alliance for Maternal Action (MAMA) is another mobile application initiative used in sub-Saharan Africa to track maternal health related issues using text messages (Palumbo, 2014:180). In South Africa, in an effort to improve Maths literacy, the Nokia Momath project on MXit platform is used to promote Maths through mobile phones, where learners receive individual support from tutors, as well as Dr Maths tutoring for students studying towards engineering in universities (Broadband Commission, 2013:21; Palumbo, 2014:182). All these initiatives are in line with achieving millennium development goals (MDGs) by providing physical access to services for marginalised communities.

Convenience and portability offered by mobile devices have improved learning experiences, prompting some academic libraries to incorporate mobile application services to facilitate access for remote users to services such as online catalogues,

short messaging service (SMS) and access to databases (Palumbo, 2014:183). Digital students, also referred to as "*millennials*", have a *fellowship* with their smartphones due to the flexibility of these devices, and their need for instant access to content and information is different in comparison to the older generation (Bomhold, 2013:424). Academic libraries have had to incorporate the use of mobile applications for smartphone users, as alternative options for web services for ease of access to information resources.

To ensure availability of cheaper broadband, the South African government initiated *South African Connect*, a broadband policy aimed at laying the foundation for faster, affordable and accessible mobile broadband infrastructure, and to remove any barriers in connecting South African citizens (Broadband Commission, 2014:38). This policy has seen a number of projects initiated for flexible and personalised content delivery. Recent survey by Statistics South Africa revealed that a great majority of households had access to mobile phones and internet connectivity (Statistics South Africa, 2014:51), a view supported through research by Effective Measures (2014:4). The South African Department of Education (DoE) recently launched *paperless or smart classrooms* on 6th January 2015 as a pilot project, to improve education quality in schools, and promote the use of innovative tools using mobile devices for equal access to e-resources, and e-books by learners and teachers (Lesufi, 2015). This initiative aims to boost learners' capabilities and to promote self-learning.

In terms of electronic resources for academic libraries, database vendors and publishers such as ScienceDirect and Ebscohost provide options for e-book users with e-reading devices such as Kindles, giving users freedom to access information at their point of need (Cottrell and Bell, 2014:144). An example of e-books for hand-held devices by database vendors is found on the ScienceDirect and Ebscohost platforms, accessed from the University of the Witwatersrand database, available at: http://0-www.sciencedirect.com.innopac.wits.ac.za/science/article/pii/B9780124158023000117 [16 August 2015] as shown in Figure 2-2:

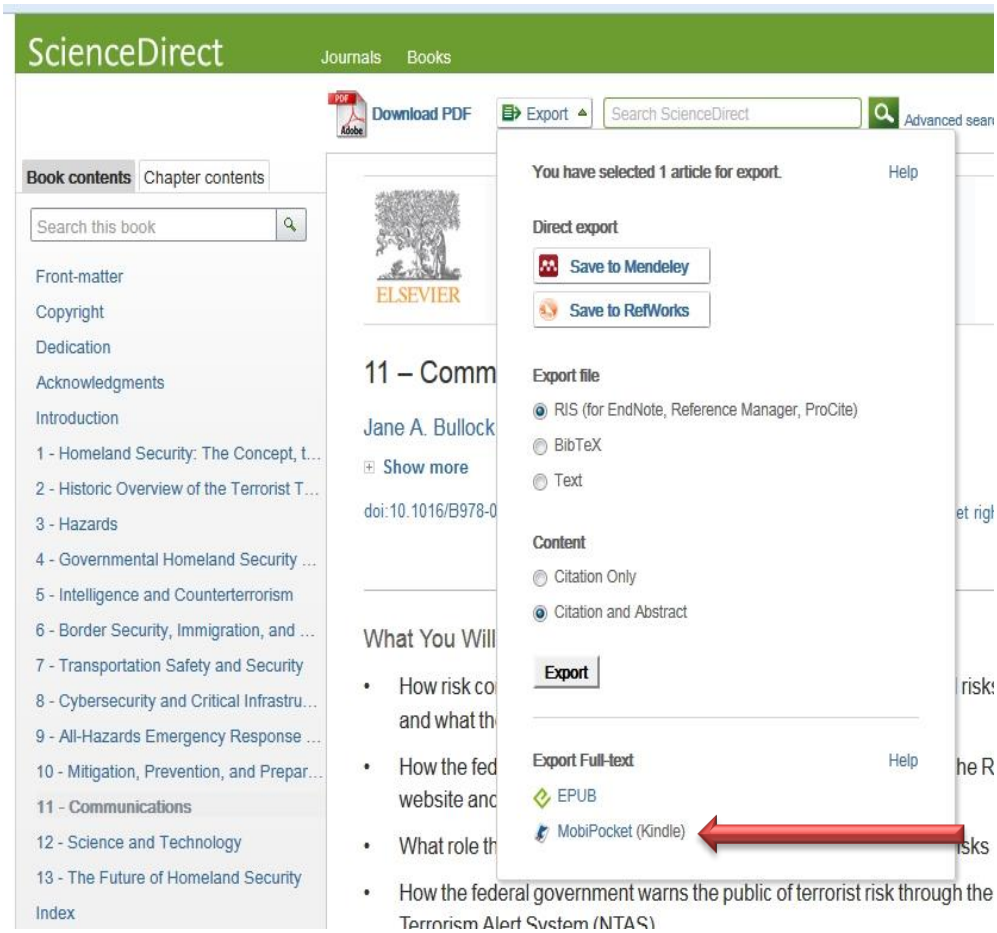


Figure 2-2: E-book option for e-readers from ScienceDirect

Figure 2-3: E-book screen shot for mobile application from Ebsco

Available at:

http://search.ebscohost.mobi/Community.aspx?authtype=ip&ugt=723731563C36354

73716359632853E5224E361D36713619366E326E339133503&IsAdminMobile=Y&encid=22D731163C4635873716359632553C67344371C377C371C376C376C379C375C33013 [accessed 16 August 2015].

For policies and procedures, Wits libraries have wireless access, and this has changed web presence standards and infrastructure in order to support the use of mobile devices, and encouraged tailoring of library products to cater for search behaviour synonymous with mobile users (Bomhold, 2014:336). Although the actual proportion of mobile usage varies, most services on offer are enhanced with functions and capabilities to include use of hand-held devices for remote access to library resources on demand. As depicted in Figure 2-4, besides the regular catalogue, Wits library also has a version for mobile users:

Mobile catalogue for Wits library users

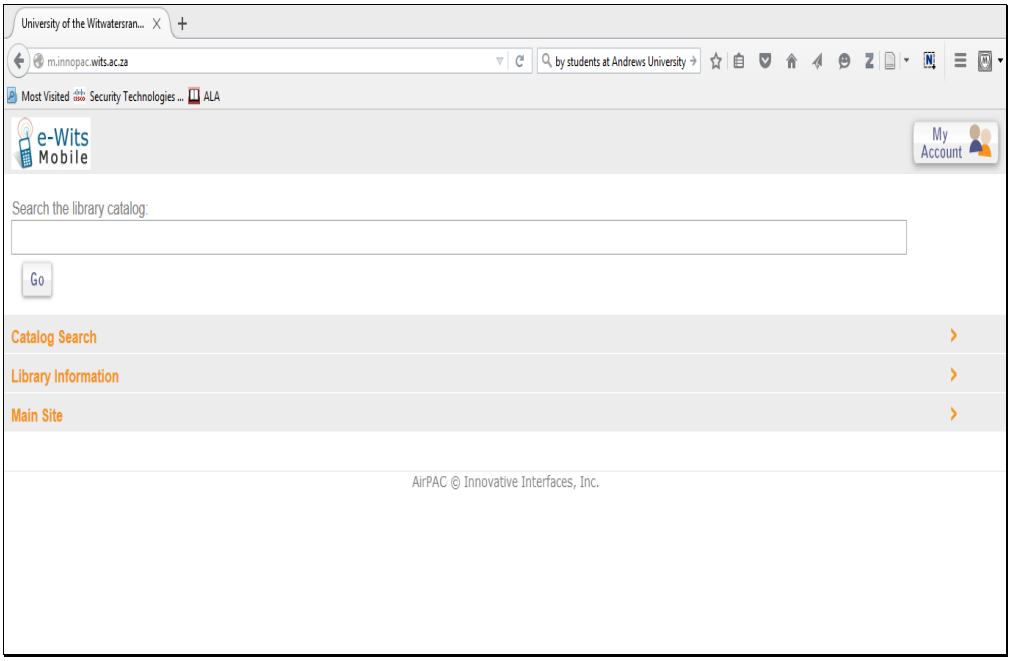


Figure 2-4: e-Wits mobile catalogue

Available at: http://m.innopac.wits.ac.za/ [Accessed 28 September 2015].

2.8 E-books, digital rights management and copyright

According to Camarero, Antón and Rodríguez (2014:543), the digital nature of e-books and mobile application devices has led to growth in demand and increased downloads, opening up copyright and piracy issues for some publishers who fear losing revenue through such practices. Libraries are on the borderline with ethical

dilemmas in terms of access as a basic right for visually impaired users. There are no specific guidelines on illicit sharing of files. User privacy cannot be guaranteed by libraries due to content control by publishers (Blankfield and Stevenson, 2012:85). Digital rights management (DRM) inhibits the sharing of e-books (Jindal and Pant, 2013:317). There are stringent rules restricting e-mailing and printing (Carreiro, 2010:225), such measures contribute to the slow adoption and impedes the basic principle of access. Sharing between devices is prohibited and the cost of hosting e-books as a technical measure for protection can be passed onto the consumers by vendors (Blankfield and Stevenson, 2012:85). Unless licensing processes for e-books are simplified, acquisition of digital content by libraries will have short-lived benefits, and the long-term consequences may negatively impact on library services.

2.9 Effect of e-books on collection development

There has been growing concern among libraries on the division of already constrained financial resources between print and electronic books. Many libraries are making concerted efforts to provide electronic and print formats to meet diverse user requirements. Collection development policies have had to be adjusted to accommodate and reflect both formats. Libraries adopting e-books have had to review and change a number of policies such as acquisition policies, cataloguing procedures, use of library spaces and marketing (Vasileiou, Rowley and Hartley, 2012:218).

There are a number of uncertainties with regard to predominance of e-book as a popular reading format by users (Cottrell and Bell, 2014:143). This problem is aggravated by different pricing models from publishers. Once libraries decide on the inclusion of e-books in their collection, the greatest challenge is determining the amount of budget allocation. Nwagwu and Okafor (2014:87) identified institutional policies as one of the major factors hindering growth of e-books, contrary to literature emanating from developed countries. To meet changing user needs for remote access to electronic information resources, libraries globally are rethinking library collection development policies, library spaces and resource allocation formats, although there are challenges with acquisition models of electronic books as opposed to journals.

2.10 Challenges of owning e-books

As libraries acquire more e-books, there are hidden obstacles affecting adoption. Academic libraries have to incorporate existing workflows with new formats using emerging technologies to ease discovery and access to e-books. There are some underlying challenges and obstacles attributed to technological infrastructure, different e-book formats, expensive e-book readers, licensing models, incompatible technology, and the need for constant upgrades to existing technological infrastructure. There is also need for a re-organization of library spaces and technologically skilled staff to train users on access and discovery of e-books (Vasileiou, Rowley and Hartley, 2012:223).

DRM threatens the very essence of the preservation function for libraries by inhibiting access as a result of restrictions on the software used to access e-books (Kahn and Underwood, 2013:14). In line with UNESCO's article 19 declaration (United Nations (UN), 1949), everyone has the right to seek and access information regardless of the media. This very freedom can be curtailed by the nature of e-resources which are internet based and provided through third-party service providers, where privacy cannot be guaranteed for library users.

2.11 E-books at the University of the Witwatersrand library

The University of the Witwatersrand (Wits) is one of the leading research universities in Africa, with an aspiration to be featured among the top 100 global universities in the world rankings by 2022, driven by research, networking and use of innovative technologies (University of the Witwatersrand, n.d.:13). Wits has five faculties, 34 schools and 3000 courses on offer (University of the Witwatersrand, 2015). Among the strategic goals is to become a techno-savvy institution, using innovation and technology to provide quality research resources in electronic format. Wits library endeavours to facilitate this through acquisition of e-resources such as e-journals and e-databases to promote scholarly research. The library in an effort to support the University's strategic priorities, has devised strategic plans geared towards provision of innovative, user-driven systems for seamless access to information resources (University of the Witwatersrand, 2012:1–2).

The history of Wits library in the adoption of e-books dates back to 2007, when the Senate Library Committee approved a policy for inclusion of e-books and print

version (University of the Witwatersrand, 2007:7), culminating in the inclusion of e-resources in the collection development policy. In 2008, the library acquired 3000 e-books from Elsevier, accessible through the ScienceDirect platform as frontlist package for books published between 2007 and 2008. This was followed by the acquisition of 3340 e-book titles (University of the Witwatersrand, 2008:7). Some of the packages from publishers did not contain relevant subject specific e-books, and the library resorted to "*cherry–picking*" of single e-book titles by 2009. In 2011, the Engineering Library acquired 2500 e-books as part of the Morgan and Claypool package hosted by SpringerLink and Elsevier databases.

The e-book collection has grown over time; by 2013, the collection stood at 15,955 e-book titles, predominantly in the Engineering and Health Sciences Faculties (University of the Witwatersrand, 2013:9). Some students within faculties have had an opportunity to access e-books via the library catalogue and databases. Although much research on user perception of e-books has been carried out in developed countries, there is scant literature in South Africa on the topic. This research is an attempt to find out undergraduate user expectations, their e-book preferences, their perceptions and features of e-books considered favourable and unfavourable, and to ascertain whether library resources are optimally used.

2.12 Conclusion

This chapter discussed various aspects of the opportunities and challenges of owning, accessing and using e-books through a review of articles written by various authors. From the literature, it is clear that academic libraries in developed countries have adopted e-books, although they too are still experiencing challenges such as publisher restrictions, change in library workflows, and dwindling budgets. Technological devices and information communications technologies have changed information seeking behaviour by users. There is need for agility by library staff to train library users, to ease their transition from print resources to digital.

In chapter three, research design and methodology are discussed. The chapter also discusses at length case study method, interviews and questionnaire, sample size, validity and reliability as well as ethical considerations.

Chapter 3 : RESEARCH METHODOLOGY

"By seeking and blundering we learn."

Johann Wolfgang Von Goethe 1749-1832.

3.1 Introduction

Chapter two discussed literature related to electronic books with emphasis on academic libraries. Favourable and unfavourable e-book features, and challenges experienced by users in academic institutions formed the bulk of the literature review.

In this chapter, important components in the design of methods and procedures are identified. The chapter gives a detailed description of tools and methods used in the study conducted at Wits, Faculty of Engineering library, and guided by the following main question and sub-questions:

- Why do students choose to use or not to use e-books?

Sub-questions

- How do students perceive the use of e-books in the University of the Witwatersrand?
- What are the barriers in accessing e-books?
- How does the library promote the use of e-books?

3.1.1 Research design

Case study research design was used within the framework of qualitative research for this study. Creswell (2009:3) describes three types of research design as qualitative, quantitative and mixed methods. Qualitative research examines characteristics or qualities, whereas quantitative research measures variables in terms of amounts or quantities (Leedy and Ormrod, 2010:94). Qualitative research is not rigid, but rather conducted informally in a friendly environment where relationships between the researcher and the participant are temporarily formed (Leedy and Ormrod, 2010: 188). The aim is to understand the interpretation of people's experiences and the meaning attached to those experiences (Merriam, 2009:5). Qualitative research tests the credibility, how findings can be applied instead of generalizing issues. This method is used to test the accuracy of

information provided, to gauge the application of methods and techniques, as well as being able to trace subjective views by the researcher back to the raw data (Pickard, 2013:21–22).

Qualitative research affords the researcher an opportunity to explore human behavioural activities, used as dynamic search processes. This view is supported by Birmingham and Wilkinson (2003:77) who stress the importance of qualitative research as a method used to capture the rich unique data, giving relationships between themes.

This inquiry was informed by the fact that Wits library is purchasing e-books, which have become part of electronic resources to enhance multi-disciplinary research, to facilitate content delivery and accessibility. The reason for selecting engineering students at the University of the Witwatersrand was that some schools are investigating the option of prescribing e-books for academic research through McGraw-Hill packages. The study concentrated mainly on the use of e-books, how and why they are used and the reasons for not using e-books.

Face-to-face interviews, semi-structured self-administered questionnaire, review of related literature and library policy documents were used to understand the thoughts and opinions which contribute to the use of e-books by undergraduate engineering students. The aim of this research was an attempt to understand the social phenomenon of e-books. The inquiry was exploratory, using qualitative research as an appropriate approach and a platform to analyse human activities.

