University of the Western Cape

Department of Library and Information Science

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The role of the academic library in supporting postgraduate students and researchers within the Community and Health Sciences Faculty at the University of the Western Cape

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Declaration

I Karen Cook, declare that the thesis entitled: *The role of the academic library in supporting postgraduate students and researchers within the Community and Health Sciences Faculty at the University of the Western Cape* is my own work, that it has not been submitted for any degree or examination in any other university, and that all the sources I have used or quoted have been indicated and acknowledged by complete references.

Signature……………………………………..

Date: 12 December 2019

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Abstract

Research, aimed at strengthening the economy and driving development, with the view to address South Africa's numerous challenges and/or advance knowledge, generally, exists in abundance. It has highlighted the crucial role played by institutions of higher learning, such as universities, in this regard. In particular, the contribution of academic libraries in supporting the country's agenda, with regard to its teaching and research goals, has come to the fore. Academic libraries have been portrayed, quite correctly, as the legitimate heart of the university, for majority of scholars rely heavily on their collections and services in their quest to develop new knowledge. However, the role played by these important facilities in supporting postgraduate students and researchers in South Africa is yet to be comprehensively examined. With a view to partly address this existent knowledge gap, this study examines the interaction between the University of the Western Cape's (UWC's) library and the institution's Faculty of Community and Health Sciences' postgraduate students and researchers. In accomplishing this task, I explore the skill set and competencies required of the subject librarian to best support the research needs of postgraduate students and researchers at UWC's Faculty of Community and Health Sciences. I also investigate the perceptions and expectations of postgraduate students and researchers vis-à-vis the institution's library. Additionally, this study explores the innovative measures adopted by UWC's library in its quest to provide competent and satisfactory services to its postgraduate students and researchers. For its theoretical framework, this study employs the Diffusion of Innovation (DOI), also known as Roger's model. This framework has been used to explore how innovative research services can be established and offered to support postgraduate students and researchers' needs. This study employs a mixed methods approach and makes use of various data collection instruments, namely, survey questionnaires and interviews. The collected data has been analyzed through the Statistical Package for the Social Sciences (SPSS). The transcribed interviews have been analyzed thematically. The findings indicated some gaps between postgraduate students' and researchers' expectations for library's research support services, research workshops and skills and competencies of a subject librarian. The findings also revealed postgraduate students' and researchers' perception of the library's research support services, research workshops and subject librarians' skills and competencies to be fulfilled. Even though many of the identified needs are currently being addressed by UWC library, several potential areas for improvement were identified. One of the major challenges is the awareness of the library services and

facilities the library offers to support research. Other challenges that postgraduates' students and researchers are facing is that they are often not aware how to search for information, easy access to the library's resources and the expertise of the subject librarians.

Keywords: University of the Western Cape; Research; Research Support; Academic Libraries; Researchers; Postgraduate Students; Academic Library Services; Subject Librarian; University libraries.

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List of Acronyms and Abbreviations

ASERL - Association of South Eastern Research Libraries

CARL - Canadian Association of Research Librarians

CHS - Community and Health Sciences

CPUT - Cape Peninsula University of Technology

DOI - Diffusion of Innovation

HEI - Higher Education Institutions

IR - Institutional Repository

ISBN - International Standard Book Number

ISI - Institute for Scientific Information

ISSN - International Standard Serial Number

ICT - Information and Communications Technology

LIS - Library Information Science

KARI - Kenya Agricultural Research Institute

MoARD - Ministry of Agriculture & Rural Development

NRF - National Research Foundation

OA - Open Access

QUT - Queensland University of Technology

RIN - Research Information Network

RISC - Research Information Support Centre

RLUK - Research Libraries United Kingdom

RSS - Rich Site Summary

SRMO - Sage Research Methods Online

SPSS - Statistical Package for Social Sciences

SUAIR - Sokoine University of Agriculture Institutional Repository

THE - Times Higher Education

UCT - University of Cape Town

UWC - University of the Western Cape

CHAPTER 1: INTRODUCTION AND BACKGROUND

1.1   Introduction

South Africa faces numerous challenges which result mainly from poverty and inequality. The National Research Foundation's (NRF) Annual Performance Report (2011-2012: 4) lists some of these challenges as: unsatisfactory educational outcomes; unemployment; a resource-based economy; a disease burden crippling the health system; divided communities; corruption; unequal public service performance; deteriorating infrastructure; and patterns that continue to marginalise the poor. Acknowledging that it is critical for the growth of the country, the South African government prioritises the establishment of an enabling environment for innovation and research and is committed to building the human capital essential for the future knowledge economy (National Research Foundation Annual Performance Report 2011-2012: 5).

There has been an upsurge in research seeking to provide solutions for the country's challenges and for the advancement of knowledge generally. This assists in strengthening the economy and driving development (Higher Education in Context, n.d.: 17). Research plays an increasingly important role in many South African universities.

The relationship between libraries and postgraduate students and researchers has been changed by the digital revolution, with fewer people physically accessing the library. It is important for academic libraries to reconsider the quality, nature and extent of their collections, their service offerings, staff and physical space, all important factors necessary to meet users' research needs (Research Libraries United Kingdom and Research Information Network 2011: 6). Academic libraries should reconsider how they can play a more pivotal role in supporting research.

This study examines the role of the academic library's services in supporting postgraduate students and researchers within the Community and Health Sciences Faculty at the University of the Western Cape (UWC). The researcher, who is one of the Community and Health Sciences' Faculty librarians, investigates the development of skills and competencies and improvements in library services that support postgraduate students and researchers in the Faculty of Community and Health Sciences.

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1.2   Background and motivation

1.2.1   Why is research needed in South Africa?

As detailed in the NRF's Annual Performance Report (2011-2012), the organisation promotes and supports research in all fields of knowledge, providing access to national research facilities, particularly at Higher Education Institutions (HEIs). Promoting science councils with high-level human capital development is one of the ways in which the NRF aims to sustain excellence in all its investments in knowledge, people and infrastructure. Governed and funded by the South African government, and in collaboration with international researchers in several countries, the NRF keeps South African research on the international radar (National Research Foundation Annual Performance Report 2011-2012: 6).

1.2.2   Research at South African Universities

The academic journal *Higher Education in Context* (n.d.: 17) reports that South Africa's strong and diverse research base is the largest in Africa, conducting and producing 80% of the basic research in Southern Africa. South Africa dominates in the latest South African university rankings, as per Bothwell (2015a). Examining fifteen African universities, the ranking system requires the institutions to have a minimum of 500 research publications in the five-year period assessed, with at least fifty papers per year. The rankings are finalised based on the scores of research influence. According to Bothwell (2015b), the University of the Western Cape is ranked number seven on the latest South African university ranking scale, with an 84.61 score of 1154.77 publications. Top South African universities, according to the 2014–2015 edition of the Times Higher Education (THE) World University Rankings, are presented in Table 1.

Table 1: The world university rankings – top South African universities

SA Rank	World Rank	University
1	124	University of the Witwatersrand
2	251-275	University of Cape Town
3	276-300	Stellenbosch University
7	954	University of the Western Cape

1.2.3 Role of the Academic Library in the University

Considering the vital role universities play in training graduates who are equipped to enhance economic growth and development and find solutions for societal problems, it is clear that research support is crucial for universities in South Africa. Neerputh (2013: 14) emphasised that the purpose of an academic library is to contribute to the core business of the university, namely teaching, learning and research. Maesaroh and Genoni (2009: 525) pointed out that academic libraries have been "a vital part of universities" since the nineteenth century. Maesaroh and Genoni (2009: 525) highlighted how scholars rely on their university library's collections and services to acquire and develop new knowledge.

1.2.4 Research at the University of the Western Cape (UWC)

UWC's mission statement states that:

> "the University of the Western Cape is a national university, alert to its African and international context as it strives to be a place of quality, a place to grow. It is committed to excellence in teaching, learning and research, to nurturing the cultural diversity of South Africa, and to responding in critical and creative ways to the needs of a society in transition. Drawing on its proud experience in the liberation struggle, the university is aware of a distinctive academic role in helping build an equitable and dynamic society" (University of the Western Cape 2009: 3).

UWC is recognised as a research-rich environment of highly qualified academics fifty percent of whom have doctoral degrees (University of the Western Cape Library Research Support Plan 2013). UWC's research capacity is thriving as a result of the support and promotion of the Office of Research, Division of Postgraduate Studies, the training of staff and the library's research support initiatives (UWC Library Research Support Plan 2013).

Many departments and faculties within the university have seen a strong focus on research. As part of the strategic plan for the next five years, the university seeks to increase its postgraduate student population from 20% to 30%. UWC is embarking on cooperative research ventures with the University of Cape Town and Stellenbosch University, resulting in several collaborative research projects with international partners.

1.2.5 Research support at UWC main library

The UWC library mission is to support and enrich the university in its commitment to teaching, learning, research and community outreach by making available relevant resources, services, staff and an environment beneficial for exploring and acquiring knowledge (University of the Western Cape Library 2013). In line with this mission, the UWC main library is committed to supporting the research activities of postgraduate students and researchers by offering the following services: advanced information literacy training; a dedicated research commons; subject librarians supporting research; postgraduate workshops, individual training sessions; developing a collection of print and e-resources that caters for researchers' needs; reference services; reference manager software; citation analysis; management of UWC output (Institutional Repository); scholarly communication; and open access (University of the Western Cape Library 2013). According to Garner (2006 n. p.), research processes, scholarly communication and quality research output are facilitated and promoted by the provision of the aforementioned services and high-quality resources.

1.3 Problem statement and research questions

This study investigated the role of the academic library's services in supporting postgraduate students and researchers within the Faculty of Community and Health Sciences at UWC. This study focuses on the academic library research services that support postgraduate students and researchers with the aim of implementing new or improved services and/or improving existing services to enhance learning, teaching and research. This study also investigated postgraduate students' and researchers' decisions to use or not use the library for research as well as their perceptions of the role of the academic library in supporting research. Lastly, the study explored the skills and competencies of a subject librarian supporting postgraduate students and researchers' needs.

The objectives of the study were to examine:

- research services of academic libraries supporting postgraduate students and researchers;
- postgraduate students' and researchers' decisions to use or not to use the library for research;
- perceptions of postgraduate students and researchers regarding the role of the academic library in supporting research; and

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- skills and competencies of a subject librarian in supporting postgraduate students' and researchers' needs.

The researcher focused on the following research questions:

1. Which research-oriented services are offered by UWC to postgraduate students and researchers?

2. Which factors affect postgraduate students' and researchers' decisions to use or not use the library for their research?

3. What are the perceptions of postgraduate students and researchers of the role of the UWC academic library in supporting research?

4. Which skills or competencies are needed by the subject librarian to support postgraduate students and researchers in their research?

1.4 Clarification of key terms

1.4.1 Academic library

The purpose of an academic library is to contribute to the core business of the university, namely teaching, learning and research.

1.4.2 Academic library services

Academic libraries provide a range of services for users. According to Auckland (2012: 46), such services comprise:

> "information management, including bibliographic software management; referencing and citations; plagiarism; copyright; bibliometrics; archival research; getting more from Google; information discovery; Rich Site Summary (RSS) and publication alerts; research data management planning; research data curation; and dissemination strategies, including open access publishing."

1.4.3 Perceptions

The Cambridge online dictionary defines perception as "a belief or opinion, often held by many people and based on how things seem" (Cambridge online dictionary, 2019).

1.4.4 Postgraduate student

A postgraduate student is a person who has obtained a degree at a university or any higher education institution, and is studying for a higher qualification, for example, a postgraduate certificate, postgraduate diploma, masters or doctoral degree.

1.4.5 Research

Research is defined by Creswell (2008) cited in Singh and Singh (2014: 80), as "a process of steps used to collect and analyse information to increase our understanding of a topic or issue". The stages of research involve, developing a question, collecting data to answer the question and presenting an answer to the question.

1.4.6 Researcher

A researcher is an individual who forms a hypothesis and then conducts research by launching an organised and systematic investigation into a subject with the aim of discovering or revising facts, theories and applications. Scientists are often described as researchers

1.4.7 Research support

Research support involves proactively supporting research activities by offering high quality resources, supporting research processes, facilitating scholarly communication and promoting quality research output (Garner 2006: n. p.).

1.4.8 Subject librarian (Faculty librarian)

Most university libraries have a librarian who works as the subject librarian, also known as the faculty librarian. Subject librarians work closely with academic departments to identify and

address the library and information needs of staff and students in specific disciplines. They present subject-specific user education sessions tailored to the needs of departments, manage the library's collections to keep them effective and relevant, and assist users at all levels to make optimal use of library resources.

1.4.9 University of the Western Cape (UWC)

The University of the Western Cape (UWC) was established in 1960. It is located in Bellville, Cape Town. UWC is ranked seventh among South African universities and between 601-800 amongst the World's University Ranking (Times Higher Education World University Rankings - University of the Western Cape: 2019).

1.5 Research methodology

This study uses a mixed methods approach; it collects both quantitative and qualitative data via survey questionnaires and interviews. According to Creswell (2014: 4), quantitative research collects data using instruments and numbers. Quantitative research is the most appropriate method for testing objective theories by examining the connections among variables. Denzin and Lincoln (2011: 3) defined qualitative research as the studied use and collection of a range of empirical data in the form of, for example, a case study, personal experience, life story, or interview. Qualitative data typically obtains a rich description of participants' views and/or experiences, e.g. capturing problematic moments and meanings in people's lives in detail.

An email survey was conducted with postgraduate students and researchers within the Faculty of Community and Health Sciences at UWC. The researcher conducted face-to-face interviews with three researchers, five PhD students and two master's students. It involved semi-structured, open-ended questions designed to draw views and opinions from the participants. With the permission of the respondents, the interviews were audiotaped and later transcribed.

1.6 Significance and delimitations of the study

This research is significant because it provides subject librarians with useful information about the skills and competencies that should be acquired to support researchers and postgraduate students conducting research. In addition, it should make a significant contribution to the improvement of research services at the UWC library. The study is limited to the University of

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the Western Cape's Master's students, PhD students and researchers within the Faculty of Community and Health Sciences. Therefore, the findings cannot be generalised.

1.7   Outline of the chapters

Chapter 1 introduces the study and provides an overview of the research project. It introduces background information on the research environment in South Africa, research at South African universities, and the role of academic libraries at universities. It presents the aim of the study, the problem statement and research questions, key concepts, a brief description of the research methodology, as well as the significance and delimitations of the study.

Chapter 2 provides an analysis of the relevant literature of supporting the research questions/objectives of this study as well as a discussion of the theoretical framework.

Chapter 3 discusses the research methods and research instruments used to collect data. It discusses the research techniques used for data collection, population and sampling, data analysis, as well as ethical considerations.

Chapter 4 reports on the results of the data collected and presents the findings of the research project.

Chapter 5 presents a discussion of the questionnaire and interview findings.

Chapter 6 presents the conclusions, recommendations, limitations of the study and suggestions for further research.

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CHAPTER 2: LITERATURE REVIEW

2.1   Introduction

Chapter 1 introduced the study and gave a brief overview of the research problem statement and research questions. This chapter provides a detailed discussion on the literature supporting the objectives of the study. The purpose of the literature review, according to Creswell (2003) cited in Rocco & Plakhotnik (2009: 125), is "to examine if a topic is researchable, to report the results of closely related studies, and to establish the importance of the current study in relationship to previous studies". This chapter starts by providing a brief overview of studies that used Rogers' theory of Diffusion of innovation (DOI), and the possibility that adopter's acceptance of an innovation could be based on their perceptions regarding the characteristics of innovation.

2.2   Theoretical framework

A theoretical framework, according to Merriam (2001: 45) cited in Rocco & Plakhotnik (2009: 125) can be described as "the structure, the scaffolding, the frame of your study". The theoretical framework used in this study is the Diffusion of Innovation (DOI) model by Rogers (2003), also known as the Rogers' model. This framework helps ascertain which innovative research or improved services can be offered to support postgraduate students and researchers. It could assist in the development of skills and competencies needed by the subject librarian to achieve this goal in the Faculty of Community and Health Sciences at UWC. The use of this theory may also help explain why postgraduate students and researchers decided to use or not to use the library for research, and their perceptions of the role of UWC library in supporting research.
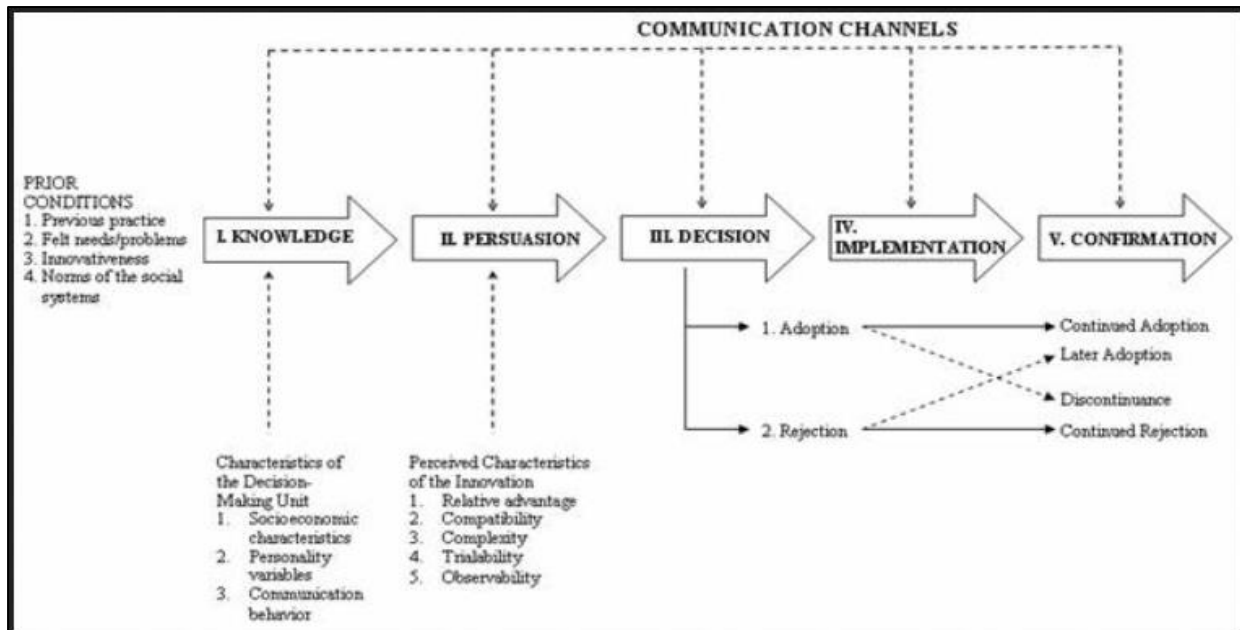
Figure 1:Diffusion of Innovations Model (Rogers, 2003)

The DOI model seeks to explain how an innovation is communicated through particular channels over a period of time among a group of individuals in a social system (Rogers 1995). Innovation is described as a new service or an existing service which has been transformed or improved to aid the organisation's development when put into practice.

> "To be an innovation the renewal must be new not only to its developer, but in a broader context, and it must involve some element that can be repeated in new situations" (Service Innovation, 2011).

The use of the DOI theory informed the research questions, questionnaire and interview questions. This framework comprises four elements namely innovation, communication channels, time and social system. Each element is briefly discussed below.

Rogers (1995 and 2003) defined the first element, innovation, as an "idea, practice or object that is perceived as new by an individual or other unit of adoption". According to Rogers (2003) if an innovation has been developed at an earlier stage and has been perceived as new by somebody, then it can still be an innovation. The characteristics of an innovation, as perceived by the members of a social system, determine its rate of adoption. Rogers (2003) cited in Musa, Ezra and Monsurat (2015: 83), declared that the rate of adoption is to some extent influenced by "perceived attributes namely: *relative advantage; compatibility; complexity; trial ability* and *observability*".

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This section uses Minishi-Majanja and Kiplang'at's, (2005) study as an example to explain how Rogers' perceived attributes of innovation was used. According to Rogers (1995; 2003) the elements discussed below, also cited in studies of Nazari, Khosravi and Babalhavaeji (2013), Nwagwu and Okafor (2014) and Musa, Era and Monsurat (2015), are the perceived attributes of innovation. The attributes of innovation in essence refer to how quickly the target audience, in this instance, postgraduate students and researchers, grasp and adopt the new ideas, processes or improved services.

In the *relative advantage attribute,* innovation is perceived to be superior to current practice and can be measured in terms of economic advantage, social prestige, convenience or satisfaction. The study by Minishi-Majanja and Kiplang'at (2005) discovered that the relative advantage was perceived to be low among the respondents due to the absence of ICT and this delayed the process of acquiring necessary ICT skills. The study also found that the use of ICT was affected by respondents' behavioral attitudes, and social and economic factors. The *relative advantage* attribute was applied in the current study to determine how successfully postgraduate students and researchers (social system) use the library research support services during their research journey. The barriers and challenges that postgraduate research students experience will determine the improvement or change in library research services.

The *compatibility attribute* indicates that an innovation is perceived to be consistent with socio-cultural values, previous experiences or perceived needs. An innovation that is incompatible with a potential user's values, norms, or practices will not be adopted as rapidly as an innovation that is compatible. According to Minishi-Majanja and Kiplang'at (2005) the compatibility of ICT facilities with the needs and desires of users may accelerate the rate of adoption. The ICT training sessions organised by KARI and MoARD reduced anxiety and doubt among staff and promoted the adoption of ICT facilities. Applying the *compatibility attribute,* the current study wishes to find out if the skills and knowledge of subject librarians are compatible with the needs of postgraduate research students during one-on-one and postgraduate workshop training. Hence, this will advance their learning ability and competencies to use the library's research support services effectively.

Complexity refers to an innovation being perceived according to a degree of difficulty to understand and use. Rogers (2005) postulated that it can to be negatively associated with the rate of the adoption of an innovation. The agricultural researcher in the Minishi-Majanja and

Kiplang'at (2005) study found ICT complex to use because users lacked computer and internet literacy skills. The study also discovered that information literacy programs were better organised in the institute where such ICT facilities were available. In the current study complexity may influence the adoption of certain specialist databases or services.

The *trialability attribute* can be perceived as promoting the adoptability of an innovation by providing the opportunity for a potential user to experience using the innovation itself. For example, the user gets an opportunity to explore a trial database without having to purchase or adopt it.

