THE SHAPE AND FORM OF THE 21ST CENTURY ACADEMIC LIBRARY IN SOUTH AFRICA: THE CASE OF THE UNIVERSITY OF CAPE TOWN LIBRARIES

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Declaration

This work has not been previously submitted in whole, or in part, for the award of any degree. It is my own work. Each significant contribution to, and quotation in, this dissertation from the work, or works, of other people has been attributed, and has been cited and referenced.

Signature:_____ Date:_____

Dedicated to my parents, Peter and Marie Pietersen

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Abstract

This study sought to ascertain the shape and form of the 21st century academic library in South Africa, using the case of UCT Libraries. The objective was supported by sub-objectives, namely: to ascertain, via a rigorous review of literature, how far along academic libraries worldwide are with incorporating technological advances in their services; to identify the progress of UCT Libraries in establishing itself as a 21st century academic library; to ascertain how readily staff adapt to changes and new technology in the library; and, to ascertain user expectations of a modern, digital era academic library. A qualitative design with a case study approach was employed by the study. The study was supported by organizational learning theory. Themes emanating from the literature include, *inter alia*, open access, MOOCs, digital humanities and research data management. Further data was collected via interviews and a questionnaire survey of purposively sampled library staff. Stratified random sampling was used to extract samples from the targeted user population (UCT undergraduates, postgraduates and, academics and researchers) for surveying by means of online questionnaires. The study concludes that academic libraries, the world over, are adapting their services according to user demands and users' use of current technology; that UCT Libraries is currently in the process of establishing itself as a 21st century academic library and that the progress and procedures currently in place to encourage new developments, holds UCT Libraries in good stead towards establishing itself as a 21st century academic library service; that the prevailing culture of organizational learning in UCT Libraries bodes well for constantly adapting to new technologies; and, that users are generally satisfied with the services they are receiving from the Library. Although the case of UCT Libraries was used in this study, in many ways this case is typical of academic libraries in other parts of South Africa as well as in other parts of the world and hence this study of the shape and form of the 21st century academic library has relevance to other academic library contexts as well.

Table of contents

List of tables

List of figures

List of acronyms and abbreviations

ACRL	Association of College and Research Libraries
CHED	Centre for Higher Education Development
CLIR	Council on Library and Information Resources
CTP	Committee of Technikon Principals
DAC	Department of Arts and Culture
DH	Digital Humanities
DRM	Digital Rights Management
GSB	Graduate School of Business
HELIG	Higher Education Libraries Interest Group
HESA	Higher Education South Africa
ICT	Information and Communication Technology
ISSS	Information Society Standardization System
LIASA	Library and Information Association of South Africa
LIS	Library and Information Services
MOOC	Massive Open Online Course
NCLIS	National Council for Library and Information Services
NPC	National Planning Commission
OA	Open Access

QR	Quick response
RDM	Research Data Management
UCT	University of Cape Town
UNC	University of North Carolina

Chapter 1 : Introduction and background to the study

1.1 Introduction

The advancement of technologies and the influx of information have made the work of information professionals more complex and dynamic. Academic libraries cater to specific communities (that is, students, researchers and academics), thus these libraries often adopt new technologies and services faster than libraries aimed at serving the public generally (Kim & Lee, 2011: 76). Like the academic library, the higher education institution is also faced with changes. The new higher education model involves a collaborative approach with the academic library being at the core (Raju & Schoombee, 2013: 27). With all the change that is taking place within the library and information services (LIS) field, there is no sign of the role of librarian becoming fixed in the future (Bracke, 2011: 65). With the rapid change in technologies, it is clear that the librarian should have the ability to adapt to changes as they come. Increasingly it is becoming clear that the library is a user-centred service. Collections are no longer limited to materials housed in the library building, but has expanded to include "licensed electronic journals and digitized books, journals and primary resources" (Michalak, 2012: 414). Tise and Raju (2012: 7) further expound on this by saying that "libraries have grown much broader and are now inclusive to any medium that makes access to knowledge and information possible".

According to Michalak (2012: 413), "today's successful academic library faces outward to connect with patrons". A persuasive reason to comply with the idea of an outward facing library is the constant decline in building-based statistics (Michalak, 2012: 413). In her study, Michalak (2012: 413) discovered that the University of North Carolina (UNC) health sciences librarians spent more time at the places of their patrons, that is, in the various college buildings, than they did at their desks. The outward facing library involves the library actively marketing its services to users. With the vast array of licensed electronic journals and digitized materials, collections are moving away from the physical library structure and more to where the user is.

Services in the academic library have been changing as its users have become more self-sufficient (Reyes, 2006: 302). The role of the librarian has been affected by these changes. As technologies become more apparent in libraries, it has become a responsibility of the library to maintain proficiency in various programmes and devices to train and aid in research. Increasingly users expect the "information necessary for learning and research to be available when […] needed" (Reyes, 2006: 302). With mobile devices becoming more commonplace amongst students, researchers and academics in higher education, users are expecting information services to adapt to these platforms.

A large percentage of library resources and services have migrated to the online environment. Jennings (2013: 111) suggests that librarians educate their users on the implications and costs that online information has for the library. Many users are unaware that the library has to sometimes pay quite substantial amounts to make journals electronically available to users. Some database vendors even impose limits to the number of downloads at a certain price. Jennings (2013: 111) goes on to say that the library goes unappreciated because students often assume that well known services such as Google Scholar provide free access to resources. All of this implies that it has become necessary for the academic library to market and brand the services offered.

In order to remain relevant, academic libraries have had to develop a digital presence. Making resources available online and offering a virtual reference desk have aided this development. The conservative, risk-averse culture of libraries has to change to avoid the cost of not taking risks – "a danger that libraries will become stuck in a niche that becomes smaller and smaller" (Council on Library and Information Resources [CLIR], 2008: 2).

1.2 Background to the study

There are 23 public higher education institutions scattered throughout South Africa. Six of these institutions are universities of technology, six are comprehensive universities and the remaining 11 are traditional universities (Higher Education South Africa [HESA], 2012). The traditional universities mainly offer degrees and have higher numbers of postgraduate students. As defined by the Committee of Technikon Principals (CTP) (2004: 25), a traditional university is "an academic institution at which research is conducted and

teaching/learning is offered within the organized cadre of contact between lecturer and student".

In contrast, universities of technology aim to facilitate the teaching of skills to "fabricate things" and the skills to "manage the fabricated product" (CTP, 2004: 25). Universities of technology will hence incorporate the following qualities (Brook, 2000 cited by CTP, 2004: 26):

- Be research informed;
- Have a curriculum developed around the graduate profiles defined by industry and professions;
- Focus on strategic research, applied research into professional practice;
- Have multi-level entry and exit points for students;
- Be concerned primarily with the development of vocational/professional education; and,
- Have technological capabilities as important as cognitive skills.

Comprehensive universities in South Africa, in most cases, integrate both the functions of the traditional university and the university of technology (HESA, 2011: 8).

From the missions and values posted on the university websites, South African higher education institutions are all geared towards embracing the future. According to *The Library and Information Services (LIS) Transformation Charter* (Department of Arts and Culture [DAC] & National Council for Library and Information Services [NCLIS], 2014: 70), spaces in the academic library need to be conducive to learning and research for the twenty-first century researcher. This means that with the added responsibilities of the digital services for remote access, the library has to maintain its responsibilities as a physical space because remote access "does not diminish the value [of] innovative design of physical space […] in learning and knowledge production" (DAC & NCLIS, 2014: 70). The Charter also presents a list of recommendations for the development of university libraries in South Africa. The document further lists opportunities for academic libraries according to trends listed by the Association of College and Research Libraries (2014) which will be discussed in Chapter 2.

According to the Times Higher Education World Rankings 2014-2015, the University of Cape Town (UCT) is the top ranked university in Africa, sitting at the global rank of 124. The only other African higher education institutions that are included in this list are situated in South Africa (Times Higher Education, 2015). Largely as a result of these rankings, UCT has become one of the preferred higher education institutions in South Africa. Part of UCT's mission is to advance and disseminate knowledge to address key challenges that society faces in the South African, African and global context (University of Cape Town, n.d. (a)). Dissemination of information is primarily the task of the library. As a centre of learning and research, the university depends on the library as a storehouse for resources to complement learning, as well as for resources to create and expand knowledge.

UCT Libraries have a vast collection (both print and online). The print collection is made up of over 1,2 million volumes which include 28,500 print journal titles, and the online collection is made up of over 72,000 e-journal titles (UCT Libraries, n.d.). UCT Libraries are made up of a main library and several branch libraries. There are nine branch libraries scattered across the five UCT campuses (UCT Libraries, n.d.). The different branch libraries housed outside the main library building (Chancellor Oppenheimer Library) are as follows:

- Bolus Herbarium Library – biological sciences;
- Brand van Zyl Law Library – law;
- Build Environment Library – architecture and construction;
- Health Sciences Library – medicine and allied disciplines;
- Hiddingh Hall Library – drama, history of art and fine art;
- Institute of Child Health Library – a subsection of the Health Sciences Library. Holds paediatric literature;
- J.W. Jagger Library – African studies collection, manuscripts and archives and rare books;
- Jewish Studies Library – interdisciplinary collection of materials pertaining to the field of Jewish Studies; and,
- W.H. Bell Music Library – music and dance.