3.1.2 Advantages of qualitative research

Some of the characteristics synonymous with qualitative research according to Creswell (2009:175–176) are that:

- Qualitative research takes place in a natural setting
- The researcher plays a major role and is able to engage directly with participants, through interviews, questioning and observing behaviour
- Themes are used to analyse data as a result of interaction with participants
- Research plan may change as the process progresses
- The researcher makes use of themes to interpret findings
- There is a holistic view of the social phenomenon under study

- Qualitative research is flexible
- Use of various data collection instruments such as questionnaires, interviews and document analysis
- Emphasis on meaning attached to the topic of research
- Qualitative research is not rigid:, the initial plan may change during data collection

Some of the vital elements of qualitative research design used in this study included the literature review, human subjects, purposive sampling, and data collection techniques to develop mutual relationships (Pickard, 2013:14).

3.2 Research strategy

The case study approach as an empirical research strategy was used to investigate perception of e-books within an academic library context. The focus was to have an in-depth understanding of everyday activities of professional librarians and students in the use of e-books, conducted in a natural setting with emphasis on subjective views of their experiences (Connaway and Powell, 2010:77).

3.2.1 Case study

The case study approach as a unit of analysis was carried out using different data collection techniques suitable for descriptive data (Merriam, 2009:41; Connaway and Powell, 2010:80), although case studies do not have specific data collection and analysis methods, but rather focus on description (Merriam, 2009:42-43), giving insight into the issue under study (Merriam, 2009:48). Pickard (2013:102) and Merriam (2009:48) have identified three case study types as:

- *Intrinsic* - whose purpose is to have a deeper understanding of the specific case, for "*particularity and ordinariness*" as intrinsic interest
- *Instrumental* case study makes use of the case as a tool for investigation or insight to understand an issue
- *Collective* case study is used when numerous cases are investigated to understand a phenomenon

In view of the above categories, this study was carried out using the *intrinsic* case study.

3.3 Research site

The site of this inquiry was the University of the Witwatersrand, Engineering library which serves the Faculty of Engineering students and staff members. This site was selected because some schools within the faculty are investigating the use of e-books as an option for prescribed content. The aim was to understand the perception of e-books by undergraduate students. The scope of coverage was undergraduate engineering students who had had the opportunity to use prescribed subject specific e-books during their course of study, while librarians may have used or experienced some challenges with e-books as part of their daily routines.

3.4 Data collection tools

Reference to the review of related literature formed an important part of the research process in establishing gaps and shaping this case study. Primary data collection tools were semi-structured interviews, semi-structured questionnaire and policy documents. According to Creswell (2009:175), interviews, observation and analysing policy documents can be used as data collection tools. The researcher is the main instrument for data collection using multiple data sources. Denzin and Lincoln (2011:529) are of the view that interviews are used to interpret and justify subjective experience, attitudes and issues that a researcher is focused on.

3.4.1 Advantages of interviews:

- Allows for interrogation to clarify statements
- Involves interaction between the researcher and the participants
- The researcher controls the questions and probing of participants
- Allows participants to dictate own conditions in terms of availability (Pickard, 2013:196)

3.4.2 Disadvantages of interviews

- Responses can be biased due to the researcher's presence
- Researcher may have difficulty in coding responses
- There is an assumption that all participants are articulate and have different perspectives on the topic of research (Creswell, 2009:179)

3.4.3 Semi-structured interviews

Semi-structured interviews allow the researcher to use pre-determined questions and also add independently designed questions for clarity on the issue (Leedy and Ormrod, 2010:188). Semi-structured interviews were used as a suitable tool for primary data collection in this study, to shed light on the expert experience of e-books by librarians, to uncover hidden issues that may not be discussed openly.

Semi-structured questions gave the interviewer an opportunity to probe further for clarification (Berg, 2001:70; Birmingham and Wilkinson, 2003:45). Face-to-face interviews were conducted due to its flexibility, for cooperation from interviewees who are willing to respond (Leedy and Ormrod, 2010:188). Face-to-face interviews helped to gather in-depth information to better understand the challenges and experiences of librarians as acquirers, implementers, and policy makers who work directly with e-books.

3.4.3.1 Advantages of semi-structured interviews

Merriam (2009:90) and Leedy and Ormrod (2010:188) have identified the following advantages of semi-structured interviews as follows:

- Semi-structured interviews comprise a blend of closed and open-ended questions, with more flexibility
- The response rate is high
- Pre-determined questions act as a guide, giving the researcher control over what to ask participants
- Participants are asked similar questions
- The interviewer formulates interview guides, which act as prompts for probing

3.4.3.2 Disadvantages of semi-structured interviews

- Interviewing one participant at a time is time consuming
- Transcription takes a long time

Semi-structured interview questions were designed to facilitate access to the necessary data (Pickard, 2013:194–195). The interviews were guided by pre-determined questions in an attempt to explore the area of research, providing an opportunity to react to new ideas from the interviewees (Merriam, 2009:90). The interview guide is available in Appendix B: Interview schedule. A pilot test was conducted to refine and further develop interview questions. The open-ended questions provided an opportunity for in-depth understanding on thoughts of the interviewees (Pickard, 2013:196). The interviewees in this study included the following librarians as policy makers in various capacities within Wits libraries:

- Deputy university librarian
- Client services manager
- Engineering librarian
- Manager library technical services
- Principal librarian - library technical services

Each interviewee was requested through email to participate in the study. The interview lasted between fifteen to twenty minutes. A letter of introduction attached in Appendix B: Interview schedule was given to interviewees who were further requested to sign the consent form as an indication of voluntary participation. Notes were taken and the interviews audio-taped using a recorder and a smartphone as backup. The recordings were later transcribed for accuracy. Data was securely locked in the researcher's office until the completion of the research, which culminated in the compilation of a mini-dissertation.

3.4.4 Questionnaire

During data collection, self-administered semi-structured questionnaires were randomly distributed personally by the researcher to 42 engineering students who visited the library during the specified period. There were no incentives given to participants. The questionnaire, see Appendix A: Questionnaire, had provision for additional comments in case the pre-determined answers did not sufficiently represent participant's views. The questionnaire was designed in way that would not invade participants' personal spaces, but in relation to the research topic and entailed a combination of open-ended and closed-ended questions. Open-ended questions allow participants to express their feelings using their own words, whereas closed-ended questions are pre-determined and participants have to choose from a list of answers provided.

3.4.4.1 Advantages of self-administered questionnaires

- Relatively inexpensive
- The researcher can easily distribute the questionnaire to respondents
- High response rate
- Saves time
- This method is not suitable for complicated research (Creswell, 2009:17)

3.4.4.2 Disadvantages of self-administered questionnaires

- Respondents need to be able to read
- Questions have to be simplified
- Direct contact with the researcher can create bias in the process of collecting data
- The researcher does not have any control for questions misunderstood by respondents
- The assumption is that all respondents are literate

The questionnaire was distributed to willing randomly selected participants in the Engineering library. Data was collected between 12th - 22nd August 2015 at 10:00am and 1:00pm alternately. This approach was deemed efficient due to the high response rate, and also to save time. Before distributing the survey questionnaire, a pre-test was conducted on selected participants to detect any errors in the

formulation of questions, or detection of questions that may be misunderstood by participants (Connaway and Powell, 2010:161).

3.4.5 Document analysis

Primary and secondary data collection focused on policy documents from Wits University and the literature review. Various documents were analysed such as the library strategic plan, policy documents and annual reports. Select secondary data was used through a review of journal articles written about e-books in academic libraries. The findings were used to augment primary data narratives.

3.5 Sampling

Purposive sampling was used in the study. It affords participants an opportunity to give varying opinions, and gives the researcher different perspectives on the phenomena of research. It is used for in-depth information rich cases relevant to the research (Pickard, 2013:14, 64,104). In-depth interviews can generate a great deal of data, hence the small sample aimed at probing further to obtain comprehensive information from different viewpoints. There are two target groups as the population for this research:

- Librarians were selected by virtue of their responsibilities in developing strategic plans, as teaching and learning committee members in developing information literacy programmes, and working directly with the acquisition of electronic resources, including e-books recommended by lecturers to gain in-depth understanding of the challenges experienced
- Students as participants in this study were randomly selected. The sample consisted of engineering students at different levels of study. The responses presented rich diverse views and in-depth information from the data collected

3.6 Data collection

Data was collected daily from the 12th-22nd August at 10:00am and 1:00pm alternately. Every fourth participant willing to take part in the study, and visited the library, received the informed consent form attached to the questionnaire as the research tool, see Appendix A: Questionnaire.

The informed consent specified the purpose of the study, how collected data would be used, the amount of time it would take participants to complete the questionnaire, and the voluntary nature of the study. The questionnaire had no provision for personal information as guarantee for confidentiality. The questionnaire was collected on completion and thanking participants for their time. Participants had an option to skip questions they did not feel comfortable with. There were no incentives given to participants. The only benefit would be to incorporate their views and use collected data to make informed decisions in the purchase of academically related book formats.

For the interviews, an email was sent to selected interviewees requesting for an appointment on their terms. Each interviewee also received consent form with the interview schedule see Appendix B: Interview schedule which stated the purpose of the study, how collected data would be used, and the amount of time it would take the interviewee to be interviewed. All interviews were audio taped using a smartphone and a recorder. The recordings were later transcribed. Notes were also taken to supplement the recordings as primary data. For data analysis, a combination of primary data and secondary data (journal articles) were used to analyse content.

3.7 Data analysis

Qualitative research data coding takes the form of categorisation, where data is analysed and coded according to categories or themes (Creswell, 2009:175). Text or content analysis as an informal method was used to determine key themes emanating from the questionnaire and interview questions. Themes had been developed and assigned codes for each theme that shared the same meaning (Connaway and Powell, 2010:223), giving the opportunity to describe unique

features and attach meaning to data, by identifying significant patterns from responses in the text (Birmingham and Wilkinson, 2003:68).

Descriptive statistics were used to analyse the frequency of occurrence of data elements, where the majority of themes appeared/occurred for consistency. Descriptive aspects of data collected led to the evaluation of different perspectives from participants about the e-book adoption for this research. Microsoft Excel spread sheet was used for data coding and analysis of quantitative data. Data is presented as graphs, tables and direct quotes. The raw datasets are available on request.

3.8 Validity and reliability

Trusted office bearers who are also colleagues of the researcher in the library were interviewed. For the questionnaire, quality was ensured by piloting the questions before the actual exercise. The questions were then adjusted to ensure that participants derived the same meaning from the questions asked.

Triangulation is a method of checking validity of data, by comparing responses using at least two methods of study, through comparison of data collected from participants who have different perspectives of the research topic (Merriam, 2009:216). *A*ccording to Pickard (2013:102), *triangulation* is used for various data collection methods as means of verifying facts about an event, and trustworthiness. In this study, policy documents, journal articles, interviews and questionnaire were used to provide different points of views, by comparing data from the participants with that from the interviewees as recommenders, policy makers and implementers.

Reliability refers to the degree with which research findings can be duplicated. In qualitative research, however, it is difficult to replicate human behaviour: Merriam (2009:221), notes that this is because the same data may yield different results through interpretation by different people. Consistency is the key to reliability. For this study, a pre-test for the questionnaire was conducted prior to the commencement of the research. Respondents had options for additional comments, whereas the interview guide was open-ended. These measures were undertaken to assess the effectiveness of the research instruments.

3.9 Bias

Some bias could have occurred. The researcher is a librarian by profession, whose job entails information literacy training. These biases may have been reflected through the researcher's subjective views and opinions on the topic of research. The questionnaire also had pre-determined answers for participants to choose from. This could have influenced the type of responses received.

3.10 Consent

According to Burnett (2009:176), any researcher undertaking research on human subjects must get formal consent from participants.

3.10.1 Advantages of informed consent

- Participants are made aware of their rights throughout the research process
- The researcher will be protected in case of a dispute

All participants and interviewees were made aware of the voluntarily nature of the research, and given an informed consent form stating reasons for the research, what the information provided would be used for, and confidentiality with which the data would be used. Consent forms accompanied data collection tools, where participants and interviewees were made aware of their rights to withdraw from the study at any time.

All interviewees were guaranteed confidentiality where pseudonyms were used to protect interviewee identities. Participant confidentiality as opposed to anonymity is a common feature in qualitative research (Connaway and Powell, 2010:211). There was no harm to participants in any form whether emotional or physical in the event of conducting this study (Pickard, 2013:93).

3.11 Ethical clearance

Pickard (2013:89–90) reports that researchers should obtain written permission to conduct research; this is done through informed consent from the participants to be able to carry out the research. Creswell (2009:175) is of the view that a researcher should seek permission from individuals and various levels within the organization before collecting data.

For this study, permission to collect data on human subjects was granted by the University of Pretoria, Department of Information Science Research Committee, see Appendix D: UP ethical clearance; the University of the Witwatersrand Academic Registrar see Appendix E: Wits Academic Registrar, and the University of the Witwatersrand Human Research Ethics Committee (non-medical) see Appendix F: Wits clearance certificate.

3.12 Conclusion

This chapter discussed research methodology for this study including the design, sampling techniques, detailed explanation on data collection and analysis, validity and reliability, bias and ethical considerations. Questionnaire and interviews as tools which guided the study were discussed, indicating criteria used in selecting participants.

Chapter four presents the data and a discussion on the research findings.

Chapter 4 : RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

The previous chapter provided a detailed discussion of the research methodology, with a focus on the research design, sampling techniques and concluded with bias, reliability and ethical considerations.

This chapter provides a description of findings from data collected through interviews and questionnaires. The aim of chapter four is to present and discuss findings of this study. A total of 5 library staff members were interviewed and 42 questionnaires distributed to students as participants in this study. Findings from the closed-ended questions are presented using descriptive statistical tools such as graphs, tables and pie charts. Findings from open-ended questions are presented thematically. The questionnaire and interviews were written and conducted in English.

4.2 Summary of main questions and sub-questions

Table 4-1 shows how the main question and sub-questions were organised for data collection purposes.

Table 4-1: Categorisation of main research question and sub-questions

Main research question and sub-questions	Questionnaire questions
Why do students choose to use or not to use e-books?	How did you get to know about e-books? How frequently do you use an e-book? For what purpose do you use an e-book? What factors motivate you to use e-books? Which function(s) do you like about e-books? Which e-book format do you prefer? How confident are you in using e-books? Which devices do you prefer for reading e-books? How do you currently access e-books?

	Do you prefer e-books or print? If you selected e-books, please explain why If you selected print books, please explain why Are you able to access electronic resources from home?
How do students perceive the use of e-books in the University of the Witwatersrand?	When looking for a specific e-book, where do you start searching? How easy is it to discover e-books using the library catalogue Which devices should the library provide for e-book access?
What are the barriers in accessing e-books?	What don't you like about e-books? Which problems do you encounter while using e-books? Which aspects prevent you from accessing e-books? Select the best option(s) describing why you **do not** use e-books While using an e-book, what would you like to be able to do? Please rate internet connection speed in Wits libraries
How does the library promote the use of e-books?	How do you prefer to find out what is happening within libraries? Have you ever had training on how to locate electronic resources in the library? What can the library do to enhance your research abilities in using e-books?

4.3 Why do students choose to use or not to use e-books?

Preliminary information was required to identify the schools affiliated with the respondents.

4.3.1 What is your current year of study?

For preliminary information, respondents were asked to indicate their current year of study. Results are indicated in Figure 4-1below. A total of 42 respondents participated in the study; seventeen were first year students, nine second year students, nine third year students and seven fourth year students.