Observability is the attribute that potential adopters notice in the results of the innovation; the more visible, the easier the acceptance and adoption. Visible results minimise uncertainty and motivate peer discussion of a new idea. Minishi-Majanja and Kiplang'at's (2005) study revealed that observation and peer discussions enabled the acceptance and use of ICT by agricultural researchers in Kenya. In the current study, *observability* may be applied when postgraduate students (social system) become aware of the library's research services on the library's web page.

The second element in the diffusion of new ideas is the *communication* channel which deals with how messages about an innovation are spread among members of a social system (Rogers, 1995, cited in Minishi-Majanja and Kiplang'at, 2005: 212). An example of such a communication channel in Minishi-Majanja and Kiplang'at's (2005) study is the Kenya Agricultural Research Institute, Ministry of Agriculture and Rural Development, librarians, ICT staff, agricultural researchers and extension workers. During a *communication* process, participants can generate and share information or knowledge with one another to reach a mutual understanding. A communication channel is how messages get from one individual to another. An example of such a communication channel in the current study could be the postgraduate students' and researchers' workshops which train postgraduate research students how to find information on electronic resources and other e-services.

The third main element in the diffusion of new ideas is *time*. This refers to the time between the introduction of the new idea and its acceptance. The rate at which the target audience grasps the new idea is correlated with the speed at which the innovation is adopted (Minishi-Majanja and Kiplang'at, 2005: 212-213). The *time attribute* applied in the current study relates to how

slowly or quickly postgraduate research students adopt what they have learned during postgraduate training workshops (communication) or one-on-one training sessions.

The fourth key element in the diffusion of new ideas is the *social system* which comprises a set of individuals, informal groups, organisations, and/or subsystems (Rogers 2003). In Minishi-Majanja and Kiplang'at's (2005) study, the social system consisted of the agricultural researchers, extension workers, Kenya Agricultural Research Institute, Ministry of Agriculture and Rural Development, librarians and ICT staff. In relation to this study, the *social system* is the library and librarians in collaboration with Division of Postgraduate Studies, Research Office, ICT support staff and Faculty in support of postgraduate students and researchers needs.

2.3 Research services of academic libraries supporting postgraduate students and researchers

Academic libraries play an important role in supporting research at academic institutions. This section looks at the different services offered by academic libraries for postgraduate students and researchers at different universities. There has been heightened interest in the services and resources provided by academic libraries to increase or improve research at tertiary education institutions. With the development of technology and the increasing use of electronic journals, databases and e-books, the importance of collections for research support has increased. As a result of digitisation, academic libraries have had to acquire and develop collections that are targeted at specialised research and tailored to researchers' needs (Garner, 2006: n. p.).

Studies conducted by Garner (2006: n. p.), Rasul and Singh (2010: 78) and Hart and Kleinveldt (2011: 48-49) posit that online reference services, originally provided by librarians, are now established as electronic services (e-services). Services available on the reviewed websites include: the implementation of current awareness alerting services such as: Rich Site Summary (RSS); feeds to receive the latest additions from database collections; linking of full-text articles in the library catalogue; provision of electronic communication services using chat platforms, SMS and email; availability of table of contents from publishers' websites on the library's websites; and making information such as ethics, regulations, copyright and intellectual property available. According to Rasul and Singh (2010: 78) the above-mentioned services improved research, and at the same time minimised frustrations and difficulties.

A study conducted by Hart and Kleinveldt (2011) examined the current role of academic libraries in facilitating research at the Cape Peninsula University of Technology (CPUT), Cape Town. A thorough interview was conducted with the manager of the Research Information Support Centre (RISC) at CPUT, followed by a questionnaire survey e-mailed to 602 academic employees. Important academic library services identified were: being up to date with research areas in their field; access to e-resources, borrowing print resources, inter-library loans; subject librarians' reference/information services; embedding librarians at faculty; database training sessions, and maintenance of research repositories (Hart & Kleinveldt, 2011: 48-49). Furthermore, the Research Libraries United Kingdom and Research Information Network report (2011: 6) and Hart and Kleinveldt (2001: 49) posited that libraries need to provide easy access to up to date quality resources, as it is important for research.

The introduction of innovative electronic services and resources has resulted in training being in high demand by postgraduate research students and academic staff. Such training aims to equip them with the required skills and knowledge to be able to use the varied and extensive resources at their disposal. Some of the most beneficial postgraduate training workshops focus on information literacy training; reference manager software; referencing styles for academic publishing; literature searching; and workshops on mastering research resources and services (Garner, 2006: n. p.).

Nazari, Khosravi and Babalhavaeji (2013) conducted a study on the acceptance of online databases with faculty members from the eighth Zone of Islamic AZAD University in Tehra. This study's objective was to determine the factors affecting the adoption and use of online information electronic resources. Rogers' definition of the Diffusion of Innovations (DOI) model as stated by Nazari, Khosravi and Babalhavaeji (2013: 28) is "…the process by which an innovation is communicated through certain channels over time among the members of the social system". The researchers used Rogers' DOI to examine the outcome of perceived innovation attributes of the online databases on the rate of adoption. The findings indicated positive perceptions of various attributes of online resources.

With regard to "*relative advantage*" respondents stated that "Boolean operators in online databases lead to easy retrieval of information". On "*compatibility*" about online databases a respondent stated that "before starting professional activity in university, I knew how to use online databases". Regarding the "*complexity*" of online databases respondents felt that "learning online databases is very hard". "*Trialability*" of online databases was viewed as "the

possibility of using online databases for a trial period". Lastly, respondents noted that "*observability*" meant that "online databases can be used simultaneously by many people". The study showed that the five characteristics, *relative advantage, compatibility, trialability* and *observability* were positive elements in adopting innovation, whereas *complexity* was a negative aspect (Nazari, Khosravi & Babalhavaeji, 2013: 36). Nazari, Khosravi and Babalhavaeji's (2013) study concluded that all the attributes facilitated the use of online databases among faculty members.

According to Morris, Boruff, and Gore (2016), McGowan and Sampson (2005) and the Medical Library Association (2005), research support is important for health librarians, and the scoping review is now the preferred method of synthesising literature on a research topic. Arksey and O'Malley (2005) cited in Morris, Boruff, and Gore (2016: 346) mentioned that the purpose of a scoping review mostly agreed by various authors, is to "address broader, more complex and exploratory research questions". While the systematic review is designed to answer exactly defined, narrow questions. Health librarians need to ensure that they are up to date with new developments so that they can make a valuable contribution to the scoping review process (Morris, Boruff & Gore 2016: 346). There is an opportunity for health librarians to play a supportive role in scholarly conversations in scoping reviews. Sampson (2014: 352) further emphasised that librarians should focus more on scoping reviews than on systematic reviews because they advance evidence-based practice.

Morris, Boruff, and Gore (2016) stated that it is important for the librarian to be involved at the beginning of the scoping review process. In addition to systematic reviews, during reference interviews librarians conduct training on how to execute searches, retrieve articles and refine the research at the early stages. Therefore, the librarian's contribution is valuable in the formulation of the research question where there is a need to balance breadth and depth, systematically, and broadly in developing the database search strategies (Morris, Boruff & Gore 2016: 347).

Scholarly communication and practice have established new trends in producing new forms of digital research and scholarship, engaging in innovative new forms of research and publications. University libraries assist research scholars with information management, disseminating and publishing their research. According to Million and Hudson-Vitale & Sandy (2018) scholarly communication facilitates the research output (new knowledge) of researchers at academic institutions. This includes services of measuring impact, potential re-use and

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preservation. The advent of new technologies that support publishing and communication have transformed the research process (Regazzi, 2015, cited in Million, Hudson-Vitale & Sandy (2018: 377).

Rosenberg (2008: 9) emphasised that the shift from a physical to an electronic product has led to innovative methods for creating, storing, accessing, using and managing content, while also bringing about new challenges in terms of understanding and learning from those developments. Information and Communication Technology (ICT) has transformed ways of accessing information.

Raju and Schoombee (2014) examined research support with specific reference to the transformation of academic library services and used the research lifecycle as a framework. The researchers studied the research support and information services provided by the Stellenbosch University library to the research community. Raju and Schoombee (2014) suggested that "…the provision of new facilities and services to researchers must be viewed within the context of the change in the research information landscape which is now characterised by ubiquitous, digitised and online access to content" (Raju & Schoombee, 2014: 28). These innovative services comprise the collection, organisation and dissemination of research data, as well as accessibility through the parent institution via an established university or library institutional repository (IR). In their detailed review of the literature, Raju and Schoombee (2014: 29) highlighted the innovative roles and tasks of the research librarian, which include "research data management, curation and preservation, facilitation of open access and bibliometric analysis".

Furthermore, Raju and Schoombee (2014) said that the librarian should be part of the different phases of the research landscape service such as, at the beginning of the research phase, when the librarian works with the researcher to become familiar with the discipline's top researchers. During the literature searching phase, the librarian trains the researcher to discover existing high-quality literature. Throughout the distribution phase, the academic librarian collaborates with the researcher to find high quality journals on a particular research topic and helps in identifying appropriate publication channels.

Parker (2012: 8) examined Australian academic libraries' commitment to developing new customer-focused services that highlight the importance of the academic library's role in institutional research for postgraduate students and researchers. This study applies the four-

stage model of the research lifecycle. Garner (2006), Kaniki (2008), Walker (2009), RLUK and RIN (2011), Auckland (2012), Parker (2012) and Raju and Schoombee (2014) mention innovative research support services which consist of: access to high quality research materials; support for disseminating results after publication; assistance with research promotion and opportunities; assistance with measurement of research impact and application for funding; and support for the management of research data.

A new area of research support is research data management and the re-use and preservation of research data (Brown, Wolski & Richardson, 2015: 225). Research data should be managed within a data repository so that it is discoverable and accessible for innovative re-use.
UWC has recently established a data repository which allows users to make all their research data available in a citable, shareable and discoverable manner. The UWC librarian who is responsible for managing the research data repository has a critical role to play in promoting it amongst the research community and librarians to educate them in how to deposit and retrieve information. The academic library is one of the service providers at academic institutions that plays an important role in the management and storage of research data (Auckland, 2012; Jaguszewski & Williams, 2013; Malenfant, 2010; Brown, Wolski & Richardson, 2015: 225).

Simon Fraser University Library (2012) emphasised that the traditional role of research support services has improved to focus on all steps of the research lifecycle. The research data management service involves research support tasks, such as creating data issues awareness within institutions, and the advantages of managing research data and developing policies around data management (Brown et al., 2015: 225). During the early stages of the research lifecycle, researchers need advice on data management. That could include encouraging researchers to generate their data, arranging and organising it and committing to publish or preserve their data in a repository. Furthermore, to develop a suitable data storage capacity, the academic library should collaborate with ICT staff. During this phase it is also important to conduct training for research students on data management and curation concepts. In addition, Stuart (2014) cited in Brown et al. (2015: 227) recommended training for scholars in retrieving, archiving, disseminating and managing data.

The Swinburne University of Technology in Australia aims to be client-centered, service-oriented and always on the lookout for opportunities to optimise researchers' time through the application of information management skills (Parker 2012: 12). In addition, the Swinburne

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library offers the following publishing support services to assist researchers in publishing their results in academic journals:

- technical infrastructure via Open Journals Software;

- the optimisation of search engines with the aim of making publications more visible and discoverable;

- assistance with copyright and open access policies and developing author guiding principles;

- a Digital Object Identifier issuing service;

- the provision of International Standard Serial Numbers (ISSN) and International Standard Book Numbers (ISBN) for monograph editions;

- subscriptions management when needed;

- guidance on abstracting and indexing services; and

- support for Electronic Research Administration procedures to increase the prominence and visibility of Swinburne journals (Parker, 2012: 12).

The Research Libraries United Kingdom and Research Information Network report (2011: 6) outlined valuable services that can be offered by libraries to support postgraduates and researchers. The libraries that offers quality services and facilities can assist institutions in recruiting and retaining top researchers and help obtain research grants and contracts. Promoting and seeking new technologies for researchers is important for exposure to the network world for example, open access and social media, allowing specialist librarians to work in partnership with academic departments and focus on specific need of researchers. It is important to build relationships with postgraduate students and researchers to satisfy their needs and to increase the value of the library's services.

Kaniki (2008) as cited in Walker (2009: 6-7) identified new areas in the South African research environment deserving of research librarians' involvement and proactive engagement. These areas included:

- focusing on matters concerning international research competitiveness, reflected in the Institute for Scientific Information's (ISI) citation ranking and analysis, as well as measuring impact;

- supporting researchers with the application of ISI Web of Knowledge and Scopus for collecting and analysis of ratings, such as discipline-specific, citation metrics;

- establishing partnerships with institutional research offices;

- supporting the NRF's application processes, for example the researcher grading system and application for grants;
- assistance with research honesty, such as information resources and references; and
- commitment to improving the field of scientific data maintenance and management. (Walker, 2009: 6-7).

Institutional repositories (IRs) are scholarly communication platforms which house digital collections of an institution's research publications. IRs contain copies of theses and dissertations, research data, journals articles, conference papers, book chapters and books. IRs increase visibility and serve as a promotional tool for a university's research publications. An advantage of IRs is that they facilitate retrieval of research publications and do not have high subscription costs. Furthermore, they support scholars and researchers with open access resources (Chan, 2004; Cullen & Chawner, 2009; Swan, 2009; Russell & Day, 2010; Chirwa & Mnzava, 2017, cited in Mnzava & Chirwa, 2018: 511). IRs are ideal for managing an institutions research and preserving research publications. The Research Libraries United Kingdom and Research Information Network (2011: 6) reported that institutional repositories increase the visibility of the institutions' output and research profiles.

According to Ahmed (2013: 29) the advent of ICT "has changed the way information is generated, stored and accessed. Internet and web-based technologies have facilitated the publishing and distribution of information resources in digital format". A study conducted by Mnzava and Chirwa (2018) examined the usage of an established Sokoine University of Agriculture Institutional Repository (SUAIR) among academic staff at the College of Veterinary Medicine and Biomedical Science (CVMBS) in Tanzania. Mnzava and Chirwa's (2018) study used Rogers' (2003) DOI model to guide the implementation of innovation decision processes. SUAIR in this study, is labeled as the technology, while academic researchers in CVMBS are characterised as users of the technology. The study investigated the awareness, attitudes, self-archiving and challenges that the academic researchers experienced when using the SUAIR.

The findings confirm that the major challenges encountered in this study were lack of awareness and knowledge. The majority of the academic researchers were not aware of how to deposit their publications in the SUAIR, although they were aware of its existence. This confirms the relevance to Rogers' model of innovation decision processes. However, the findings confirm that insufficient knowledge and awareness emerged as major barriers for the

adoption of innovation. According to Rogers' (2003) "diffusion of innovation model, knowledge on the existence of the technology 'awareness' is the prerequisite factor for the use of any innovation" (Rogers 2003: 511). Furthermore, Mnzava and Chirwa (2018) mentioned that a person can easily adopt and use the innovation if they are aware of the innovation's existence and its purpose. Several other studies also revealed the insufficient use of IRs, and poor submission of scholarly publications by academic researchers. Challenges involving the usage of IRs include awareness, its purpose, impact, its existence and copyright issues (Chan & Costa, 2005; Dutta & Paul, 2014, cited in Mnzava & Chirwa, 2018: 511). The findings in this study suggested that librarians should educate researchers by hosting training, seminars and workshops to raise awareness, developing knowledge and skills to effectively use the SUAIR. With the possibility of acceptance of IR innovation, it will increase the visibility of researchers' publications as well as promoting Sokoine University of Agriculture. Various research studies used Rogers' model focusing on the use of IRs, and Mnzava and Chirwa (2018: 513) reported that this model was fit for their study.

Within the framework of Rogers' DOI theory, Daniels, Darch and de Jager (2010) examined the establishment and use of the research commons at the University of Cape Town's main library, with a view to establishing if it would provide a new service to support and enhance research productivity at the university. Upon observing evidence that postgraduates had been spending time at the university's knowledge commons alongside undergraduates, UCT discovered that there was a need for the library to specifically focus on research support. Daniels, Darch and de Jager (2010: 4) found that diffusion of innovation appeared to be essential for the adoption of the research commons. According to Rogers (2003), an innovation needs to be accepted as new by its adopters. However, the innovation does not have to be a new discovery but can be a parallel invention.

The research commons are a similar idea that was developed for undergraduate students. The research commons, which was funded by the Carnegie Corporation of New York, was developed as a classy hub where information specialists offer support in subject specific disciplines and research services. A classy hub can be described as a modern and more sophisticated technology-enabled scholarly common room where postgraduate research students access the library's electronic resources, conduct research and collaborate with one another. Knowledgeable and skilled librarians are on duty to assist with postgraduate research students research needs. It could benefit the university's increasing number of postgraduate students, especially those from disadvantaged backgrounds (Daniels, Darch & de Jager 2010).

It is important that the academic library provides dedicated spaces and an efficient work environment for postgraduate students and researchers who depend on the library and its resources (Research Libraries United Kingdom and Research Information Network report, 2011: 6).

The other two components in the development of research support services were a tailor-made research portal, and an intensive programme of advanced training for mid-career subject librarians and extended working visits at United States (US) research libraries (Daniels et al., 2010: 4).

All the above-mentioned research support services suggest that academic libraries should work collaboratively with other institutional research units to support the needs of postgraduate students and researchers. Parker (2012) as cited in Raju and Schoombee (2014) emphasised the value of collaborative partnerships using Queensland University of Technology (QUT) as an example. The QUT library partners with institutional services such as:

> "Student Academic Services, supporting Student Learning Support Services' postgraduate sessions, Postgraduate Student Association's interactive sessions, the Faculty of Graduate Research's orientation sessions and the Research Office - through the research output verification and new researcher orientation sessions" (Raju & Schoombee, 2014: 6).

In order to transform research librarianship, the library has to position itself as a dynamic partner in all phases of the research life cycle. Academic libraries have a valuable role to play in supporting postgraduate students and researchers in the course of their research activities. Although some of the studies did not use Rogers' DOI model as the theoretical framework, it can be noted that innovative services have been discovered and applied. The introduction of new electronic services and resources has increased the call for training programs to provide postgraduate students and researchers with the required skills and knowledge needed to use the extensive variety of services and resources. A few studies namely, Nazari et al. (2013), Mnzava and Chirwa (2018) and Daniels et al. (2010) highlighted the use of Rogers' DOI in the successful adoption of new and improved services.

The following section discusses the reasons for students choosing not to use the library services.

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2.4 Postgraduate students and researchers' decisions to use or not to use the library for their research

Several studies in this section highlight the various reasons why some postgraduate students and researchers use or do not use library services. A study done by Hayati and Jowkar (2008), using Rogers' DOI theory, investigated the process of adoption of electronic reference materials in academic libraries in Iran. The diffusion of innovation theory was used to evaluate the effect of perceived innovation attributes on the rate of adoption of innovations. The findings revealed that the main reasons for adopting electronic reference materials were ease of information retrieval, and reduction in both search time and the cost of resources. On the other hand, access to electronic reference materials is inhibited by academic librarians and users who do not have adequate ICT knowledge or ability to search databases. Librarians should be knowledgeable and have effective skills to assist students with information retrieval (Saiti and Prokopiadou, 2008: 101), and they need to further develop their search strategy skills (Cader et al., 2006: 407).

In a study conducted by Du and Evans (2011: 111) at the University of South Australia, it was found that postgraduate students did not make use of some of the university library services in support of their research, or had used library services but stopped doing so at a later stage. The reasons identified for academic scholars not using some of the services were: they were confident gathering information themselves; they had difficulty searching the library's online databases; they preferred to use Google and Google Scholar when searching for information.

Hayati and Jowkar (2008: 59) identified the *complexity and compatibility* features of electronic reference sources and databases. The authors stated that because of delays with the adoption of information sources, researchers did not have adequate computer literacy skills and had difficulty searching some of the electronic databases. This could be because of users' unfamiliarity with the search functions within electronic resources. According to Ray and Day (1998) libraries should provide instructional training programs conducted by professional librarians to facilitate access to information.

A similar study by Haglund and Olsson (2008: 56) found that problematic access to off-site electronic resources was another important factor contributing to the *complexity* of library usage due to different e-proxy codes. The authors further revealed that immediate access to electronic information was identified as very important to postgraduate students. As indicated

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by Friedlander (2002) cited in the study by Saiti and Prokopiadou (2008: 101), 40% of the users are unskilled due to inadequate training in how to search the electronic resources for information. Furthermore, it was mentioned by several researchers that training will equip students with the necessary skills for life-long learning and by accessing information sources effectively (Saiti & Prokopiadou, 2008: 101).

Furthermore, there was uncertainty about the importance of information specialists in research assistance; it was felt that attending postgraduate workshops is a waste of time, and some researchers were unaware of a specific service offered by the library (Du & Evans, 2011: 111). Haglund and Olsson (2008: 52) also indicated that the researchers did not visit the library regularly, as they doubted the competency and value of the librarians, instead finding colleagues and supervisors to be their most important sources of support in searching for information. Awareness of existing library services such as the importance of the librarians' role, and the facilitation of electronic information retrieval, were not properly introduced.

The findings of an observational study to better understand the needs of young researchers conducted at three universities in Stockholm, Sweden suggested that most researchers prefer to use Google, being confident that they can manage on their own (Haglund & Olsson, 2008: 52). Similarly, Herring (2001) and Albanese and Oder (2002) as cited in Wai Fan (2005: 45) reported in a Hong Kong study that few professors and postgraduate students visited the library, choosing instead to use the Internet to search for information. Tenopir (2003) cited in Saiti and Prokopiadou (2008: 101) reported that visits to the physical library had decreased, whereas the use of online resources had increased.

With reference to Rogers' DOI used in Hayati and Jowkar's (2008) study, the most *relative advantage* perceived attributes of electronic reference sources were ease of information retrieval, the ability to facilitate information retrieval, and accessing volumes of information on an online database. This implies that participants have library instruction skills and can search the online electronic resources successfully.

To conclude, postgraduate students and researchers were confident about finding information on their own, with the majority using Google as a search tool. Communication gaps existed between librarians and postgraduate research students, the latter doubting the value of librarians' proficiencies. The authors also stated that researchers would rather seek assistance from their colleagues and supervisors.