Within the Chancellor Oppenheimer Library building, there are Government Publications, Interlibrary Loans, Knowledge Commons (working space for undergraduate students), Research Commons (working space for masters and doctoral students) and the Short Loans Centre.

There has been dramatic change in academic library and information services in recent years, largely the result of technology developments. It would be useful to ascertain, through a study such as this one, the rate at which UCT Libraries are shifting to accommodate the shape and form of the 21st century academic library.

1.3 Research problem

The library plays an important role in access to information resources. As information becomes available online, people tend to disregard library services assuming that all information that is required may be obtained via the Internet. The problem with this is that search engines such as Google do not always make available information that is credible. Jennings speaks about "empowering your users" (2013: 114) because as credible online information grows, unreliable sources also grow. In order to advance the services and technology used in the library, there has to be buy-in from both the users and library staff.

The National Planning Commission (NPC) (2012: 318) of South Africa in its *National Development Plan* states that there are three main functions that the university plays in a developing nation. The second of these is:

> Universities are the dominant producers of knowledge, and they critique information and find new local and global applications for existing knowledge. South Africa needs knowledge that equips people for a changing society and economy.

The academic library being part of the parent organization (that is, the university) has to partake in its mission in order to be relevant to that organization. The academic library should be involved in providing ample access to both new and existing knowledge. In a developing context, the open access movement (elaborated on in Section 2.3.9 of Chapter 2) allows for information to infiltrate even the poorest communities. The collection development of the academic library and the services that the library offers should be in

synchronization with the teaching and learning and the research needs of researchers, academics and students within the institution. Once the collection and services fulfil the immediate needs of the users, the academic library should anticipate future needs by reviewing developments and innovations at similar academic libraries.

If an organization, like the academic library, is reliant on its parent institution, the organization has to align itself with the goals of the parent institution. According to the UCT Statement of Values (University of Cape Town, 2001: 1), UCT aspires to become "a world-class African university". The library has to align itself with the institution by adopting the mission and goals of the institution. Thus, the library has to become world-class in order to remain relevant in a world-class academic institution.

Making available new and innovative services will not have an impact if the users do not know about them. In order to remain relevant, libraries have had to start marketing their services actively. Many libraries now have Facebook pages or Twitter accounts to engage with their users. In a study completed by Phillips (2011: 521) about the place of Facebook in the academic library, Phillips concludes that a social platform like Facebook encourages library users to take "greater advantage of the library services". She further concludes that Facebook does not have a dependency on users to initiate interaction and through the "immediacy, informality, and interactivity", they offer the academic library an opportunity "to influence how they are perceived [and] to demonstrate their support of students" (Phillips, 2011: 521).

In the new and dynamic information landscape, it is important to define the role of the academic library in the higher education institution and to interrogate the new roles of librarians. Changing higher education pedagogy affects the type of information services that the library has to offer its users. The demands of changing higher education pedagogy necessitate the academic library to align its services accordingly, especially seeing that libraries are purported to be at the core of the new higher education paradigm (Raju & Schoombee, 2013: 27). The problem that this study addresses is the effect of technological advances on the services that the 21st century academic library offers and how said technological advances affect staff and user expectations of a digital age academic library.

1.4 Research objective

This study aims to ascertain the shape and form of the 21st century academic library in South Africa, including the expectations (from both staff and users) of services rooted in technological advances of the digital era – using the case of the academic library of UCT, a leading research-led university in South Africa.

1.5 Sub-objectives

The sub-objectives of this study are as follows:

1. to ascertain, via a rigorous review of literature, how far along academic libraries worldwide are with incorporating technological advances in their services;
2. to identify the progress of UCT Libraries in establishing itself as a 21st century academic library;
3. to ascertain how readily staff adapt to changes and new technology in the library; and,
4. to ascertain user expectations of a modern, digital era academic library.

1.6 Research questions

The research questions guiding this study are:

1. To what extent have academic libraries worldwide embraced technological advances in their services?
2. How far along are UCT Libraries in the continuum of establishing itself as a 21st century academic library service?
3. To what extent are staff accepting changes and new technologies in the academic library and how readily are they adapting their skills to accommodate these developments?
4. What are the expectations of users of the modern academic library?

1.7 Motivation for study

This study looks at the progress that UCT Libraries have made in becoming a 21st century academic library service by looking at the factors contributing to such a library service. The developing world is faced with constant change as many of the advances in industry in the developed world are exported to the former. Instead of looking at just the implementation of the advances, this study examines the expectations that users have and matches up those expectations with the services that the academic library offers. With the academic library being a service-oriented organization, its services should reflect the needs of the users. It is hoped that this study would contribute to the existing body of knowledge regarding the development of the academic library in the modern age. Much of the literature that discuss the evolving academic library are studies based in developed countries. This study attempts to find common ground in the rate of progression of academic libraries between the developed context and a developing context such as South Africa.

1.8 Definitions of relevant terms

There are several terms that are relevant to this study. They are as follows:

1.8.1 21st century

For the purpose of this study, the 21st century refers to the current period as well as the short to medium term future. Although in the literature the term is synonymous with 'modern' or 'future', '21st century' allows for the study to also include current developments.

1.8.2 Academic library

For the purposes of this study, an academic library is a library that operates under the auspices of a higher education institution. It primarily serves the student body, academic staff and researchers. Traditionally, a library consists of vast amounts of print monologues, print journals and musical scores amongst other things, "orientated towards collections and custody" (Sharma & Vishwanathan, 2001: 10). The size of the physical collection of the library, the greater access the community or institution had to knowledge (Smith, 2008: 13).

Courant (2008: 26), in 2008, predicted that in the next ten years or so, “almost all scholarly literature will be available in digital form”. This shift is indicative of the academic library embracing information in its digital form. While the format of information is continually changing, the purpose of access has not. The academic library has a “traditional position at the centre of campus [reflecting] its function as a crossroads for intellectual activity” (CLIR, 2008: 5).

1.8.3 Access

Access refers to the ability to find and make use of a library or a resource. Traditionally, libraries were viewed as a “warehouse of information” but as we advance to the digital environment, the library is becoming a “gateway to information” (Kane, 2003: 51). Instead of focusing solely on building a physical collection, the academic library has built a network so that resources can be shared. Kane (2003: 52) posits that the library is moving away from the view that “bigger is better” which emphasizes the size of the collection, to the view that “availability is key” which places emphasis on both the availability and the delivery of information. ‘Access’ is a term that has become popular in discussions about the future of libraries because it pertains to the library buying licences for access to electronic journals and electronic books to replace and supplement print journals and print books. Although there are challenges and high costs associated with licensing electronic titles, the ease that electronic resources provide in terms of access makes it a formidable opponent to the owning of physical collections.

1.8.4 Digital age

The digital age can be defined as “a new, networked, visually rich, digitally constructed communication and information world” (Plekta, 2007: 28). People born into the digital age are referred to in some literature as the ‘Net Generation’ (Plekta, 2007; Tapscott, 2009). Plekta (2007: 27) places the Net Generation being born between the years 1982 and 2002. This means that most of the current university student populations around the world would fit into the category of the Net Generation. The Net Generation “expect collaborative learning conditions and social online contexts, they also expect individualized feedback to their unique needs” (Plekta, 2007: 29).

1.8.5 Shape and form

The words ‘shape’ and ‘form’ are often considered synonymous. ‘Shape’ is defined as “the visible form or appearance characteristic of a particular person or thing” (“Shape, n.”, 2013). For the purposes of this study, ‘shape’ is seen as the overall structure of the academic library that is influenced by the services that the library chooses to offer. This study sees the shape as being the academic library’s service structure that is influenced by the technological advances in the digital age. The dictionary (“Form, n.”, 2013) offers philosophical definitions for ‘form’. The one most fitting for this study is: “the real or objective conditions on which a sensible quality or body depends for its existence”. This definition can be applied in the library and information services sector if we regard the “real or objective conditions” to be policies and guidelines that influence the types of services the library offers and could offer, as well as the types of users that the library would want to attract with its services. With these definitions in mind, the form of the library provides the basis for its shape. The services offered and the resources made available provide a shape or structure for the library while the policies and guidelines that are put in place by management give the library a sense of where it should be headed, that is, a form.

1.8.6 Users

A user is “a person who… makes use of a thing” (“User, n.”, 2013). This study defines the user as a person who makes use of the services offered by the academic library. People who make use of the academic library include the student body of the higher education institution, researchers, academic staff and the support services staff. This study focuses on the student body, researchers and academic staff.