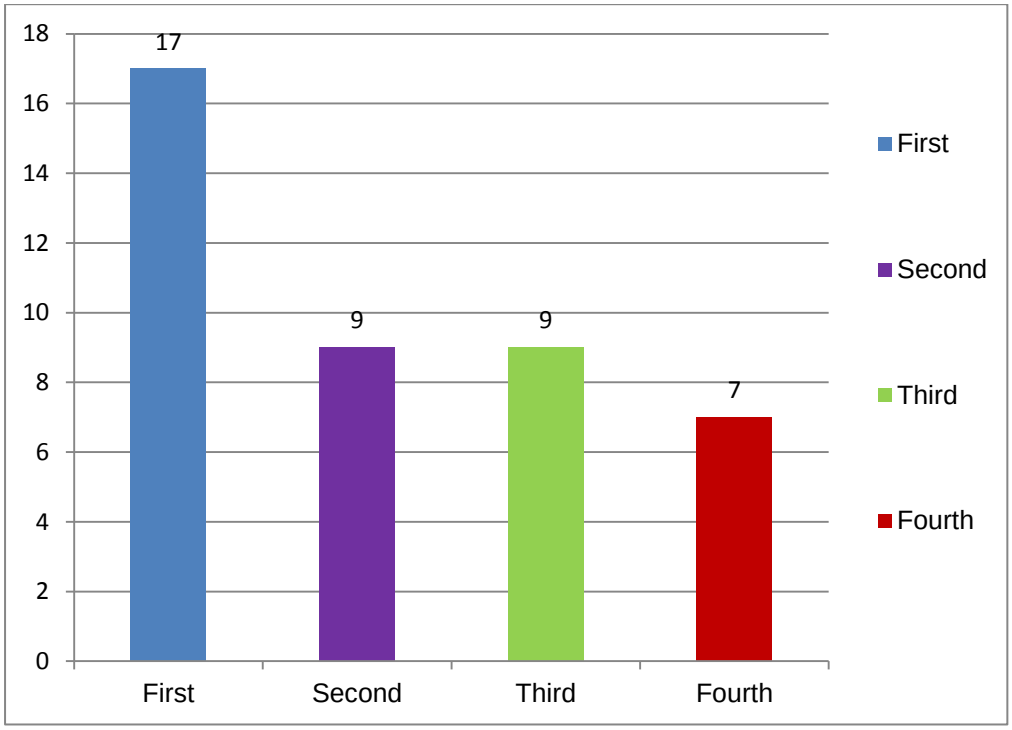


Figure 4-1: Year of study for participants

4.3.2 Which school are you associated with?

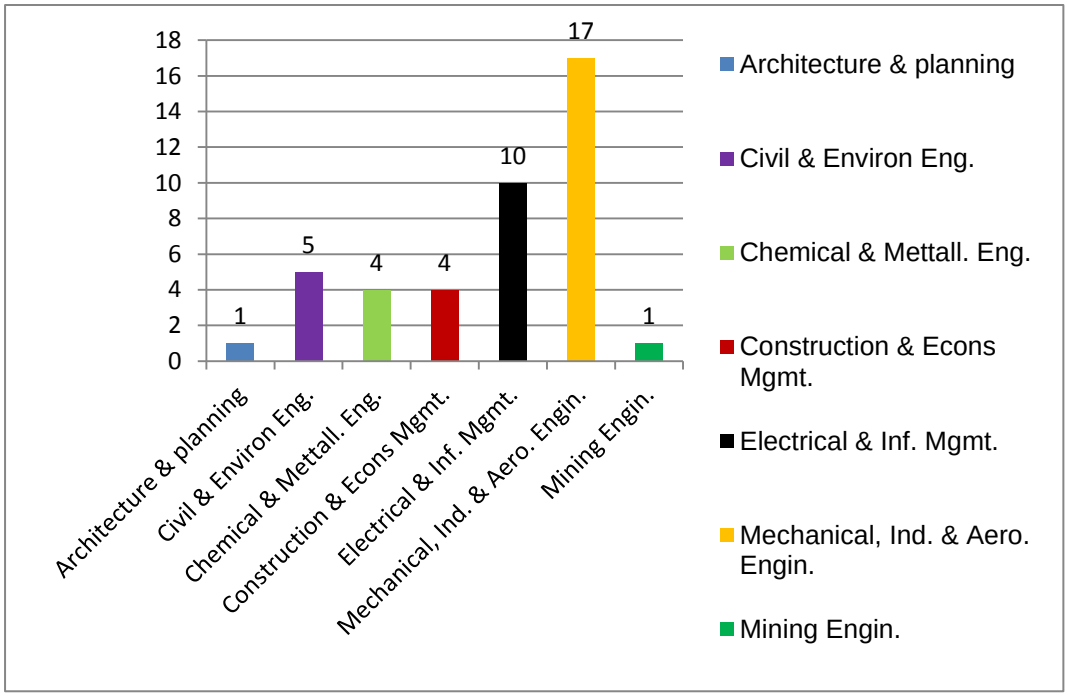


Figure 4-2: Schools associated with respondents

Respondents were affiliated with the following schools within the Faculty of Engineering: Architecture and Planning (1); Civil and Environmental Engineering (5); Chemical and Metallurgical Engineering (4); Construction, Economics and Management (4); Electrical and Information Management (10); Mechanical, Industrial and Aeronautical Engineering (17); and Mining Engineering (1).

4.3.3 How frequently do you visit Wits Engineering library?

This question sought to establish the frequency with which respondents physically visited the Wits Engineering library, 31% visited the library once a day, 24% several times a day, 17% twice a day, 17% once a week, 9% once a month and 2 % did not use the library. However, for the one respondent who did not use the Engineering Library, there should have been a further question to find out why the library was not used. It is evident that more than half 58% of the respondents make use of the Wits Engineering Library on a daily basis. The findings relate to previous studies for example Letchumanan and Tarmizi (2011:513) and Collins and Stone (2014:61) which shows that engineering students are heavy users of their libraries. Figure 4-3 shows the frequency of library visits:

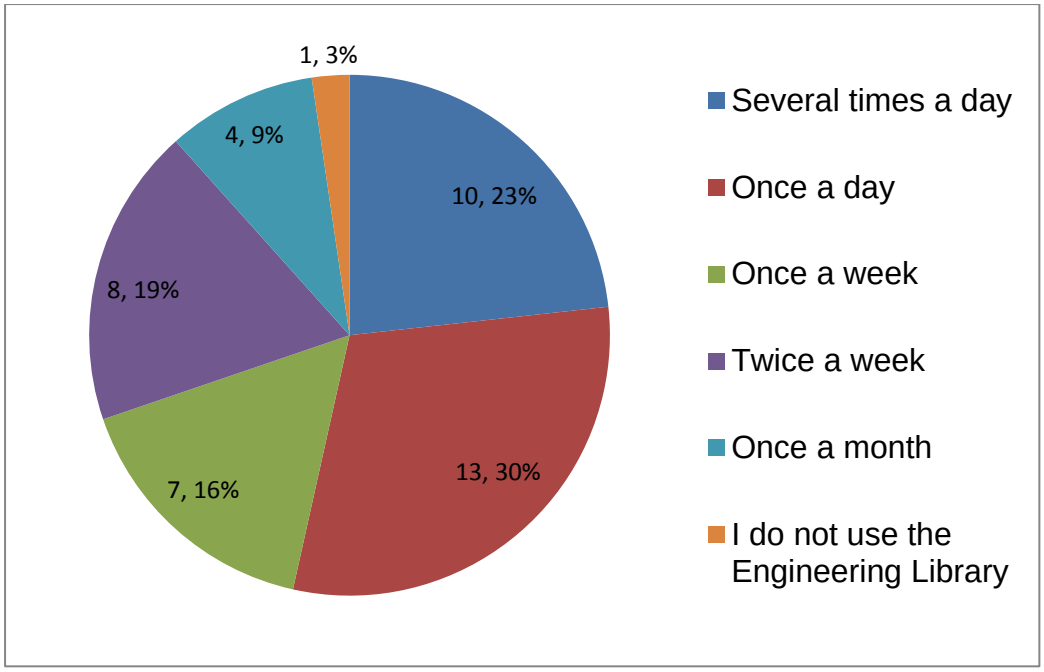


Figure 4-3: Frequency of physical library visits by participants

4.3.4 If you do use the Library, for what purpose do you physically visit the Wits Engineering Library?

This was a multiple response question as a follow-up to the previous question. Forty-two respondents had the option to list as many responses as possible, indicating reasons for physical library visits. Table 4-2 shows categorisation of various responses from respondents:

Table 4-2: Reasons for physical library visits

Variable	Number of respondents	Percentage %
Quiet self-study environment for research	29	50%
Discussion rooms/Group work	6	10%
Printing and photocopying	3	5%
Internet/Wi-Fi	6	10%
Borrow books	9	16%
Access online resources	5	9%

The findings/data in Table 4-2 indicates that the library is desirable as physical space for quiet study, and the frequency of visits attract users due to the ambience as well as attributes related to user information seeking behaviour. Majority of the respondents 50% used the library mainly for quiet study and research. Respondents are also still attracted to print books. These findings highlight various qualities and significance of the library, depicting the relevance of the library as physical space conducive for better study experience.

4.3.4 How did you get to know about e-books?

Respondents were requested to indicate how they learnt of the existence of e-books in Wits libraries. This question had multiple responses, 28% knew of e-books through a friend, 23% through library orientation/training, 19% on recommendation by the lecturer, 15% had never heard of e-books, at this point, there was an option for respondents to exit the survey, 13% learnt about e-books through social media and 2% learnt of e-books through "*my mother*" and "*the researcher.*"

The responses in Figure 4-4 indicate the need for increased awareness on the availability and benefits of e-books and the critical importance of keeping lecturers informed. The data indicates that 62% knew of the availability of e-books from sources other than the library training which is an indication for the need for librarians to proactively create awareness of e-books amongst users including word of mouth marketing.

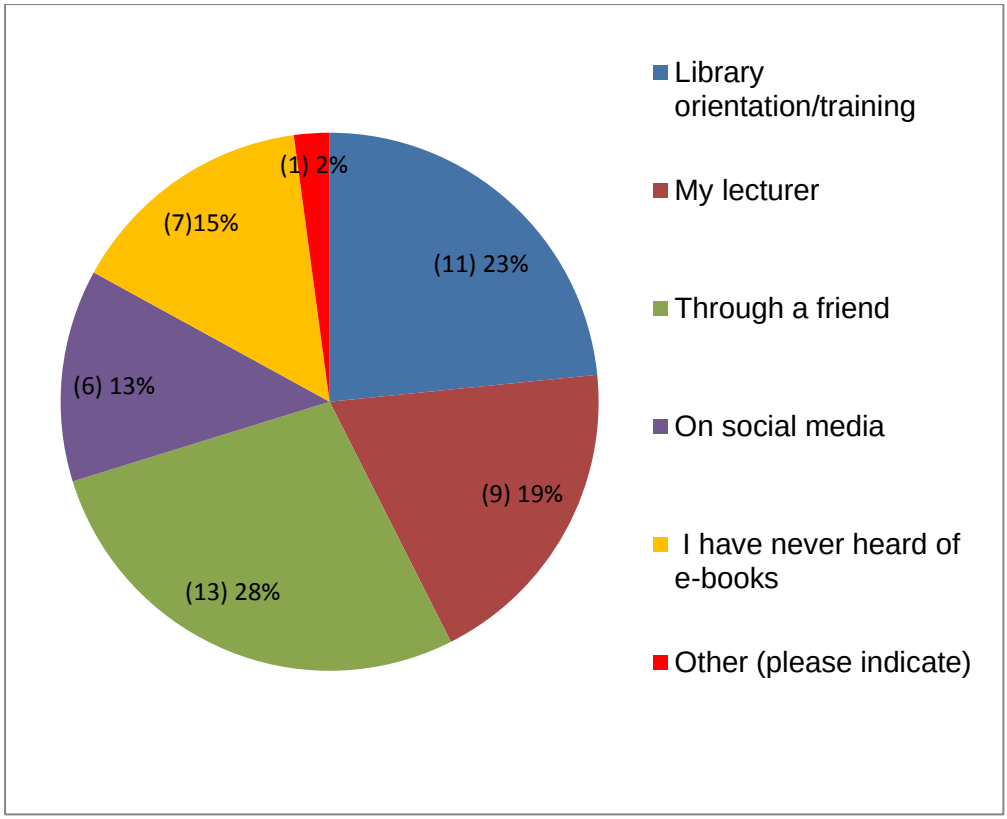


Figure 4-4: Knowledge of the existence of e-books

4.3.5 For what purpose do you use an e-book?

This question sought to find out if respondents were aware of the availability of e-books accessible through the Wits library website. Seven respondents had never heard of e-books and opted out of the survey. Three respondents skipped this question. Respondents had more than one option to choose from as shown in Figure 4-5 giving reasons for e-books use, 65% had used an e-book for academic research and study, 21% for leisure, 10% on recommendation by the lecturer and 4% on recommendation by friends.

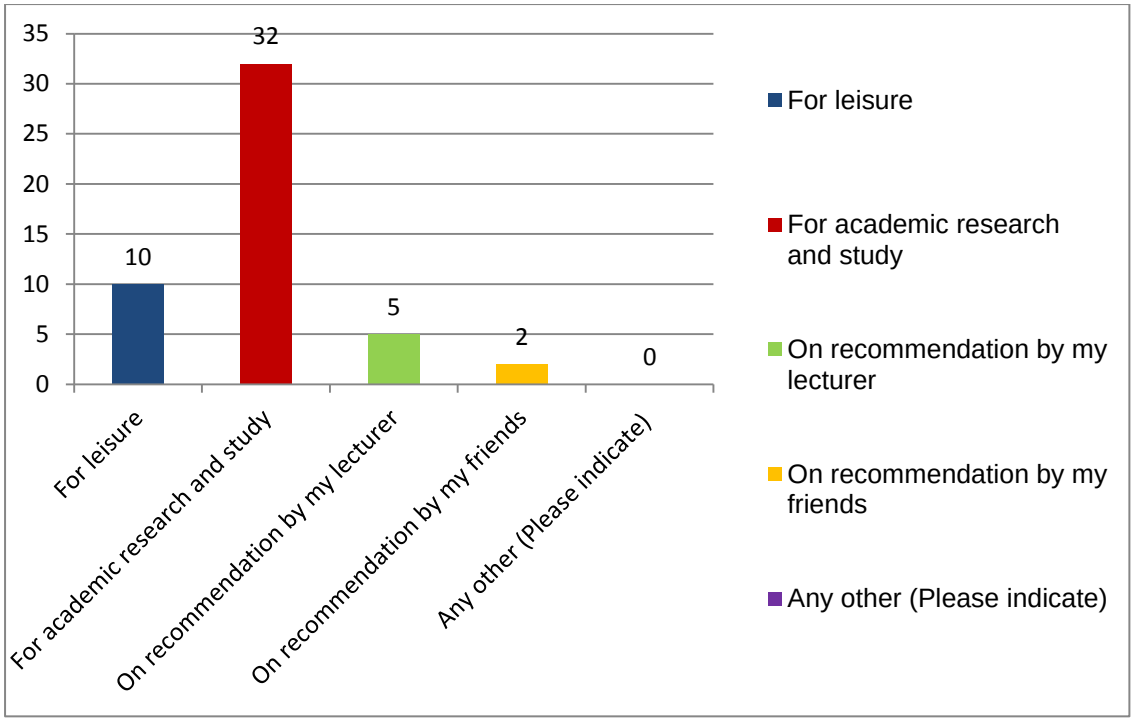
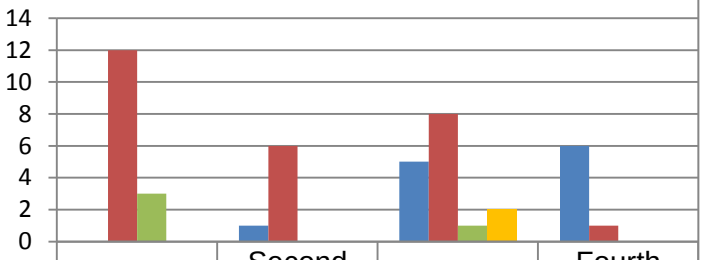


Figure 4-5: Purpose for e-book use

Further subdivision indicated the purpose for e-book use according to the year of study. Respondents had more than one option to choose from pre-determined responses, the findings include both descriptive and qualitative data as shown in Figure 4-6:



	First year	Second year	Third year	Fourth year
For leisure	0	1	5	6
For academic research and study	12	6	8	1
On recommendation by my lecturer	3	0	1	0
On recommendation by my friends	0	0	2	0

Figure 4-6: Purpose of e-book use according to year of study

Interviews

For qualitative data on e-book use, library staff members as interviewees were asked to comment on the purpose of their e-book use. Some of the comments obtained are listed below:

> "*Yes! not an academic one, entertainment, leisure"* (Interviewee1)
>
> *"Yes, for studying" (Interviewee 2)*
>
> *"I have, I was doing my own research and must say I didn't use it from the library website. It was from Google, and when it came up through Google Scholar, and I said well this is what I want to read, so it was really a click and that is it" (*Interviewee 4)
>
> *"Let me put it this way, not in a way where I have a Kindle and I will sit and read a book, but in academic environment, I have picked up on some research…Yes."* (Interviewee 5)

Interviewees use e-books for academic work and leisure reading. From the excerpts/quotations above, there is an indication that e-books are mainly used for convenience purposes, to skim, and scan as opposed to in-depth reading. The findings corroborate research by Walton, (2014:267) and Chou (2014:4) who found that e-books were used to skim and scan. However, the findings also reveal that participants used e-books on recommendation by the lecturer or friends, highlighting the importance of word of mouth marketing. The findings are an indication of the dynamism and complementary nature of tacit and explicit knowledge types, shared and transferred through socialisation (experiences and ideas), externalisation (transforming ideas), combination (use of different sources such as the library website, databases, and technology tools) and internalisation through observation by users for everyday actions in decision-making, a process referred to as knowledge spiral by Nonaka, Toyama and Konno (2001:12).

4.3.6 How frequently do you use e-books?

Respondents were asked to indicate the frequency with which they used e-books. This question had various pre-determined options where respondents could choose more than one response. A total of thirty-five respondents answered this question. In

Table 4-3, 43% used e-books when writing assignments, 23% everyday, 14% every week and 20% suggested other reasons for e-book use as listed in Table 4-3:

Table 4-3: Frequency of e-book use by participants

Frequency of e-book use	Number of responses	Percentage %
Everyday	8	23%
Every week	5	14%
When writing assignments	15	43%
Other (please specify)	7	20%
□ when I need something from the library like books □ infrequent, when I want to □ only personally [for personal use] □ for studying □ when there is no hard copy □ seldomly, when a research report is to be completed □ reading novels when time permits		

The findings indicate that e-books were used for academic research, thus fulfilling one of the major roles of an academic library.