The following section deals with the perceptions of postgraduate research students concerning the role of academic libraries in supporting research.

2.5 Perceptions of postgraduate students and researchers regarding the role of academic libraries in supporting research

This section highlights the perceptions of postgraduate research students of various studies on their research needs with regards to library support. According to Du and Evans (2011: 113) the following perceptions of the role and importance of the library and academic librarians regarding research support were identified by participants at the University of South Australia: assistance from librarians in searching for library resources; subscribing to and maintaining access to relevant full-text databases. Training centres for research skills were viewed as very important. These skills included advanced searches on databases; saving searches on various databases; setting up alerts to receive current research papers; and training on journal bibliometrics (Du and Evans 2011: 113).

A study conducted by Singh (2007) at four Malaysian universities examined the perceptions of postgraduate students regarding the current universities' library roles in assisting them with their research. When asked for their opinions on how the library could better support them in their research, the respondents suggested increasing the number of resources, providing more up-to-date resources, providing increased ease of access and making better use of technology to improve services. Another interesting suggestion was having a knowledgeable, dedicated research librarian available at the reference desk to address researchers' needs. Staff should also be able to understand and communicate with foreign students (Singh, 2007: 469-470).

Pinto, Fernandez-Marcial and Gomez-Camarero (2010: 77) conducted a study which showed that users in Spain did not make use of the library's reference service because they did not believe that the research librarian was capable of assisting them. Respondents identified that university libraries focus on improving their relationship with users and recognising users' needs (Pinto, Fernandez-Marcial & Gomez-Camarero, 2010). Another study by Koffel (2015) cited by Spencer and Eldredge (2018: 49) investigated why researchers make use of the assistance of health librarians and pointed out that it improved the quality of searches, especially when the librarian is skilled in conducting systematic reviews.

Haglund and Olsson's (2008: 57) findings suggested that librarians should be more visible, working in the research environment and being more engaged with researchers. Furthermore, libraries should make their information search engines more user-friendly. Morgan and Atkinson (2000: 101) also felt that academic librarians should be active researchers, able to support students with their research needs.

An investigation by Nel (2015) studied the information needs, information seeking behaviour and information use behaviour of veterinary researchers at the University of Pretoria. The researchers and postgraduate students of the Jotello F Soga library reported problems accessing information sources, and difficulties in navigating and finding information on the library website. The respondents indicated lack of awareness or knowledge of the products and services provided by the library. A number of respondents expressed the need for access to more electronic information. The library needs to make Open Access (OA) electronic resources available that are free to the public. The lack of marketing and training on library products and services were another concern, as respondents were unaware of what the library had to offer. The need for a quieter space to work was raised by one respondent, corresponding with the need for a study area allocated to researchers suggested by Nel (2015: 134).

A study focused on postgraduate students (100) at the School of Education at the University of Dar es Salaam, Tanzania, conducted by Katabalwa (2016: 451) assessed to what extent postgraduate students use electronic journals, and explored their experiences with searches. One of the questions to respondents was what their reasons were for not using electronic journals. The results showed that three of the participants did not use electronic journal resources because they preferred using printed resources. Four of the respondents indicated that they did not know how to access electronic journal resources (Katabalwa 2016: 455). Problems experienced while using electronic journals included power outages, insufficient bandwidth, and slow download speeds. Other issues were lack of off-campus access to resources, insufficient training and awareness, insufficient access to computers and difficulty searching for information (Katabalwa, 2016: 455).

The review of the perceptions of postgraduate students in the available research literature has provided a clear indication of how academic libraries can improve their services to better support students. The studies in this section indicated that when seeking information respondents have more confidence in their colleagues and supervisors than in their librarians.

Researchers felt that it takes more time to use online databases than to use Google or Google Scholar. There was also ignorance about what the library has to offer.

The following section discusses the competencies of research librarians and how they can develop, educate and equip themselves in order to improve their services.

2.6   Competencies and skills of a subject librarian supporting research

The academic librarian's role has changed as a result of the introduction of new electronic tools and the prominence of new knowledge economies within academic institutions. Accordingly, academic librarians have been developing and providing more value in the research life cycle, learning and teaching (Bedi & Walde 2016: 2).

Bedi and Walde (2016) conducted an exploratory study on the trends in research in Canadian academic librarianship, focusing on the experience and knowledge of Canadian academic librarians who were involved in faculty research. The findings suggest how these involvements are influencing the changes of the academic librarian in Canada. While it is not mandatory for Canadian academic librarians to conduct research for tenure and promotion, some conduct research for professional growth and to provide a professional service. The Canadian Association of Research Libraries (CARL) (2010), Brown, Wolski and Richardson (2015), and Bedi and Walde (2016) found that academic librarians should develop a research interest by becoming more knowledgeable about research and the research process and to gain skills to meet a variety of faculty requests.

Academic librarians can play a pivotal role by working in collaborative research teams, and as information providers within the academic community, practising library information science (LIS) research (Bedi & Walde 2016: 3). The Canadian academic librarian's embeddedness in faculty research developments and need to have knowledge of grant application processes are important, together with the establishment of liaison roles which allow faculty researchers to reach out to the skillful librarians related to their discipline.

The skills and competencies that are essential for health librarians supporting health postgraduate research students, especially with systematic and scoping reviews are: effective reference interviews; question formulation; development of search strategies; source selection;

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citation management; training; teaching; critical appraisal and report writing (Spencer & Eldredge, 2018: 47-51).

ASERL (2001: 9) initiated an education committee to examine the new trends in research librarianship for universities to prosper and excel in teaching and research. ASERL stated that the research libraries and librarians are essential partners in the higher education environment and will be afforded new opportunities to gain and create new knowledge, due to new developments in the library domain, such as ICT developments, and legal limitations on the use of information. According to ASERL (2001) the following competencies for a research librarian is needed to develop their institution in future:

> Develop and manage effective services to meet user needs and support the library's research mission; support collaboration to enhance services; understand the library within the context of higher education and the needs of students, faculty and researchers; know about the structure, organisation, creation, management, dissemination, use and preservation of information resources, new and existing, in all formats; and demonstrate commitment to the values and principles of librarianship (ASERL, 2001: 7-8).

CARL (2010), cited in Hart and Kleinveldt (2011), analysed the competencies of academic librarians in relation to all technologically advanced countries. CARL identified competencies that relate to research support in a changing academic research environment such as, knowledge of librarianship as well as understanding of the academic institution environment. Scholarly communication at academic libraries has explored and developed new positions for e-Research services. These include information technology skills such as emerging web technology, institutional repositories, and database management. Familiarity with legal ethics such as copyright and licensing models is vital for librarians. Interpersonal skills that are considered essential are advocacy skills, enabling the required collaborations with diverse groups and writing and speaking skills. Necessary leadership and management skills include strategising to develop collaborations and partnerships with relevant communities (Hart & Kleinveldt, 2011: 41-42). CARL (2010) and Million, Hudson-Vitale and Sandy (2018) recommended that librarians and information specialists should have specialised skills to support the scholarly publishing cycle, such as IRs, digital curation, preservation of collections and archives, and records management. Brandt (2007: 365) said that researchers see librarians as essential support structure in organising and archiving data sets and other research output.

Hence, according to Hart and Kleinveldt (2011: 49), the knowledge of academic libraries supporting information management is vital in the online research environment.

The Research Libraries United Kingdom (RLUK) report, compiled by Auckland (2012), had subject librarians and their managers take part in an online survey to confirm their skills and knowledge. The report identified excellent knowledge of information retrieval search engines in particular disciplines as crucial for subject librarians to support researchers. In addition, the subject librarian should possess sufficient skills to conduct information literacy training (both face-to-face and online) and be able to support literature searching, with outstanding skills in information discovery (CARL, 2010; Auckland, 2012). Furthermore, Auckland (2012) stated that it is important to be able to advise on citing and referencing, and on the use of bibliographic management software, such as Mendeley. It is also essential to be able to market appropriate library services that cater for postgraduate students and researchers. Finally, the librarian needs to keep up to date with continually changing local research interests and have an appreciation of individual researcher and project needs (Auckland 2012: 39).

2.7   Summary of the chapter

This chapter reviewed the literature related to the objectives of the study and focused on the research activities of academic libraries. As confirmed by Garner (2006: n. p.), Rasul and Singh (2010: 78) and Hart and Kleinveldt (2001), online reference services have become increasingly important in research libraries. Examples of these services include alerts; RSS feeds; linking the catalogue to full text articles; electronic information resources; social networking and suggestions from researchers for new book titles to be purchased; inter-library loans and providing information on ethics regulations; copyright and intellectual property on the library's website.

The focus of this study is on the research support for postgraduate research students at CHS Faculty and reports on the important services such as systematic and scoping reviews as well as the development of the health librarians. Another important service is academic scholarly communication which facilitates the research output of researchers at academic institutions. Examples are the establishment of IRs, research data management, data curation, measuring impact, support with grant applications and publishing support services at academic institutions by using Open Journal Software.

According to Haglund and Olsson (2008: 56) a user's decision for using or not using academic libraries is influenced by an increasing preference among the majority of young academic researchers for using Google for their research needs and being confident that they can manage on their own. This chapter also focused on users' perceptions of the role academic libraries play in supporting research. Singh (2007: 469-470) recommended that academic libraries increase their number of resources, offer more up-to-date resources and ease of access, and make use of technology to improve services. It was emphasised that the research process is a significant role for librarians, not just to produce research but to develop more knowledge about the research process so that it will enhance the research services they provide through reference, instruction and collection.

This chapter also discussed Rogers' Diffusion of Innovation theory and how it may be applied in this study. The continually changing research environment has significant implications for academic libraries supporting research. Academic libraries should become key partners in research by anticipating, understanding and highlighting the challenges posed by new research activities. This will open new possibilities for libraries to improve the quality of existing services and develop innovative services to successfully support research activities.
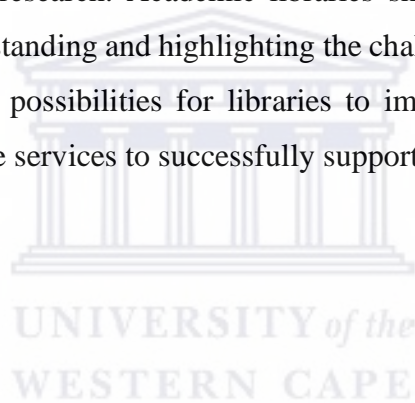
CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses the research design and methods selected to collect evidence to address the research questions. It also includes a discussion of the research techniques and instruments for data collection, sampling techniques and strategies for data analysis. The Diffusion of Invitation (DOI) theory was applied in this study to guide the components of the mixed method approach. The use of the DOI theory informed the research questions, data collection, data analysis and the implications that can be drawn from the findings.

According to Creswell (2014: 16), research methodology involves the form of data collection, analyses and interpretation that researchers recommend for their studies. According to Leedy and Ormrod (2014: 4), the research methodology guides the whole research endeavor. The collected data, combined with the methods and process to analyse the data, assist to conclude accurate findings in order to resolve the original research problem. Leedy and Ormrod (2014: 76) and Pickard (2013: 13) contend that research methodology involves two fundamental categories, namely quantitative and qualitative research.

The study investigated the role of the academic library's services in supporting postgraduate students and researchers within the Faculty of Community and Health Sciences at UWC. The researcher focused on the following research questions:

- Which research-oriented services are offered by UWC library to postgraduate students and researchers?
- Which factors affect postgraduate students and researchers' decisions to use or not to use the library for research?
- What are the perceptions of postgraduate students and researchers of the role of academic libraries in supporting their research?
- Which skills or competencies are needed by the subject librarian to support postgraduate students and researchers with their research?

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3.2   Research design

A research design, according to Creswell (2014: 12), is a form of inquiry within qualitative, quantitative and mixed methods approaches that provide specific methods for procedures in a research study. Leedy and Ormrod (2014: 76) state that research design is used as "… a general strategy for solving a research problem" and that, by clarifying the purpose of the research design, the initial problem can be clearly addressed and systematically answered. All aspects of the research study are guided by decisions and shaped by the research design.

This study employs a mixed method approach that entails the collection of both quantitative and qualitative data via questionnaires and interviews. According to Tashakkori and Creswell (2007: 4), mixed method research is a process in which the researcher collects and analyses data, assimilates the findings, and draws interpretations using both quantitative and qualitative approaches in a study or a program of inquiry. As stated by Creswell (2015), mixed methods research is a research approach in which the researcher gathers both quantitative and qualitative data by incorporating the two categories and making interpretations based on the combined strengths of both sets of data to understand the research problem.

The reason for using the quantitative and qualitative approaches is that the one will complement the other in order to provide a comprehensive analysis of the research problem. This study's research started with a quantitative survey; whereby web-based questionnaires were distributed by email to participants who were randomly selected by the Manager: Academic Administration. The Manager: Academic Administration is responsible for the management of research including overseeing the distribution of questionnaires to UWC staff, students and researchers. The second phase continued with qualitative, semi-structured interviews facilitated by the researcher who collected detailed, rich information from participants to help explain the quantitative survey. The interviewees who are enrolled within the School of Public Health, School of Nursing, Sports, Recreation and Management Sciences and Occupational Therapy departments, granted permission to partake in the interviews.

The following section will explain the elements and selection of research methodology for this study. The section will discuss the purpose and nature of quantitative research, qualitative research and mixed method research and how these will be used in this study to address the research question as a whole.

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3.2.1 Mixed methods

A mixed method approach was adopted; that is, both quantitative and qualitative research methods were employed in the study. The researcher chose this methodology because of the advantages mixed methods offer when exploring the aims and objectives of the study. See Table 2 below.

Table 2: Advantages and disadvantages of mixed methods

Advantages	Disadvantages
• Obtains two different perspectives, one gained from closed-ended data (quantitative) and one gained from open-ended personal data (qualitative); • Obtains a more comprehensive view, including more data, about the problem than either the qualitative or quantitative perspective on its own; • Adds to instrument data (quantitative information) details about the setting, place and context of personal experiences (qualitative information); • Conducts preliminary exploration with individuals (qualitative research) to make sure that instruments, measures and intervention (quantitative research), actually fit the participants and site being studied; and • Adds qualitative data to our experimental trials (quantitative research) for example, identifying participants to recruit and interventions to use.	• More extensive data collection is needed; • The time-intensive nature of analysing both qualitative and quantitative data; • The requirement for the researcher to be familiar with both quantitative and qualitative forms of research.

(Creswell 2015: 15) see also Creswell 2014.

3.2.2 Quantitative research approach

Connaway and Powell (2010: 3) state that quantitative research is a structured research method which involves structured data collection processes, as well as quantification and measurement of concepts.

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The data that have been collected are commonly quantified in numbers and analysed and communicated as aggregated data and statistical representations. According to Leedy and Ormrod (2014), quantitative research methodology aims to explain, predict, control or confirm human behaviour or to validate or test a hypothesis. Experimental studies, quasi-experimental studies and statistical-analysis studies are examples of quantitative studies (Leedy & Ormrod 2014).

Creswell (2015: 4) states that a quantitative researcher will first decide what to study, then pose specific questions or hypotheses, followed by measuring variables to enable the finding of answers. Next, the researcher will use statistical analysis to obtain information in order to answer the research question(s) and, finally, interpret the results.

According to Creswell (2014: 4) quantitative research uses numbers and the data collection itself is also quantitative, using instruments. Quantitative research is a method for testing objective theories by investigating the connection among variables.

Creswell (2015: 5) summarises advantages and disadvantages of quantitative research aptly, which can be seen in Table 3 below:

Table 3: Advantages and disadvantages of quantitative research

Advantages	Disadvantages
- Draws conclusions for large numbers of people - Analyses data efficiently - Investigates relationships within data - Examines probable causes and effects - Controls bias - Appeals to people's preference for numbers	- Is impersonal, even dry - Does not record the words of participants - Provides limited understanding of the context of participants - Is largely researcher driven

During the first phase, an information letter attached to the online questionnaire was distributed to randomly selected postgraduate students and researchers within the Faculty of Community and Health Sciences at UWC by the Manager: Academic Administrator via email (see Appendix A and Appendix C).

3.2.3 Qualitative research approach

Denzin and Lincoln (2011) define qualitative research

> "as involving the studied use and collection of a variety of empirical materials - case study, personal experience, introspective, life story, interview, observation, historical, interactional, and visual texts - that describe routine and problematic moments and meanings in individuals' lives" (Denzin & Lincoln 2011: 3).

Qualitative research methods, according to Conrad and Serlin (2011: 5), focus on the discovery and understanding of participants' experiences, perspectives and thoughts of participants. Creswell (2015: 4) states that with qualitative research, the researcher asks general questions and data are collected in the form of text, audio recordings or video recordings. Furthermore, qualitative research data are collected through observation of participants or by means of open-ended questions, using a tool such as interviews.

Creswell (2015: 5) provides a representation of the following advantages and disadvantages of qualitative research in table 4 below:

Table 4: Advantages and disadvantages of qualitative research

Advantages	Disadvantages
• Provides detailed perspectives of a few people • Captures the voices of participants • Allows participants' experiences to be understood in context • Is based on the views of participants, not the researcher's views • Appeals to people's enjoyment of stories	• Has limited generalisability • Provides only soft data • Studies few people • Is highly subjective • Minimises the use of researcher's expertise due to reliance on participants

(Creswell 2015: 5)

The researcher conducted face-to-face interviews with three researchers, five PhD students and two master's students within the Faculty of Community and Health Sciences at UWC. The interviews involved semi- structured, open-ended questions (see Appendix D) that were intended to draw views and opinions from the participants. The researcher opted to use semi-structured interviews for this study, because the aim was to collect rich and detailed data of the above-mentioned research problem.

Silverman (2006: 110) states that semi-structured interviews allow the interviewer to become a facilitator who grants the interviewee the freedom to offer his/her definitions and views of concepts on the studied topic.

The interviews were recorded with the permission of respondents who signed the consent letter (see Appendix B) and later transcribed. The method of transcribing the data means that the texts from interviews were typed into word-processed documents. The interviews were transcribed by the researcher who identified themes for data analysis.

3.3   Triangulation

This researcher looked at optimal ways to integrate mixed method research in this study. The process of triangulation was used to check qualitative against quantitative results. Triangulation is a design in which both quantitative and qualitative data are composed and analysed in parallel and then merged to develop a more comprehensive understanding (Creswell, Plano Clark & Garret, 2008: 68). Triangulation, as described by Doyle, Brady and Byrne (2016: 624) is the use of quantitative and qualitative methods so that findings may be mutually verified. Triangulation's goal is to gain a more comprehensive understanding of the subject matter that is being studied, and often includes incongruities and contradictions in the findings (Flick, 2018: 17). In this study quantitative data were first collected by means of a questionnaire from Masters' and PhD students and researchers in the CHS faculty. The data were analysed and the results built on to explain them in greater depth with the follow-up qualitative semi-structured interviews. This mixed methods design is referred to by Creswell and Creswell (2018: 15) as explanatory sequential mixed methods. In this order or sequence, the quantitative results became the basis for further clarification with the qualitative results. In this study, the researcher triangulated the findings of the questionnaire survey and semi-structured interviews and made conclusions based on the data collected from all the instruments.

3.4   Population

A population is characterised as a group of individuals who have certain characteristics. The population of this study focused on Masters' students, PhD students and researchers within the Faculty of Community and Health Sciences (CHS) at UWC.

Below is the table presenting the breakdown of potential participants per department within the CHS faculty at the University of the Western Cape. See Tables 5, 6 and 7 below.

Table 5: Master's students by CHS Departments

Departments	Total
School of Nursing	99
Sports, Recreation & Exercise Science	34
School of Public Health	142
Social Work	83
Psychology	35
Dietetics and Nutrition	2
Occupational Therapy	19
Physiotherapy	43
Total	**457**

Source: University of the Western Cape (2017)

Table 6: PhD students by CHS Departments

Departments	Total
School of Nursing	50
Sports, Recreation & Exercise Science	12
School of Public Health	52
Social Work	42
Psychology	21
Occupational Therapy	9
Physiotherapy	26
Total	**212**

Source: University of the Western Cape (2017)

Table 7: Researchers by CHS Departments

Departments	Total
Sports, Recreation & Exercise Science	2
Social Work	2
Psychology	1
Total	**5**

Source: University of the Western Cape (2017)

3.5   Sampling technique

Sampling can be described as the process of drawing a part, group or subset of a population to use as a representative of the population in the study (Struwig & Stead 2008). Pickard (2013: 326) states that sampling is the actual research participants in a specific study. Sampling is an

essential part of most research processes, even though some methods use it to a smaller extent, as well as methods related to case study research (Blaxter, Hughes & Tight, 2010: 169). Connaway and Powell (2010) identify the different types of sampling techniques, namely

"non-probability sampling and probability sampling. Examples of non-probability sampling include accidental sample, quota sample, snowball sample, self-selected sample and incomplete sample. Probability sampling includes simple random sample, systemic sample, and stratified random sample and cluster sample" (Connaway & Powell, 2010: 117).

For this study, stratified random sampling is used to highlight a specific subgroup within the population. The stratified random sampling technique is useful because it ensures the presence of the key subgroup within the sample. The most common strata used in stratified random sampling are age, gender, socio-economic status, religion, nationality and educational attainment. Morse and Niehaus (2009: 66) define stratified random sampling as: "… the groups of interest are sorted according to some characteristics of interest (such as age and gender) and the subjects are selected from these subgroups randomly". The strata in this study focused on the level of education (Masters' students, PhD students and researchers).

Proportionate Stratified Random Sampling is used in this study. Daniel (2012: 7) describes the sample size of each stratum as proportionate to the population size of the stratum when viewed against the entire population. A stratum refers to a subset of the population which is being sampled. Proportionate Stratified Random Sampling means that each stratum has the same sampling fraction. For example, if three strata have 100, 200 and 300 population sizes respectively, and the researcher chose a sampling fraction of 20%, then the researcher must randomly sample 20, 40 and 60 subjects from each stratum respectively.