1.9 Overview of research methodology

This study employs a qualitative research design. UCT, a leading research-led university in South Africa, is adopted as a case study. A case study strategy is a useful research strategy to utilize when “examining contemporary events” and “when the relevant behaviours cannot be manipulated” (Yin, 2014: 12). The case study research method was considered optimal for assessing the current state of the services of UCT Libraries.

UCT Library staff were surveyed by means of self-administered questionnaires as well as interviews. Purposive sampling was used to identify library staff for the questionnaire survey as well as to identify interviewees. Library users were divided into three groups, namely, undergraduate students, postgraduate students, and researchers and academics. Stratified random sampling was used to select samples from these three categories of users for purposes of administering self-administered questionnaires.

The data collected via the study's triangulated data gathering process, were coded (where necessary) and subjected mostly to content analysis and, where applicable, to simple descriptive statistical analysis (frequency and percentage distributions). Findings are presented according to the research questions guiding the study and hence facilitated triangulation of common themes scattered across the multiple data gathering instruments. Conclusions are drawn and a recommendation for further study is made based on discussion of the main findings in response to the study's objectives and in the context of the literature reviewed and the theory informing the study.

1.10 Limitations and delimitations of the study

According to Simon and Goes (2013), limitations are factors that are beyond the control of the researcher. These factors may affect the outcomes of the study or how the outcomes of the study are interpreted. All studies have limitations irrespective of how well the study is conducted and constructed.

A limitation in this study was the way the questionnaires were disseminated to the target populations. For the student questionnaires, the questionnaire was sent out to the entire UCT student population by the Department of Student Affairs. Official UCT structures did not allow the researcher to select a sample. The HR Department in the University disseminates research instruments to UCT staff. In order to obtain approval to send out research instruments via these departments, all relevant data collection tools as well as the research proposal were made available to the University by the researcher. Upon approval the researcher was given opportunity to select a sample from the list of researchers and academics. Unfortunately, the administrator tasked to send out the survey attached the incorrect invitation message and this resulted in a poor response rate from researchers and

academics. Attempts to correct this were in vain. Notwithstanding this, the researcher was able to continue with the research as the student survey yielded an adequate crop of returns and, further, the researcher/academics response, though small, yielded some rich and valuable responses which were sufficient for a study of this size.

As opposed to limitations, delimitations are factors affecting the study that are put in place by the researcher. Delimitations are put in place to limit the scope of the study and to declare the boundaries of the study (Simon, 2011). This study is delimited to the University of Cape Town Libraries as the latter is used as a case study to examine the shape and form of the modern academic library. The size of the study (minor dissertation) and time constraints (university requirements for completion of the degree programme) were influencing factors in the selection of this delimitation. At the same time, the researcher is confident that focusing this study on the University of Cape Town Libraries was appropriate for investigating the shape and form of the academic library in the digital age, due to the profile and institutional context (see Section 1.2 of this chapter) of this particular academic library service.

1.11 Structure of the research report

This study is organized into five chapters. Chapter 1 presented the introduction, background to the study, the research problem, the overall research objective, sub-objectives of the study, motivation for the study, definitions of relevant terms, overview of the research methodology and limitations and delimitations of the study. Chapter 2 covers the theoretical framework informing the study and a review of relevant literature relating to the study. The overarching themes covered in the literature review are: modern universities, academic libraries, e-learning and m-learning, MOOCs, digital preservation, the mobile environment, digital curation, open access, research data management, collaboration and e-books. Chapter 3 looks at the research design and methods and procedures that were used for carrying out the study. The findings of the study based on analysis of data collected, are presented in Chapter 4 using graphs, tables and narratives. Chapter 5 discusses the main findings in relation to the theory informing the study, the literature reviewed and the objectives of the study, and based on this discussion conclusions are drawn and a

recommendation for further study is made. The research report ends with a reference list of all the sources consulted, and appendices relevant to the study are attached.

1.12 Summary

This chapter introduced the study by providing context and background to the research conducted. The research problem, objective and sub-objectives are presented here. Definitions of relevant terms are provided, as well as the motivation for the study, an overview of the research methodology used, limitations and delimitations of the study and the structure of the research report. The next chapter presents a review of literature related to the study and outlines the theory that informs the study.

Chapter 2 : Literature review

2.1 Introduction

A literature review is the process of finding and assessing literature that relates to the topic in order to "sharpen and deepen the theoretical framework of the research" (Bless, Higson-Smith & Sithole, 2013: 49). For this study, the literature review is useful to ascertain the latest developments in academic libraries worldwide in order to contextualize the study. Looking at literature relating to the study also helps to identify gaps of knowledge in the field of research (Bless, Higson-Smith & Sithole, 2013: 49) which may be filled by further research. This chapter is divided into two sections. The first part discusses the theoretical framework that grounds the research and the second part is made up of themes that are trending in academic libraries globally. In order to set some context for the themes, this chapter also discusses modern universities and academic libraries. Some of the themes are appropriated and adapted from the Association of College and Research Libraries (ACRL) Research Planning and Review Committee's (2014) list of top trends and issues affecting academic libraries. These include: data, the mobile environment, open access, collaboration and digital humanities.

2.2 Theoretical framework

While the study looks at developments in the modern academic library, there is also focus on the readiness of staff to accommodate the advancements and also the capabilities of staff to adapt to the changing environment of the academic library. As a result of this focus, the study looks at organizational learning. Organizational learning is driven by "the globalization of markets and ever keener worldwide competition, the shortening of development cycles for individual products, demographic shifts in the world's industrialized countries, and reduction in the half-life of knowledge" (Maier, Prange & Von Rosenstiel, 2003: 14). In the context of this study, organizational learning would be driven by technological advances in the social sphere and in the LIS sector, as well as by the resulting increase in the production of academic research outputs. Clifford and Thorpe (2007: 6) note that organizations always require people that are able to perform effectively in their jobs

and this is becoming more apparent and important as the pace of change increases. They further state that "employees are required to adapt and respond to these changes quickly and without the loss of productivity" (Clifford & Thorpe, 2007: 7).

The successful transfer of knowledge within organizations (from one person to another through formalized or informal training) has enjoyed only modest success (Szulanski & Cappetta, 2003: 514). According to Szulanski and Cappetta (2003: 518), there are four stages in knowledge transfer and each of these has its own challenges; they are, according to Szulanski and Cappetta (2003: 519-521):

- **Initiation** is where, as soon as a gap in knowledge in an organization is detected, then steps to find knowledge to fill that gap are followed. The challenges with this is recognizing an opportunity for a transfer of knowledge and the effort involved in estimating the scope of knowledge for transfer, the timing and the costs;
- When the information and resources shift between the source and the recipient, **implementation** is applied. The challenge here is the source having to address any lack in the technical capability of the recipient;
- The **ramp-up** stage is the phase of transfer where, after receiving the knowledge of the task, the recipient now has to identify and resolve unexpected problems. Challenges here are dependent on the seriousness of the problems and the frequencies thereof. It is important to note that unexpected problems could also arise from the application of the transferred knowledge getting a different reaction than expected, the training proves to be insufficient or incomplete, or the newly trained staff leave the organization or do not fit the role; and,
- When a routine is established using the newfound knowledge, we enter the **integration** stage of knowledge transfer. Difficulties here are removing the obstacles that prevent the new work processes from developing a routine.

In the academic library context, the transfer of knowledge would allude to the adaptation of skills to undertake new tasks that arise from the current trends in the modern academic library.

2.3 Emerging themes

There are several trends that emerge from the literature about the modern academic library. The list of trends discussed in this chapter is by no means an exhaustive one, but it provides a general overview of the route modern academic libraries seem to be taking. To provide some context to the themes outlined below, an overview of the changing modern university and some discussion on the evolving academic library, are included.

2.3.1 Modern universities

It is undeniable that higher education is changing. Looking at what the future holds for higher education is as involved as viewing the changes taking place in the academic library. As with the academic library, teaching is also utilizing Web 2.0 tools to support learning at universities. According to Eijkman (2009: 240) the internationalization of higher education draw learners from different cultures and languages. Web 2.0 tools such as social media presents a "driver supportive of more discursively inclusive learning spaces" (Eijkman, 2009: 241). While Web 1.0 delivered a "static read-only" web environment, Web 2.0 gives access to a wide variety of "social networking and mass authoring tools" like "wikis and blogs, online multi-user games, virtual worlds, social writing applications" that are "all predicated on social participation, transparency, and communal ownership of knowledge" (Eijkman, 2009: 248-249). According to Millan and Bromage (2011: 149), the existence of Web 2.0 technologies exerts pressure on "academic researchers to interface more effectively with the public sphere". Research and scholarly communications have taken on a form of social engagement due to the collaborative efforts facilitated by Web 2.0 tools, specifically, social media (Cann, Konstantia & Hooley, 2011, cited by Akeriwa, Penzhorn & Holmner, 2015: 284).