4.3.7 What factors motivate you to use e-books?

Respondents had more than one option to choose from indicating factors that motivated them to use e-books as shown in Figure 4-7, 22% used e-books because they were easily accessible from anywhere, 18% for convenience and saving time, 14% due to freely available e-books online, 12% due to ability to access e-books using smartphones and tablets, 11% due to free wireless access on campus, 10% due to faster internet connectivity on campus, 9% because it is easy to download chapters, 3% due to user friendly library website and 1% as other with the following comment: "*because the hard copy is not available."*

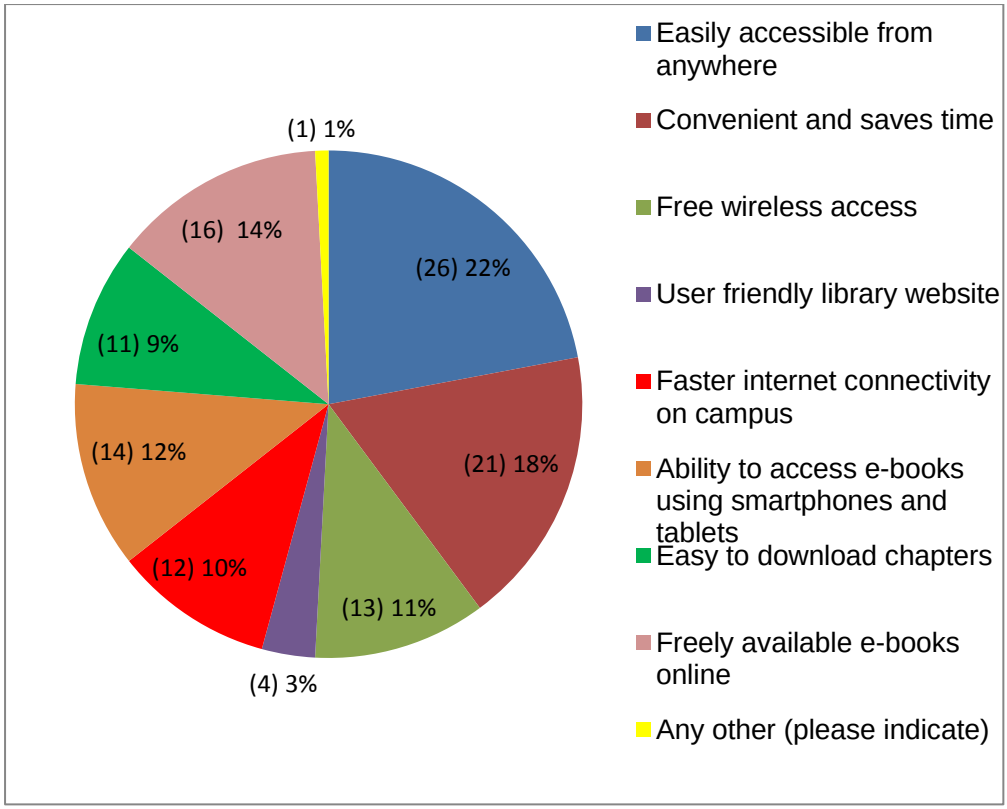


Figure 4-7: Reasons for e-book use

Although e-books are fairly new and used on experimental basis by Wits students, ease of access, convenience and "freely" available e-books promote usage as attractive features.

4.3.8 Which function(s) do you like about e-books?

This was a multiple response question which sought to find out from the respondents favourable e-book functions. The responses were categorised into themes as listed below in Table 4-4:

Table 4-4: Favourable e-book functions

Variables	Number of respondents
Physical aspects (space saving and portability)	5
Ease of use (availability)	10
Navigation (accessibility)	10
No response	5
Additional comments • Very light weight :) • the E- electronic • I prefer print • the convenience of carrying an iPad as opposed to large cumbersome books • Video tutorials	

The findings indicate that the decision to use e-books is influenced by availability, seamless access and navigation.

4.3.9 Which e-book format do you prefer?

This question sought to find out e-book format preferences by respondents. The findings will have both descriptive and qualitative data. Thirty-five respondents had multiple responses to choose from, 80% indicated preference for PDF format, 13% preferred e-books for mobile devices 5% preferred e-Pub (electronic publication) for e-readers such as iPad, iPhone or Android, and 2% preferred hyper-text mark-up language (HTML). An additional comment indicated an “iBook textbook format, (includes video)” the findings include both descriptive and qualitative data as shown in Table 4-5:

Table 4-5: E-book format preferences

Variables	Number of responses	Percentages %
PDF	32	80%
E-books for mobile devices	5	13%
ePub for e-readers such as iPads, iPhones or Android	2	5%
Hyper-text mark-up language (HTML)	1	2%
Other reasons: "*iBook textbook format (includes video).*"		

The preference for PDF as popular format is more desirable for academic libraries, this is not surprising as most users want to be able to download and print relevant articles. Lack of standards in the e-book industry presents access challenges from different platforms when using multiple devices, leading to frustrated users.

Interviews

Library staff members as interviewees were asked to state their preference for e-book formats, their feedback is listed below:

> *"I don't know if we have a preference, I think whatever it comes into, but I think most of them are PDF."* (Interviewee 1)
>
> *"I prefer the chapter by chapter model that they have in Springer and Elsevier, you know it's just easy, you can search and it picks up the chapters that find your keywords in, but what I don't like is the Ebsco model where you basically take the book out for two weeks, so what's the point? Well the PDFs sitting on Springer and Elsevier are convenient, but we also have like on ebrary where you page through it, which is the other option, not everybody wants to download this chapter now, don't have time now, just want to page through, so I think it really depends on the user taste."* (Interviewee 3)
>
> *"In terms of Wits and DSpace, it's definitely the PDF, and most of the books are PDF." (Interviewee 5)*

4.3.10 How confident are you in using e-books?

This question sought to find out the ability by respondents to search, find and use e-books. The question had multiple responses for respondents to choose from indicating their confidence levels in using e-books. The findings indicate that 37% were confident in using e-books, 37% were somewhat confident, 11% were not confident, 6% only used new technologies if they had to, 6% were technology savvy and used e-books often, while 3% indicated "*very confident for leisure reading, not confident for studying" as* shown in Figure 4-8:

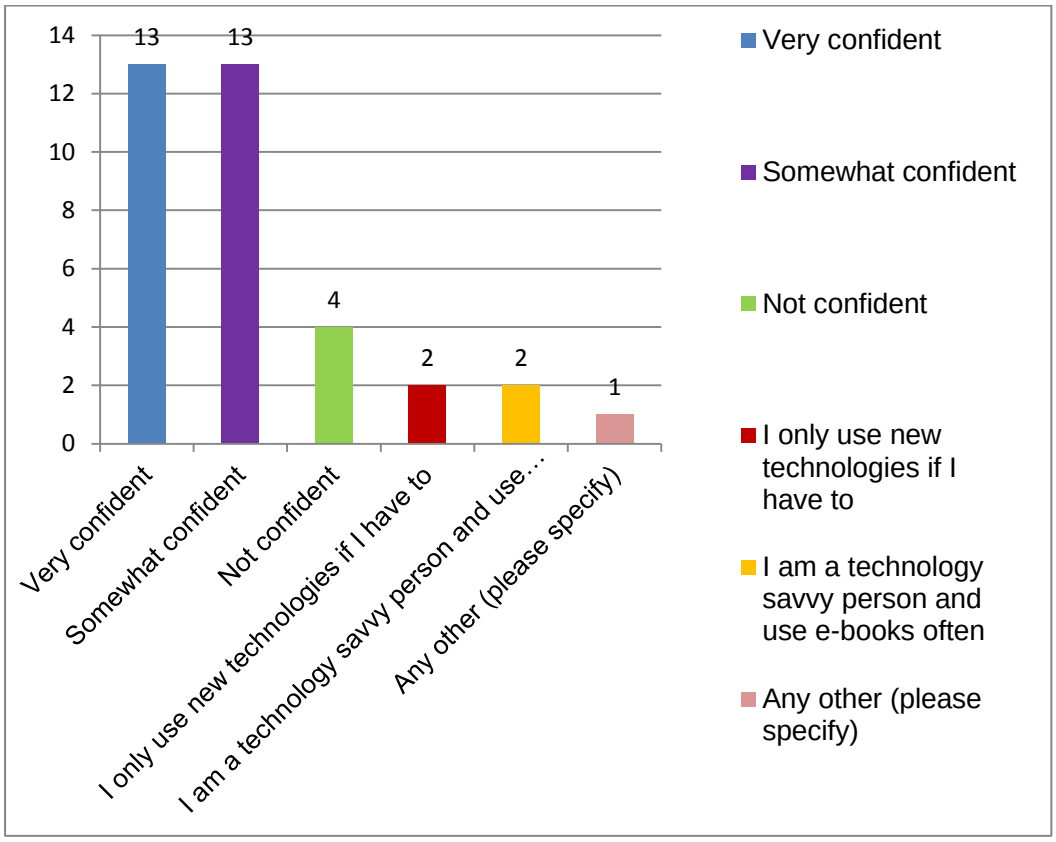


Figure 4-8: Confidence levels in using e-books

Although most respondents 74% are confident in using e-books, there is need for training to impart digital skills to users on how to access e-books found on different platforms such as Proquest, SpringerLink, Ebscohost, Science Direct and the Wits library website. For visibility, it is important to embed e-books on Libguides and Sakai as virtual platforms and learning environments. There was an element of forced adoption from the findings, where 6% used new technology if they had to. The findings also indicate that some of the respondents 6% were technology savvy and did not require digital skills to access e-books.

4.3.11 Which devices do you prefer for reading e-books?

Thirty-five respondents were asked to indicate more than one preferred e-reading devices as indicated below in Table 4-6:

Table 4-6 : Device preference for reading e-books

Device name	Number of responses
iPad	5
Kindle	2
Tablet	11
Laptop	11
Computer (PC)	6
Mobile/Smartphone/Cell phone	4
iMac	1
Additional comments from respondents are listed below: - any touch screen device with 10" screen or bigger - the standard library computers. While other e-readers may be useful, I think they may be vulnerable to theft	

These findings indicate that the most popular devices are tablet and laptop, while the least are iMac and kindle, indicating preference for portable e-readers, partly due to the convenience and seamless access, as opposed to static desktop PCs which restrict users to specific points of access. The issue of security for handheld devices is one of the reasons for desktop preference.

4.3.12 How do you currently access e-books?

The aim of this question was to find out digital device preference and ownership by engineering students used to access electronic resources. Respondents had multiple responses from pre-determined answers to choose from. In Table 4-7, 36% accessed e-books using laptops, 16% on smartphones (Blackberry, Sony, iPhone, Samsung, Nokia), 13% used iPads, 12% used desktop or personal computer (PC),

10% used tablet, 10% did not respond, 3% used Kindle and no response for Nook. Broadband Commission (2014:12) report indicated there was a total of 1.9 billion smartphone subscriptions worldwide, with education sector leading in mobile services on offer (Broadband Commission, 2014:13). The results below indicate that respondents have preference for handheld devices and smartphones. The most popular are laptops and smartphones, while the least are the Kindle and the Nook.

Table 4-7: E-reading devices used by respondents

Device	Number of responses	Percentage %
On my laptop	25	36%
On my smartphone (Blackberry, Sony, iPhone, Samsung, Nokia)	11	16%
On my iPad	9	13%
Desktop/Personal Computer (PC)	8	12%
On my tablet	7	10%
On my Kindle	2	3%
No response	7	10%
On my Nook	0	0%

The frequency of device usage by engineering students reveals that majority use laptops to access electronic resources. These results support findings by Johri et al., (2014:292) where laptop ownership by engineering students was higher. The findings also indicate that some respondents had access to more than one e-reading device. These findings are useful and can help to inform library policy makers, to consider the possibility of purchasing portable devices as loanable items instead of static desktop computers.

4.3.13 Do you prefer e-books or print?

This question sought to find out whether respondents preferred e-books or print books, 45% prefer print, 26% prefer e-books, 26% prefer both print and e-books and 3% did not respond. Majority 45% prefer the traditional print over e-books as depicted in prior studies, partly due to the shift from content ownership by libraries to leasing from vendors. However, it is worth noting that print and e-books content have unique attributes and functions which drive usage and preferences as shown in Figure 4-9 below:

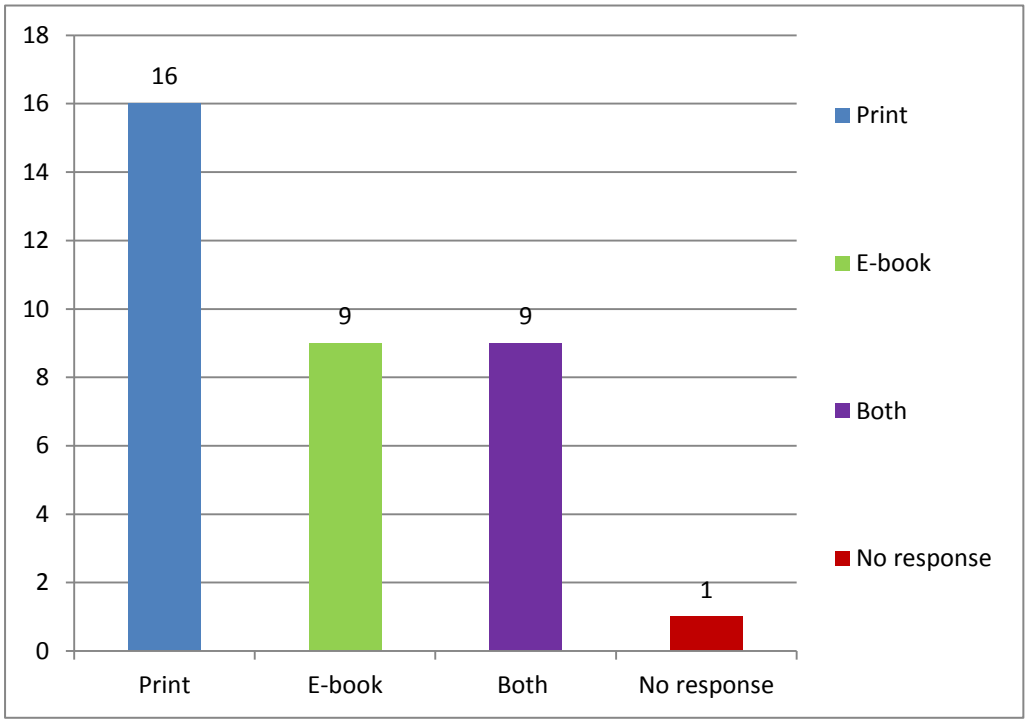


Figure 4-9: E-book or print preferences

4.3.13.1If you selected e-books, explain why

Some of the qualitative reasons for e-book preferences or non-preferences mentioned by respondents are categorised in Table 4-8:

Table 4-8: Reasons for e-book preferences

Reason for e-book preference	Number of mention
Ease of access to many documents from anywhere	6
Ability to access using e-reading devices (smartphones, tablets, Kindles, iPad)	2
Convenience and portability	4
Light weight	1
Free and cheaper	1
Easy to find and download chapters	1
Freely available e-books	1
No response	28
there is no need to carry heavy textbooks around campus I can't write on it	

4.3.13.2If you selected print books, explain why

Reasons indicated by respondents for print preference or non-preference were categorised as listed, the findings include descriptive and qualitative data as shown in Table 4-9:

Table 4-9: Reasons for print preference

Reasons for print preference	Number of mention
Tactile/enjoyable reading experience	2
Ease of navigation/reading	7
Physical print (feel of paper, cannot die or lose connection)	2
Highlighting and making notes	5
I get tired reading on screen	1
Easy on the eye	1
No fear of device battery going flat	1
Wastes no electricity, requires no battery	1
No response	15

Print book functionalities are unique and provide tactile and enjoyable reading experience. Ease of navigation, ability to highlight and making notes are the most desirable features for print preference.

Interviews

Interviewees were asked to state their preferences given a choice between print and e-book of the same title:

> *"Print, I am old school"* (Interviewee 1)
>
> *"I prefer print because of my age. I find that it's easier to read. There are advantages and disadvantages when you are travelling, you don't have to pack your whole suitcase with you. But for studying purposes at home, I want to spread the books around me and dig into different things. I have now had to get a computer with two screens…have my e-book open on one screen and the work I am doing on another, otherwise it is difficult."* (Interviewee 2)

> *"I think for work I prefer e-book, if I go home I prefer book [print], because I sit in my office all day on the computer, and when I go home, I switch my computer off, I don't want to look at it until the next day, and I sit with my book."* (Interviewee 3)
>
> *"I think its old habits, and as I said there is this flexibility that comes with reading a book [traditional print book], which I may not necessarily get on an electronic book."* (Interviewee 4)
>
> *"I have scrolled through and tried to read on, I am you know old school, I prefer print book, I certainly prefer print when on an aeroplane, sorry."* (Interviewee 5)

Views by respondents and interviewees suggest that majority still prefer print over digital. Use and preference is determined by a number of factors such as technology competencies, ease of access, awareness and favourable e-book features. The results also indicate a form of forced adoption to use e-books for respondents when the print equivalent is unavailable as per findings by Walton (2014:267), two respondents selected the following option "*I only use new technology if I have to."* Print books still play a major role in academic libraries and not just relegated as an alternative source of information. Lack of e-books in subject specific areas also contributes to print preferences.