For this study, the population size for the CHS Faculty is 674. The population size for each stratum mentioned in tables 3, 4 and 5 above as indicated, Masters students 457, PhD students 212. The population size for researchers is 5, therefore total population sampling was used. The researcher decided to select a sampling fraction of 30% for master's students and PhD students. The sampling fraction of 30% for each stratum was randomly selected by The Manager: Academic Administration. The randomly selected participants for master's students were 137 (female 92 and male 45) and PhD students 63 (female 43 and males 20). The total random selected population size (Masters and PhD students) including the 5 researchers is 205. The

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number of researchers is only 5 therefore this study used census data collecting method which gathered information from every member of the population, in this case the researchers. In other words, a census is a study of every unit, everyone or everything, in a population. Census refers to the quantitative research method, in which all the members of the population are enumerated. Daniel (2012: 29) mentioned that it is essential to choose a census to represent small segments of a population in a study.

This study used the convenience sampling technique for the interviews. The postgraduate students and researchers who were interviewed were conveniently selected by the Postgraduate Coordinators. The postgraduate coordinators are responsible for overseeing the work of all postgraduate research students serving different departments within the faculty.

Convenience sampling is a non-probability sampling technique where subjects are selected because of their convenient accessibility and proximity to the researcher. The conveniently selected interview participants were invited by the researcher via email.

3.6   Methods of data collection

Questionnaires

Questionnaires, according to Connaway and Powell (2010: 146), are defined as a form consisting of a set of questions to be completed by a research participant. A questionnaire has some advantages over other data collections tools. Connaway and Powell (2010: 146) describe a questionnaire as the best instrument for collecting data, as it has the following advantages:

•   Questionnaires can inspire honest answers because of the researcher is not present.

•   Interviewer bias is eliminated due to the researcher's absence (responses are less likely to be influenced as they might have been in the presence of the researcher).

•   Quantitative data are easy to collect and analyse.

•   Questionnaires allow for the collection of large amounts of data in a short time.

According to Powell (2010: 147), the following are some of the disadvantages:

•   Questionnaires remove personal contact between the researcher and the respondent.

•   Ambiguous questions cannot be clarified by the researcher.

•   Uneducated participants may find it difficult to complete questionnaires.

•   Non-response rates can be high.

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This study used a web-based questionnaire which consists mostly of closed-ended questions and some open-ended questions. The web-based questionnaire was distributed to a sample population size of 205 participants (masters students, PhD students and researchers) by the Manager: Academic Administration via email of whom 53 responded.

The response rate (26 %) was very low, although the questionnaire was emailed repeatedly by the Manager: Academic Administration and thereafter by the Postgraduate Coordinators. The Manager: Academic Administration forwarded the email addresses of the randomly selected students to the Postgraduate Coordinators so that they could also email the students.

The questionnaire questions are as follows (See Appendix C): Section 1 consisted of demographic information based on gender, program of study and academic departments. Students were also questioned on the usage of the UWC library, finding out the challenges or barriers to usage. Section 2 entailed questions on students' perceptions of the services the library currently provides. In section 3 students were asked to best describe their expectations of the services in the library using subject librarians' competencies; research support services and the library's research workshops. The Diffusion of Innovation (DOI) theory informed questions in sections 2 and 3 which examined improvements in UWC library services based on students' opinions and expectations to support their research needs.

Section 4 consisted of questions which collected information pertaining to students' user education. Students were asked to rate the overall services the library provides; Students were asked to indicate the most important roles of the subject librarian. The DOI theory was used to formulate two questions: requesting students' opinions on subject librarians' skills and the shortcomings of the library in supporting their research needs. Students were asked to give their opinion on the successes of the library supporting their research needs. Lastly, informed by the DOI theory, students were asked to indicate new or different services UWC library should offer to support postgraduate students and researchers with their research needs.

Interviews

An interview is a data collection method in which a researcher asks questions, normally face to face with participants (Pickard 2013: 323). Wilkinson and Birmingham (2003), cited in Manyissa (2014: 51), mentions that the interview as a data collection tool has been used

extensively by researchers in order to collect detailed information relating to a topic or subject. Fraenkel and Wallen (2006: 120) point out that one of the advantages of an interview approach is that the interviewer can clarify any questions that might be uncertain and can also ask the respondent to provide more detail on answers that are particularly important or revealing.

Wilkinson and Birmingham (2003: 44) have also argued that using the interview technique can be time-consuming and that it is, therefore, not suitable for collecting data from large populations. In this study, the researcher conducted semi-structured interviews (see Appendix D) with five PhD students, two master's students and three researchers (see Appendix E) within the Faculty of Community of Health Sciences at UWC. The postgraduate students and researchers who were interviewed may not have completed the questionnaires. In other words, the students who were interviewed were not necessarily the same students from the questionnaire sample. The interviewees who partook were from the School of Public Health, School of Nursing, Sports Recreation & Exercise Management Sciences and Occupational Therapy departments. See Appendix D for the interview guide questions.

3.7 Data analysis

Data analysis, according to Connaway and Powell (2010: 224), involves "… working with data, organizing it, breaking it into manageable units, synthesizing it, searching for patterns, discovering what is important and what is to be learned, and deciding what you will tell others." Data analysis contains both qualitative analysis, which covers processes such as thematic and content analysis, and quantitative or statistical analysis. Content analysis is a data analysis method of qualitative research which uses a set of procedures to make valid interpretations from texts.

The capturing of quantitative data was done through the use of the Statistical Package for Social Sciences (SPSS). The interview data were transcribed by the researcher who identified themes. The application of the DOI theory and supporting literature were used during the quantitative and qualitative analysis process to establish gaps for improvements based on the research questions.

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3.8   Ethical considerations

Research ethics as described by Wiener (2008), is "a broad term that is used to describe adherence to the shared values of efficiency, truthfulness, accuracy, and objectivity". Permission to carry out the research was obtained from the Research Ethics Committee at UWC.The researcher obeyed the ethical guidelines of the Research Committee of UWC and respected the rights of participants. Informed consent was obtained from the research participants based on providing them with adequate information regarding the project. All surety was made to ensure the anonymity and confidentially of participants and that no one would be harmed during or after the data collection process of this study. Participation of participants in this research study was voluntary and they were given the freedom to withdraw at any stage of the research process.

An introductory letter (Appendix A) was developed for respondents completing the online survey, as well as for those participating in the interviews (Appendix F). Consent forms were developed for questionnaire participants (Appendix G) and for those who gave permission to partake in the interviews (Appendix B). Participants were informed about the use of audio recorders during the interview process.

3.9   Summary of the chapter

This chapter explained the research design employed in this study to provide answers to the research questions noted in chapter one. This section gave an overview of the research questions, research designs and the methods used. Information was provided on the structure of the questionnaire, interviewee questions, the identification of participants and how the data were gathered. The next chapter will present, describe and analyze the data collected from the participants in this study.

CHAPTER 4: PRESENTATION AND ANALYSIS OF RESULTS

4.1 Introduction

The chapter aims to report the results of the study done in support of postgraduate students and researchers at the University of the Western Cape. A questionnaire was distributed to 205 students and 53 responded. The response rate (26%) was very low although the questionnaire was sent out repeatedly by the Manager: Academic Administrator and thereafter by the Postgraduate Coordinators. The raw data was analysed using the Statistical Package for Social Sciences (SPSS). The interviews were transcribed by the researcher who applied thematic analysis.

4.2 Questionnaire results

The findings of the data are presented according to the online survey questionnaire themes set out by the researcher. Sections within the questionnaire include closed-ended and open-ended questions and focus on the objectives of the study. The questionnaire sections are as follows:

Section one: demographic information of the participants representing the program, gender and academic departments of the study as well as their regularity of library and internet use.

Section two: data collected on the following two objectives, namely research services of the UWC library supporting postgraduate students and researchers and decisions to use or not to use the library for their research.

Section three: data collected on the perceptions of postgraduate students and researchers regarding the role of the UWC library in supporting research.

Section four: data collected on the skills and competencies of a subject librarian in support of postgraduate students and researchers needs.

4.3   Demographic information of participants

The first section of the questionnaire gathered personal data of the respondents. Figure 2 illustrates the program and gender of the study participants and figure 2 the departments within the faculty.
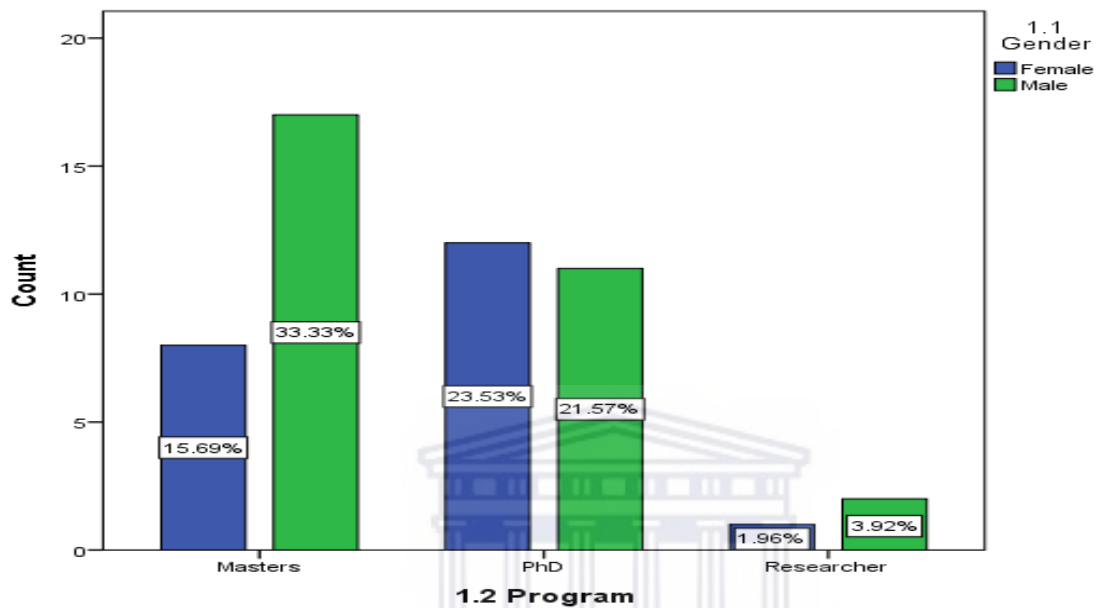
Figure 2: Program and Gender of study

Results in figure 2 indicate that there were more male respondents within the master's program in this study. It also shows that slightly more female respondents were enrolled for the PhD program while the majority of researchers were male.
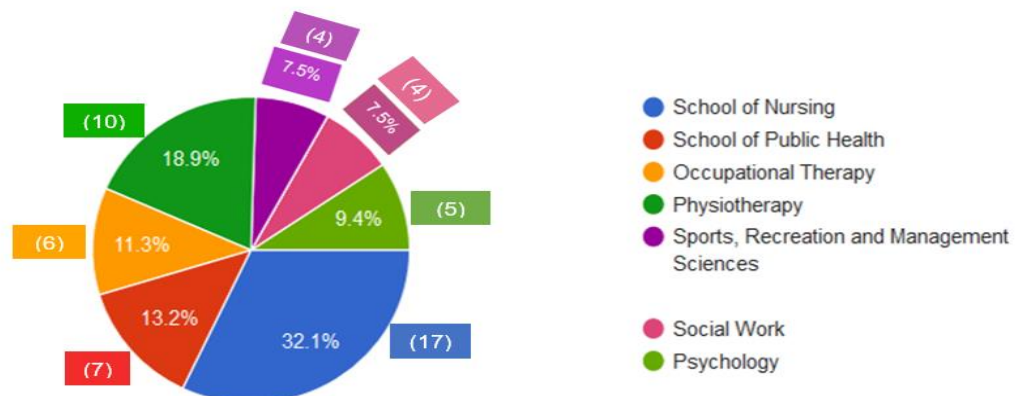
Figure 3: Departments within the Faculty of Community and Health Sciences

The total number of respondents per departments are as follow: School of Nursing (32.1% = 17), School of Public Health (13.2% = 7), Occupational Therapy (11.3% = 6), Physiotherapy (18.9% = 10), Sports, Recreation and Management Sciences (7.5% = 4), Social Work (7.5% = 4) and Psychology (9.4% = 5). Figure 3 shows that most respondents are from the School of Nursing (32.1% = 17) with the least from Sports, Recreation and Management Sciences (7.5% = 4) and Social Work (7.5% = 4).

4.4 Academic library services in support of postgraduate students and researchers

This section reports data collected on academic library research support services and library research workshops in support of postgraduate students and researchers with their research activities.

4.4.1 Expectations of research support services by program

Participants could choose from a Likert scale of *strongly agree* to *strongly disagree* what their expectations were of the library's research support services. Table 8 [Question 5.2] shows the predominant choice of categories, namely agree/strongly agree combined. The majority of postgraduate students and researchers expect the research support services listed.

Table 8: Expectations of research support services by program

[M=28; PhD=22; Researchers=3]

Research Support Services	Masters		PhDs		Researchers	
	%	*f*	*%*	*f*	*%*	*f*
Library research workshops	71%	20	100%	22	100%	3
One-on-one training sessions	71%	20	100%	22	100%	3
Subscribing to relevant and up-to-date printed and online library resources	78%	22	100%	22	100%	3
Easy access to full text journal articles	78%	22	100%	22	100%	3
Reference services (physical & online)	68%	19	86%	19	100%	3
Document delivery services (ILL)	68%	19	100%	22	100%	3
Help with measuring research impact when applying for funding (citation analysis*; h*-index reports)	64%	18	91%	20	100%	3
Support for managing research data	64%	18	91%	20	100%	3
Support and build relationships through the research process	64%	18	91%	20	100%	3
Support to establish researcher profiles	71%	20	91%	20	100%	3

Research support services at postgraduate research lab/commons	68%	19	86%	19	100%	3
Research support at the beginning of the research stage: identify the field's leading authors or research groups	71%	20	82%	18	100%	3
Research support at the information search stage: to establish high quality existing literature	64%	18	86%	19	100%	3
Research support at the dissemination stage: to identify journals that publish articles on a particular topic and provides guidance on publishing outlets	64%	18	86%	19	100%	3
Assistance to advance in my academic field	71%	20	82%	18	100%	3

The majority of the respondents indicated agree/strongly agree that they expect the library to provide the research support services listed in Table 8.

4.4.2 Expectations of library research workshops by program

In a different question, participants were asked to rate their expectations of the library's workshops. They could choose from a Likert scale ranging from strongly agree to strongly disagree as to what their expectations of the library's research workshops were. Table 9 [Question 5.3] shows the predominant choice of categories, namely agree/strongly agree combined.

Table 9: Expectations of library research workshops by program

N=53 [M=28; PhD=22; Researchers=3]

Library Research Workshops	Masters		PhDs		Researchers	
	%	*f*	*%*	*f*	*%*	*f*
Advanced information search skills training	75%	21	95%	21	100%	3
Reference Manager Tools training (Refworks and Mendeley)	75%	21	82%	18	100%	3
Database training and save searches	75%	21	91%	20	100%	3
Current awareness electronic services: RSS feeds and publication alert services to databases and journals	71%	20	91%	20	100%	3
Searching Google Scholar optimally	71%	20	86%	19	100%	3
Sage Research Methods Online	68%	19	91%	20	100%	3
Measure your research impact	57%	16	82%	18	100%	3
Creating your researcher profile	54%	15	77%	17	100%	3
How to upload your publication in UWC Repository	57%	16	82%	18	100%	3

The majority of the respondents indicated strongly agrees or agrees that they expect the library to provide research workshops listed in Table 9. Results show that masters (54%) students have a lower expectation than PhD (77%) students and researchers (100%) on creating their researcher profile service. Results also show that Masters (57%) students indicated a lower expectation than PhD (82%) students and researchers (100%) on measuring their research impact and how to upload a publication in UWC Repository. It is evident that the masters' students are not at the stage of publishing and disseminating of their research.

An open-ended question [Question 6] invited respondents to comment further on their expectations for research support services and library research workshops. One of the respondents revealed that the library should try to "differentiate high quality research, which is not the case". Respondents are of the opinion that research services, such as measuring your research impact and adequate subject expertise and knowledge to support users in their discipline are the responsibility of the research supervisor, not the librarian because supervisors are already experts in the field. However, the majority of the respondents expect the library to provide the research support services listed in Table 8 as well as the library to provide research workshops listed in Table 9. There was also a request to update existing library training manuals.

A further solicitation of respondents' research needs [Question 7] elicited two additional remarks: a preference to be trained using the Mendeley reference management tool instead of Reworks; and "I have high expectations that the library should benchmark with other universities' electronic resources. I feel it is embarrassing to ask students from other universities to use their login and passwords to access their library's databases". The above statement reveals that UWC Library does not subscribe to all relevant databases and access to full text journal articles and those students rely heavily on immediate access to electronic information. This challenge is raised again in the interviews and will be elaborated on later.

4.4.3 New or different services the UWC Library could offer

A related open-ended question [Question 14] asked respondents to recommend new or different services that the UWC library could offer in support of research needs. Data gathered from respondents were analyzed and categorized according to themes. See Table 10.

Table 10: New or different services the UWC Library could offer

Library hours	Requests for provision of 24 hours' library service.	N=2
Library research space	Request for more dedicated space specifically for postgraduates.	N=2
Borrowing period	Extend borrowing time to postgraduate students and researchers for short loan books in the library. "Being there first thing on a Monday morning to return books is a real nightmare".	N=1
Research librarian specialist	Staff should be made available for research students alone. Improve accessibility to the subject librarians and their response times. Recommend some articles to students when they request assistance. Provide mentors specializing in the same field of study. The subject librarians should offer online training. Subject librarians who are knowledgeable and understand the research process to assist students in need. Assist students with materials or journals related to their topic, even theses of former students and support with referencing.	N=4
E-resources	Need more access to international publications. Provide access to more relevant and up to date databases that will support research. Provide access to vast trustworthy databases and journal sites. Continue updating the online research resources towards a faster, simpler yet effective process for postgraduates and researchers.	N=4
Inter Library Loans services	Inter library loans should be more easily accessible.	N=1
Research Data Management	Research data management is of importance.	N=1
Reference services and training	Expand services relating to reference management and plagiarism. Train students how to find latest information easily.	N=2
Research workshops	Library should have more research workshops and accommodate part time students as well. Restoration of research process training sessions usually held in September/October that enables foreign postgraduate students to attend.	N=2
Level 13 postgraduate lab services	Make provision for more postgraduate work areas/ offices/ tutorial rooms, discussion areas, comfortable chairs and water fountains within the library. Provide good postgraduate coaches who will spend enough time for the benefit of the student.	N=5

	Need for advanced training in excel and other statistical programs. A scanner should be made available in the postgraduate lab. Control of noise levels.	
Internet access	Provide better Wi-Fi connection.	N=2
Customer service	More staff should be helpful, highly motivated and polite to students.	N=3
Language challenges	Some students face language challenges as English is not their first language. In the library they face problems with searching and making meaning out of academic documents that are in English. The library should assist these students in liaison with the language department.	N=2
Distance learning services	Provide online tutorials/ lessons to all students; especially distance students on how to access full text and the UWC library website easily. "I need online training on how to access the library to easily do my studies, plus other accredited journals to all UWC students".	N=1

In summary, the objective of this section was to determine the academic library services in support of postgraduate students and researchers. This section reported on data collected on the expectations of library research support services, expectations of library research workshops and new or different services UWC library could offer. The next section reports on the postgraduate students' and researchers' usage of the library for their research needs.

4.5   Postgraduate students and researcher's decisions to use or not to use the library for research

4.5.1   Frequency of library visits by program

Respondents were asked how often they visited the library [Question 1.4]. Table 11 shows the regularity of visits. If respondents chose "other", they were asked to elaborate.

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Table 11: Frequency of library visits by program

N=53 [M=28; PhD=22; Researcher=3]

Frequency of Library Visits	Masters (%/ size)		PhD (%/ size)		Researcher	
	%	f	%	f	%	f
Daily	11%	3	27%	6	0%	0
Weekly	21%	6	14%	3	0%	0
Monthly	39%	11	0%	0	33%	1
Quarterly	11%	3	9%	2	0%	0
Never	7%	2	5%	1	67%	2
Other	11%	3	45%	10	0%	0

Findings showed that most masters (39%) students visited the library on a monthly basis while most PhD (45%) students indicated other. Some of the PhD students mentioned under the option other, that they are School of Public Health distance learners who live in other countries and visited the library very seldom, annually, bi-annually or whenever at university. Some respondents indicated that they are visiting the library only to borrow and return books. Some respondents indicated that they visit the library depending on their research needs. The majority of researchers (67%) indicated that they never visited the library.

4.5.2 Frequency of library visits by departments

Table 12 illustrates the frequency of library visits by department.

Table 12: Frequency of library visits by Departments

N=53 [M=28; PhD=22; Researcher=3]

Frequency of library visits	School of Nursing (%/ size)		School of Public Health (%/ size)		Occupat-ional Therapy (%/ size)		Physio Therapy (%/ size)		Sports, Recreation & Management Sciences (%/ size)		Social Work (%/ size)		Psychology (%/ size)	
Daily	24%	4	14%	1	0%	0	40%	4	0%	0	0%	0	0%	0
Weekly	29%	5	0%	0	17%	1	10%	1	0%	0	25%	1	0%	0
Monthly	18%	3	0%	0	0%	0	20%	2	25%	1	25%	1	80%	4
Quarterly	6%	1	14%	1	0%	0	30%	3	0%	0	25%	1	0%	0
Never	6%	1	0%	0	33%	2	0%	0	50%	2	0%	0	0%	0
Other	18%	3	71%	5	50%	3	0%	0	25%	1	25%	1	20%	1

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Findings specify a high frequency of Physiotherapy postgraduate students visited the library daily (40%) and quarterly (30%). The results indicated high frequency from the departments of School of Nursing (29%) and Social Work (25%) postgraduate students who visited the library weekly. Postgraduate students within the Psychology department show high frequency of students (80%) visited the library monthly. Results from the departments of Occupational Therapy (33%) and Sport, Recreation and Management Sciences (50%) indicated the highest incidences of respondents who never visited the library. Some reasons are indicated under the option "other" and "never" below.

Some respondents selected "other" indicating reasons for visiting the library only to borrow and return books. Some respondents indicated that they visit the library depending on their research needs. Some respondents indicated that they are currently not visiting the library as they feel it is not relevant. School of Public Health respondents indicated the highest frequency of "other". One respondent indicated that he/she is a distance student and does not visit the library. Some respondents indicated very seldom, annually, bi-annually or whenever at university.