Web 2.0 technologies being adopted by researchers in the university impacts on what is expected from libraries. By owning various mobile devices, "faculty, staff, and students […] expect to use them" (Grajek, 2013). Should the academic library embrace this by making websites and platforms fully compatible with these devices, there could be added efficiency in making use of the library services. The University of Pretoria (South Africa), for instance, has made some of its library services available on a mobile compatible website (University

of Pretoria, 2010). Being the primary resource centre of the university, the shape and form of the modern academic library is influenced by the shape and form of the modern higher education institution.

According to the ACRL Research Planning and Review Committee (2014: 297), student success forms part of the list of top trends in the academic library. The academic library, being part of the parent institution, has to align itself to the goals of the institution and in this spirit, several academic libraries in the United States of America have formed collaborations with other stakeholders in order to place emphasis on student success in academia (ACRL Research Planning and Review Committee, 2014: 297). This review report continues to assert that "libraries must […] align their missions with institutional and state student success missions, and focus resources on those students most in need of support".

2.3.2 Academic libraries

The impact of Web 2.0 technologies on higher education has made an impact on the academic library. According to Dale (2011: 30), "these are challenging times for the knowledge and information professional [… as] new products, social networks and web services appear almost daily". Some of the most notable influences for the change in collections and services in academic libraries are: "networked technologies, powerful search engines available to all, social technologies and the digitization of everything" (Michalak, 2012: 413). In the online sphere, information professionals are faced with information that is "altogether too transitory and ephemeral to even think of managing it" (Dale, 2011: 30). Amidst the challenges that Web 2.0 brings to the library, are tools that are useful for both the library and researchers.

From the development of Web 2.0, the concept of 'Library 2.0' emerged. There is contestation whether Library 2.0 only extends to Web 2.0 tools or if it encompasses change in physical services that the library offers (Shoniwa & Hall, 2007: 70). The technological advances that the library adopts does impact on how the physical collection of the library is maintained and how much of the resources are diverted to cater for the web-based library services. With this in mind, even if Library 2.0 looks at the development of technology and web presence in the library, there is also an impact on the physical aspects of the library.

According to Farkas (2004),

> librarians are going to be asked tech related questions by an increasingly tech-savvy youth generation, and it will be difficult to engage these young people if you don't speak their language. Reference work is going to be done more and more online as electronic collections grow and virtual reference becomes more common.

Farkas (2004) goes on to state that the nature of librarianship is changing and that "librarians will have to learn a whole new set of skills in order to remain relevant to their patrons". A new skills-set will have to be developed by librarians so that they are able to survive in the modern academic library. Farkas' statements emphasize the need for successful organizational learning in the academic library.

2.3.3 E-learning and m-learning

Emerging technologies have had a "significant impact on educational technology" (El-Hussein & Cronje, 2010: 12). E-learning can be defined as "a technological infrastructure with applications and software that manage courses and users" (A, 2009: 1). According to A (2009: 4), new developments in e-learning include: people-centred learning (as opposed to content-centred learning; a bottom up learning approach (encouraging student input in courseware creation); dynamic content publishing (creation of blogs encouraging students to publish, comment and interact making it a form of social networking; and, folksonomy (students have the ability to organize content according to their preferences which enables quick access to learning resources).

E-learning makes use of software that can be referred to as a "Learning Management System (LMS)" (A, 2009: 1). The University of Cape Town makes use of a portal called Vula, which is powered by Sakai CLE (University of Cape Town, n.d. (b)), as its learning management platform. E-learning provides support for traditional learning in the classroom. E-learning infrastructures provide another platform for information resources to be shared. Although it is not the domain of the academic library, there are copyright considerations when sharing resources on such a platform. The library being the customer of e-resource vendors would be involved in obtaining permission for electronic resource sharing on such platforms. According to Abram and Cromity (2013: 43), in order to add value to e-learning,

through the learning management system, the library can advance and promote information literacy training. This in turn promotes quality research.

Mobile learning, or m-learning, is similar to e-learning, but with the use of mobile devices (primarily smartphones). According to El-Hussein and Cronje (2010: 14), m-learning is only feasible when "the technology in use is fully mobile and when the users of the technology are also mobile when they learn". Mobile learning would necessitate the library to also have mobile friendly web interfaces. Many database aggregators have already adapted to the mobile environment. Examples are EBSCOhost (2013) and Taylor & Francis (n.d.). El-Hussein and Cronje (2010: 20) conclude their study by defining m-learning as "any type of learning that takes place in learning environments and spaces that take account of the mobility of technology, mobility of learnings and mobility of learning". The academic library being a critical contributor to higher education teaching and learning has to adapt to this environment.

2.3.4 MOOCs

One of the rising trends in modern higher education institutions worldwide is massive open online courses (MOOCs). These are courses which make use of "electronic distance learning technologies" like the Internet, computers, tablets, smartphones and other mobile devices to provide a virtual classroom that accommodates "a virtually unlimited number of students all simultaneously taking a course via online modality, who pay little or nothing for the course, and may earn no traditional formal credit" (Amirault, 2012: 261). Although these courses offer no formal credit, in theory they can impact enrolment in formal university programmes (Amirault, 2012: 261). In other words, students may find the content of MOOCs so engaging that they enrol in a formal learning environment. MOOCs being essentially free raise the issue of making copyright materials available for an open and online environment (Butler, 2012: 2). In standard university courses, the use of proprietary materials is allowed without the instructor having to gain special permission.

2.3.5 Digital preservation

Digital can refer to “any information that has been digitized” (Chandler & Munday, 2011). This means that anything that undergoes a change in format in order to become suited to the electronic environment can be regarded as digital. It must also be noted that “texts [or data of any kind] generated in a digital medium can be ‘copies without originals’” (Chandler & Munday, 2011) like text generated on a word processor. These are also referred to as ‘born-digital’.

Digital preservation is the “long-term curation and preservation of digital materials” (Ross, 2012: 44). Preservation in the digital context is fraught with technological concerns. With the rapidly changing technologies, “there is a risk that information becomes inaccessible and unusable” (Muir, 2004: 73). When preserving content that is digital-born, there is always the issue of licensing and copyright. Digital materials “are bound to… specific application packages (or hardware) that were used to create or manage them” which makes them “prone to corruption” (Ross, 2012: 44). When a library undertakes the task of creating a repository for digital materials, policies and standards have to be adapted in order to maintain consistency in quality. In the midst of this, digital preservation is also about “maintaining [the material’s] provenance and authenticity, about retaining its ‘interrelatedness’, and about securing information about the context of its creation and use” (Ross, 2012: 45). The Internet provides a global platform for information to be shared. Digital preservation makes it possible for rare artefacts to be shared widely without transporting or damaging the artefact.

2.3.6 Mobile environment

More and more library users are equipping themselves with mobile devices. The range of devices has made it imperative that the library (in collaboration with relevant stakeholders) develops services that are device neutral (ACRL Research Planning and Review Committee, 2014: 296). The ACRL document (2014: 296) reports that the development of digital services for only desktop or only mobile phones is no longer sufficient. The mobile environment offers users efficiency and information on demand. With the rapid change in the library in terms of technologies and web applications (such as social media), it is plausible to state

that “librarians are perfectly aware that they are facing now a Web 3.0 environment” (Corradini & Pérez-Montoro, 2013: 178).

Mobile technology, having infiltrated the scholarly workflow (that is, students and researchers increasingly access library and other university affiliated services through mobile applications and sites), makes it important for libraries to optimize and integrate their services for mobile access (Johnson et al., 2014: 8). In a study conducted at a Ghanaian university, researchers found that nearly all respondents in their study owned at least one mobile device. After making this observation, the researchers state that the “affirmation of ownership and actual use of such an Internet enabled tool is essential if the [library] plans to deliver some of its services by means of mobile technologies” (Akeriwa, Penzhorn & Holmner, 2015: 291). Particularly significant about this observation is that the University of Development Studies Library has little automated library services; yet the infiltration of mobile technologies among the user population warrants more innovative use of technology to facilitate the accessibility of services and resources (Akeriwa, Penzhorn & Holmner, 2015: 287).