The inconvenience, and not so much the convenience is cited as a reason for preference of print books over e-books, for example when an interviewee (library staff member) stated that "*I have now had to get a computer with two screens…have my e-book open on one screen and the work I am doing on another, otherwise it is difficult."* Technology has given print books a new lease of life, playing a major role in the evolution of print books.

4.3.14 Are you able to access electronic resources from home?

The aim of this question was to find out if respondents could access electronic resources from home as shown in Figure 4-10.

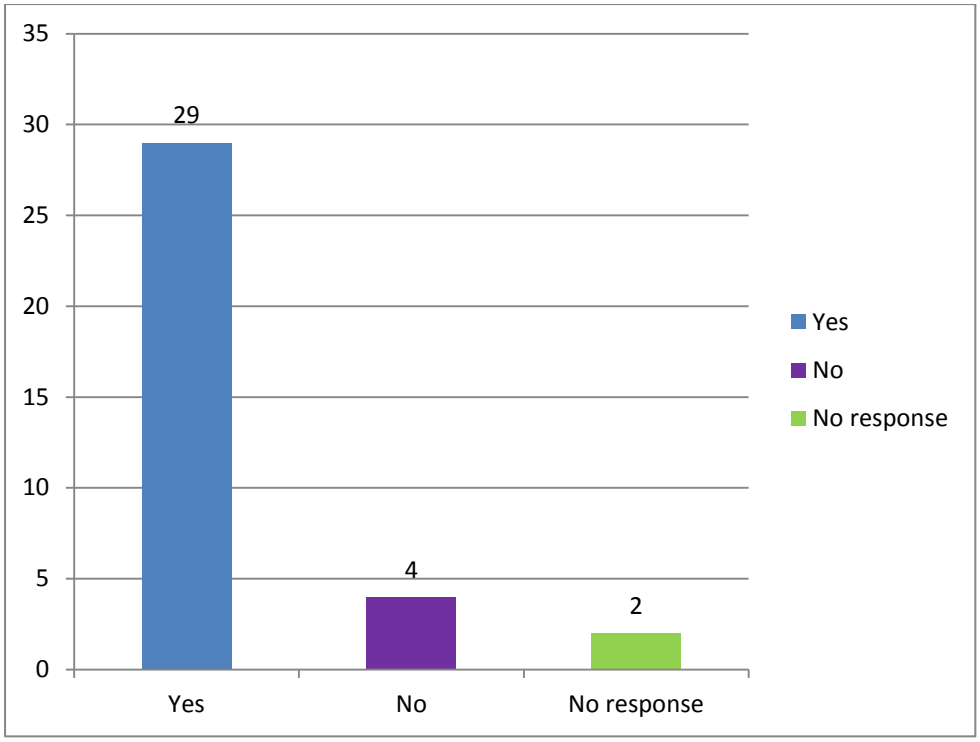


Figure 4-10: Internet access from home

Majority 83% had access to internet at home, 11% did not have access, while 6% did not respond. The high number of respondents with access from home corroborates findings for internet connectivity by Statistics South Africa (2014:51), which shows increased numbers of household members with access to the internet. However, some respondents do not have access off campus, and this is worth consideration by the library and schools to have a balanced collection for equal access.

4.4 How do students perceive the use of e-books in the University of the Witwatersrand?

4.4.1 When looking for a specific e-book, where do you start searching? Please tick the relevant option(s)

This was a multiple response and respondents were asked to select various options indicating where their search of a specific e-book started. As indicated in Figure 4-11, 35% indicate Google search engine, 35% indicated the library catalogue, 13% through Google scholar, 7% through library databases, 4% through publisher websites, and 2% through ask a librarian service. There were additional comments from 4% as listed:

- "*When doing research on the internet, for the library e-book on the library webpage"*
- *"Torrents, www.pirating.org"*

It is interesting to note that Google search engine and Google scholar account for 48% of searches compared to the library website at 35%. Although research findings by Hwang et al., (2014:533) indicate that the starting point for e-book searches were through library website and catalogue, this finding suggests otherwise, where majority of the searches are conducted through Google search engine, and Google scholar, followed by the library catalogue. Surprisingly, none of the respondents indicated social media platforms such as Facebook or Twitter as starting points for e-book searches.

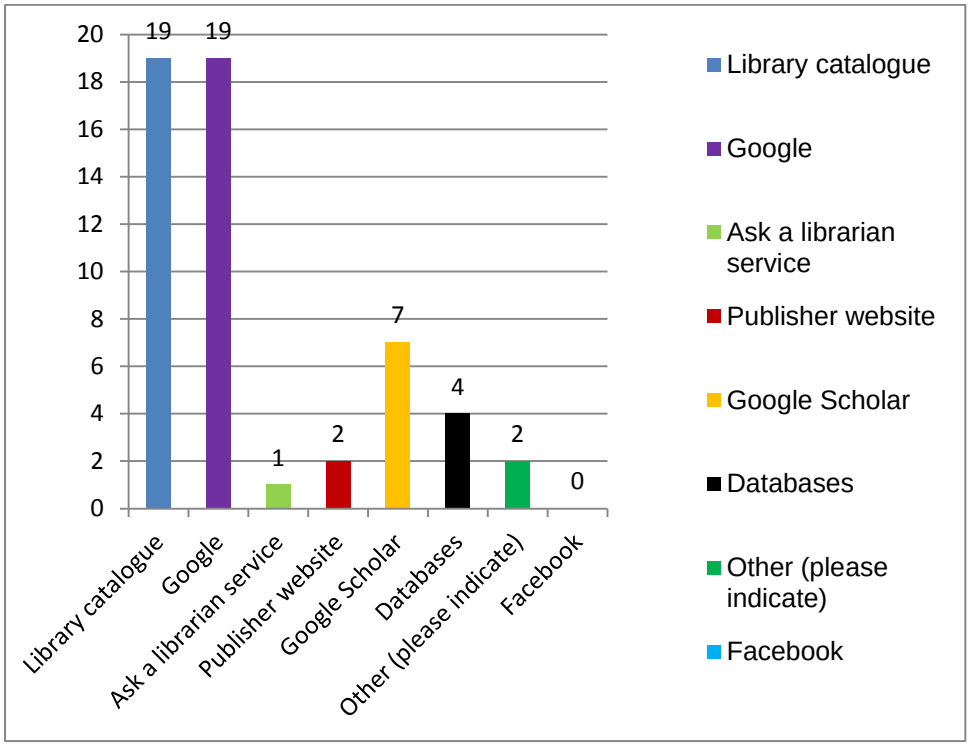


Figure 4-11: E-book search option preferences by participants

4.4.2 How easy is it to discover e-books using the library catalogue?

This question sought to find out the ease with which respondents were able to discover e-books using the library catalogue. Some respondents indicated that searching the library catalogue for e-books was very easy, or easy, but majority experienced difficulties in discovering e-books. The high number of respondents experiencing difficulty requires more attention to create awareness and training.

The responses were coded as “very easy”, “easy” and “not easy” through frequency distribution as indicated in Table 4-10:

Table 4-10: Discovery of e-books using Wits library catalogue

Codes	Number of responses	Percentage %
Very easy	8	23%
Easy	8	23%
Not easy	14	40%
No response	5	14%

- Difficult because when typing keywords, too many sources appear which aren't always relevant to what I want
- It is difficult sometimes, due to limited search functions
- I have never tried
- I found it difficult as I had to register and still couldn't find the e-book I was looking for
- I have had difficulty possibly due to blind navigation
- haven't used library catalogue
- It is not easy because you have to acidentally [accidentally] stumble upon the material you searching for. There are no tags to help for a particular subject

4.4.3 Which devices should the library provide for e-book access?

Thirty-five respondents were asked to identify loanable devices preferred as part of infrastructural development to facilitate access to electronic resources. Respondents could list more several devices. Table 4-11 gives an indication of the type of loanable devices preferred by respondents to facilitate access to electronic resources:

Table 4-11: Loanable devices suggested by participants

Device name	Number of responses	Percentage %
iPad	9	21%
Kindle	4	9%
Tablet	13	30%
Laptop	4	9%
Computer	11	26%
Mobile/Smartphones/Cellphone	2	5%
Additional comments from participants are: - E-book suggestions including page numbers of relevant pages. PDF manuals on how to find e-books quickly - guidelines on the different types of books relevant to engineers, and how to research and find the relevant e-books - Summarrative [summative] functionality: this would involve a strong element of machine learning and natural language processing where a body of text is mined and the core topics are generated for the user to view. This could be on a per chapter or overall basis		

Access to e-reading devices such as tablets, laptops, smartphones, computers, and iPads encourage users to access electronic resources.

4.4.4 Do you have any suggestions for the library on how to improve e-books access?

This question sought suggestions from respondents on how Wits library can improve access to e-books. Respondents could list more than one response. Their suggestions are listed in Table 4-12:

Table 4-12: How Wits library can improve access to e-books

Category	Response count	Percentage
Improve connectivity and devices (better computers/laptops/tablets)	3	7%
Create awareness/promote/advertise	4	10%
Recommendation system for similar e-books	1	3%
Online tutorials for e-books	2	5%
No response	24	60%
I have no suggestion	4	10%
Improve the library catalogue	1	3%
Provide access from home	1	3%

This question had low response rate where 60% did not respond. The findings indicate various challenges in owning an e-book. Respondents indicated the need to improve internet connectivity and e-book devices for access. The need to create awareness has been identified as a major obstacle to e-book adoption. Online tutorials and recommendation system similar to journal articles has been suggested by one respondent, perhaps as a measure of online user behaviour to facilitate discovery of other related e-books.

Interviews

For qualitative responses, interviewees (library staff members) were asked if the library provided sufficient infrastructure to access online resources:

> *"You see them sitting down scramble for the PCs or what, they scramble for the plugs to plug in their computers."* (Interviewee 1)
>
> *"We attempt to, but I don't say that if you speak to all students, they would probably say no."* (Interviewee 2)

"*I think we do the best we can with the resources we have financially, as well as infrastructure as well as space…There will never be enough computers, never!...with newer libraries with more network data plugs at every seat, that is important, but then again, that is a financial constraint on us."* (Interviewee 3)

"Let me say from the word go, we have tried our best, but we are still a long way off. Wi-Fi access as you know particularly in the last year or two, it has been fairly unstable, and I know our students are always asking for they have to connect wirelessly. So yes we are a long way off in terms of that kind of access." (Interviewee 4)

4.5 What are the barriers in accessing e-books?

This question sought to find out satisfaction levels and barriers inhibiting access to e-books. The question had sub-divisions and the comments were categorised into themes as indicated in Table 4-13 and Table 4-14.

4.5.1 What don't you like about e-books?

The respondents were asked to indicate reasons why they did not like e-books. The responses were coded as indicated in Table 4-13:

Table 4-13: E-book shortcomings

E-book shortcomings	Response count	Percentage
I prefer print	4	11%
Reading on screen/Eye strain	2	6%
Lack tactile feedback	2	6%
Difficult to find	1	3%
Scrolling through many pages	3	8%
Needs charged devices	1	3%
Hard to make notes	2	6%
Can be deleted	1	3%

The books part	1	3%
Finding relevant information	2	6%
Lack hypertext links	1	3%
No response	14	40%
Other	1	3%

The findings indicate low response rate for this question, 40% did not provide any responses, 11% have preference for print, 8% do not like scrolling through many pages, 6% experience eye strain while reading on the screen, 6% cited lack of tactile reading experience, 6% indicated challenges with finding relevant information, 6% indicated inability to make notes as a challenge, 3% indicated lack of hypertext links, 3% indicated that e-books can be deleted, 3% indicated difficulty in finding e-books, 3% did not like the books part for e-books, 3% indicated that e-books need charged devices for access and 3% indicated other *"I have nothing against it."*

4.5.2 Which problems do you encounter while using e-books?

This question sought to find out problems experienced by respondents while accessing e-books. The responses were categorised into themes as listed in Table 4-14:

Table 4-14: Problems experienced while using e-books

Problems encountered with e-books	Response count	Percentage
Connectivity challenges - Wi-Fi and internet access	4	13%
Downloading and printing	2	6%
Lack of subject specific e-books	1	3%
Eye strain	1	3%
Navigation – search difficulty	6	19%
Passwords	2	6%

I do not have any problems	3	9%
No response	13	41%
Additional comments: - No printing - Logging in process - Crashes on device		

There was low response rate where 41% did not respond to this question, 19% had difficulty with navigation and searching, 13% indicated connectivity challenges with Wi-Fi and internet access, 9% did not experience any problems, 6% had challenges with downloading and printing, 6% cited challenges with passwords, 3% eye strain as a challenge and 1% indicated lack of subject specific e-books. The findings indicate that there are different challenges experienced by users. Some of the challenges are technical, while other challenges require training and the need to provide e-books for all engineering subject areas.

Interviews

For qualitative responses, interviewees were asked to identify problems encountered while dealing with e-book vendors, some of the comments were consolidated as indicated:

> "*Ideally, if you want a certain book, you would rather just buy that book, and that is what is relevant to the university curriculum. But usually these vendors come up with packages and you've got to go for a package, and in any one package, you may find there is quite a number of titles that are not relevant to our curriculum at all."* (Interviewee 4)
>
> "*There are a lot of problems with print with e, with ordering generally… and then everything goes wrong with that order… there is a problem with value added tax (VAT). I think it is shocking, I think there shouldn't be VAT on any educational material whatsoever."* (Interviewee 5)

4.5.3 Which aspect(s) prevent you from accessing e-books?

This was a follow-up question, with a list of multiple responses indicating problems and challenges restricting access to e-books as shown in Table 4-15:

Table 4-15: Aspects preventing access to e-books

E-book access barriers	Number of mention	Percentage %
I do not have a library Personal Identification Number (PIN)	**2**	**5%**
I have no internet access	**1**	**2%**
I do not have a laptop, iPad or Kindle reader	**0**	**0%**
I get distracted easily by opening other webpages	**15**	**36%**
Lack of e-books in my subject area	**4**	**9%**
I get eye fatigue while reading on the screen	**13**	**31%**
Lack of sufficient computers in the library	**5**	**12%**
Any other (please indicate)	**2**	**5%**

This question sought to find out challenges experienced by respondents while accessing e-books, 36% indicated they are easily distracted by opening other webpages, 31% indicated eye fatigue while reading on the screen confirming other research findings by various authors (Jeong, 2012:393–394; Asunka, 2013:45; Hwang et al., 2014:534; Mulholland and Bates, 2014:496, Chou, 2014:9). Other respondents 12% indicated lack of sufficient computers in the library, 9% indicated lack of e-books in their subject area, 5% did not have a library PIN (personal identification number), 5% did not have access to the internet, and there was no response on the option for lack of laptop, iPad or Kindle reader, while 5% cited other reasons as listed below:

- *"time in the library is limited"*
- *"don't know what is available or how to find them"*

These findings indicate that there are challenges ranging from lack of sufficient technology infrastructure and lack of subject specific e-books. The responses for getting distracted 36% and eye fatigue 31% are surprising since it is assumed that millennials are always connected and thus reading online would not be a problem.

Interviews

To determine qualitative reasons inhibiting e-book access, interviewees (library staff members) were asked if they had experienced any challenges:

> *"I had issues with that [reading for a long time on the screen or the font size] because I was doing it on my tablet, so the font size did affect me but of course I know how to change the font size, so I changed it. I guess because I work in the library, I know what to do when things are not working properly"* (Interviewee 4)
>
> *"No I haven't got any"* (Interviewee 5)

The findings indicate that it is difficult to concentrate while reading on the screen, and a user's trail of thoughts can be easily distracted by *"wondering off"* to other webpages. Lack of e-books in specific subject areas for academic research highlighted by participants was also found to be a contributing factor to the slow up-take in South Africa as per findings by Zinn and Langdown (2011:110).

4.5.4 Select the best option(s) describing why you do not use e-books.

This question sought to find out reasons why respondents did not use e-books. The question had multiple responses for respondents to choose from as shown in Figure 4-12. Respondents gave various reasons for non-use, and the findings indicate that 20% had preference for print books, 17% did not use e-books due to tiredness reading on the screen, 11% due to very slow internet, 9% did not use e-books due to low battery on the laptop or e-reader, 8% due to different passwords for different databases, 8% due to difficulty in finding e-books on the catalogue, 6% due to lack of e-books in specific subject areas, 6% due to lack of e-reading devices such as laptops and e-readers, 5% due to lack of access off campus, 5% due to lack of internet connectivity, 4% due to constant load shedding/power supply outages and 1% indicated "*I am not well trained to use e-books."*

The findings suggest high preference for traditional print books. However, there are several other challenges ranging from technology issues such as internet connectivity, fatigue reading online, intermittent power outages, and lack of charging stations for e-reading devices in the library. Other challenges are access difficulties due to inability to locate e-books on the library catalogue; access restrictions by

publishers and need for passwords; as well as collection failure due to lack of subject specific e-books which discourage e-book use.