In response to an open-ended question [Question 1.5] why they never use the library for their research, respondents indicated they are distance postgraduate students and unable to get to the library. They can access material from their office or home. Some respondents indicated that they can afford their own research books and can access the resources electronically. Some respondents do not have time to visit the library as they are part-time students who use their personal computers at home to do research.

4.5.3   Frequency of accessing resources via the library website

Respondents were asked to select how often they access resources via the library website [Question 1.6]. Responses revealed that daily access predominated, followed by weekly, monthly and quarterly. See Table 13.

Table 13: Frequency of accessing resources via the library website by program

N=53 [M=28; PhD=22; Researcher=3]

Frequency of accessing resources via the library website	Masters (%/ size)	PhD (%/ size)	Researcher (%/ size)

Daily		43%	12	36%	8	33%	1
Weekly		28%	8	41%	9	0%	0
Monthly		18%	5	14%	3	33%	1
Quarterly		11%	3	0%	0	33%	1
Other		0%	0	9%	2	0%	0

The majority of respondents accessed the library website either daily or weekly. Researchers spread their library website access from daily to monthly and quarterly.

In response to the category "other", one respondent mentioned accessing resources through the library website when working on studies. The majorities of distance students enrolled in the School of Public Health are from other countries in Africa and most experience problems accessing the library resources electronically.

4.5.4   Frequency of Internet use

Respondents were asked how often they use the Internet e.g. Google Scholar for finding research   information [Question 1.7]. The overwhelming responses were daily and weekly. This indicates that good internet access is vital for research. See Table 14.

Table 14: Frequency of using the Internet by program

N= 53 [M=28; PhD=22; Researcher=3]

Frequency of Internet use	Masters (%/ size)		PhDs (%/ size)		Researchers (%/ size)	
Daily	61%	17	59%	13	0%	0
Weekly	32%	9	23%	5	100%	3
Monthly	7%	2	4%	1	0%	0
Quarterly	0%	0	9%	2	0%	0
Other	0%	0	4%	1	0%	0

Findings specify that high internet users were masters (61%) and PhD (59%) students who accessed on a daily basis. Researchers (100%) used the internet on a weekly basis.

In the category "other", the respondent indicated accessing the internet on a need's basis.

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4.5.5   Library's shortcomings in supporting research

In response to an open-ended question about the library's shortcomings in supporting research needs [Question 12], the replies were varied but overlap considerably with previous responses in Tables 8 & 10. The responses are described as follows:

  (a) Level 13 Postgraduate laboratory

The level 13 Postgraduate laboratory in the library has insufficient quiet space and seating and that a more conducive working space is needed. Postgraduate students experience level 13 as cramped, loud and inconvenient. Computers do not work properly. The computer keyboards are often unhygienic and a health hazard. Proper operational hours of level 13 are needed, especially during weekends when it is closed at times without reason. There is a need for water fountains, a refreshments area and few discussion areas. A scanning service would be useful.

  (b) Increase number of books and loan period

One of the doctoral students mentioned that the library should increase the number of books permitted to borrow as well as extend the time period to return books.

  (c) Accessibility of library resources

The library should ease accessibility and subscribe to full text online journals. Some respondents experienced difficulty accessing full text journals articles which is time consuming as well as having problems accessing the library resources off campus. The library should increase the number of books to borrow as well as extended time period to return books.

  (d) Assistance with research methodology and thesis writing

Postgraduate students comment that subject librarians have been supportive in conducting literature searches, Google and Sage Research Methods Online (SRMO) training but not so much on methodology and that more specialized librarians are needed to assist students with their thesis.

  (e) Availability of skilled and knowledgeable subject librarians

Postgraduate students identified that some subject librarians can be quite busy or may not have the necessary resources to assist them to the maximum degree. Some students require improved research training and follow-up sessions with them. There should be a librarian that is adequately skilled in each department to assist.

(f) Assistance with data analysis and writing skills

Assist with accessing tools for data analysis and writing skills.

(g) Awareness of library services and workshops offered to postgraduate students

Postgraduate students request wider advertising of the services and workshops offered. One student indicated that he/she "do[es] not know how to access the library's online research databases".

(h) Improve online reference and distance learning services

There was a demand to improve the online librarian (reference) services and to develop e-tools to improve support for distance learning students.

(i) Literature searching assistance over weekends

Other shortcomings mentioned by some postgraduate students are literature searching for the different subjects. There is no librarian available to assist over weekends on the subject and the research process.

4.6 Perceptions of postgraduate students and researchers regarding the role of academic libraries in supporting research

Respondents were asked to identify their perceptions of the actual services the library currently provides by rating the subject librarians' perceived competencies, research support services that the library offers, and the library research workshops in terms of research support.

4.6.1 Subject librarians' perceived competencies

Participants could choose from a Likert scale ranging from *very true* to *untrue* what their perceptions were of the subject librarian's perceived competencies. Table 15 [Question 2.1] shows the predominant choice of categories, true/very true combined per program.

Table 15: Perception of subject librarian's competencies by program

N=53 [M=28; PhD=22; Researchers=3]

Perception of subject librarian's competencies	Masters		PhDs		Researchers	
	%	*f*	*%*	*f*	*%*	*f*
Staff who improve users' research skills	61%	17	91%	20	100%	3
Staff who are knowledgeable to assist with users' research questions	46%	13	86%	19	100%	3
Staff who provide users with the information skills needed for their research	57%	16	86%	19	100%	3
Staff who have knowledge and experience of the research process	57%	16	73%	16	100%	3
Staff who have adequate subject expertise and knowledge to support users in their discipline	46%	13	73%	16	100%	3
Staff that build good relationships with postgraduate students and researchers during their research journey	57%	16	77%	17	100%	3

The majority of the respondents indicated true/very true as to what their perceptions were of the subject librarian's competencies listed in Table 15. However, results indicated that masters' students have the lowest frequency of positive perceptions of the subject librarian's competencies listed above.

4.6.2 Research support services

Participants could choose on a Likert scale range from *very satisfied* to *very dissatisfied* as to what their perceptions were of the library's research support services. Table 16 [Question 2.2] shows the predominant choice of categories, *satisfied/very satisfied* combined.

Table 16: Perception of research support services by program

N=53 [M=28; PhD=22; Researchers=3]

Perception of research support services	Masters		PhDs		Researchers	
	%	*f*	*%*	*f*	*%*	*f*
Library research workshops	78%	22	77%	17	100%	3
One-on-one training sessions	68%	19	73%	16	100%	3

Subscribing to relevant and up to date printed and online library resources	71%	20	91%	20	100%	3
Easy access to full text journal articles	61%	17	68%	15	100%	3
Reference services (physical & online)	64%	18	82%	18	100%	3
Document delivery services (ILL)	71%	20	73%	16	100%	3
Assistance to advance in my academic field	61%	17	82%	18	100%	3
Assistance with my literature searching	64%	18	64%	14	100%	3

The majority of the respondents indicated their perception of being satisfied/very satisfied with research support services listed above. Results showed that masters students have the lowest frequency of perception for easy access to full text journal articles (61%) and assistance to advance in my academic field (61%).

The study results under this category show that the respondents are satisfied with the assistance with literature searching. Subscribing to and maintaining access to relevant full-text databases is of importance. Respondents are very satisfied with subscribing to relevant and up-to-date printed and online library resources; however, respondents indicated they were less satisfied with easy access to full text journal articles. Furthermore, respondents indicated that they are very satisfied with document delivery services (ILL). The respondents are very satisfied with the library research workshops and one-on-one training sessions. The respondents are satisfied with assistance to advance in their academic field, whereas masters' students (61%) indicated a lower frequency of satisfaction. However, respondents are satisfied with the reference services (physical and online).

4.6.3   Library research workshops

Participants could choose on a Likert scale from *very satisfied* to *very dissatisfied* as to what their perceptions were of the library's research workshops. Table 17 [Question 2.3] shows the predominant choice of categories, satisfied/very satisfied combined.

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Table 17: **Perceptions of library research workshops by program**

N=53 [M=28; PhD=22; Researchers=3]

Library research workshops	Masters		PhDs		Researchers	
	%	*f*	*%*	*f*	*%*	*f*
Advance Information search skills training	75%	21	82%	18	100%	3
Reference Manager Tools training (Refworks and Mendeley)	68%	19	73%	16	100%	3
Database training and save searches	68%	19	86%	19	100%	3
Current awareness electronic services: RSS feeds and publication alert services to databases and journals	57%	16	82%	18	100%	3
Searching Google Scholar optimally	75%	21	91%	20	100%	3
Sage Research Methods Online	61%	17	82%	18	100%	3
Measure your research impact	57%	16	68%	15	100%	3
Creating your researcher profile	68%	19	64%	14	100%	3
How to upload your publication in UWC Repository	57%	16	68%	15	100%	3

The majority of the respondents indicated their perception of satisfied/very satisfied for research workshops listed above. However, masters' students rated their perceptions of certain research workshops lower than others: namely, measuring your research impact, how to upload your publication in UWC Repository and current awareness electronic services. Furthermore, PhD students also rated their perceptions of research workshops on measuring your research impact, creating your researcher profile, and how to upload your publication to the UWC Repository as lower than others.

Comparing the results shown in Table 9's *expectations* with Table 17's *perceptions* of library workshops, there are some similarities and some differences. Similarities are that Masters' students, too, have a lower *expectation* of measuring their research impact (57%) and how to upload a publication in the UWC Repository (57%). However, while 53% of Masters' students expected a library workshop on creating a researcher profile, 68% had the perception that they actually occurred. The biggest differences between the PhD responses in their *expectations* compared to their *perceptions* was in the offering of advanced information search skills (95% expected compared to 82% who perceived that they had occurred), measuring research impact (82% expected but 68% perceived it had taken place), creating a researcher profile (77% expected it but 64% perceived it), and how to upload a publication to the UWC repository (82% expected it but 68% perceived that it had actually happened).

In addition to the above, respondents were asked in open-ended question 3 to add comments about any of the services mentioned in Questions 2.1, 2.2 and 2.3. Findings are categorised under the following headings:

(a) Postgraduate workshops (N=2)

Respondents mentioned that the library has supported the academic experience by conducting informative workshops such as Thompson Reuter's journal writing and Mendeley. The workshops also assisted respondents in easily accessing relevant research resources.

Did not make use of library services (N=4)

Some students have not participated in any workshops, have not used the library services mentioned above, did not require some of services yet, and did not use the library services regularly.

(b) Awareness of library services offered (N=1)

One of the distance students indicated that he/she just registered and is not aware of the library services and will probably use the services in future.

(c) Excellent library services (N=1)

A student commented that the library services are excellent: "responses from subject librarian always satisfactory and greatly appreciative".

(d) Poor research assistance (N=1)

Another indicated that research assistance is poor compared with other universities.

(e) More time allocated for postgraduate workshops (N=1)

Subject librarians move rapidly through the training sessions and there is not enough time to explain in workshops.

Respondents were also asked in open-ended question 4 to comment about other library services to meet their research needs. Findings are listed under in the following headings:

(a) Inadequate library resources (N=1)

One of the postgraduate students commented that databases are an insult to students and that he makes more use of Stellenbosch and UCT databases through friends. There is insufficient

access to journals and the journals are outdated, compared to other universities as it is the perception from many postgraduate students from various faculties.

(b) Dissatisfied with online librarian services (Online reference service) (N=2)

Online librarian services (Online reference service) were mentioned as not functioning well; students are dissatisfied with response times of the librarian. Because of the dissatisfied experience, students decided to email the subject librarian instead.

4.6.4   Rating of library services

Question 8 asked postgraduate students to rate the overall research services provided by the library.

Participants could choose on a Likert scale from *very good* to *very poor* to rate the library services. Table 18 shows the choice of categories listed. In addition, they were asked to specify reasons when selecting the option, "other".

Table 18: Rating of library services by department

Rating of library services (%/ size)	School of Nursing (%/ size)		School of Public Health (%/ size)		Occupa-tional Therapy (%/ size)		Physio Therapy (%/ size)		Sports, Recreation & Manage-ment Sciences (%/ size)		Social Work (%/ size)		Psychology (%/ size)	
Very good	29%	5	57%	4	17%	1	20%	2	25%	1	75%	3	0%	0
Good	53%	9	43%	3	83%	5	80%	8	75%	3	25%	1	80%	4
Poor	6%	1	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0
Very poor	12%	2	0%	0	0%	0	0%	0	0%	0	0%	0	20%	1
Other	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0	0%	0

The majority of the departments rated the library services as good: Physiotherapy (80%), Occupational Therapy (83%), Psychology (80%), Sports, Recreation and Management Sciences (75%) and School of Nursing (53%). Only the department of Social Work and School of Public health rated the library services as very good.

4.6.5   Successes of the Library

Question 13 asked an open-ended question to solicit participants' opinions about the library's successes in supporting them with their research. According to the respondents' data the following were specified:

(a) One-on-one training sessions with subject librarians
"Personal one-on-one contact broadens my horizon and equips me with information-searching skills and enables me to conduct a systematic review". It advances student's research field by teaching important databases and assists with referencing using Refworks for managing references.

(b) Knowledge and skills of subject librarians
Knowledgeable subject librarians provide guidance and great support: "Going to the librarians is very useful as one never leaves still being unclear on the subject, as they prepare you for the research journey. Challenges have been solved: for example, the subject librarian is "nice" by assisting where to specifically search for relevant information when required".
One postgraduate student mentioned that he/she is able to email the librarian for assistance when struggling to find the full text of an article: "Respond to my emails promptly and provide URL links to where the articles can be found on the relevant databases".

(c) Online services and improved online resources
Online services are great, and the library improved its online resources. "The library resources are made available in a timely fashion and the subject librarian and online system eases location of various materials. The library is always seeking for new ways with online services".

Availability of resources and reference services are satisfactory. Postgraduate students are able to access the library website from off campus and to access current full text articles in prestigious journals. There is satisfactory support with requests of full text articles through Inter Library Loans services for their research.

(d) Library postgraduate research workshops
Respondents mentioned that "research and information finding workshops are brilliant".

(e) Level 13 postgraduate laboratory

"Level 13 research lab is doing a great job in trying to accommodate students who do not have access to internet at home. The library working hours are suitable and there is enough space and material needed for research". This is in contrast to a previous comment on p.53, under 4.5.5(a).

(f) Internet connectivity and improved computers

Some respondents indicated improvement on fast internet connectivity, computerization and flexibility of working schedules and security.

The objective of this section was to determine the perceptions of postgraduate students and researchers regarding the role of academic libraries in supporting research. This section reported on data collected on the perceptions of subject librarians' competencies, perceptions of library research support services, perceptions of library research workshops, rating of the library services and successes of the library. The next section reports on respondents' expectations (as opposed to perceptions) of subject librarians.

4.7 Competencies and skills of a subject librarian

4.7.1 Expectations of subject librarian's competencies

Participants could choose on a Likert scale from *strongly agree* to *strongly disagree* what competencies they expect their subject librarians to possess. Table 19 [Question 5.1] shows the predominant choice of categories, *agree/strongly agree* combined.

Table 19: Expectations of the subject librarian's competencies

N=53 [M=28; PhD=22; Researchers=3]

Subject librarian's competencies	Masters		PhDs		Researchers	
	%	*f*	*%*	*f*	*%*	*f*
Staff who improve users' research skills	75%	21	91%	20	100%	3
Staff who are knowledgeable to assist with users' research questions	71%	20	91%	20	100%	3
Staff who provide users with the information skills needed for their research	64%	18	95%	21	100%	3
Staff to have knowledge and experience of the research process	68%	19	95%	21	100%	3

	64%	18	91%	20	100%	3
Staff who have adequate subject expertise and knowledge to support users in their discipline	64%	18	91%	20	100%	3
Staff that build good relationship with postgraduate and researcher during their research journey	68%	19	91%	20	100%	3

In general, the majority of respondents *agreed/strongly agreed* that they expect the subject librarian's competencies listed above.

Postgraduate students and researchers were asked in question 2.1 to rate their *perceptions* of their subject librarians' competencies in terms of research support. See Table 15, Question 2.1. When compared to their *expectations* in Table 19, the expectations of the master's students exceed their perceptions in all competencies. PhD students' expectations of librarians' competencies such as knowledge and experience of the research process, subject expertise, and building good relationships with students during the research journey, were rated much higher than their perceptions.

4.7.2 Rating of the most important roles of the subject librarian

Question 9 asks postgraduate students and researchers to rate the most important roles of the subject librarian. Participants could choose on a Likert scale from most important to not important. Table 20 [Question 9] shows the predominant choice of categories, important/most important combined.

Table 20: Rating the most important roles of the subject librarian by program

N=53 [M=28; PhD=22; Researchers=3]

Most important roles of the subject librarian	Masters		PhDs		Researchers	
	%	*f*	*%*	*f*	*%*	*f*
Subject-based information expert	64%	18	77%	17	67%	2
Teacher of information search skills and related skills	71%	20	100%	22	100%	3
Specialist in facilitating electronic access to information sources	71%	20	95%	21	100%	3
An important member of the research team/process	64%	18	77%	17	67%	2

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The highest ratings went to the teaching of information search skills and the role of specialist in facilitating electronic access to information resources. Less, but still important, were the roles of subject-based information expert and being a member of the research team/process.

Question 10 asked an open-ended question whether respondents thought subject librarians were adequately skilled for supporting their research needs. Responses varied. Some respondents indicated "yes", some indicated "no", "not sure". "not all the time". "somehow", "not really" and that the subject librarians are "averagely skilled". Some respondents indicated that subject librarians need training in the research process.

More positive responses revealed that subject librarians are "very good". Respondents are satisfied with the assistance and that librarians impart knowledge and skills. One respondent indicated that subject librarians are under-staffed. Some respondents indicated that they "do not know who the subject librarians are". Some participants responded that they have "never met any librarians and have never visited the library".

In addition to open-ended question 11, respondents were asked to elaborate on the answers they gave in question 10. Responses are given below:

(a) Subject librarian's research support

A few respondents mention that they have been well supported by subject librarians and rely on their support. One of the respondents indicated that during their postgraduate journey the subject librarians have mostly provided training in literature searching and reference management to improve search techniques.

Respondent 1: "I was preparing for a systematic review and the librarian guided me to develop search strategies. Have always been adequately assisted by the staff and I have always been helped to the best of their ability as well as when off campus".

Respondent 2: "Subject librarians are equipped with the skills to helpfully assist students like myself and could assist me or lead me in the correct directions. She also went out of her way to ensure her assistance was sufficient and that I had not needed anything else and she is prompt in her response, come back with articles or assistance".

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Respondent 3: "They are polite and have good professional skills and they are quite trained and do above and beyond the necessary to ensure one is adequately helped. They assist me with relevant content suggestions, thus giving me not only what I wanted but also what I needed and helpful in identification of resources relevant to your project/assignment".

Respondent 4: "They know where to find the necessary information for example on a very rare occasion I needed to contact the librarian and was sufficiently helped".

    (b) Room for improvement with skills and training in research process

Respondent 9: On the other hand, one of the respondents strongly believes there's always room for improvement, in any individual role. "They need training in the research methodology because they cannot assist completely in the research process".

Respondent 15: One of the respondent's comments was that he/she was a new user and at first did not know anything. When in contact with the librarians for assistance, not all the needs were satisfied.

Respondent 20: Requested for assistance and was only told to go and search the library website. "I am a very slow person and they usually do not have patience with me. Sometimes they don't know the answers to my questions, or they can't refer me to an appropriate person who might know". A request for more experienced staff and additional time spent to support in their research.

In summary, the objective of this section was to determine what skills and competencies respondents expected from their subject librarian. This section also reported on the rating respondents gave of the most important roles of the subject librarian. The next section reports on the data collected using interviews.

4.8 Data collected using Interviews

The researcher conducted semi-structured interviews (see Appendix D) with five PhD students, two master's students and three researchers (see Appendix E) within the Faculty of Community of Health Sciences at UWC. The postgraduate students and researchers who were interviewed

may not have completed the questionnaires. In other words, the students who were interviewed were not necessarily the same students from the questionnaire sample. The interviewees who partook were from the School of Public Health, School of Nursing, Sports Recreation & Exercise Management Sciences and Occupational Therapy departments. See Table 21.

Participants were asked to elaborate on and discuss issues addressed in the questionnaire. The questions that were asked included opinions of the services the library currently provides: library services to support research, staff services offered by the library, satisfaction with access to information, opinions about the library facilities, shortcomings of the library in supporting research needs, skills and competencies of the subject librarians and new or different services UWC library can offer postgraduate students and researchers with their research needs. See Appendix D for the interview guide questions.

Table 21: Demographic information of interview participants by program

Department	Program		
	Masters	PhD	Researcher
School of Nursing	1	2	
School of Public Health		1	2
Sports, Recreation and Management Sciences	1	2	
Occupational Therapy			1

4.8.1 Postgraduate students' and researchers' opinion/s of the services the library currently provides

Postgraduate students and researchers were asked to give their opinions of the services the library currently provides. Their views of the different services the library currently provides follow:

Library services

Some of the interviewees responded positively:

Interviewee 1 indicated: "I don't think that there is anything out there that is faulty in terms of your services. I'm quite impressed with the services so far".

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Interviewee 2: "The library provides very good service".

Interviewee 3: "As compared to what was available to students before, things have clearly improved, but when compared to the other institutions I've come into contact with, the facilities that the library has available still aren't adequate. More needs to be invested in postgraduate students. Investments must be reflected in the size of the spaces allocated within the library for use by such students, and access to newer and more books. I have, for instance, recommended that the library purchase a newly-published book, but I am doubtful that anything will come of this recommendation. I purchased the book myself because I needed it that urgently".

Improved library online services:

Some of the interviewees indicated that the library has improved its online services, as reflected in Interviewee 1's statement:

"Satisfied with access of resources remotely. Online resources and on-line work are really what supports me. The tools that you showed me, using the library portal, using the search engines, you know, that was just incredible, because it was a one-stop place where I could go and search using different search engines, topics, whatever, I could just go and access that, so that was, I think, and seeing the range that the library had on-line was for me just incredible".

Library Staff services:

Interviewee 1: "Satisfied with assistance of staff". Student very satisfied with library and staff services: "lenience has been showed by taking out a short loan book and could negotiate and actually had the book for a little bit longer which is really appreciated".

Interviewee 2: "Value library staff members' honesty and commitment; opportunity to learn and take ownership of my project (research); services that the library is providing are very helpful and user-friendly too".