2.3.6.1 QR codes in the mobile environment

Everywhere we go, we see cubic barcode type images. These are now found everywhere; from magazines to posters to even web pages. This is the emergence of the Quick Response (QR) codes in the mobile environment. Lombardo, Morrow and Le Ber (2012: 15) explain that QR codes are “two-dimensional barcodes that store information to be downloaded at a high speed”. These codes are designed to be “scanned with a mobile device that has a camera”, then once scanned, “the device is prompted to load a web page or display text, telephone numbers, or other data contained in the code” (Lombardo, Morrow & La Ber, 2012: 15). QR code readers are available on almost every smartphone platform. The University of Utah incorporated QR codes in its libraries in various ways. Lombardo, Morrow and La Ber (2012: 17-20) outlines these applications as follows:

- QR codes to promote digital collections – in several libraries, digital images of each piece in the art collections with metadata were collected, QR codes for each of the artworks were generated and then placed alongside the physical artwork. Patrons

could then view the artwork and extract information and the digital image of the artwork by scanning the QR codes using their mobile devices;

- QR codes for mobile class registration – many of the libraries at the university offer open classes and workshops for the students. The flyers advertising these classes and posters advertising the workshops have QR codes that direct the user to more information on the sessions, registration forms and sign-up sheets;
- QR codes for reserving group study rooms – because of the demand for group study rooms, the library placed QR codes beneath the room numbers so that students can scan the codes and ascertain the availability of the rooms and also make reservations;
- Finding places and things with QR codes – the size of the libraries obliged the library to add QR codes to their maps so that users could navigate the libraries using a mobile map; and,
- Mobile delivery using QR codes – frequent use of the QR code is to deliver information directly to the user's mobile device. A QR code was used to promote the library's mobile-friendly website. The codes are used to deliver hand-outs and syllabi to students. All hand-outs and materials are aggregated on a web page. Students scan the code, save the link and then have access to the entire collection of material for the course. RSS feeds are also generated from databases, creating a persistently updated list of current literature on a topic.

Another academic library placed QR codes at the end of the shelves to direct users to e-resource collections relating to the subject of the shelf (Kane & Schneidewind, 2011: 117). This use of QR codes connects the digital library to the physical library and also aids the promotion of making use of both physical and digital resources.

The addition of such a service to the academic library would necessitate that library staff familiarize themselves with technologies so that they are able to guide patrons in their use.

2.3.7 Digital curation

Curatorship is becoming vital as electronic resources are increasingly becoming important and research data is multiplying. Digital curation also forms part of digital scholarship. To

curate, as defined by *Oxford dictionaries* ("Curate, v.", 2013), is to "select, organize, and present (suitable content, typically for online or computational use), using professional or expert knowledge". From this definition, one can deduce that **curation** is the process of selecting, organizing and presenting data/information using professional or expert knowledge. **Curatorship** in turn, would be the noun form of 'curate' and would refer to the process of curating information.

Digital curation is a recent development in the LIS sector. With the magnitude of data that is being digitized and data that is created for the digital environment, there is a need for the management and the preservation of this data (Abbott, 2008). The library is at the forefront of information management in the academic environment, so it is natural that information professionals have assumed roles as digital curators in the formal academic setting. Digital curation includes "managing data from planning its creation, best practice in digitization and documentation, and ensuring its availability and suitability for discovery and re-use in the future" (Abbott, 2008). According to the definitions provided by *The Library and Information Services (LIS) Transformation Charter* (DAC & NCLIS, 2014: 20), digital curation is also:

> the process of establishing and developing long term repositories of digital assets for current and future reference by researchers, scientists, and historians, and scholars generally.

With the influx of digital resources, digital curation is becoming a necessary activity if the academic library is to remain relevant to researchers.

2.3.7.1 Data curation

'Digital curation' and 'data curation' are terms that are sometimes used interchangeably. For the purpose of this study, 'data curation' is seen as a subset of 'digital curation' and refers to the management of research data. According to the *World encyclopedia* ("Data, n.", 2004) data is "information, such as lists of words, quantities or measurements". Data is information in its raw form that is often only meaningful to the researcher of a study. For the purpose of this study, it is important to note that 'data' (especially when used in conjunction with 'curation') refers to the raw information emanating from research.

As opposed to digital curation, data curation has to do with "research data management [RDM] and repository infrastructures" (MacDonald & Martinez-Uribe, 2010: 4-5). Data curation requires skills from parties across the university. These skills include: "information management, computing, economics, institutional governance, and social dynamics". These skills are supplied by "departmental heads, librarians, computing staff, principal investigators, records managers, archivists, and research office staff" (Macdonald & Martinez-Uribe, 2010: 5). Collaboration between various departments to establish a data curation system combines both resources and expertise. Data curation has become necessary because funding agents have come to the realization that "much of the data that they are paying to have generated is not being properly curated or fully utilized and is often lost" (Heidorn, 2011: 663). Although it is not traditionally the role of the librarian to manage research data, research data that is produced by faculties on campus are moving "out from the fringes of this evolving collection activity and into the periphery of prospective library practice" (Newton, Miller & Bracke, 2011: 53). Libraries are among the only institutions that are equipped to curate and disseminate research data successfully (Heidorn, 2011: 663). Heidorn (2011: 670) states that "increasingly, data are being recognized as first-class intellectual objects that can undergo quality checks, peer review, distribution, and reuse" and citing data sets can "contribute to the reputation of the creator of the data for good or ill". By hosting and linking data collections, the library becomes more involved in the research process. It is a natural fit for the academic library to assume the role as an access provider to data collections because of the expertise that already exists within the library.

2.3.8 Digital scholarship

The term 'digital scholarship' lends itself to many interpretations. These interpretations are dependent on the particular culture of the institution, institutional organization and the environment (McCullough, 2014: 187). Andersen (2004: 16) defines a digital scholar as someone who is aware of the expanded options available to him/her, his/her students and his/her research through new technologies.

At New York University Libraries, digital scholarship services extend to "high performance computing; geographic information systems; quantitative and qualitative data analysis; data

finding and management; the digitization, creation, manipulation, storage, and sharing of media content; repository services; digital preservation; streaming media platforms; digital journal publishing; online collaboration; and intellectual property consultation" (Vinopal & McCormick, 2013: 27-28). Vinopal and McCormick (2013: 27) mention that these services are offered in conjunction with a unit of the Information Technology Services at New York University. This emphasizes the role that the academic library plays in connecting resources in order to offer superior services. Each institution has different cultures and needs, thus the scope of the services offered by the digital scholarship centre depends on the institutional need (McCullough, 2014: 190).

Arguably Digital Humanities (DH) fall within the scope of Digital Scholarship. However, Fitzpatrick (2012: 14) states that DH particularly contributes to digital scholarship in its exploratory investigation of the difference that digital can make in work processes and also the difference it makes to our methods of communication. Adams and Gunn (2013) describe DH as being "an emerging, interdisciplinary movement which looks to enhance and to redefine traditional humanities scholarship through digital means". DH is not confined to one field but is highly collaborative and encourages contribution from all sectors (Adams & Gunn, 2013).

2.3.9 Open access

While Open Access (OA) is not new to academia, it has only become a serious alternative to traditional publishing processes in recent years (Mercieca & Macauley, 2008: 244). Although OA has "not been designed with libraries as its foundation" (Bailey, 2007: 370), the library has the capabilities to enhance the access to OA resources for its users. OA has been around for more than ten years, but "academic promotion processes may be in conflict with the increasing support with open access modes of publication" (Mercieca & Macauley, 2008: 244). Houghten (2002) states that "promotion, tenure, and funding allocations in universities and research institutions are often linked to publication in a few, leading, refereed journals". Negativity towards OA seeps in when these few titles linked to the institution are not OA.

“The talks associated with [OA] usually focuses upon forging a model that might enable the academic publishing industry to continue to thrive” (Beer, 2012: 479), but OA is contested in the academic world because it brings with it a set of problems. If the responsibility of the repository OA material does not lie with the library, academics will have to be trained sufficiently so that quality metadata can be added to the repository for access. Beer (2012: 480) points out that “open access may have positive outcomes but it needs careful navigation to ensure that it does not undermine the very thing that it aims to promote”.

One of the problems with acquiring e-resources in the library, is ownership. Online resources that are acquired by the library are managed by the database vendor and the library is only given access to the content. This means that aside from the access provided, the library has no ownership over many online resources. OA would result in the institution having perpetual access to electronic journals with little monetary implications (Bailey, 2007: 369). There are little costs involved with OA, but “for information to be made freely and permanently available to the public, the costs of creation, publication, and distribution must be absorbed by someone other than those who wish to use it” (Oppenheim, 2008: 581).

Bailey (2007: 376) notes that although there are many benefits of OA to the institution and the library, there is still the question of funding. He suggests that as the OA repository grows, it could eventually substitute conventional journals. This means that the library will be able to cut away some subscriptions (Bailey, 2007: 376). For access to journals, libraries are victim to the terms of licensing agreements. If the library promotes and facilitates OA, “researchers would not encounter gaps in the collection corresponding to journals with unacceptable prices or licensing terms” (Bailey, 2007: 370). The growth of OA could have major implications on the world of e-resources. As more researchers contribute to OA repositories worldwide, it is important for the library to stay abreast of the developments so that the university can benefit from this movement.