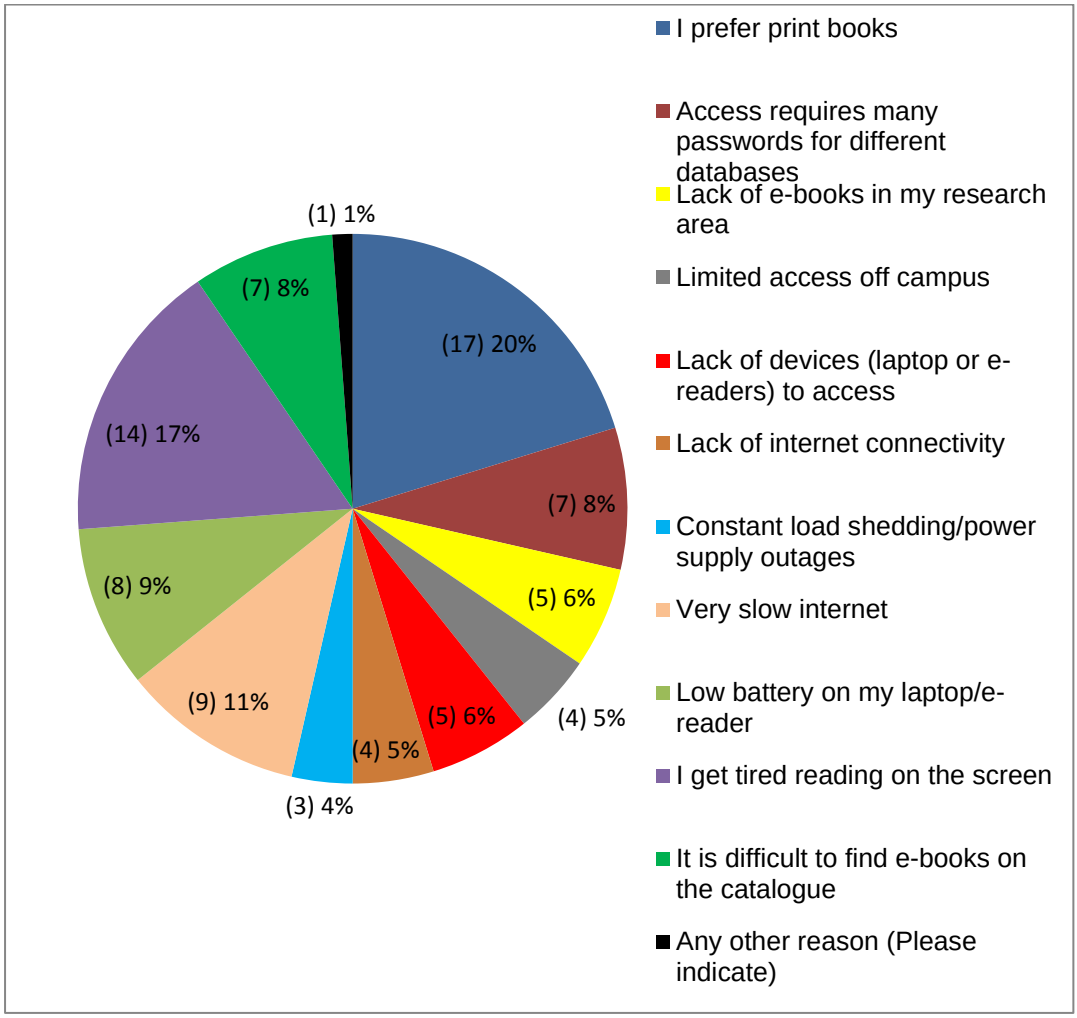


Figure 4-12: Reasons why e-books are not used

Interviews

Interviewees provided reasons that inhibit their access to e-books as listed below:

> *"I couldn't open the book properly, so I think that whether it was a linking problem from our library side or whatever, I know I should have reported…but I didn't. I thought I can't be bothered, I will move to the next thing, I will find an alternative."* (Interviewee 2)

> *"It's the usual story of reading it on the screen, what if I want to go outside, where there is just room to sit back. Do I carry my screen? The issues with the glare of the outside; whereas if it's a book, I can just tilt it, and I can read my pages at leisure."* (Interviewee 4)

> *"I don't know if you can make it much more user friendly. I suppose what irritates me is that each platform has a different way of going in, a different layout, but that is from an academic point of view. If I am buying an e-book myself, that's different."* (Interviewee 5)

4.5.5 While using an e-book, what would you like to be able to do?

This question sought to find out features preferred by respondents while searching within an e-book. Thirty-five respondents participated in the survey and had more than one option from pre-determined responses to choose from. Respondents indicated the desire to replicate features of print book in an e-book as shown in Figure 4-13. Searching within text, making notes and highlighting are features found to be more beneficial by respondents, whereas the least desirable features were to change font size and to copy and paste. Additionally, most respondents would like to have email function as an e-book feature. Other comments from respondents are listed below:

- "*I would like to see how many people have used the e-book and when (and searching from where, if possible). If more people from this library have used it, it is probably a reliable source of information*"
- *"a detailed index"*

Interviews

Interviewees were asked to comment on favourable e-book features, their suggestions are listed below:

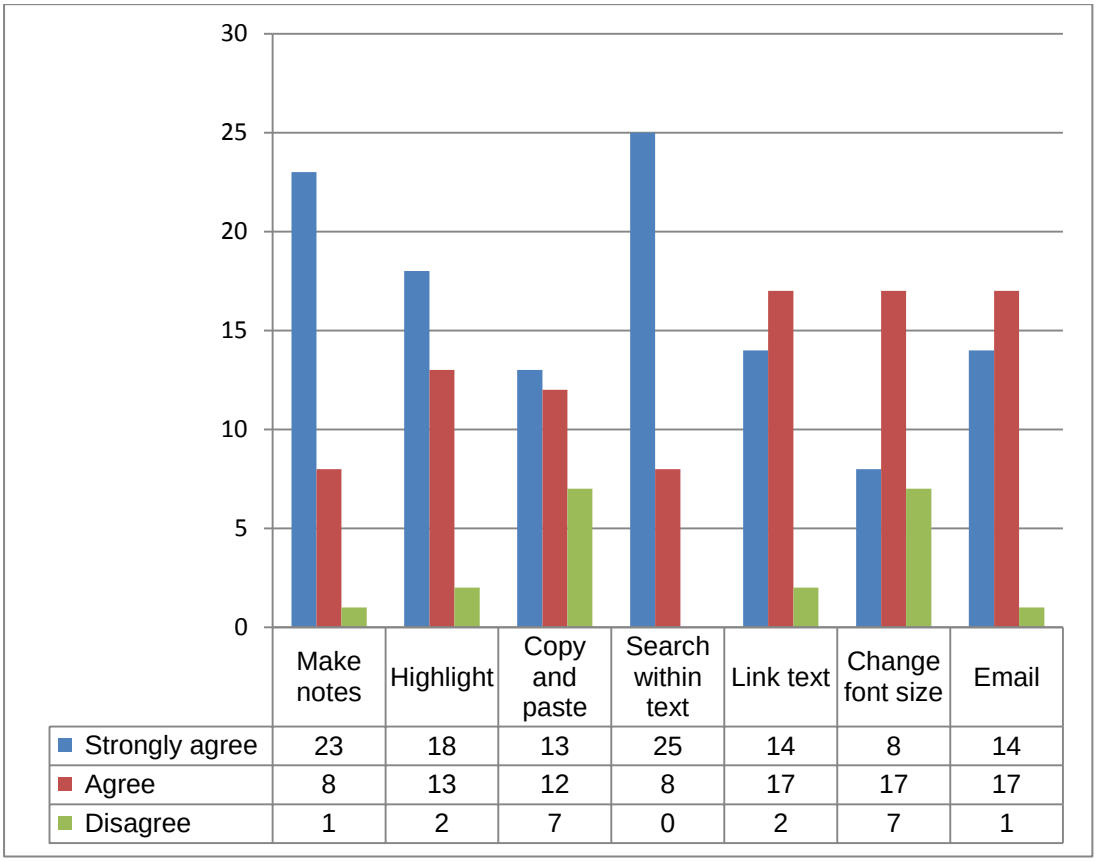
> *"I can page through, I can go back, I can mark, you know the same that I do with, on the print book."* (Interviewee 1)

> *"The contents page, because I could quickly skim through there. The ease of navigation through them, and some of them I know there is a link to other books of similar titles, I can't remember which discipline does that but I feel that is quite useful…with an e-book, there is no deteriorations in handling the material, it stays available there for everybody to use depending on the licenses."* (Interviewee 2)

> *"I would say searching in the book [e-book], just go to a specific section because that's where my interest is, by keyword, pick it up."* (Interviewee 3)

"Nothing particularly striking because all I wanted was the text, so it opened on my screen, I read through and that was it. Of course what I also liked was the copy and paste, though of course deep down I am conscious that I should acknowledge." (Interviewee 4)

"It's very very convenient." (Interviewee 5)



	Make notes	Highlight	Copy and paste	Search within text	Link text	Change font size	Email
Strongly agree	23	18	13	25	14	8	14
Agree	8	13	12	8	17	17	17
Disagree	1	2	7	0	2	7	1

Figure 4-13: Favourable e-book features

4.5.6 Please rate internet connection speed in Wits libraries

This question sought to find out if respondents were happy with the internet connectivity in Wits Engineering Library. Respondents were asked to rate internet connection speed as shown in Figure 4-14:

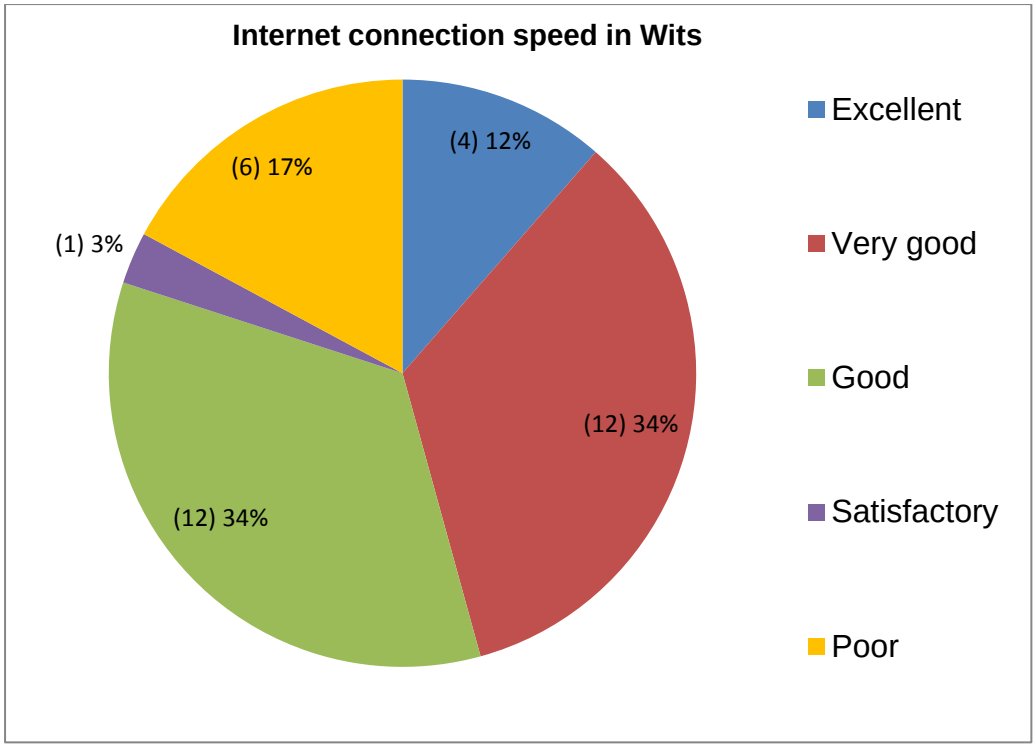


Figure 4-14: Internet connection speed in Wits Engineering library

Views on internet connection speed in Wits Engineering library yielded the following results: 34% indicated that internet connection speed was very good, 34% indicated the speed was good, 17% indicated the speed was poor, 12% indicated the speed was excellent, and 3% indicated the speed was satisfactory. Although 80% of the respondents seemed to be happy with the internet connection speed in Wits Engineering library, 20% percent were not entirely happy. However, for the few who rated the connection speed as poor, it is a pointer for library management to work with relevant authorities to improve internet connection speed, in an effort to meet user expectations. Internet connectivity and speed are part of the information technology ecosystem requirements, and necessary for academic research which facilitates seamless access to electronic information resources.

4.6 How does the library promote the use of e-books?

Marketing of library resources is crucial to accelerate research and learning. Market segmentation should be used to target specific user groups to ensure optimal utilisation of available resources. The questions below were designed to find out user preferences when it comes to library related issues.

4.6.1 How do you prefer to find out what is happening within libraries?

The respondents were asked to indicate the preferred channels of communication in knowing what was happening within the library as marketing awareness service. Respondents had to select answer from pre-determined multiple responses as indicated in Table 4-16 below:

Table 4-16: Communication channel preferences by participants

Communication channel preferences	Number of responses	Percentage %
Short messaging service (SMS) on my smartphone (Mobile)	10	21%
Facebook	0	0%
Twitter	1	2%
In class	3	7%
E-mail	31	66%
Posters	1	2%
Other, please specify	1	2%

In terms of marketing and promoting library services, 66% prefer to know what is happening within the library through email, 21% through short messaging service (SMS), 7% in class, 2% through Twitter, and 2% through posters. There was no response for Facebook. The optional part for this question requested participants to specify other preferences to know what was happening within the library. One respondent 2% indicated *"don't care."* These findings suggest that respondents prefer more personalised communication through email and short messaging service. Although Wits library has Facebook and Twitter accounts as social media platforms to market library resources, findings indicate that there is low interest for social media platforms by respondents.

Interviews

Interviewees had varied views when asked how the library promoted e-books and the awareness surrounding e-books:

"*They are all over in the lifts, in libraries and your branches, and there you've got visual screens [digital signage]."* (Interviewee 1)

"Badly! It's through our Libguides, through email, there are notices in the lifts, but whatever we are doing we haven't got the recipe right." (Interviewee 2)

"Well, we've got the newsletter, it's on our Libguides [subject portals], we've got the digital screen, we compile a new e-book list and book list that goes to the library representatives. I guess we need more marketing, you know, to make people aware of how many e-books there really are. I know they don't always realise there is more." (Interviewee 3)

"*What we do is with our information literacy programs, I think we encourage our librarians to make sure that if you are training people…how to access the catalogue, I think we know that some books come up with links. We encourage our librarians to click on those links to e-books. If you look at the Springer project, we focused particularly on e-books…we had publicity materials from Springer [circulated] through various noticeboards, through our digital signage, our library homepage, through meetings with faculties."* (Interviewee 4)

*"There is lots of promotional materials, we've got sales representatives coming and they offer to do workshops like ScienceDirect, Springer. They offer to do free workshops at Wits; they provide everything they even send someone to do it. So I think it is quite well promoted, but we have got a huge student population and staff" (*Interviewee 5)

Despite some notable marketing strategies used by the library, respondents prefer personalised communication. Interviewees acknowledge efforts made to market e-books, but there is still need for more awareness and marketing. Although engineering Libguides are heavily used to access online resources and e-books, knowledge of the existence of e-books seems to be lacking among some respondents. Extensive marketing strategies used by the library also seem to target users who physically visit the library.

4.6.2 Have you ever had training on how to locate electronic resources in the library?

Respondents were asked if they had received any training on how to locate electronic resources in the library. The answers were grouped into themes of “yes”, “no” and “no response” as shown in Figure 4-15 below:

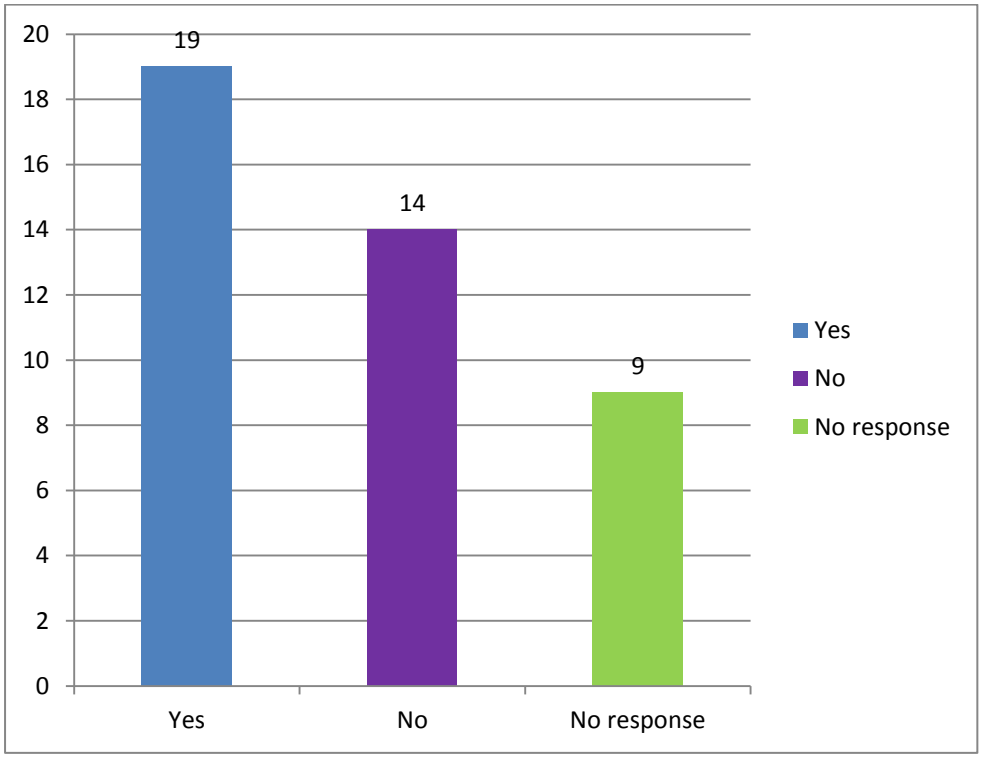


Figure 4-15: Training on how to locate electronic resources

Although information literacy training is compulsory for all first year undergraduate students in the last two years, there is likelihood that some of the senior students did not attend the training sessions, contributing to the high number of respondents who had not had any training. The library needs to intensely create awareness and train students and staff on how to discover resources using the library catalogue.