Access to library resources:

Some interviewees stated that the library resources are very useful, and they are satisfied with regard to access to the relevant resources from the databases via UWC library website. They also attributed their contentment to the availability of a wide range of books. This, they contend, plays a crucial role in aiding with their research endeavors. An assortment of some of these sentiments is copied below:

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Interviewee 1: "I rely on whatever is online and available on the shelves (books & journals & current journals in reading room) while preparing for proposal and literature searching."

Interviewee 2: "I've gotten everything that I needed basically from the data bases that I used via the UWC library web site, so that's basically my main use for getting articles for my thesis".

Interviewee 3: "I am using the library physically and mostly use the library online resources that relates to my own field of research".

Library operating hours:
Some of the interviewee's students mention that they are very happy with the library's operating hours.

Interviewee 1: "Easier to use the library during the holidays – very busy during term times".

Interviewee 2: "The library hours are accommodative and especially during the exam times that it's open twenty-four hours. Are pretty important, especially when you feel pushed and pressurized, you don't get the information that you have on-line, then there's that option".

Follow-up sessions with new students:
One of the interviewees indicated that the subject librarian should build relationships and do follow- up sessions with the new students.

Interviewee 1: "There is still room for improvement in terms of when you had appointments with students and assist them with their needs; maybe you can do a follow-up, especially for the new students".

Request to Purchase more updated research books:
Some of the interviewees indicated that they feel frustrated about the outdated research books and that the library should purchase more updated books.

Interviewee 1: "The library does not have enough updated research books and should purchase more to support research needs". The interviewee experienced that there are more updated research books available at other universities like Stellenbosch and UCT libraries.

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Awareness of library services:

Some of the interviewees indicated that they were unaware of the services the library offers.

Interviewee 1: "Awareness of library services is needed".

Interviewee 2: "I never knew that the UWC library was offering so many different services to UWC students. It was not until I started with my Postdoctoral research fellowship and my supervisor introduced me to Ms. Karen Cook, that I, from that day I, made it my responsibility to search for all library services available".

Interviewee 3 recommended that the library should find a way to encourage students to use the services: "I am talking from experience because I completed my PHD without knowing that the library is offering so much valuable services needed to ease our research journey". Some of the interviewees indicated that they are "not aware of Inter Library Loans services for requesting books from another university".

Faculty partnership and awareness of library services:

One interviewee indicated that the library should collaborate with the faculties and raise more awareness of its services.

Interviewee 2: "The library should foster their partnership with departments and ensure that all students are aware of these services. I know sometimes it is our fault as students to be naïve, but I think more awareness is needed to market the library services".

Postgraduate Lab services:

One of the interviewees mentions that he/she is happy that the library has a postgraduate lab available to do research.

Interviewee 3: "Pleased with availability of postgraduate lab for PhD and master's students".

Communication problem:

One of the interviewees experienced a lack of communication with one of the postgraduate lab assistants:

Interviewee 5: "The communication gap was there because especially when you are a foreign student and of course the language problem that you experience, it took me time to really understand what the person is saying over there".

Writing coach assistance:

Interviewee 4: requested that writing coaches should address student's needs:

"They should appoint someone who knows a little bit of social issues and not someone that don't know anything about medical. In other words, the coaches should have knowledge of health and nursing as well that assists you".

Subject librarian's services:

Some interviewees indicated that access to faculty librarians responsible for the faculty to assist them with any specific issues is of great help. Interviewees are satisfied with the support of the organization's librarian, who could obtain full text articles that were inaccessible. Interviewees make use of the university's library mainly via telephone and email, as well as through its online portal:

Interviewee 7: "Interaction with faculty librarian was fruitful; I developed knowledge and skills after introduced to various research skills; literature searching; introduced to various search engines and Mendeley, use of data management system".

4.8.2 Library services to support them with their research

The researcher asked postgraduate students and researchers to state their opinions of the library services in supporting them with their research. This section will briefly present the comments of participants under the following headings.

Awareness and visibility of library services

Some of the interviewees in this section indicate lack of awareness of what the library can offer them. The following statements are expressed:

Interviewee 1: "I think the one major area of support could be if the library services were actually as visible as possible, so if we knew that you could get for example, training in the library".

Interviewee 2: "if it was more visible, let's say on other channels for example, once you click the website of UWC, or there's a pop up somewhere that says ok, remember library services

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or if there were those posters next to our departments, just more visibility of what the library actually offers, because I think it actually offers a lot we don't know".

Interviewee 3: "Awareness of postgraduate library research support services on library calendar, library website; even notices sent out to students by email; awareness of what resources the library has and what training is available to enhance our skills; schedule training sessions for late registrations; the library has such a vast amount of resources that are useful to me, it's a really essential place for me".

Interviewee 4: "Despite how long I've been at UWC, I suspect that I am not fully aware of just how useful the library can be, and exactly which services are at my disposal, and more can be done to highlight what is available".

More human resources needed

One of the interviewees indicated that the library needs to assign more staff to guide the students, so students are able to reach the shelves and know exactly where to go to find the information.

Interviewee 4: "We have all the books on the shelves, but if there are people there to really give directives. We need assistance with finding the necessary information instead of struggling to find relevant research books".

Faculty librarians' assistance

This section received positive comments from interviewees with regards to the assistance of CHS Faculty Librarians (FL) assisting them with research needs.

Interviewee 1: "I do not have a problem; I'm getting the help that I need from the faculty librarian. It's absolutely fantastic. When I come and I need a book, she'll print out something for me; I go to the shelf and I find the book, and if I don't find it, I come to her and she will obviously assist me at the shelves".

Interviewee 2: "Satisfied and needs have been fulfilled". The interviewee struggled in the beginning initially in terms of how to refine her search; how to access the library and these

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resources offline. "After a one-on-one session with the FL where sufficient assistance was given, I was able to work independently from home".

Interviewee 4: "I have been referred to the faculty librarian by my supervisor for assistance with literature searching. There was a time when I was supposed to do a systematic literature and develop strategies and so forth, all those skills that I needed for, to be able to look for the particular articles and discovered that I need someone; I gained a lot of knowledge and I do appreciate the assistance that I got".

Interviewee 6: "Very important was the training on Mendeley referencing tool by you and you shared links to tutorials for support; very useful and easy to use; I wish I'd had it when I wrote my proposal".

Library Postgraduate Workshops
One of the interviewees suggested that the library should provide postgraduate workshops during the week as well.
Interviewee 5: "I've noticed that the workshops that they do, it's mostly on a Saturday, and they should try and make maybe an extra workshop during the week, as some people can't come on weekends".

4.8.3 Staff services offered by the library

Postgraduate students and researchers were asked to give their opinions of the staff services offered by the library in support of their research needs. The following were cited:

Satisfied with library staff services
A number of interviewees described the quality of staff services as very good. Quotations of some of the remarks are as follows:

Interviewee 2: "Satisfied with library staff services as they have knowledge on their specific duties".

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Interviewee 3: "Staff services are excellent; they go an extra mile assisting us to ensure that even if that particular service is not available or relevant to my project, but they do provide alternatives; very honest when providing a feedback on certain projects".

Interviewee 5: "I had positive engagement with library staff members. When I came, I was very new, so I did not know how things were running and I remember going to the printing room in downstairs second floor I think or first floor. I had no idea of how to print, how to scan and all of that and I asked one of the ladies who was helping out and she really assisted me and then also how to borrow books, the circulation desk was really helpful in that; how to print as well, they also showed me how to load you know money onto your card and all of that and of course I've spoken to you about my research and using the apps Google and things like that, so I think I've had a positive engagement with the library staff. To me, I really needed some hand holding, because it was my first time".

Interviewee 9: "I have always been assisted by library staff, never been turned away. When I did ask questions and if people did not know, then they would refer me on, or they would ask somebody close by for assistance, so I've never been turned away, which is great".

One of the interviewees had a negative impression of the way that he was treated by the library. Interviewee 6: "I was looking for a particular text that was on short loan and they said there's only one and it is out on loan. The circulation staff did not follow-up on the book and contact me. I needed that book earlier this year and I was writing one of my business chapters and I needed that particular textbook. I even ended up buying my own online. The library definitely has a shortage of research books".

Postgraduate lab services
One of the interviewees experienced IT related problems at level 13 postgraduate lab and was dissatisfied with the postgraduate lab assistant on duty. Extracts of interviewees are as follow:

Interviewee 7: "Sometimes when you're stuck with something, they cannot really help you. Like for example if, maybe I click on something on the computer, or I'm struggling to print something, I need help, some of them are not able to help".

Interviewee 2: "Am satisfied with the service rendered at Level 13 postgraduate laboratory".

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Interviewee 3: "Use that level 13 for my research; postgraduate student assistance that is there is once again leniency in terms of patience when you require assistance; used level 13 PG laboratory to have sessions with a coach in one of the discussion rooms; they were always open and the gentleman sitting there also helped and guided, there's powerful new computers and it's quiet".

Interviewee 4: "The people there adhere to some very strict principles, which makes you feel when you go there you actually feel that you have to study; I even thought that the day that I'm now really not feeling up to it I'll come physically here and I know I will do some work, because of the environment".

Interviewee 5: "Some assistance with the coaches will also help. Very beneficial. I in fact had a purely science coach and I do a social science and my request logical sequence. He also knew a lot of technical sites that I could use".

Some challenges experienced at postgraduate laboratory:
Some of the interviewees expressed their dissatisfied experiences when using the postgraduate laboratory in the library for research purposes.

Interviewee 6: "As a doctoral student, usually when I come here, I go straight to level thirteen post graduate lab, and I think earlier on this year there was a time when it was closed. They said there's no one to man your guys and then to me it didn't make sense because there are some computers in that level that have particular software to be used for analysis and that software we can never find within the computers that are on the lower levels".

Interviewee 7: "I came on a Saturday morning and they told me that they couldn't help me, so I had to sit there and do nothing the rest of the weekend, because I wanted to analyze some data that I had, which I think also it doesn't make sense as I don't think a proper functioning library has to add a barrier to my own development as a student because of the lack of personnel there".

4.8.4 Satisfaction with access to information

The researcher asked postgraduate students and researchers about their satisfaction in terms of access to information. The following were cited:

Satisfied with access to library resources

Some of the interviewees mentioned that access to library resources works quite well for them.

Interviewee 4: "I would just go straight to Google scholar, so I noticed that I would not get anything until I realized that I had to go to the library website, so once I discovered that if I go to the library website there's actually more access to articles and things like that and it also works off campus so I stay off campus so I'm normally doing searches at home and things like that so it works quite well".

Interviewee 4: "Satisfied with access to library resources; registered with various databases; sometimes difficulty access the full text of journal articles; it was also explained by you how to find other ways of getting the same full text article".

Interviewee 9: "I'm satisfied; there's really a great variety of resources; you also have access to a vast amount of information when searching Sage Research Methods publications; where the very basic principles of research is available; variety of resources that also assist with technical skills is very freely available; I don't think I would have been able to get this far if it wasn't for that access to their services. It was user friendly".

Dissatisfied with access to library resources

Some of the interviewees experienced problems, namely accessing the library resources, unaware how to use the library resources and struggle to access full text articles.

Interviewee 6: "I don't have access to library resources. I am experiencing login problems".

Interviewee 5: "Was not introduced how to access the library database. When I came to UWC, I wasn't really orientated on how to access the library databases, using UWC web site. Like an orientation to the library services".

Interviewee 3: "Experienced problems accessing the library resources and was unaware how to search the library resources for my research. After a one-on-one session with the faculty librarian I could easily access articles via the library databases. Satisfied with the assistance and overcame access problems. More full-texted journal subscription based on different disciplines".

Interviewee 4: "I manage to find information on my own. Usually what I do is there are some publications, especially latest publications that are when you try to access it online; they tell you to buy it. Then at times they ask you to log in using your institution specifications, so usually what I do is, I copy and paste the name of the article within the UWC library home page, then I search, and usually I find some there, but most I don't".

Interviewee 5: "Experienced problems accessing full text articles and did not ask the faculty librarian or other staff for assistance. So, what I usually do is I speak to some people at some other institutions, especially abroad, not in Africa, then they download from whatever institutions they are at and they send a PDF to my email".

Interviewee 6: "Sometimes difficult to access full text of some publications; request to be able to retrieve full text for all publications; articles have valuable information, but you cannot access the full text".

Interviewee 7: "Not satisfied with access to information at all; UWC does not subscribe to enough social science journals, and this really hampers one in carrying out research; solution to this problem has been to frequently request articles through Interlibrary Loans; cost of accessing these journals is nominal; it does add up, particularly when reliant on funding from the National Research Foundation as a primary source of income".

4.8.5   Postgraduate students and researcher's opinion/s about the library facilities

This section asked the postgraduate students and researchers to raise their opinions about the library facilities. The majority of interviewees expressed negative attitudes towards the level 13 postgraduate laboratory and stated as follow:

Interviewee 1: "I find the postgraduate lab sometimes crowded and most of students rely on level 13. I would rather sit on other levels".

Interviewee 2: "I wanted to be here in the library so I can be close to the resources and I was sitting somewhere, and I had to struggle to find a desk because there were so many students using the postgraduate lab. To crowded, the library has a space problem".

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Interviewee 3: "The postgraduate lab at level 13 does not have enough computers to meet the needs of the students. The library needs to provide more seating and computers because the researchers, Masters and PhD students are growing in numbers. The multi plugs are also not working".

Interviewee 4: "I think it's small, it's not accommodating all the post graduate students, and I do have a problem when you are maybe in your second year of masters, and now very concentrating, and then you have the immature, new masters students, and they don't know anything, they pop in and there is no control of the way people come into that lab and out and it's too congested, It's very disturbed".

Interviewee 6: "I stopped going to level thirteen, when visiting the library. I couldn't concentrate. I had to finish, then I used to come on Sundays to use level fourteen, because level thirteen is absolutely distracting. There's no order".

Interviewee 7: "Level thirteen postgraduate laboratory was a life saver for me when I was doing my masters, because I was almost every day there. One of the main reasons why I decided to stay away from level thirteen is when I realized that they rarely clean the computers in terms of viruses and so forth. When I come to use level thirteen, usually I only do everything online, use toolbox download from my email, I do not use any of my external information hardware".

Interviewee 10: "Library facilities are very good and also allow me an opportunity to do my work after hours; with all the new setup in the foyer, I think it is very good that we can now print outside, plug our laptops and have access to Wi-Fi-connection".

Interviewee 3: Expresses a concern of returning the short loan books after hours and in the morning: "I would suggest you know a place that you just drop the books like you know the video store etc. and I'm not sure if there's cameras that actually also then can guide…because I know about the safety and security issues, but if there's just a place to submit it. It's mostly that morning that you have to return it at nine thirty".

In addition to other library facilities, a suggestion from some interviewees indicated that the library should have more printing and photocopying facilities.

4.8.6 Shortcomings of the library in supporting research needs

Interviewees mentioned the following shortcomings of the library in supporting them with their research. These remarks were categorised and the following problem areas were identified:

Awareness of library services

Some of the interviewees indicated that they are unaware of the library services to support them with their research.

Interviewee 4: "Not aware of all the library services. I don't know how much the library can support; I don't know how many services. I don't know where to go for help".

Research space

Some of the interviewees identified that a bigger space is needed for masters and postgraduate students.

Interviewee 6: "Level 13 postgraduate lab allocated for masters and PhD students is too small to do research. Suggested that a bigger area is needed and partition it for PhDs and master's students and instructions must be no one owns a computer there".

Interviewee 6: "There is also a need for a refreshment area. Request that library should provide a space at postgraduate lab to have refreshments".

Library resources and access to information

Interviewee 3: "If possible, try and have e-books on those short term-loan books so that we can also access them online".

Interviewee 4: "The only shortcoming is the short-term loan of some books in level 5. I would like to request the library management to review the policy on short-term loan of books, because sometimes you are only allowed to use a book for an hour and is not enough".

Interviewee 6: "Most of the assistance that I had was when I used the library online system for journal articles and books; otherwise I do my thing away from the library. I've learnt to depend solely on the internet".

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Interviewee 8: "I had a negative experience when requested a book to use for my research proposal. I was told via email that the library was unable to access the book for me; Several weeks later when visiting the library, I queried about the book again. I explained that I was in the proposal development phase of my study, which would culminate in the submission of my research proposal, as well as a presentation to my department; that having this book would be a big help. The staff member followed up and, on this occasion, I received the book within a matter of days! I was grateful to have finally received the book but at the same time rather annoyed at how things had played out".

4.8.7   Skills and competencies of subject librarians

Interviewees were asked to give their opinions about the skills and competencies of the subject librarians serving them to meet their research needs. Their responses are organised and summarised into themes in Table 22.

Table 22: Opinions about the skills and competencies of subject librarians

Skills and competencies of the subject librarians	Phrases from interviews addressing skills and competencies of the subject librarians	Number of responses
Satisfied with skills and competencies	"The librarians are doing a great job". "Faculty librarian one-on- one training session helped tremendously with my research on how to access articles for my literature review and thesis. "The FL has the knowledge and skills and the assistance was positive, effective and beneficial". "After being in contact with you I was able to access more articles than I was before so I knew how to use different web sites because I only used a few before that and then knew how to select and de select and filter my information, so it was much easier". "The faculty librarians were really efficient and even had resources that I didn't find when I did the search independently, so I would say that I'm aware that the skills by the librarian were up to date, relevant and even you know it exceeded what I requested. So, I had resources that I initially didn't know about. Also, in terms of you explaining how the system works,	N= 7

	in requesting articles and the help that is available, I found that really very beneficial". "I really benefitted by it so much that I didn't have to slot in by the library PG workshop". That session alone made it possible for me to access". And you can communicate after a first visit via email about whatever problems you encounter; You know of current research that is discipline-related, that is quite valuable; you mention that somebody else is almost doing a similar topic, and that immediately meant that your value is not just towards finding information …but toward the topic too". "I'm quite ok doing my apps, Google and my database searching, so I think that reflects the skills of the person who showed me how to use them, so I think that was ok". "I've found the staff I've interacted with to be competent and knowledgeable about their work".	
Awareness of skills and competencies	"What I think would help is if the faculty librarian would interact; sets a session with the post grad students, depending on the faculty and say ok, I'm here for you. This is what I do. What kind of assistance would you guys need?" "I know for the distance students it is quite hard, but for the ones who are here. I guess it's a start to just either attend one of their journal clubs to say ok, this is who I am; this is what I do…more interaction within faculty and departments? more visible within the faculty".	N= 1
Research experience	"I think that a major benefit for me was the fact that you have research experience and I noticed that from the get-go. It was somebody that wasn't just talking theoretically or but somebody that was in the know, and everything that was explained to me was explained from a knowledge base that was there and an experience base and so that was very useful to me and I felt like I was talking to somebody, not only a professional in terms of library skills or library knowledge and library science knowledge, but somebody that has research experience, which is very useful for a student". "For somebody to know ok this is this type of research and that type of research and this is where you go for that and so on. So, having that was very, very useful".	N= 2

	"The librarian should have at least skills or knowledge of the research process".	

4.8.8   New or different UWC library services

The researcher asked postgraduate students and researchers to name new services that are needed to support their research needs effectively. Data collected from interviewees were organised and analysed and thereafter categorised into main headings, namely library online services, continuous relationship building, extended library hours, increased library postgraduate workshops, access to internet connectivity, extended opening hours of library, access to electronic resources and literature search service for senior postgraduate students. Some of the notes were cited to facilitate better understanding of comments. See Table 23 below.

Table 23: New services or improved services indicated by postgraduate students and researchers

Library online services	The library should make all its services online available. "I think where the library needs to get on board is online. And I think that would be the only area, if needed, where the library would show more progress".	N= 1
Continuous relationship building	There is need for relationship building, continuous follow up with research students via email.	N= 1
Extended library hours	Student requests for extended library hours, even on weekends. "Because I used to come here on a Saturday or Sunday. Sometimes when the library is locked, students are busy maybe to prepare for submitting their proposals. Students need the library to do corrections and they don't have a place to do research". Student requests that the postgraduate lab should be open every Saturday. "Sometimes when you come here that room on a Saturday is locked". Student recommends that the library has to open 24 hours right through the year regardless of the fact that it's exam time. "We are dependent on this facility in terms of it providing also studying space and so forth".	N= 2

Increase library postgraduate workshops	Student suggested that the library should conduct the postgraduate workshops more often because different students are at different times for processes in their thesis. "You can't make the one and then the next one is only like two months later; then you already past that stage where you actually needed help".	N= 1
Access to internet connectivity	Student mentions that Access to internet connectivity is very important. "I would think part of packaging the services of the library is to make sure that students have the access free and that there is room, even off campus, to access and that's specifically the times of the "fees must fall" and whatever instability that happens, that there should be places that it continues".	N= 1
Access to electronic resources	More e-books are requested especially for short-loan books on level 5 and easily accessible for full text of articles.	N= 1
Literature search service for senior postgraduate students	Recommend that a literature search service for senior postgraduate students could be considered.	N= 1
Awareness of library services	Better awareness of library services. "I don't know if the library has induction as well, because we still have orientation in the first year and then we have induction for each of the postgraduate". Visibility of signage's of services.	N= 1
Postgraduate research lab	There should be a bigger research lab for postgraduates for research purposes and to utilize at any time.	N= 1

4.9 Summary of the chapter

In this chapter, the data collected to determine the role of the academic library in supporting postgraduate students and researchers within the Faculty of Community and Health Sciences at the University of the Western Cape were presented. Data were collected by means of a questionnaire and interviews.

In the next chapter the results of the data presented in this chapter will be interpreted and discussed in order to make recommendations on more effective ways to support postgraduate students and researchers.

CHAPTER 5: INTERPRETATION AND DISCUSSION OF QUESTIONNAIRE AND INTERVIEW DATA

5.1 Introduction

Chapter four presented the results of the study on the role of the academic library in supporting postgraduate students and researchers within the Faculty of Community and Health Sciences at the University of the Western Cape. This chapter uses triangulation to interpret and discuss the questionnaire and interview results.

As stated by the Research Libraries United Kingdom and Research Libraries Information Network (2011), the digital revolution has changed the relationship between libraries and postgraduate students and researchers, some of whom do not physically use the library. Academic libraries need to consider the quality, nature and extent of the library's collections, their staff and the services they provide, as well as physical space, all of which are important to support the users with their research needs.