There are two different approaches to OA. They are “that of institutional repositories and open access journals” (Oppenheim, 2008: 578-579). These approaches are classed as ‘green OA’ and ‘gold OA’. The green OA refers to “self-archiving, whereby an author places a copy

of the scholarly output in one or more OA repositories (these may be an institutional repository (IR), a subject-based repository, or a combination of them)" (Oppenheim, 2008: 579). This system of OA does not deter the author from publishing the same document in a "traditional journal" (Oppenheim, 2008: 579). The cost implications of this model is that the organization maintaining the repository pays for the uploading of the materials, metadata and other requirements (Oppenheim, 2008: 579).

The gold OA refers to "publishing the article in an OA journal, [that is], an electronic or parallel-published journal that allows free of charge access to the articles within it" (Oppenheim, 2008: 580). This model survives on little or no income and thus the author pays for publication. Oppenheim (2008: 580) stresses that the 'author pays' business model is a misnomer because it is the employer of the author that pays the publication costs.

There is a "widely held suspicion […] that articles in gold OA journals are less well peer-reviewed than their counterparts in toll-access journals" (Oppenheim, 2008: 582). This suspicion stems from the fact that these journals are new and have not yet had the chance to accomplish high status, and that the editors are pressured to accept poor quality articles in order to maintain the stream of income (Oppenheim, 2008: 582).

Both the green and the gold OA route would have implications for the academic library. Both models would require staff to add metadata to the items. The library would have to educate users on the sensible use of these OA resources as well as market the resources.

2.3.10 Collaboration

The Internet and social networks have reduced the world to a global village. Information can be shared across the globe instantly. It comes as no surprise then that in order for the library to fully embrace the new academic environment, collaboration is critical. Neal (2010: 71) captures the need for collaboration well:

> The core responsibilities of research libraries align well with the needs of big science. Therefore, partnerships at the project, campus, discipline, national and global levels will advance scientific discovery and progress, and support the interests of individual scientists and teams of researchers, universities and research

> centers, and funding agencies. There is a productive marriage of capabilities and needs between library and science researchers.

Cook (2000, cited by Dixon, 2006: 6) reiterates this when he says that because of the "complex and expansive information and technological innovations of today…, it is vital for librarians to make connections" and to "… redefine their roles and to establish proactive partnerships across the campus and beyond". According to Neal (2010: 66) collaboration "combines rapidly evolving user requirements, a recognition of the need to rethink redundant inefficient library operations… [and] a focus on the need to achieve scale and network effects through aggregation". Hence collaboration becomes an important aspect of the modern academic library. It is not enough to confine collaboration at the librarian-faculty level because the research process extends beyond the faculty and library. As was articulated under the theme, Digital Scholarship, partnerships with sectors on campus like the information technology unit solidifies the notion that academic libraries lie at the centre of the research process.

2.3.11 E-books

Considering that the market for e-books has taken off exponentially, the adoption of e-books in academic libraries has been slow. According to Ashcroft (2002, cited by Ashcroft, 2011: 398) issues regarding "the introduction of ejournals, such as raising user awareness, bundling, proliferation of passwords and consortia purchase" have been resolved, but although there is a large market for e-books, "the situation regarding e-book provision is less stable" (Ashcroft, 2011: 398). One of the issues with the acquisition of the e-books is the bundling that is offered to the libraries. According to Ashcroft's (2011: 400) surveys, the option to select title by title is not available to libraries. The ability to select e-books title by title means that the purchaser has "maximum control over purchasing decisions" (Ashcroft, 2011: 400).

One of the major issues regarding the acquisition of e-books, is the Digital Rights Management (DRM) software connected to the e-books. This software limits the way the content can be used. The definition of DRM according to the Committee for Standards (CEN) and the Information Society Standardization System (ISSS) (2003: 7) is:

> The management of rights to digital goods and content, including its confinement to authorised use and users and the management of any consequences of that use throughout the entire life cycle of the content.

The presence of DRM means that the use of e-books is limited in the library. According to Böhner (2008: 599-600), DRM determines who can use the digital content, the timeframe in which it can be used, the frequency at which it can be used, the place of access and how the digital document can be used (this extends to printing, reading or copying).

One of the basic tools that a library offers is a catalogue of its collection. E-book collections are dynamic in nature and titles can be withdrawn from a collection with ease. This poses a problem for a cataloguing department. With an unstable collection, an up-to-date catalogue will be almost impossible (Kahn & Underwood, 2013: 11).

2.4 Summary

This chapter outlined the theoretical framework that the study employs and also explored some of the prominent themes relating to the modern academic library. It reviewed literature on developments for modern academic library services that provide a basis for the theory of organizational learning. The next chapter looks at the research design and methods employed by this study.

Chapter 3 : Research design and methods

3.1 Introduction

Research can be defined as the manifestation of a curiosity to learn more (Beck & Manuel, 2008: 9). The process of gaining knowledge through research "involves a process of formulating specific questions and then finding answers to them" (Bless, Higson-Smith & Sithole, 2013: 1). This study aimed to ascertain the shape and form of the 21st century academic library in South Africa, including the expectations (from both staff and users) of services rooted in technological advances of the digital era – using the case of the academic library of UCT. The sub-objectives of this study are as follows:

1. to ascertain, via a rigorous review of literature, how far along academic libraries worldwide are with incorporating technological advances in their services;
2. to identify the progress of UCT Libraries in establishing itself as a 21st century academic library;
3. to ascertain how readily staff adapt to changes and new technology in the library; and,
4. to ascertain user expectations of a modern, digital era academic library.

3.2 Research methodologies

There are generally three methodologies that are commonly used to conduct research, namely, the qualitative research method, the quantitative research method, and the mixed methods research. Both qualitative research and quantitative research are broad terms that encompass a range of methodology for data collection and analysis (Grix, 2004: 116). Qualitative research is the research process of "[drawing] data from the context in which events occur" (Gorman & Clayton, 2005: 3). This type of research involves "in-depth investigation of knowledge" through data collection methods such as participant observation, interviews, ethnographic study, or archival or other documentary analysis (Grix, 2004: 119-120). As opposed to qualitative research, quantitative research is based on three basic phases: "finding variables for concepts, operationalizing them in the study, and measuring them" (Grix, 2004: 117). This research method makes use of techniques that are

more applicable to numerical data (Grix, 2004: 117). One of the advantages of the quantitative approach is that numbers are exact. Irrespective of the discipline, numbers maintain the same meaning (Bless, Higson-Smith & Sithole, 2013: 58). Bless, Higson-Smith and Sithole (2013: 58) go on to say that an "important advantage of numbers is that they can be analyzed using descriptive and inferential statistics".

Mixed methods research makes use of both the qualitative and quantitative designs. This means that both numerical and text-based data are collected and analyzed. According to Punch (2005: 240), the incorporation of both the quantitative and qualitative research methods capitalizes on the strengths of both methods including enhancing the validity of the study through triangulation. It can be argued that mixed methods research promotes a better understanding of the research problem or question (Creswell, 2014: 215).

This study adopts the qualitative research design. Qualitative research allows for the researcher to draw data from the "context or environment in which events occur" (Gorman & Clayton, 2005: 4). An aspect of this study looks at the adaptability of the library staff in the modern academic library setting. This means that insights have to be drawn from the staff themselves. This introduces the idea of the human research instrument as illustrated by Pickard (2013:16) who argues that complexities that arise from human lives and their interpersonal relationships make it necessary for the researcher to act as a research instrument to properly engage with the research participant. Qualitative research attempts to "understand the meaning that people create in context and then to describe and interpret the meaning" (Gorman & Clayton, 2005: 4). The concept of the 21st century academic library will be constructed from the main themes in the recent literature on the development of the academic library.

3.3 Case study research approach

This study employs a case study research approach. Case study research in qualitative analysis gives emphasis to the interrelatedness of the different features and causes within each example of the case (Bazeley, 2013: 5). Using the case study is preferred when the research focus is contemporary events (Yin, 2014: 12). This study looks at the advancements made in the academic library, with specific reference to UCT Libraries, how staff are coping

with the changes in the service and how users perceive the level of contemporaneousness of the library service. Yin (2009: 18) describes a case study as being an empirical enquiry that is used when the researcher wants to gain an in-depth understanding of real-life phenomenon while also needing to understand the context pertinent to the phenomenon. Yin (2014: 17) goes on to say that case study research deals with distinctive situations in which there are many more points of interest than data points, thus resulting in a reliance of several sources of evidence. The varying sources of evidence require for the data to correspond to each other in a triangulating manner.

The use of different data collection instruments for the different strata in the identified population in this study will ensure that the researcher is able to properly evaluate the information service in terms of identifying the progress of UCT Libraries in establishing itself as a 21st century academic library and ascertaining how readily staff adapt to changes and new technology in the library. This incorporates triangulation into the study.