4.6.3 What can the library do to enhance your research abilities in using e-books?

Respondents were asked to provide additional comments, and thoughts on what can be done by the library to enhance their research abilities while using e-books. The responses were coded as “improve Wi-Fi/internet connectivity,” “provide e-reading devices,” “awareness/training/online tutorials,” “broad range of subject specific e-books,” “have recommendation system/subject tags,” “improve Wits catalogue

search functions," and "access without passwords/PIN" as shown in Table 4-17 based on the responses received.

Table 4-17: How Wits library can improve e-book access

Variables	Number of responses
Improve Wi-Fi/internet connectivity	4
Provide e-reading devices/computers	5
Awareness/training/online tutorials	5
Broad range of subject specific e-books	3
Recommendation system/subject tags	2
No password/PIN restrictions	2
Improve catalogue search capabilities	2
No response	10
Other	2
Additional comments - I am not a fun - None, the system is sufficient	

The viewpoints in Table 4-17 indicate that there is lack of awareness by users on the existence of e-books. These views resonate with Vasileiou, Rowley and Hartley (2012:223), who suggest the need for a re-organization of library spaces and having technologically skilled staff to train users on access and discovery of e-books. Other studies by Posigha (2012:798) and Nwagwu and Okafor (2014:87) also found lack of awareness to be a major obstacle to e-book adoption. It is worth noting that technological challenges and lack of e-reading devices also contribute to slow uptake of e-books.

Interviews

For qualitative answers, interviewees (library staff members), were asked for comment on whether the library provided sufficient infrastructure to access online resources:

> *"It is a problem the university is addressing from the Wi-Fi point of view, access from home sometimes is faster than access on campus provided you know the network you have to go through, and remember that you have to log on as a staff member or a student to get in"* (interviewee 2).
>
> *"I think we do the best we can with the resources we have financially, as well as infrastructure as well as space…There will never be enough computers, never!...with newer libraries with more network data plugs at every sit, that is important, but then again, that is a financial constraint on us."* (Interviewee 3)
>
> *"The university must come to the party in a bigger way. There obviously are constraints on the whole information infrastructure on our access."* (Interviewee 5)

4.7 Discussion on the findings

4.7.1 How access to information is influenced by technology acceptance model 2 (TAM 2)

Some of the questions in the study were designed to test perceived usefulness and ease of use of e-books by participants. Electronic books are readily available and most students are able to access e-books using various gadgets.

Participants were asked to state what motivated them to use e-books. One of the pre-determined answers was because e-books are: *"easily accessible from anywhere"* and 22% indicated their motivation to use e-books due to ease of access. This feedback corroborates measures by Venkatesh and Davis (2000:201). The mere fact of access is an indication of the perceived usefulness of e-books. When asked for views on the adequacy of investment for e-books, the interviewees (library staff members) opined that there has been an exponential growth in the demand for e-books since inception in 2008. The following statements from interviewees and participants are an indication of perceived usefulness of e-books:

> "*There is an increase of e-books. I am sure because most of the Senate Library Committee meetings that I sit on are advocating for e-books. I think it is a good investment for the new generation because they are really going for it. And also the fact that it doesn't have a boundary, you don't have to be in the library to get it*." (Interviewee 1)

> "*There is certainly an increase in demand for e-books…particularly for health sciences and engineering, because most of their resources are coming as e-books, not so much as e-journals. And these are resources that support their curriculum.*" (Interviewee 4)

Interviewees agree that perceived usefulness was improved by the introduction of e-books for convenience and accessibility by all. For the survey, some respondents indicated they would use e-books based on recommendations from their peers as depicted in the statement below:

> *"Create a student/researcher profile which uses a recommendation system to track and suggest e-books of interest for my individual curriculum. This could be based on the likes of other students/peers."*

The feedback above indicated a measure of subjective norms identified by Venkatesh and Davis (2000: 201), which influenced the use of e-books by some participants. When asked to give reasons for e-book use, some participants also indicated they used e-books *on recommendation by their lecturer*, and others *on recommendation by their friends*.

4.7.2 Emerging trends from the study

The survey and the interview have provided an insightful view of how e-books are used for research and leisure purposes. Results indicate mixed feelings on the use of e-books. E-books are mainly used for academic and research purposes due to ease of use and seamless accessibility (McLure and Hoseth, 2012:137; Smyth and Carlin, 2012:177), portability, ease of navigation and convenience. A major dislike for e-books was eye fatigue and distraction by opening other webpages. Interviewees (library staff members) and participants (students) have expressed strong preference for the traditional print book as per findings by Smyth and Carlin (2012:177) and Nasser Al-Suqri (2014:279) because of the feel and smell of a new book as opposed

to e-books. Findings also show that the younger generation easily embrace new technologies more compared to the older generation; however, there are challenges when e-reading devices are dependent on electricity/power supply.

4.7.3 Promotion and marketing of e-books

Although e-books are always available, marketing and promotion of the invisible e-book is a challenge. Marketing strategies by librarians through information literacy training, Libguides, posters, faculties, library website and digital signage has created some awareness. However, respondents indicated the need for personalised communication through email and short messaging service to know what was happening within the libraries. There should be more emphasis on information literacy training to ensure that users are able to assess, organise and retrieve relevant information.

4.7.4 Technology infrastructure

There are issues and challenges arising from the inconvenience as a result of technological infrastructure and e-book features. These challenges hinder e-book adoption by library users. Through analysis of sentiments echoed by participants and interviewees, it is apparent that there are a number of institutional infrastructural challenges highlighted which hinder the adoption of e-books. Broadband speed for wireless access needs to be improved. Participants expressed the need for the library to provide loanable e-reading devices to facilitate access to all. The library is well aware of the challenges as expressed below:

> "*We are supposed to improve the infrastructure whether its Wi-Fi or plug-ins and I think we passed the stage for marketing, I think marketing is there, but just keep hammering and increase our budget, because the e-books are not cheap."* (Interviewee 1)
>
> *"If you look at the number of surveys we have conducted, there is always a request for more charge stations, and which means we still haven't satisfied all the needs, and then there is place for more connectivity, people want more points where they can connect to the internet because wireless is not 100%. So we fully haven't addressed all those needs that I am terribly aware. And it*

requires a much bigger project than just the library can pull on its own." (Interviewee 4)

Although some respondents would like to email e-book chapters, there are stringent rules by publishers/vendors restricting e-mailing and printing (Carreiro, 2010:225). Such measure contributes to the slow adoption and impedes the basic principle of access. Sharing between devices is prohibited and the cost of hosting e-books as a technical measure for protection can be passed onto consumers by vendors (Blankfield and Stevenson, 2012:85). Technology, subject content, subscription models and budgetary constraints are the greatest hurdles in the adoption of e-books.

4.7.5 Views of challenges in accessing e-books and dealing with vendors as experienced by interviewees

Interviewees highlighted a number of challenges. Most of the challenges and experiences were as a result of frustrations when dealing with e-book publishers and vendors. The frustrations are more on the administrative side as expressed below:

"*One is that [of] activation*, *some would take forever to activate [an e-book] and then some URLs would link and one time they are not linking. Some vendors when you write to them they take forever to respond…Well, I will be selfish, but we want to say when we express an interest in an e-book, they [vendors/publishers] should be able to activate, while we do the process of payment, but it doesn't make economic sense from their side because they want to also get the money first*." (Interviewee1)

"*The challenge is the license agreements, and we have been specifically excluded from ILL [inter-library loan] by virtue of licensing agreement…by going e however, the problems will be different when you have people like Swets go under, who is going to support whatever they had? There are a couple of concerns [with e-books]…when it comes to the legal deposit library do they deposit an e-book there? How is it sorted?*" (Interviewee #2)

"When you buy a collection, we've realised over time that you should ask for a definitive list of what's in that package because you are likely to lose a few…you can't know the dates of publication so you buy in good faith. I now

> *have a…2012 e-book that I was told oh you are not entitled to this. And I looked at my definitive list we got from… and it is there! No he said we never bought the e-book rights so the publisher has taken it back! Now that is suspect! How can you sell an e-book when you haven't bought the e-book rights?* (Interviewee # 5)
>
> "*Although most vendors and publishers have very helpful sales representatives, communication seems to be one of the major challenges, especially when the URLs are not working. Most e-books are sourced from international publishers and vendors, this further compounds the troubleshooting issues due to lack of a contact person to solve such problems. For some other vendors, when the URL doesn't work or something, I have really got a problem…we just need a contact, because the sales people that visit us aren't the people on the ground.*" (Interviewee # 5)

Some interviewees seemed to be objective in their feedback when asked about the fear of e-book vendors and publishers going out of business:

> "*It is a question that comes up, but if you decide to let that manipulate your decision, you are not going to buy any e-books, because it is always there. Even with Swets [information services company], it was a disaster, but their stuff is taken over by other strong and powerful vendors. So some way or other you can't really let that sway your decision.*" (Interviewee3)
>
> "*Nowadays, before we sign a memo with a vendor, we do a risk analysis and that risk analysis specifically asks that question you have asked, and increasingly explore what backup mechanisms they have in place. We really want to address those questions before we even sign a license agreement with them or a service level agreement."* (Interviewee4)

From the views above, it seems adoption of e-books still has a lot of "teething" problems, with challenges ranging from communication and licensing restrictions (Kahn and Underwood, 2013:12; Besen and Kirby, 2014:131–132; Zhu and Shen, 2014:62), and technological infrastructure. These challenges are an indication that there is a limit to what the library can offer given the licensing restrictions and institutional budgetary constraints.

Interviewees were asked to specify licensing models preferred by Wits library:

> *"Unlimited access perpetual model, we pay for it once. Our preference is unlimited, where we can't get, then we take whatever,"* (Interviewee 1)

> *"Ideally, you would want a license that opens up access to everybody, but then sometimes it costs us… you will have some books which are only available on one vendor and its only one user license. I have come across such a book on Ebscohost, and unfortunately, they allow users to check out the book, so for that time the book is checked out, nobody can use it"* (Interviewee 4)

4.8 Conclusion

This chapter presented an analysis of findings and a discussion of data in this study. From the analysis, most respondents and interviewees have a preference for print books. Although e-books are an alternative source of information for academic research, there are many challenges ranging from privacy, technical, legal, access and financial. Other challenges are lack of awareness; licensing restrictions; limits on the number of users, restrictions on downloads, emailing and printing; lack of e-books in certain academic research fields; too many platforms requiring passwords to log in, and financial constraints which make e-books unsustainable.

The next chapter presents a conclusion of the study and makes recommendations and suggestions for further future research.

Chapter 5 : CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

The previous chapter discussed findings of analysed data collected through questionnaire and interviews.

This chapter concludes the study and presents a summary of findings from chapter four. The aim of this exploratory research was to have an understanding of the perception and use of e-books by Wits engineering students.

ICT integration in academic libraries leads to increased flexibility in terms of access. Wits library subscribes to a variety of resources in different formats to fulfil the research, teaching and learning functions of the university. E-book subscriptions complement print, although the proportion varies depending on academic fields and availability in specific subject areas. Majority of the e-book subscriptions are in health sciences and engineering faculties. While the preferred licensing model by Wits is perpetual, there are some books available from vendors who offer one user license.

The library has adopted various marketing strategies to ensure the visibility of e-books, such as inclusion of e-book links on the library website, Libguides, social media platforms, digital signage and notifying faculty library representatives. Library users can access e-books on and off campus, although passwords are required for off campus access. There were four research questions which informed this study. The main research question had sub-questions and a summary of the main findings are listed below:

5.2 Why do students choose to use or not to use e-books?

This question sought to find out views from respondent and interviewees on the reasons why they used e-books. In answering the main question, the findings seem to indicate that there are various reasons ranging from the library as space which provides the infrastructure required to access online resources. Respondents used e-books through awareness from friends and the library catalogue. Respondents are happy with certain favourable and attractive e-book features such as highlighting, ease of use, navigation, search functions, portability and convenience which motivate the use of e-books, with emphasis on printing and emailing options. On average, e-books were used on a weekly basis when writing assignments, for

academic research and leisure, whereas interviewees are more inclined to traditional print books. Although the university does not purchase leisure books, it is assumed that such users accessed freely available e-books online. Other benefits that drive e-book use are the ability to access e-books using mobile devices, and off campus access. There was high preference for print by both young and older generation.

Overall, the positive aspect of e-book use is for academic research especially when writing assignments, and for leisure purposes. The negative aspect is when students do not have an alternative, thus forced to use e-books.

5.2.1 How do students perceive the use of e-books in the University of the Witwatersrand?

Given the choice between print and e-books, majority had preference for print; again this finding is subject to scrutiny in the sense that the findings were views from a small sample. E-books are still a viable option for Wits library. However, few subject specific e-books could have led to print preference. There are other challenges especially technology infrastructure.

5.2.2 What are the barriers in accessing e-books?

E-books are always available anytime, anywhere, but invisible to users. For effective use of any service, there has to be awareness. Some respondents found e-books through the library catalogue search, whereas others used Google search engine and Google Scholar to locate e-books. Initially, library orientation was not compulsory, and most users did not attend information literacy sessions. But in the last two years, information literacy training is compulsory for all first year students. It is hoped that such measures will create awareness of e-resources and ensure optimal utilisation of the available scarce resources.

Other factors which negatively affect the adoption of e-books were identified as eye fatigue while reading on the screen, device and power dependence to access e-books, intermittent power outages which clearly affected the whole country in 2015 impacting on access to electronic resources. Respondents also indicated getting distracted by opening other webpages while online. It is therefore not surprising that most respondents had preference for print. Another impediment to the adoption of e-books has been identified as lack of subject specific e-books. The overall impression

is that e-book usage is low. Users expect e-books to mimic traditional print book features. Most users are more familiar with traditional print which provides for tactile reading experience hence the preference.

5.2.3 How does the library promote the use of e-books?

Wits library promotes library products on an on-going basis through Libguides, posters, digital signage, information literacy training and faculty library representatives. Although the library has initiated compulsory information literacy training in the last two years for all first year undergraduate students, there are some who are not aware of certain library products. Continuous partnerships between the library and academic staff, as well as embedding resources on learning platforms will help create awareness among users.

5.3 Recommendations

A number of challenges were indicated by participants and interviewees concerning e-book usage at Wits. The following recommendations can help the library to improve:

5.3.1 Library technology infrastructure policy

All challenges identified by respondents and interviewees have policy implications. The library collection development policy has been aligned with the university business strategy. However, there is need for policy guidelines for technology infrastructural development on loanable devices and increased broadband speed. Such a policy may stimulate access to electronic resources and increase the uptake for research and learning within the academic environment. Such a policy should stipulate what needs to be done with DRMs restrictions for downloads on multiple e-reading devices, licensing and provision for adequate budget allocation.

5.3.2 Library budget

Initially, e-books were thought to be cheaper than printed books. With time, it is apparent that there are hidden costs where e-books require technological infrastructure and manpower to manage the workflow. There are restrictions on usage depending on user licenses making e-books expensive to maintain. The budgetary allocation for information technology infrastructure and resources needs to

be increased to sufficiently meet needs that affect the quality of service offered. A sustainable budget will enable the library to source electronic resources and keep abreast with the ever changing technological needs for tangible (hardware) and non-tangible (software) IT assets.

5.3.3 Marketing/promotion

Segmentation by targeting specific groups is necessary to create awareness of services. Academic staff can include e-books on the class reading list to create awareness. Respondents highlighted the need to improve awareness of the existence of e-books in Wits libraries. Although various marketing strategies have been used, respondents seem to prefer personalised marketing services. Some of the suggestions were the need to know what was happening within the library through email and short messaging services. The library may want to investigate these options as marketing strategies to sensitise users to resources available in the library. There is also the need to continually analyse existing marketing strategies to find out shortcomings and make the necessary adjustments.

5.3.4 Book formats

Although e-books are convenient and easily accessible, it is worth noting that some of the respondents do not have access to electronic resources off campus and e-reading devices. Other users simply prefer print. The library has the responsibility to provide the necessary infrastructure and access to resources in different formats for academic research. E-books are sourced from various publishers and vendors. There are different platforms which require passwords for access. Then there is lack of sufficient e-books for certain subjects. VAT charges imposed on all internationally sourced resources impacts on the library budget and e-books acquisition. Most users have access to e-reading devices, especially smartphones; however, compatibility of e-reading devices also discourages usage. There is need for universal devices for e-books.