The findings of the study were dealt with by answering the research questions below. These questions are guided by the literature review and answered by data collected. Data was collected using questionnaires and conducting interviews with postgraduate students and researchers within the Faculty of Community and Health Sciences at the University of the Western Cape. The response rate was low (53 or 26%) although the questionnaire had been repeatedly sent to master's students, PhD students and researchers (total of population sample 205). The first section of the questionnaire collected demographic information from the participants. Sections within the questionnaire include closed ended and open-ended questions and focused on the objectives of the study.

This study aimed at finding out the role of academic library services in support of postgraduate students and researchers at the University of the Western Cape. It aimed to answer the following research questions:

- Which research-oriented services are offered by UWC library to postgraduate students and researchers?

- Which factors affect postgraduate students and researchers' decisions to use or not to use the library for research?

- What are the perceptions of postgraduate students and researchers of the role of academic libraries in supporting their research?

- Which skills or competencies are needed by the subject librarian to support postgraduate students and researchers with their research?

5.2 Expectations and perceptions of research support services

The research environment is forever changing, and academic libraries should play a key role by anticipating, understanding and challenging new and improved research activities. This section discusses the expectations and perceptions of postgraduate students and researchers of the support that UWC Library research services render.

This study confirmed that respondents highly expect the library to provide the research support services listed in Table 8. There is a great demand that the library subscribes to relevant and up-to-date printed and online library resources and provides easy access to full text journal articles. Katabalwa's (2016: 446) study mentioned that students and faculty members are using electronic resources for working on their assignments, research proposal writing, literature review, research report writing, current awareness and for exploration of ongoing research through peer-reviewed papers. Academic libraries are the gateway to information resources and UWC library subscribes to a vast amount of print and electronic resources to support research. Remote access via the library catalogue makes e-books, electronic journals and databases as well as open access resources accessible for users anywhere anytime via internet connectivity. It is evident that UWC library should revisit the challenges and try to make delivery of information as seamless as possible enabling access to relevant and full text resources.

In this study, the library's research support services are the innovation, for which communication is needed in order for them to be adopted. In this study, *communication* (awareness, training, service delivery) is one of the DOI elements the library uses to deliver services to postgraduate students and researchers listed in Table 8. The *social system,* another element of the DOI, in this case is the UWC postgraduate students and researchers, the library

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staff (subject librarians) and the CHS faculty. UWC library's lack of current print and online resources as well as easy access to full text journal articles could have led to the adoption of the innovation being hampered by complexity created by this lack.

The perception of respondents in this study showed a lower frequency of satisfaction with research support services listed in Table 16. It is evident that the results for master's students and PhD students indicated that there is a significant association between *expectation* and *perception*. Applying the DOI, *relative advantage* of adopting the services was perceived as low among postgraduate research students and it clearly speaks to the elements of *communication* and *social system* that the subject librarians need to improve their skills to develop and fulfil the needs of postgraduate research students to become independent learners in the research environment.

5.3   Expectations and perceptions of library research workshops

There is a strong demand for the library to provide research workshops as listed in Table 9.

The research workshops offer postgraduate research students training in using different search tools, databases, uploading their publications in the UWC repository and measuring research impact, amongst others. The perceived *relative advantage* of attending workshops could affect the adoption by researchers.

Postgraduates and researchers perceive the research workshops as quite satisfactory. See Table 17. Masters' and PhD students' results show that there is a significant association between expectation and perception that the library should provide and improve on the research workshops. The DOI element of *complexity* is revealed as some respondents could not clearly understand these workshops, or there was a lack of marketing of the workshops, awareness or lack of interest. It is evident that these research workshops are really important to assist with postgraduate research students' needs and to increase the university's output. The library should provide high quality research support and an improvement in these research workshops as well as awareness.

The advent of new electronic services and resources has led to the demand for training to equip postgraduate students and researchers with the necessary skills and knowledge to be able to utilize the wide variety of services and resources available.

One of the respondents believes that measuring one's research impact and having adequate subject expertise and knowledge to support users in their discipline is the responsibility of the research supervisor because they are already experts in the field. This is in contrast to responses to question 5.2 and 5.3 where the majority of the respondents expect the library to provide the research support services listed in Table 8 and to provide research workshops listed in Table 9.

This study revealed that existing library training manuals should be updated. Updating the training manuals might attribute to the perceived *relative advantage* of adopting this support service to enhance postgraduate research students' learning and development and stay up to date with the information search tools. There was also a preference for the Mendeley reference management tool instead of Refworks.

5.4 Expectations and perceptions of subject librarian's competencies

The literature publicized that academic librarians have always played an important role in providing research services and research skills development to faculties in higher education. That role is now changing to include the academic librarian as a unique and necessary research partner, practitioner and participant in research projects.

Respondents were in strong agreement that they expect subject librarians to be skilled and have knowledge of the aspects listed in Table 19. Innovations may seem more complex and thus likely to be adopted more slowly if administered by unskilled people.

Swisher (1986) cited in Powell, Baker and Mika (2002: 50) strongly emphasizes the need for librarians to engage in the research process. The author believes that librarians have an essential role in the research process not just to produce research but to educate themselves further about the research process and eventually make better decisions on services they provide through reference, instruction and collection.

Data from the interviews brings out variations of comments. Some respondents are satisfied with the skills and competencies of the subject librarians serving them. Interviewee (1)

mentioned that the one-on-one training session with the subject librarian assisted enormously in finding articles for research. The subject librarian is experienced in supporting postgraduate research students during their research process. However, in contrast with the above statement, other respondents indicated that the librarian should have skills and knowledge of the research process. Respondents also requested subject librarians to interact more with the CHS community, be more visible and market their knowledge and expertise in supporting them.

Responses to open-ended questions 2.1, 2.2 and 2.3 confirmed that the library has supported the research community by conducting informative postgraduate workshops such as Thompson Reuters' journal writing (author workshop on journal writing and publishing) and on Mendeley reference manager tool.

This study confirmed similar results in Table 17 that postgraduate students and researchers are very satisfied with advanced information search skills training. Subject librarians are very supportive and doing a great job. Nevertheless, a request was made for more time should be allocated to postgraduate workshops to allow for discussions and explanations. Further *complexity* in this study is the perception that subject librarians' research support is poor compared with other universities.

While there was a request that the library should improve the online librarian (online reference) services and speed up responses, Table 16 demonstrates that the majority of respondents perceived online and physical reference services to be satisfactory or very satisfactory. Positive perceptions of research support services could be a result of researchers seeing the relative advantage in adopting them. The application of ICTs in academic libraries have changed how reference services can be provided to students and faculty. Dollah and Singh (n.d.); Maharana and Panda (n.d.) and Mardikian (2007) cited in Nfila (2010: 7) state that users expect and request academic libraries to offer reference assistance regardless of location and time. Furthermore, reference services can also be offered to users electronically not necessary being physically in the library. The provision of electronic reference services at UWC Library involves using ICTs, for example, Ask-a-librarian whereby users can ask questions and receive answers online. Electronic reference services include face-to-face, email, online ICT tools and frequently-asked-questions, among others.

Visibility and awareness of services and training workshops should be better marketed in the faculty and the library website. Nel (2015: 147) mentions that postgraduate students reported a lack of marketing, training in library products and services and that they are unaware what the library has to offer. The DOI's o*bservability attribute* is low for postgraduate students (*social system*) who are not aware of the library's research services on the library's web page. Once postgraduate research students become aware of services and training workshops, they will observe and learn which leads to *relative advantage.*

Some respondents in this study did not attend any postgraduate workshops, did not make use of the library services mentioned or make regular use of the services, and did not yet need some of services.

Respondents expect the library to subscribe to relevant and up-to-date electronic resources (Table 8) to support postgraduate research students' needs. This will dissuade students from accessing databases and journals from other universities. This challenge is raised again in the interviews. It is important for current information resources to be available and accessible when they are needed.

Library staff's commitment to service is highly valued. Respondents view subject librarians as very helpful and friendly. This study suggests that subject librarians should perform follow-up sessions with new postgraduate research students. Findings confirms that the library should foster a partnership and collaborate with the faculty, raising awareness of the services the library offers.

The postgraduate lab (level 13) is a research environment where postgraduate students and researchers spend time working on their research with the support of lab assistants and writing and statistical analysis coaches. Yao, Liu and Cai (2009) cited in Daniels, Darch and de Jager (2010: 123) mentioned that

> The information commons of research university libraries should be a brand-new service platform dominated by brand new service concept. It is a physical presence that integrates network, computer hardware facilities and information available in multiple formats [. . .] an open, free, beautiful, convenient, comfortable, flexible and functional place where users can self-study, group discuss, creative work, interactive communicate, and relaxing socialize.

The study confirms that respondents are satisfied that the library has a postgraduate lab available to do research, despite its shortcomings.

This study requested that the library should invest in a bigger research space for postgraduate students. Daniels, Darch and de Jager (2010: 127) mentioned it would be useful to capture "evidence relating to the extent of use, occupancy rates and demonstrated demand for expanding the facility" as evidence that the research commons were used by users and overcrowded.

Findings from the interviews about library facilities confirmed a request for an expansion of its postgraduate laboratory with more computer workstations to accommodate many students. Respondents want the postgraduate lab to be a quiet space to do research without distractions.

Respondents highlighted language barriers with the postgraduate lab assistants. According to Singh (2007: 469-470) staff should be able to understand and communicate with foreign students. Respondents in the current study would like writing coaches at the postgraduate laboratory to address students' needs. Respondents require coaches to have knowledge of different disciplines especially for health and nursing. Further discussions will be elaborated on under successes and shortcomings of the library, rating of library services and new or improved services the library could offer.

5.5   New or different services the UWC Library could offer

The findings from the questionnaire and interviews highlighted the following services for improvement: improved online reference services are suggested by participants of this study, such as response time for requests and knowledgeable librarians to assist with queries. There is a need for relationship-building and continuous follow-up with students via email. Although the library is open until midnight, 24/7 during examination periods, it was suggested that the same operating hours should apply for the postgraduate research commons (level 13). Students suggested that the library should conduct the postgraduate workshops more often because different students are at different levels during their research process. It was recommended that a literature search service for senior postgraduate students could be considered. Students mention that access to internet connectivity is very important. Problems with Wi-Fi internet connectivity are of great concern for postgraduate students and researchers, who indicated their

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dissatisfaction with slow networks to information resources. More e-books are requested, especially for short-loan books on level 5, and full text articles need to be easily accessible.

5.6 Library usage

5.6.1 Frequency of library visits

This study indicated that most masters students visited the library on a monthly basis in comparison with most researchers who never visited the library. Researchers who never use the library for their research can access material from their office or home. Evidence also indicated that they can afford their own research books and are confident accessing the resources electronically. Although a low percentage of PhD students visits the library daily, the majority responded under the category "other". The results indicated that they visit the library only to borrow and return books, depending on their research needs and some feel it is not important.

This study indicated infrequent library visits of departments on a daily, weekly and monthly basis. The departments of Occupational Therapy and Sport, Recreation and Management Sciences specified the highest incidences of respondents who never visited the library. These respondents could be part-time students who use their personal computers at home to do research. Du and Evans's (2011: 111) identified that researchers were not using certain services because they had no idea of specific services that the library offers.

The School of Public Health respondents indicated the highest frequency "other". The majority of the School of Public Health postgraduate students are distance learners who live in other countries. These respondents visited very seldom, annually, bi-annually or whenever at university.

This study discovered reasons why postgraduate students and researchers decide not to use the library for research. Students visit the physical library less because they can access the library's vast amount of information via the library's subscribed electronic resources using the internet. Postgraduate students and researchers indicated that they are confident and can access resources electronically from their office or home. *Relative advantage* and *compatibility* influenced the adoption of these research support services. The School of Public Health offers

distance learning programs and some students do not visit the library at all. UWC library offers an online reference service and library support guides via the library's website and other online tools, such as iKamva (Sakai e-learning platform).

5.6.2 Access and usage of the library's online resources and the internet

This study's results revealed that most masters and PhD students accessed the library website either daily or weekly. PhD students indicated under the category "other" that they are searching for resources through the library website when working on their research. Similar feedback on challenges to access occurred under frequency of library visits that they are distance students enrolled in the School of Public Health residing in other African countries and mostly experience problems accessing the library resources off campus. The study of Haglund and Olsson (2008: 56) also mentions that the *complexity* of library usage is that access to off-site electronic resources was problematic.

This study also indicated that a majority of the postgraduate research students use the internet daily and weekly. This indicates that good internet access is vital for research. The reason why postgraduate students do not use the resources via the library website could be, according to Katabalwa (2016: 455), and as one respondent indicated, he/she does not know how and always struggles to access the electronic journal resources. The reason why most of the respondents accessed the internet more than the library website could be that they find it easy and are confident in using it. This implies that the users find *compatibility* with using the internet. It is also evident that *complexity* influenced the adoption of e-journal resources and the library should make their resources easily accessible (user friendly). *Complexity* influenced the adoption of accessing the library resources because of login problems. *Complexity* also influenced the adoption of research services related to searching for the library resources and retrieving full text articles [Interviewees 5 and 6]. Other studies indicated that most students use the internet as a matter of convenience and to retrieve information easily and quickly. Metzger, Flanagin, and Zwarun (2003: 286) and a similar study by Saiti and Prokopiadou (2008: 99) report that fast access to the internet facilitates prompt information retrieval and is a natural choice for those students who work full time, or cannot leave home or their post at work.

Some interviewees were satisfied while others were dissatisfied with access to library resources. This study indicated satisfactory access to library resources from on and off campus [Interviewee 4]. This study confirmed that a one-on-one session with the subject librarian assisted with accessing the library resources and discovered more full text articles [Interviewee 3]. The attributes of *observability and relative advantage* are applied under this category due to gaining effective training and became independent learners. It is evident that postgraduate students have the knowledge and skills to find relevant information for their research.

In contrast with the above results, some respondents expressed dissatisfaction with access to library resources. According to Satpathy and Rout (2010) cited in Maya (2018: 31), although libraries host a vast amount of resources, their usage has been low due to lack of awareness. Libraries need to raise awareness of their electronic resources through different mediums as well as marketing. This study also indicated that UWC library needs to subscribe to more Social Science journals to avoid stumbling blocks and to excel in research.

5.7   Rating of library services

This study indicated that the library has being rendering a good to very good service. However, it was raised that the library training workshops on offer are not of a high standard for postgraduate students, being instead more suitable for undergraduates. Results from the study by Haglund and Olsson (2008: 56) indicated that researchers feel that they do not need the library instruction and that subject librarians are only contacted when the need for in-depth searches arises. Respondents expect subject librarians to possess excellent subject knowledge.

5.8   Successes and shortcomings of the Library

Positive results reveal the successes of the library in support of research. Respondents are highly satisfied with one-on-one training sessions. They regard subject librarians as having the knowledge and skills to support them with their research needs. Respondents are satisfied with the prompt responses from subject librarians via email when requesting assistance with full text articles. Respondents are very satisfied with the online services and that the library has improved its online resources. The library resources are made available in a timely fashion and the subject librarian and online system eases location of various materials. Findings indicated that access to the library's website and full text journals articles was possible. Postgraduate

research students are satisfied with Inter Library Loans services requesting full text articles for their research. Information search skills postgraduate workshops were well received and to the satisfaction of postgraduate students. The postgraduate laboratory on level 13 serves as an important environment for postgraduate students who do not have access to the internet at home. Overall, respondents are satisfied with the library opening hours, space, material needed for research, fast internet connectivity and improved computers.

While responses were overwhelmingly positive, shortcomings did arise from respondents. Dissatisfaction was expressed with the level 13 postgraduate laboratory research environment which has insufficient seating space and needs to be quieter. A similar study by Singh (2007: 469-470) reported that postgraduate students need a space in the library that is accommodative to assist with research, with library staff being more knowledgeable regarding research materials and staying up to date with researchers' needs. Voices in this study requested professional assistance with data analysis and writing skills.

Respondents experienced problems accessing full text journal articles, both on and off campus. Postgraduate students rely heavily on immediate access to electronic resources for their research. With reference to the library as a major information source, it is important for the library to subscribe and maintain access to relevant full text databases when needed. Friedlander (2002: 5) discovered in his study that users are encumbered by insufficient training in how to search for information. Therefore, information search training which teaches them how to access information resources more easily and quickly promotes their effective use of the relevant information technologies and effectively equips them with the skills needed for life-long learning.

The provision of an efficient search engine access system by academic institutions, according to Waldhart, Miller, and Chan (2000: 101-102), for using various methods of selecting resources would not only mean greater recognition of these highly-valued information resources but would also build a better understanding of the significance of information and establish a firm basis for the life-long learning and development of the students. Furthermore, as indicated by the above authors, the investment in information sources, particularly in expanding the level of access to resources both in libraries and on the internet, would improve the productivity of the learning experience for students; allow higher education to continue the

process of inquiry and learning; accelerate development; and thus, boost the research output (Waldhart, Miller, & Chan, 2000: 102).

Respondents requested that the library subscribes to online prescribed e-books and increase the loan period of short loan books. Some respondents requested the need for subject librarians to assist with research methodology and that more specialized librarians are needed to assist students with their thesis. Some respondents require improved research training and follow-up sessions, stating that the librarians should be skilled to assist in each department.

Du and Evans (2011: 113) reported that one study participant preferred the library and librarians to be partners of the research community, stating appreciation for librarians who "… know my research topic, email me out of the blue with a link, an article or reference that relates to my research". The findings of this study also identified that some subject librarians can be quite busy or may not have the necessary resources to assist them to the maximum degree.

Most information resources are available at South African academic libraries which subscribe to a variety of academic databases and provide access via the library portal for on and off campus users (Maya, 2018: 25). With reference to the internet as a major information source, it is evident that there is a lack of awareness of searching skills to access the library's online resources. Maya (2018: 25) mentioned in his study that it is highly important that students know and become familiar with the resources available to assist in learning and research and effective usage of it. This current study advocated for a wider advertising of the services and workshops offered, as one student indicated that he/she "did not know how to access the library's online research databases". Rehman and Ramzy (2004: 150, 154) confirmed that electronic resources were not used efficiently by health professionals due to insufficient awareness and incompetence in accessing and using these resources.

This study mentioned that the library should improve their online librarian (library reference) services, develop e-tools to improve support for distance learning students and literature searching for the different subjects. This study also requested that a librarian be available on Saturdays to assist with different subject disciplines and the research process. Echoed by Gannon-Leary et al. (2006: 260) ''access to libraries and learning resources is still important for the students and a level of staff support is necessary and should be equitable for all students''. Since students have difficulties in utilizing databases and accessing information, further assistance and guidance from subject librarians is needed to allow students to develop their skills.

5.9 Rating the most important roles of the subject librarian

The results of this study showed that the role of teaching of information search skills was rated the highest followed by the role of specialists in facilitating electronic access to information resources. The roles of subject-based information experts and the importance of being a member of the research team is still important but rated lower. The results support the findings of the expectations and perceptions of subject librarian's competencies listed in Table 19 and Table 15.

This study indicated that subject librarians should enhance their skills and knowledge in the research process and training is needed to effectively support postgraduate research student's needs. The above feedback is similar to the findings in Table 15, that master's students and PhD students have a lower frequency on the perception of the subject librarian's competencies in knowledge and experience of the research process. According to Morgen and Atkinson (2000) cited in Saiti and Prokopiadou (2008: 101) academic libraries should have staff who are also active researchers to support students in developing their information search skills. CARL (2010) cited in Hart and Kleinveldt (2011: 42) identified that "professional development and by undertaking research, knowledge of the research process and fundamentals of the research methods" are competencies of academic libraries for research support.

Subject librarian's research support is important for teaching, learning and research. It was revealed by one respondent that subject librarians mostly provided training on literature searching and reference management and improving search techniques to find relevant resources. This study requested that more experienced librarians and additional time is needed with postgraduate students. As one respondent comments, she was a new user and at first did not know anything. When in contact with the librarians for assistance, not all the needs were satisfied. Requests for assistance were not fulfilled and she was told to go and search the library website.

Singh (2007: 469-470) reports on the recommendation of postgraduate students that the library staff should be more knowledgeable regarding research materials and keep up to date with research needs. This sentiment is echoed by Tenopir (2003) cited in Saiti and Prokopiadou (2008: 101), who reported students' dissatisfaction, namely, the lack of customer orientation and the scarcity of knowledgeable librarians.

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With the application of the DOI, this study applied the *compatibility attribute* to ascertain the skills and knowledge of subject librarians (social system) to support postgraduate research students (social system) during one-on-one or postgraduate training workshops (communication). The librarians need to enhance their knowledge and skills to best support the learning ability of postgraduate students to use the library's research support services effectively. This will reduce *complexity* and increase *relative advantage*.

5.10 Summary of the chapter

This chapter interpreted and discussed the findings to the four research questions identified in Chapter one with regards to the role of the academic library's services in supporting postgraduate students and researchers within the Faculty of Community and Health Sciences at UWC. Results were synthesized using the DOI and compared with similar results reported by other researchers. The response rate (26%) was low and reading the findings should always bear this shortcoming in mind.

The section that follows will provide conclusions and recommendations.
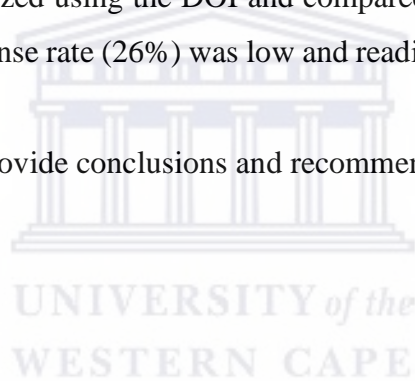
CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

6.1   Conclusion

This section will provide a short summary of the main findings for each research question and will be further elaborated under the recommendation section.

- Which research-oriented services are offered by UWC library to postgraduate students and researchers?

The implications for the academic libraries supporting research is that the research environment is continuously changing. Academic libraries need to be key partners in research by anticipating, understanding and highlighting the challenges in new research activities. This will open up new possibilities for libraries in improving the quality of existing and developing innovative services to successfully support research activities.