The theory of organizational learning, adds focus to the design of the data collection instruments and provides a basis for discussion, particularly in terms of findings relating to the third sub-objective: to ascertain how readily staff adapt to changes and new technology in the library.

3.4 Population and sampling

The population is the "entire set of objects or people that is the focus of the research project and about which the researcher wants to determine some characteristics" (Bless, Higson-Smith & Sithole, 2013: 162). In the context of this study, the population would refer to the staff employed by UCT Libraries, students of UCT, researchers and academics.

This study looks at the effects that technology has on the user services that the library offers, hence the staff members who form part of the population of the study, are those who are directly involved with the user services in the library. This identified group of individuals also includes members of library management who are involved in the development of library policies and services that facilitate the library's advancement into the 21st century. Everyone in the student body does not necessarily make use of the services

that the library offers. Consequently, student library users form part of the population rather than all students at UCT. In order to carry out their research and teaching successfully, at some point all researchers and academics need to make use of library resources, print or digital. Hence, all researchers and academics form part of the population for this study. In order to obtain accurate information about a group of people, it is best to examine everyone in the group, but it is also possible to get an accurate conclusion by studying only a portion (a sample) of that group (Bless, Higson-Smith & Sithole, 2013: 162). Thus this study employed sampling.

Sampling is employed when the population of the study is too large to include in the research (Pickard, 2013: 59). This study made use of varied sampling methods for the different strata within the population of the study. In order to identify the key informants in the library, purposive sampling was employed. Purposive sampling occurs when it is suitable to select a sample "on the basis of knowledge of a population, its elements, and the purpose of the study" (Babbie, 2011: 179). Library staff within the confines of the Chancellor Oppenheimer Library (the main library for UCT) are easily identifiable and thus appropriate for purposive sampling. To establish a representative sample, the researcher made certain that participants were selected at different levels in the hierarchy of the organizational structure of the library. These staff members were identified for interviewing.

A further segment of the library staff was targeted for data collection using the same sampling approach. The Library is segmented into different departments that deal with different aspects of the library services. In order to acquire a representative sample of the library staff from each of the different departments, the researcher found it necessary and suitable to make use of purposive sampling. Hence, two samples were extracted from the library staff population. One sample was identified for the questionnaire survey and the other for interviews.

To obtain a representative sample of students and researchers and academics the researcher employed stratified random sampling. Random sampling allows for each member of the specified population to have an equal chance of being included in the sample (Pickard, 2013: 61). Stratified random sampling occurs when there are strata within

the population. This method allows for random sampling of groups within the population group (Pickard, 2013: 62), for example, undergraduates and postgraduates.

Stratified random sampling is the same as doing a random sampling of the entire population, except that this sampling would be of the smaller groupings within the population (Pickard, 2013: 63) and allows for the extraction of a more representative sample. Random sampling also serves as measure to restrict any bias on the part of the researcher, whether conscious or unconscious (Babbie, 2011: 187). The samples were extracted from the user population for the questionnaire survey.

The sample size was selected according to the sampling table provided by Sekeran (2003: 294). The sizes of the population strata targeted and the samples extracted from them are as follows:

Table 3.1: Population strata and sampling numbers for questionnaire survey

Target population	Population size	Sample size
Undergraduate students	17 500	377
Postgraduate students	7 500	367
Researchers and academics	1 571	315
Library staff (questionnaires)	119	95

A purposive sample of 16 library staff members were selected for the interviews. The sample comprised of professional staff at all levels of the organizational hierarchy. The sample was selected according to the staff members' designations in the Library and their involvement with Library projects.

3.5 Data collection

There are several methods of data collection within qualitative research. A research design is often made up of a few of the data collection instruments within qualitative research methodology rather than just one and the combination of instruments depend on the researcher and the requirements of the study (Pickard, 2013: 192). Making use of several

data collection instruments adds to the validity of the study through triangulation (Pickard, 2013: 192). To address the different strata within the population as outlined in Section 3.4, this study made use of multiple data collection instruments that were suited to collecting data within each strata of the identified population. These data collection instruments included interviews and questionnaires. The interviews commenced 18 July 2014 and ended 6 August 2014. The questionnaire data was collected from 23 July 2014 and concluded 18 August 2014.

3.5.1 Interviews

There are many advantages to interviewing. Gorman and Clayton (2005: 125-126) allude to five advantages. The first of these is the immediacy of a response to a question. Secondly, interviewing gives the researcher and the participant an opportunity to explore questions. This means that any ambiguity in a question can be resolved. This also gives the researcher opportunity to pose open-ended questions that "may lead to unexpected insights" (Gorman & Clayton, 2005: 125). The third advantage is that the researcher can explore why individuals or organizations operate in the way they do. The final advantages are that interviews are a much more personal and friendly method of data collection and interviews facilitate the collection of "a large quantity of rich data in a relatively short space of time, as most of us can talk much more quickly than we can write" (Gorman & Clayton, 2005: 126). This data collection tool does not come without disadvantages. Disadvantages include: costly, because interviewing can take up much of the researcher's time; the reporting might be selective as the researcher may have to sort through large amounts of verbal data to lift out important points; the interviewing process may be too personal for the participant especially if the data is potentially sensitive or embarrassing which could result in the participant lying or omitting relevant facts; lastly, the "approach, personality and even the appearance of the interviewer" has an effect on the "quality and direction of an interview" (Gorman & Clayton, 2005: 126). The researcher addressed these flaws by assuring the participant that any data he/she might consider sensitive or can be used to identify the participant will be removed from the transcript.

There are two types of research interviews, namely, structured and unstructured interviews (Beck & Manuel, 2008: 73). Structured interviews are used primarily in quantitative research. It comprises set questions read out to a participant and the answers are slotted into "predetermined categories" (Gorman & Clayton, 2005: 127). These type of interviews are number based and are used in market research and political polling (Beck & Manuel, 2008: 73). Unstructured interviews "are concerned with open-ended questions that allow the interviewees to tell their own story in their own words" (Pickard, 2013: 199). There are several types of unstructured interviews as described by Gorman and Clayton (2005: 127):

- Standardized open-ended interviews – these are interviews where the wording of the questions is decided before the interviews. The danger of this type of interview is that it might become quite formal. This interview type allows for comparisons to be made between the answers of the participants;
- Making use of an interview guide – this method allows for the researcher to gather detailed and comprehensive data. While the topic of the interview is chosen in advance, the wording of the questions is natural and the researcher is allowed to respond to issues raised by the participant. The disadvantages of using this type of unstructured interview, is that some issues may be overlooked inadvertently and little comparison may be made between the answers of the participants; and,
- Informal conversational interviews – these interviews are exploratory in nature. The questions arise from the discussion.

This research adopts a qualitative design and thus made use of unstructured interviews. The interviews were (as much as possible) informal in nature in order to encourage conversation. The segment of the population that was subjected to interviews was the library staff. The unstructured interview made use of an interview guide (refer to Appendix B) because the researcher needed to ascertain information on developments in UCT Libraries. As mentioned in Section 3.4, this study used purposive sampling to identify interview subjects. Participants were selected at most levels of service in the organization in order to obtain a full picture of the organizational development and to ascertain to what extent information is disseminated throughout the organization. The design of the interview

guide was informed by modern academic library themes reflected in the literature as well as the organizational learning theory discussed in Section 2.2 of Chapter 2.

3.5.1.1 Interview guide design

As aforementioned, the interviews are unstructured, but an interview guide was produced to guide the direction of the conversation in the interview. The guide (refer to Appendix B) was designed to include questions based on the literature reviewed in Chapter 2. The theory informing the study – organizational learning – guided the questions regarding training and development. It was anticipated that some of the interviewees might not be able to answer all the questions, but where relevant to their job duties, will be able to give in-depth responses to some of the questions. The purpose of the interview guide was to be as exhaustive as possible regarding the developments at UCT Libraries. The subject of this study was UCT Libraries as an organizational entity (making it opportune to employ organizational learning as the supporting theory) and thus the interview guide was designed to interrogate the organizational entity and not the interviewees per se.

Invitation emails (refer to the invitation message in Appendix B) were sent out to the identified sample of library staff. Prior to commencing each interview session, the participants were asked to read and sign a consent form (refer to Appendix A).

3.5.2 Questionnaires

One of the more popular data collection techniques in research is the questionnaire. This method of data collection is used to reach a large community at a relatively low cost (Pickard, 2013: 207). Self-administered questionnaires are forms that are completed without any assistance from the researcher (Bless, Higson-Smith & Sithole, 2013: 194). These questionnaires could be distributed physically, where the researcher disseminates those questionnaires and then collects them when they are completed, they could be sent via mail (this could include email) (Bless, Higson-Smith & Sithole, 2013: 195), or they could be administered online. For this study the researcher chose to administer the questionnaires online. Web administered surveys have the capabilities to incorporate multimedia items and some survey tools are able to do real-time randomization of questions (Fricker & Schonlau, 2002: 347). Students at the University of Cape Town are

widely spread across several campuses in an array of disciplines. Hence the self-administered questionnaire was the best option to reach students selected for participation in the study using stratified random sampling.