Until these challenges are addressed fully, the library cannot simply shift from print format to e-book format. There will never be any competition between the two formats. Most subject areas are not covered by e-books. What is required is to carefully consider stakeholder needs. Wits library has the responsibility to provide a balanced collection which will cater for all user categories.

5.3.5 Improve information technology infrastructure

Although the library provides information infrastructure, more facilities are required to transform Wits libraries into 21st century library. Many participants in the study raised concerns related to ICT infrastructure improvement. The university needs to assign substantial budgetary allocation for investment in ICT infrastructure and information resources. Provision of e-resources also requires around the clock help desk support. This service should be considered by the library to ensure that users are assisted at their time of need.

5.3.5.1 Wireless network and wireless printing

Wireless and broadband access for mobile devices is vital in higher education landscape to facilitate access to resources. Most students access information resources using their mobile devices. Reliable and constant access to high speed Wi-Fi will most likely increase the frequency of access to electronic resources. Improved broadband speed and faster internet access can reignite the uptake of e-books for academic research. It was observed that students had various devices, and the library should investigate options for wireless printing facilities as well.

5.3.5.2 Loanable devices

The decision to acquire digital resources means that the library should have sufficient infrastructure to transform research and innovation. Provision of e-reading devices will expose users to technology gadgets and help bridge the digital divide. Respondents expressed the need for the library to invest in loanable e-reading devices. Most respondents prefer to read e-books on iPads, tablets and smartphones as portable technology gadgets to support academic research. In determining technology device preference for e-books, the library may want to carry out a survey, by engaging students as the largest stakeholders, to device creative means for appropriate services, seeing that it is difficult to keep up with technological innovations. There should also be discussions with publishers to relax digital rights management (DRM) restrictions imposed on downloads and use of multiple devices, and address compatibility issue for different platforms. It is also important for Wits library to invest in retraining existing staff to support troubleshoots and hurdles related to multiple loanable devices in branch libraries.

5.3.5.3 Library as space

Wits Engineering Library is a newly refurbished library, integrating technological infrastructure and quiet study facilities, a catalyst for access to electronic resources and services. The collection consists of both print and electronic format. The library provides flexibility in terms of space, where students can access various service points. Discussion rooms are spaces used to foster creative collaboration and active learning. However, because respondents use multiple devices to access resources, the library needs to invest in charging stations for portable devices, wireless printing and faster broadband speed.

5.4 Conclusion

As we aspire to advance human civilisation, we need to continually value the acquisition of knowledge through content in different formats. Electronic books and electronic journals are value-adding resources as part of the knowledge ecosystem which complements print resources. Technology makes unique collections discoverable in support for intensive research in academic institutions. Library staff members have invested heavily in the print format, and changing that mind set and workflows entirely is not easy, and yet it is necessary. Innovative portable technological applications such as tablets, iPads, and laptops are favoured by respondents enabling students to be connected on the move, as opposed to static desktop computers, supporting findings by the new media consortium horizon report where portable applications are revolutionising the higher education landscape (Johnson et al., 2014). The library needs to have a balanced collection for equitable access in response to local stakeholder needs.

Most respondents love the smell of a new book, the feel and the reading experience afforded by the print book. Views from this study may not necessarily be a true reflection for the entire university, but rather give an indication of what specific user preferences are in terms of electronic resources. Technology has provided an avenue for e-books to be used for complementary research at Wits University. So for this research, technology acceptance model 2 designed by Venkatesh and Davis (2000) seems to support the view that perceived usefulness, ease of use and subjective norms are some of the reasons behind the e-book ecosystem, giving users an opportunity to access electronic resources for research and innovation.

5.5 Further research

This study focused on one faculty and did not sample the entire student community within Engineering Faculty. It is worthwhile for further research to focus on the whole university to include views from all stakeholders such as academic and support staff, and all full-time and part-time students. It is critical to have follow-up studies which should focus on preferred loanable devices by users as technological infrastructural development.

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APPENDIX A: QUESTIONNAIRE

LETTER OF INTRODUCTION TO PARTICIPANTS

My name is Margaret Atsango, I am an information Librarian in the Commerce Library, University of the Witwatersrand. I am also a Carnegie scholar, studying towards a Master's degree in Information Technology (M.IT) at the University of Pretoria. To complete the degree programme, I need to carry-out research on e-books titled "**The use of electronic books in academic libraries: a case study of the University of the Witwatersrand**" as a mini dissertation. I am interested in understanding the perceptions of e-books in academic libraries by undergraduate engineering students, and how e-books are used to bridge the knowledge gap in an academic setting.

It will take you 15- 20 minutes to complete the questionnaire. This research is strictly for academic purposes and all confidentiality protocols will be adhered to. The questionnaire consists of open-ended and closed questions. Information you do not feel comfortable supplying will not be part of the study.

Your answers will enable me to collect relevant data to make recommendations on how the library can make better use of scarce resources. Participants in the questionnaire are students in the Faculty of Engineering. Please do not hesitate to contact me should you have any questions or further suggestions.

Contact Details: Margaret Atsango

E-mail: Margaret.Atsango@wits.ac.za
Telephone: 011-717-1993.

I agree to participate in the study on "**The use of electronic books in academic libraries: a case study of the University of the Witwatersrand"**

…… ……..

Signature **Date**

QUESTIONNAIRE SCHEDULE FOR STUDENT PARTICIPANTS

1. Preliminary information

Please note that all information will be treated with utmost confidentiality and the identity of participants will not be divulged. Preliminary information is required for assessment purpose.

What is your current year of study?

Which school are you associated with?

- ☐ Architecture and Planning
- ☐ Civil and Environmental Engineering
- ☐ Chemical and Metallurgical Engineering
- ☐ Construction Economics and Management
- ☐ Electrical and Information Engineering
- ☐ Mechanical, Industrial and Aeronautical Engineering
- ☐ Mining Engineering

How frequently do you visit Wits Engineering library?

- ☐ Several times a day
- ☐ Once a day
- ☐ Once a week
- ☐ Twice a week
- ☐ Once a month
- ☐ I do not use the Engineering Library

If you do use the Library, for what purpose do you physically visit the Wits Engineering library?

2. Marketing/awareness services

How do you prefer to find out what is happening within libraries?

- ☐ Short messaging service (SMS) on my smartphone (Mobile)
- ☐ Facebook
- ☐ Twitter
- ☐ In class
- ☐ E-mail
- ☐ Posters
- ☐ Other, please specify

How did you get to know about e-books? Please tick the relevant option(s)

☐ Library orientation/training

☐ My lecturer

☐ Through a friend

☐ On social media

☐ I have never heard of e-books (**Thank you for participating, I am interested in e-book users only. Please return this questionnaire to the researcher without answering any further questions**)

☐Other (please indicate)

Have you ever had training on how to locate electronic resources in the library?

3. When looking for a specific e-book, where do you start searching? Please tick the relevant option(s)

☐ Library catalogue

☐ Google

☐ “Ask a librarian” service

☐ Publisher website

☐ Google Scholar

☐ Databases

☐ Other (please indicate)

4. E-book usage

For what purpose do you use an e-book? Please tick the relevant option(s)

☐ For leisure

☐ For academic research and study

☐ On recommendation by my lecturer

☐ On recommendation by my friends

☐ Any other (Please indicate)

How easy is it to discover e-books using the library catalogue?

How frequently do you use e-books?

☐ Everyday

☐ Every week

☐ When writing assignments

☐ Other (please specify)

How confident are you in using e-books? Please tick the relevant option(s)

☐ Very confident

☐ Somewhat confident

☐ Not confident

☐ I only use new technologies if I have to

☐ I am a technology savvy person and use e-books often

☐ Any other (please specify)

While using an e-book, what would you like to be able to do?

Make notes	☐ Strongly agree	☐ Agree	☐ Disagree
Highlight	☐ Strongly agree	☐ Agree	☐ Disagree
Copy and paste	☐ Strongly agree	☐ Agree	☐ Disagree

Search within text ☐ Strongly agree ☐ Agree ☐ Disagree

Link text ☐ Strongly agree ☐ Agree ☐ Disagree

Change font size ☐ Strongly agree ☐ Agree ☐ Disagree

Email ☐ Strongly agree ☐ Agree ☐ Disagree

Please list any other facilities you would like

5. Technology and e-reading devices

Which devices should the library provide for e-book access?

Which devices do you prefer for reading e-books?

How do you currently access e-books?

☐ On my laptop

☐ On my iPad

☐ On my smartphone (Blackberry, Sony, iPhone, Samsung, Nokia)

☐ On my Kindle

☐ On my Nook

☐ On my tablet

☐ Desktop/Personal Computer (PC)

☐ Any other devices (please indicate)

Please rate internet connection speed in Wits libraries

☐ Excellent

☐ Very good

☐ Good

☐ Satisfactory

☐ Poor

Which technology infrastructure should be improved in the library?

Are you able to access electronic resources from home?

☐ Yes

☐ No

6. E-book features

Which function(s) do you like about e-books?

What don't you like about e-books?

What factors motivate you to use e-books?

- ☐ Easily accessible from anywhere
- ☐ Convenient and saves time
- ☐ Free wireless access
- ☐ User friendly library website
- ☐ Faster internet connectivity on campus
- ☐ Ability to access e-books using smartphones and tablets
- ☐ Easy to download chapters
- ☐ Freely available e-books online
- ☐ Any other (please indicate)

Which e-book format do you prefer?

- ☐ PDF
- ☐ Hyper-text mark-up language (HTML)
- ☐ e-Pub for e-readers such as iPad, iPhone or Android
- ☐ E-books for mobile devices

☐ Other (please specify)

Select the best option(s) describing why you <u>do not</u> use e-books. Please tick all that apply

☐ I prefer print books

☐ Access requires many passwords for different databases

☐ Lack of e-books in my research area

☐ Limited access off campus

☐ Lack of devices (laptop or e-readers) to access

☐ Lack of internet connectivity

☐ Constant load shedding/power supply outages

☐ Very slow internet

☐ Low battery on my laptop/e-reader

☐ I get tired reading on the screen

☐ It is difficult to find e-books on the catalogue

☐ Any other reason (Please indicate)

7. Challenges in using e-books

Do you prefer e-books or print?

If you selected e-books, please explain why

If you selected print books, please explain why

Which problems do you encounter while using e-books?

Which aspect(s) prevent you from accessing e-books?

- ☐ I do not have a library PIN
- ☐ I have no internet access
- ☐ I do not have a laptop, iPad or Kindle reader
- ☐ I get distracted easily by opening other webpages
- ☐ Lack of e-books in my subject area
- ☐ I get eye fatigue while reading on the screen
- ☐ Lack of sufficient computers in the library
- ☐ Any other (please indicate)

What can the library do to enhance your research abilities in using e-books?

Do you have any suggestions for the library on how to improve e-books access?

Did you learn anything about e-books through this survey?

Thank you for your time

APPENDIX B: INTERVIEW SCHEDULE

LETTER OF INTRODUCTION TO STAFF

My name is Margaret Atsango, I am an information Librarian in the Commerce Library, at the University of the Witwatersrand. I am also a Carnegie scholar, studying towards a Master's degree in Information Technology (M.IT) at the University of Pretoria. To complete the degree programme, I need to carry-out research on e-books titled "**The use of electronic books in academic libraries: a case study of the University of the Witwatersrand**" as a mini dissertation. I am interested in understanding the perceptions of e-books in academic libraries by undergraduate Engineering students, and how the e-books are used to bridge the knowledge gap in an academic setting.

This research is strictly for academic purposes and all confidentiality protocols will be adhered to. Pseudonyms will be used to protect the identity of all participants.

- The interview consists of a number of questions and respondents are free to terminate the interview at any point.
- You are free to decide on the time when you will be available for the interview
- Information you do not feel comfortable supplying will not be part of the study

You have been selected to participate in this research by virtue of your work. This interview will enable me to collect relevant data to make recommendations on how the library can make better use of scarce resources. Participants in this interview are librarians and policy makers in the University of the Witwatersrand Libraries. Please do not hesitate to conduct me should you have any questions.

Best regards,

Margaret Atsango
E-mail: Margaret.Atsango@wits.ac.za
Telephone: 011-717-1993.

I agree to participate in study on "**The use of electronic books in academic libraries: a case study of the University of the Witwatersrand"**

…… ……..

Signature **Date**

INTERVIEW SCHEDULE FOR UNIVERSITY OF THE WITWATERSRAND LIBRARY STAFF

This interview will be based on four sub-questions: namely, the decision to use or not to use e-books, perception of e-books, accessibility and barriers in using e-books as well as awareness and promotion of e-books.

Interview questions

Who allocates funds to acquire e-books for the library?

What e-book licensing models does the university library prefer?

☐One user license

☐Multiple/unlimited user licenses

Why does the library prefer the licensing model selected above?

Which e-book vendors do you prefer?

Why do you prefer these vendors?

What challenges do you experience dealing with e-book vendors?

What should be done to address these challenges?

Who recommends e-books for acquisition?

How does the library promote e-books?

Have you ever used e-books?

For what purpose do you use the e-books?

Which e-book feature(s) do you like?

What challenges have you experienced while using e-books?

Given a choice between a print book and e-book, which would you prefer?

Do you think the library provides sufficient infrastructure to access online resources?

During acquisition, have you noticed an increase in demand for e-books?

Based on user feedback, what do you think of the investment in e-books?

Do you have any other suggestions on e-books?

Thank you very much for your time.

APPENDIX C: CONTENT ANALYSIS DOCUMENTS

The following documents were analysed and used in this study:

- Wits library annual reports
- Wits University annual report and website
- Wits vision 2022 strategic framework

APPENDIX D: UP ETHICAL CLEARANCE

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Enquiries : Dr Marlene Holmner
Tel. nr. : +27 (0)12 420-5215
Fax nr. : +27 (0)12 362-5181
E-mail : Marlene.holmner@up.ac.za
Office : IT 6-43

Faculty of Engineering, Built Environment and Information Technology

School of Information Technology

2015-07-27

ETHICAL CLEARANCE FOR MARGARET ATSANGO

Dissertation Title: The use of electronic books in academic libraries: a case study of the University of the Witwatersrand

To whom it may concern:

This is to confirm that the Research Committee of the Department of Information Science approved the application by Margaret Atsango for ethical clearance. Mrs Atsango complied with the standard requirements for ethical clearance as set out by the University of Pretoria's Faculty of Engineering, Built Environment and Information Technology (EBIT), as follows:

- She signed and submitted all the application forms required for ethical clearance;
- She submitted her data collection instruments for vetting by both the Research and Ethics Committees; and
- She implemented all corrections recommended by the above-mentioned committees.

The Research Committee of the Department of Information Science therefore requests permission for Mrs Atsango to collect the data she needs in order to complete and submit her mini-dissertation for examination. The Committee further appreciates any effort by appropriate authorities to expedite this process, and expresses its gratitude in anticipation.

Yours sincerely

Dr Marlene Holmner

Dr Marlene Holmner
Academic Coordinator: Carnegie MIT
Department of Information Science
E-mail: marlene.holmner@up.ac.za

APPENDIX E: WITS ACADEMIC REGISTRAR

UNIVERSITY OF THE WITWATERSRAND JOHANNESBURG

OFFICE OF THE REGISTRAR

TO WHOM IT MAY CONCERN

"The use of electronic books in academic libraries: a case study of the University of the Witwatersrand"

It is hereby confirmed that the enclosed research material has been distributed in accordance with the University's approval procedures for such a project. Please be advised that it is your right to withdraw from participating in the process if you find the contents intrusive, too time-consuming, or inappropriate. The necessary ethical clearance has been obtained.

Should the University's internal mailing system be the mechanism whereby this questionnaire has been distributed, this notice serves as proof that permission to use it has been granted.

Students conducting surveys must seek permission in advance from Heads of Schools or individual academics concerned should surveys be conducted during teaching time.

Carol Crosley
University Registrar
30th July 2015

Private Bag 3, WITS 2050, South Africa | Tel: +27 (11 717 1000 | Fax: +27 (11 717 1217 | Email: registrar@wits.ac.za

APPENDIX F: WITS CLEARANCE CERTIFICATE

Research Office

HUMAN RESEARCH ETHICS COMMITTEE (NON-MEDICAL)
R14/45 Atsango

CLEARANCE CERTIFICATE	PROTOCOL NUMBER: H15/06/03
PROJECT TITLE	Use of electronic books in academic libraries: A case study of the University of the Witwatersrand
INVESTIGATOR(S)	Ms M Atsango
SCHOOL/DEPARTMENT	Commerce Library (Wits)
DATE CONSIDERED	19 June 2015
DECISION OF THE COMMITTEE	Approved unconditionally
EXPIRY DATE	13 August 2018
DATE 14 August 2015	CHAIRPERSON (Professor J Knight)

cc: Supervisor: Professor P Underwood

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10005, 10th Floor, Senate House, University.

I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any deviation be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to completion of a yearly progress report.**

Signature Date

PLEASE QUOTE THE PROTOCOL NUMBER ON ALL ENQUIRIES