Even though many of the identified needs are currently being addressed by the UWC library, several potential areas for improvement were identified. These include technical support with easy access to online resources, improved Wi-Fi internet connectivity, awareness and visibility of library services, extended library operating hours, improved knowledge and skills of subject librarians supporting research, online reference services, online distance- learning services, increased library postgraduate workshops, improved postgraduate lab services and more research space, relationship building and partnership with faculty, improved customer services as well as assistance with language problems.

Other challenges that postgraduate students and researchers are facing is that they are often not aware of how to search for information and the expertise of the subject librarians. One of the major challenges is the awareness of students of the library services and the facilities the library offers to support research. The new scholarly communication support services include assistance with digital curation, research data management, open access, bibliometric analysis, establishing researcher profiles and publishing. The UWC library also supports with measuring research impact as well as establishing researchers' profiles. During the interview sessions none of the postgraduate research students mentioned the newer support services.

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- Which factors affect postgraduate students and researchers' decisions to use or not to use the library for research?

The development of ICT has changed the way information is generated, stored and accessed, whereas internet and Web-based technologies have facilitated publishing and distribution of information resources in digital format.

Library users in many academic institutions no longer depend on printed materials only; instead, they also use e-resources to meet their information needs. Electronic resources have become vital resources, and a source of information in academic areas whereby students, researchers and faculty members use them to complement or supplement printed books.

Students visit the library, physically, less because of the vast amount of information accessible either via the libraries' subscribed electronic resources or the internet. Postgraduate students and researchers indicated that they are confident and can access resources electronically from their office or home. They visit the library only to return books; visits also depend on their research needs. The School of Public Health offers distance learning programs and so some students do not visit the library at all. However, they experience problems accessing the library resources electronically.

The largest numbers of users were masters (60%) and PhD (65%) students who accessed the internet on a daily basis. The reason why the majority of the users access the internet more than the library website could be that they find it easy and are confident in using it.

The results showed that respondents were experiencing problems accessing the library resources due to login problems. The respondents also commented that they were unaware of how to search the library resources and experienced problems retrieving full text articles.

- What are the perceptions of postgraduate students and researchers of the role of academic libraries in supporting their research?

The majority of respondents indicated their perception of being satisfied/very satisfied with research support services listed in Table 16.

The results for master's students and PhD students show that there is a need for improvement and that subject librarians should play an important part in improving these research support services, namely: library research workshops, one-on-one training sessions, subscribing to relevant and up-to-date printed and online library resources and document delivery services (ILL), easy access to full text journal articles. Furthermore, the library should provide reference services (physical and online), and assistance in advancement in their academic fields.

- Which skills or competencies are needed by the subject librarian to support postgraduate students and researchers with their research?

Academic librarians have always played an important role in providing research services and research skills development to faculties in higher education. But that role is evolving to include the academic librarian as a unique and necessary research partner, practitioner and participant in research projects.

This question was addressed by the data presented in Chapter 5 that the majority of respondents strongly agree that they expect subject librarians to be skilled and have knowledge of the aspects listed in Table 19. The following are the most important competencies that a subject librarian should possess in support of postgraduate students' and researchers' research needs: staff who improve users' research skills, staff who are knowledgeable to assist with users' research questions, staff who provide users with the information skills needed for their research, staff who have knowledge and experience of the research process, staff who have adequate subject expertise and knowledge to support users in their discipline and staff that build good relationships with postgraduate students and researchers during their research journey. The above-

mentioned competencies are significant as librarians are not living up to students' expectations.

6.2   Recommendations

Although UWC library is always striving to support an effective and efficient research service to postgraduate students and researchers, based on the findings of this study, the following recommendations are suggested to improve the present status in support of research.

(a) Awareness and visibility of library services

The study found that some of the postgraduate students and researchers are unaware of the research support services and facilities that the library offers. A few postgraduate students are also unaware of the skills and expertise of the subject librarians.

It is suggested that the library market their research support services more widely and visibly on campus. Relationship building and partnership needs to be improved with Postgraduate coordinators, Supervisors, Division of Postgraduate Studies to increase awareness of the library research support services with postgraduate students and researchers.

(b) Extended library operating hours

Although the library is open until midnight, 24/7 during examinations, it is suggested that the same operating hours should apply for the postgraduate research laboratory (level 13). Students had experienced in the past that the postgraduate research lab is sometimes closed after hours during the week on Saturdays and especially during the vacation.

(c) Subject librarians' research support services

As indicated by the study, postgraduate students and researchers seek the support of the subject librarians to assist them with the research process. Evidence to support the above indicated that respondents have high expectations of subject librarians' competencies, listed in Table 19, to support them during their research journey.

In the category for improvement of the subject librarian skills and training in the research process, respondents feel training is needed to effectively support their needs.

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Furthermore, it is recommended that subject librarians become more involved in their own research and other research activities by attending seminars and workshops offered by the library, other institutional libraries, the Faculty and the Division of Postgraduate studies.

Subject librarians need to be more involved in institutional and faculty goals, as well as in the research activities of the researchers they support. They need to offer research support products that are aligned with institutional goals.

(d) Online reference services and support at reference desk on level 5

Improved online reference services are suggested by participants of this study, services such as response time of requests, and knowledgeable librarians to assist with queries.

It was recommended that knowledgeable librarians should be available on Saturdays at the reference desk to assist on the different subjects and the research process.

(e) Online distance learning services

It is suggested that the library creates and provides online tutorials/ lessons for all students, especially how to access the UWC library website, enter login details to search the variety of databases finding relevant full text journal articles and books easily.

(f) Increased and improved library postgraduate workshops

It is recommended that more postgraduate workshops should be implemented, especially during the week, to accommodate part-time students because not all are available on a Saturday to attend. Furthermore, more time should be allocated for postgraduate workshops.

The study also revealed that the majority of the respondents has high expectations of the library to provide research workshops as listed in Table 9. The largest number of respondents indicated that they expect the library to provide advanced information search skills training and database training postgraduate workshops.

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(g) Improved library postgraduate lab services

Knowledgeable lab assistance is needed to assist postgraduate students and researchers with any research and ICT-related queries. Respondents requested that writing coaches should address their needs and should have knowledge of the different disciplines.

(h) Improved research space

A more dedicated, spacious research space is recommended to accommodate a large number of students. A number of respondents indicated their dissatisfaction with the level 13 postgraduate laboratory which has insufficient quiet and seating space, and that they need a more conducive working space. The postgraduate lab, which is now called the Research Commons, is being restructured.

(i) Easy accessibility to library resources

The majority of postgraduate students and researchers indicated that access to information resources is problematic. This study recommends that the UWC library provides easy access to information resources, which includes easy access to full text journal articles.

(j) Continuous relationship-building and faculty partnership

It is suggested that continuous relationship-building with faculty will improve research support services to better assist postgraduate students' and researchers' needs. Attending seminars and workshops within the faculty will keep subject librarians informed of the latest research done. Subject librarians also need to embed themselves within the faculty by visiting the departments to market the research support services that the library offers, the relevant resources that the library subscribes to and attend to any needs and queries.

The library, working in close collaborative partnership with the Community and Health Sciences Faculty, Division of Postgraduate Studies, Research Office and other stakeholders at UWC, will improve and support the research environment and increase research output.

(k) Improved Wi-Fi internet connectivity

Problems with Wi-Fi internet connectivity in this study are a great concern for postgraduate students and researchers who indicated their dissatisfaction with slow networks to information resources. The UWC library should work with ICS to improve Wi-Fi internet connectivity.

(l) Improved customer service

A serious lack of communication skills of library staff was reported by respondents. It is suggested that the library staff should attend customer service workshops in order to be effective and efficient in the workplace.

(m) Assistance with language problems

Some of the postgraduate students are foreign nationals and are experiencing language challenges. It is recommended that the library communicate these problems with Postgraduate Academic Coordinators and the Division of Postgraduate Studies to implement an introduction to English programs for students to improve their English.

6.3 Suggestion for future research

One of the key limitations of this research was the low response rate of the researchers (There were only five researchers and three participated). For future research, the use of a larger sample of the researchers would be more appropriate in order to assess the role of the academic library in support of the researchers. This larger sample could include academics as researchers.

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8   LIST OF APPENDICES

APPENDIX A: QUESTIONNAIRE INFORMATION LETTER

The Department of Library and Information Science

The role of the academic library in supporting postgraduate students and researchers within the Community and Health Sciences Faculty at the University of the Western Cape

Dear Postgraduate Students and Researchers

I am currently undertaking research towards my Master's in Library and Information Science studies at the University of the Western Cape. I am inviting you to participate in and assist me in this research study by completing this anonymous online questionnaire.

The purpose of this study is to investigate the academic library's services in supporting postgraduate students and researchers within the Community and Health Sciences Faculty at the University of the Western Cape. The survey is designed to investigate and obtain the views of the postgraduate students and researchers on the role of the academic library services in supporting their research, as well as establishing the factors that affect their decisions to use or not use the library in their research.

Please tick appropriate answer; in some question's answers will be reflected on a linear scale and others will only require you to select an option. There will also be a limited number of questions that require you to give more detail where appropriate. This online questionnaire takes approximately 15 minutes to complete. Please take the time to complete and submit this questionnaire.

For further questions or concerns about this study, please contact Mrs S. Witbooi, a lecturer and the supervisor for this study, at the University of the Western Cape, Library and Information Science Department at (021) 959 2437, or via email: switbooi@uwc.ac.za or myself: Mrs Karen Cook (021) 9592684, kerasmus@uwc.ac.za or kcook5240@gmail.com.

Your comments, input and suggestions are important for this study.
Thanking you in advance for your time and effort.

Regards
Karen Cook
Faculty Librarian for Community and Health Sciences
University of the Western Cape Library

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Bellville South

+27 21 959 2684

APPENDIX B: INTERVIEW CONSENT LETTER

"Title" Research Project

The role of the academic library in supporting postgraduate students and researchers within the Community and Health Sciences Faculty at the University of the Western Cape

Researcher: Karen Cook

Please initial box

1. I confirm that I have read and understand the information sheet explaining the above research project and I have had the opportunity to ask questions about the project.

2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason and without there being any negative consequences. In addition, should I not wish to answer any particular question or questions, I am free to decline.
(If I wish to withdraw I may contact the lead research at any time)

3. I understand my responses and personal data will be kept strictly confidential. I give permission for members of the research team to have access to my anonymised responses. I understand that my name will not be linked with the research materials, and I will not be identified or identifiable in the reports or publications that result for the research.

4. I give permission for the audio recording of the interview.

5. I agree for the data collected from me to be used in future research.

6. I agree to take part in the above research project.

_____   _____   _____
Name of Participant   Date   Signature
(*or legal representative*)

_____   _____   _____
Name of person taking consent   Date   Signature
(If different from lead researcher)

_____   _____   _____
Lead Researcher   Date   Signature
(*To be signed and dated in presence of the participant*)

Copies: All participants will receive a copy of the signed and dated version of the consent form and information sheet for themselves. A copy of this will be filed and kept in a secure location for research purposes only.

Researcher:	**Supervisor:**	**HOD:**

APPENDIX C: QUESTIONNAIRE FOR POSTGRADUATE STUDENTS AND RESEARCHERS

1.1 Please indicate your gender

Male	
Female	

1.2 Please select the option that best describes you

Masters student	
PhD	
Researcher	

1.3 Academic department

School of Nursing	
School of Public Health	
Occupational Therapy	
Physiotherapy	
Sports, Recreation and Management Sciences	
School of Natural Medicine	
Social Work	
Psychology	
Dietetics	

1.4 How often do you visit the library?

Daily	
Weekly	
Monthly	
Quarterly	
Never	
Other	

If other, please specify.

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1.5 If your answer to no. 1. 4 is never, please give a reason/s and then answer questions 2- 4 (ignore all the other questions).

1.6 How often do you access library resources through the library website?

Daily

Weekly

Monthly

Quarterly

Other

If other, please specify.

1.7 How often do you use the Internet e.g. such as Google Scholar search, for finding information for your research?

Daily	
Weekly	
Monthly	
Quarterly	
Other	

If other, please specify.

----

2. Please select the option below, the number that best describes your "PERCEPTIONS" (your actual experiences) of the services the library currently provides.

How would you rate the subject librarian's competencies in terms of research   support?

Very true - True – Somewhat true - Untrue

2.1 Subject librarian's Competencies

	The library provides….	1	2	3	4
2.1.1	Staff who improve users' research skills				
2.1.2	Staff who are knowledgeable to assist with users research questions				
2.1.3	Staff who provide users with the information skills needed for their research				
2.1.4	Staff who have knowledge and experience of the research process				
2.1.5	Staff who have adequate subject expertise and knowledge to support users in their discipline				
2.1.6	Staff that build good relationship with postgraduate and researcher during their research journey				

2.2 Research Support Services

How would you rate the following research support services that the library offers in terms of research support?

Being very satisfied - Satisfied - Dissatisfied- Being very dissatisfied

	The library provides….	1	2	3	4
2.2.1	Library research workshops				
2.2.2	One-on-one training sessions				
2.2.3	Relevant and up to date printed and online library resources				
2.2.4	Easy access to full text journal articles				
2.2.5	Reference services (physical & online)				
2.2.6	Document delivery services (ILL)				
2.2.7	Assistance to advance in my academic field				
2.2.8	Assistance with my literature searching				

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2.3 Library Research Workshops

How would you rate the following library research workshops in terms of research support?

Very satisfied -   Satisfied - Dissatisfied   - Very dissatisfied

	The library provides the following research training modules on….	1	2	3	4
2.3.1	Advance Information search skills training				
2.3.2	Reference Manager Tools training (Refworks and Mendeley)				
2.3.3	Database training and save searches				
2.3.4	Current awareness electronic services: RSS feeds and publication alert services to databases and journals				
2.3.5	Searching Google Scholar optimally				
2.3.6	Sage Research Methods Online				
2.3.7	Measure your research impact				
2.3.8	Creating your researcher profile				
2.3.9	How to upload your publication in UWC Repository				

3. If you would like to add comments about any of the services mentioned in question   2.1 to question 2.3, please do so.

----

4. If you would like to add comments about other services of the library for your research needs, please do so.

Expectations

5. Please select the option below, the number that best describes your "EXPECTATIONS" (Expectations refer to what you personally want) of the service in the library.

1 = Strongly Agree; 2 = Agree; 3 = Neutral; 4 = Disagree; 5 = Strongly Disagree

5.1 Subject librarian Competencies

	I expect ….	1	2	3	4	5
5.1.1	Staff who improve users' research skills					
5.1.2	Staff who are knowledgeable to assist with users research questions					
5.1.3	Staff who provide users with the information skills needed for their research					
5.1.4	Staff to have knowledge and experience of the research process					
5.1.5	Staff who have adequate subject expertise and knowledge to support users in their discipline					
5.1.6	Staff that build good relationship with postgraduate and researcher during their research journey					

5.2 Research Support Services

	I expect the library to provide….	1	2	3	4	5
5.2.1	Library research workshops					
5.2.2	One-on-one training sessions					
5.2.3	Subscribing to relevant and up to date printed and online library resources					
5.2.4	Easy access to full text journal articles					
5.2.5	Reference services (physical & online)					
5.2.6	Document delivery services (ILL)					
5.2.7	Help with measuring research impact when applying for funding (citation analysis; *h*-index reports)					
5.2.8	Support for managing research data					
5.2.9	Support and built relationships through the research process					
5.2.10	Support to establish researcher profiles					
5.2.11	Research support services at Postgraduate research lab/commons					

		1	2	3	4	5
5.2.12	Research support at the beginning of the research stage: identify the field's leading authors or research groups					
5.2.13	Research support at the information search stage: to establish high quality existing literature					
5.2.14	Research support at the dissemination stage: to identify journals that publish articles on a particular topic and provides guidance on publishing outlets					
5.2.15	Assistance to advance in my academic field					

5.3 Library Research Workshops

	I expect the library to provide the following training ….	1	2	3	4	5
5.3.1	Advance information search skills training					
5.3.2	Reference Manager Tools training (Refworks and Mendeley)					
5.3.3	Database training and save searches					
5.3.4	Current awareness electronic services: RSS feeds and publication alert services to databases and journals					
5.3.5	Searching Google Scholar optimally					
5.3.6	Sage Research Methods Online					
5.3.7	Measure your research impact					
5.3.8	Creating your researcher profile					
5.3.9	How to upload your publication in UWC Repository					

6. If you would like to add comments about any of the services mentioned in question 5.1 to question 5.3, please do so.

----

7. If you would like to add comments about other services of the library for your research needs, please do so.

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User satisfaction

Please select one of the options below.

8. How would you rate the overall services provided by the library? Please select one of the options below.

Very good	
Good	
Poor	
Very Poor	
Other	

If Other, please specify.

----

9. In your opinion, what are the most important roles of the subject librarian? (Please rate 1- 4; where 1 indicates the most important role)

Subject-based information expert

Teacher of information search skills and related skills

Specialist in facilitating electronic access to information sources

An important member of the research team/process

If, Other roles please specify.

----

10. In your opinion, do you think the subject librarians are adequately skilled for supporting your research needs?

11. Can you please elaborate on the answer you gave above?

----

12. In your opinion, what are the shortcomings of the library in supporting your research needs?

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13. In your opinion, what are the successes of the library in supporting you with your research needs?

----

14. What new or different services would you like to see UWC library offer postgraduate students and researchers with their research needs?

APPENDIX D: INTERVIEW SCHEDULE FOR POSTGRADUATE STUDENTS AND RESEARCHERS

1.4 Gender

Male	
Female	

1.5 Academic Status

Masters student	
PhD	
Researcher	

1.6 Faculty / Department

School of Nursing	
School of Public Health	
Occupational Therapy	
Physiotherapy	
Sports, Recreation and Management Sciences	
School of Natural Medicine	**NA**
Social Work	
Psychology	
Dietetics	

2. What is your opinion of the services the library currently provides you?

3. How would you like the library services to support you with your research?

4. User Satisfaction:

4.1 Tell me what you think about the staff services offered by the library?

4.2 How satisfied are you with access to information?

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4.3 Give me your opinion about the library facilities?

5. Are there any shortcomings of the library in supporting your research needs?
   **Please elaborate.**

6. What is your opinion about the skills and competency level of the subject librarians in
   serving you?

7. What new or different services would you like to see UWC library offer postgraduate
   students and researchers with their research needs?

APPENDIX E: INTERVIEWEES

Respondents	Program	Department	Date
Respondent 1	PhD	School of Public Health	22 June 2017
Respondent 2	Researcher/ Academic	School of Public Health	26 June 2017
Respondent 3	PhD	School of Nursing	26 June 2017
Respondent 4	Masters	School of Nursing	28 June 2017
Respondent 5	Masters	Sports Recreation & Exercise Management Sciences	29 June 2017
Respondent 6	PhD	School of Nursing	30 June 2017
Respondent 7	PhD	Sports Recreation & Exercise Management Sciences	30 June 2017
Respondent 8	Researcher/ Academic	Occupational Therapy	30 June 2017
Respondent 9	PhD	Sports Recreation & Exercise Management Sciences	4 July 2017
Respondent 10	Post Doc/Researcher	School of Public Health	28 July 2017

UNIVERSITY of the
WESTERN CAPE
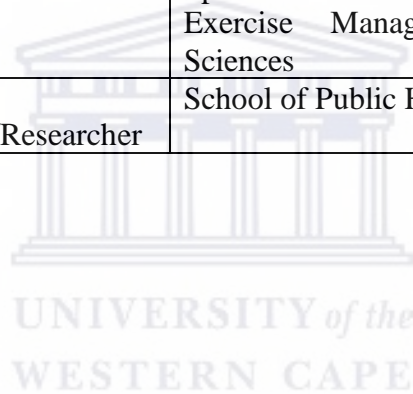
APPENDIX F: INTERVIEW INFORMATION LETTER

Dear Postgraduate Student/Researcher

I trust that you are well. My name is Karen Cook and I am the Faculty Librarian for Community and Health Sciences at the University of the Western Cape. I am currently undertaking research towards my Master's in Library and Information Science studies at the UWC.

I am required to do interviews for my thesis as I could not collect enough questionnaires. I would like to request a 30-minute interview session on Thursday, 29 June 12h00-12h30 please.

The topic of my research project is "The role of the academic library in supporting postgraduate students and researchers within the Community and Health Sciences Faculty at the University of the Western Cape".

There will be no identifying of participants on interview transcripts. Codes will be used for identification of participants when transcribing. Responses for this study will remain confidential and anonymous. Pseudonyms will be used for participants and institutions in the publication of thesis. Responses will be kept in an online environment protected by password.

Your comments input and suggestions are important for this study.

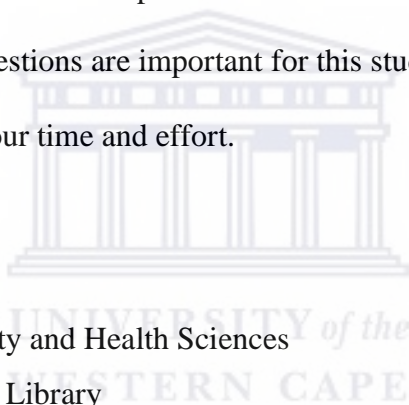Thanking you in advance for your time and effort.

Kind Regards

Karen Cook

Faculty Librarian for Community and Health Sciences

University of the Western Cape Library

Bellville South

+27 21 959 2684

APPENDIX G: QUESTIONNAIRE CONSENT LETTER

University of the Western Cape

Department of Library and Information Science

Dear Participants

My name is Karen Cook. I am currently undertaking research towards my Master's in Library and Information Science studies at the University of the Western Cape. I am conducting a study to investigate the academic library's services in supporting postgraduate students and researchers within the Community and Health Sciences Faculty at the University of the Western Cape.

The survey is designed to investigate and obtain the views of the postgraduate students and researchers on the role of the academic library services in supporting their research, as well as establishing the factors that affect their decisions not to use the library in their research.

If you have any questions or concerns or wish to know more about the study, please contact me at kerasmus@uwc.ac.za or my supervisor, Mrs S. Witbooi at the University of the Western Cape, Library and Information Science Department, (021) 959 2437, or via email: switbooi@uwc.ac.za.

Thanking you in advance for your time and effort.

If you agree to voluntarily take part in the above research, please tick YES below:

☐ I confirm that I have read and understood what the research entails and agree to take part in this research. [YES] [NO]

☐ I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason and that I do not have to answer every question. [YES] [NO]

Signature_____