Further questionnaires were distributed amongst library staff working in different departments of UCT Libraries. These questionnaires were distributed electronically in the Chancellor Oppenheimer Library where the roles of different librarians are more distinctive and thus each department within the library has different levels of interactivity with technology and technology driven services in the Library. The researcher made use of *KwikSurveys*, an online survey builder. The platform allowed for each of the themes to be displayed on a new page and features quick analysis tools.

3.5.2.1 Questionnaire design

The online survey builder allowed the researcher to display questions according to theme. The builder allowed the researcher to make certain questions compulsory. These questions are marked by an asterisk (refer to Appendices C-F). In order to ensure triangulation, each of the questionnaires were developed using mostly, either the same or similar themes used in the interview guide. The themes not covered by the interview guide but included in the user questionnaires served to gain insight of library services from the user perspective. A section on technology was incorporated into the library staff questionnaire (see Appendix C, Section E) to address the third research objective: to ascertain how readily staff adapt to changes and new technology in the library. The questions in this section were also informed and guided by the theory of organizational learning.

3.5.3 Pre-testing of data collection instruments

Pre-testing is an "informal, loosely structured set of procedures where the researcher explores, probes and tests many of the parameters of the study being planned" (Bailey & Burch, 2002: 133). Pre-testing the data collection instruments assures the researcher that in the instruments (Thomas, 2004: 108-109):

- the language is clear and unambiguous;

- the questions are not intrusive and might therefore not be answered by all participants;
- the questions are simple and not at all difficult to understand;
- the expectations of the participant is clearly outlined in the instrument; and,
- the questions result in extracting the data required for the study and that the data analysis is functional.

Pre-testing the data collection instruments took place over a period of two weeks. For each of the questionnaires, there were focus group discussions each comprising two participants and the researcher. Participants were selected from the pool of student assistants working at UCT Libraries. The researcher invited students to participate in the pre-testing and those that did participate did so voluntarily. Each participant was instructed to complete the questionnaire using the web interface. Thereafter, the researcher distributed print copies of said questionnaire and with the participants, went through each question again. Minor changes were made to each questionnaire to eliminate ambiguities that came to fore in the focus group discussions.

Two participants from the library staff were selected to pre-test the interviews. These participants were not selected for the main study. Before the pre-test interviews were conducted, the participants were informed that the interviews were being conducted as part of a pre-test and thus they should pay attention to language and scope. The interviews were conducted as it would be conducted in the study. After the interview, the researcher asked the participants to comment on the questions. The absence of interlibrary loans in the study surfaced, but the researcher came to the decision that the scope of the study did not allow for the inclusion of developments in interlibrary loans. Although relevant to the academic library, trend reports (ACRL Research Planning and Review Committee, 2014; Johnson et al., 2014) made little or no mention thereof indicating few major developments in that sector.

3.5.4 Administration of instruments

The questionnaires were administered online. The undergraduate and postgraduate surveys were sent by the office of the Department of Student Affairs (as per UCT protocol). This

department has no infrastructure to send emails to a specific group of students (using random sampling), and hence the survey was sent out to the entire student population and students were given the option to select either the undergraduate or postgraduate survey. Researchers and academics, forming part of the staff body of the University, had to be accessed through the Human Resources Department (again, as per UCT protocol). Unfortunately because of a misunderstanding, the incorrect invitation message was sent resulting in a low response rate. An amended invitation did not boost the numbers tremendously. For the questionnaire survey, library staff were identified by the researcher using purposive sampling. This made it easy for the researcher to disseminate the questionnaires via a personal email account.

Library staff respondents for the interviews were also selected purposively. The researcher extended invitations to participate in the research via email.

There were good response rates for the most part. Although the yield from researchers and academics was low, the user population as a whole was sufficient. Table 3.2 reflects the return rates.

Table 3.2: Response rates

Population	Sample size	Return
Undergraduate students	377	270 (72%)
Postgraduate students	367	231 (63%)
Researchers and academics	315	20 (6%)
Library staff (questionnaires)	95	39 (41%)
Library staff (interviews)	16	15 (94%)

3.6 Data analysis

Qualitative data analysis aims to record respondents' experiences authentically through the results of the research (Bless, Higson-Smith & Sithole, 2013: 339). Data analysis is made up of a series of steps. The qualitative data in this study comprises largely of recordings and text. Bless, Higson-Smith and Sithole (2013: 342) recommend that the first step in data analysis is for the researcher to immerse him/herself in the data by reading and rereading

the collected material. By doing this, the researcher has a broad sense of what has been collected. The next step is to start preliminary coding of the data. The literature review of this study looked at some of the themes that are trending in modern academic libraries. These pre-set themes provided a simple mechanism for coding the data collected. The questions that were set out in the interviews were guided by the themes identified in the literature review. Bless, Higson-Smith and Sithole (2013: 344) title the third step: "coding definitions". This step requires the researcher to provide a scope for each code (or theme) so that data can easily be identified to code. Hierarchies at this stage can be incorporated into the coding process. For this study, the researcher did not make use of a software package for data analysis because the study did not collect large amounts of data.

With triangulation in mind, data collected from the questionnaires had some themes that were different from those of the interviews because the questionnaires served to respond to different research questions in the study. The qualitative responses from the interviews with library staff were analyzed by means of content analysis, that is, identifying of common themes to establish patterns in the findings. The data collected from the questionnaires were coded and presented according to the research questions, using simple frequency and percentage distributions (descriptive statistics) where necessary. Presenting findings from the analysis according to the researcher questions allowed themes that were similar across all the data collection instruments to be compared and presented in a structured setting. This is a form of thematic content analysis, the process whereby material is classified and presented in more relevant, manageable sections of data and then comparisons are drawn (Gorman & Clayton, 2005: 213-214). The challenge associated with this technique of data analysis is decontextualizing words or phrases (Gorman & Clayton, 2005: 214). By providing sufficient narrative in the findings chapter, the researcher was able to avoid this.

3.7 Reliability and validity

Reliability and validity are important for social research as they regulate the objectivity and credibility of the study (Peräkylä, 2008: 283). Validity refers to the quality of the measurement. According to Bless, Higson-Smith and Sithole (2013: 229), validity asks the questions:

- "what does this instrument actually measure?"; and,
- "what do the results actually mean?"

This means that the researcher must ensure that the data collection tools are actually collecting the data that the study needs collecting. The researcher made use of multiple instruments (interviews and questionnaires) to collect data, thus using triangulation to ensure the validity of the study.

Reliability is when a researcher follows the same procedures outlined by an earlier researcher and is able to arrive at the same findings and conclusions (Yin, 2014: 48). Yin (2014: 49) goes on to explain that a useful way of approaching reliability is to make the steps "as operational as possible and to conduct research as if someone were always looking over your shoulder".

In order to ensure reliability, the researcher pre-tested the data collection instruments and made use of recordings for the interviews so that the information that was collected from the interviews had had been accurately captured. The questions/items in the questionnaire were made simple and clear to avoid ambiguity and confusion. The researcher ensured that details for contact were on all questionnaires so that participants could make contact if they needed to. In a study by Shoniwa and Hall (2007) on the drives and impacts of Library 2.0 in UK academic libraries, the researchers made use of three data collection instruments. Two of these instruments, web-based questionnaires and interviews, are used in this study. According to Babbie (2011: 131), one of the ways to raise the reliability of the study is to use established measures. Though not as specific a study as that of Shoniwa and Hall (2007), this study shares some of the objectives set out by Shoniwa and Hall (2007: 70) which include finding out about experiences in implementing new tools and services and the extent to which these new services were implemented in the academic library.

3.8 Ethical considerations

Research ethics is an important part of social research. Research ethics ensures that research participants are treated with sensitivity and humanely (Bless, Higson-Smith & Sithole, 2013: 28). There are several principles of ethical consideration. These are: non-maleficence, where the research participants are not harmed at all and are not subject to

conditions that could impact their health negatively; beneficence, where the research should contribute to improve circumstances rather than just do no harm; autonomy, where the participants should have full control over their participation in the research; justice, where people should not be discriminated against in the study; fidelity, where the researcher should honour any promises or agreements made to the participants; and, respect for participants' rights and dignity, where the research should not violate or devalue the rights and dignity of any participant during the research (Bless, Higson-Smith & Sithole, 2013: 29-31).

In this study, voluntary participation was practiced. The participants had the option to withdraw from the study at any point. In order to maintain confidentiality, the names of the interviewees remained confidential. The questionnaires did not contain any details that could identify any of the library users or the library staff. The questionnaires being administered via a web survey tool further assured anonymity for the participants. The analysis of the questionnaires and interviews was done in such a way that the participants cannot be identified by reading the findings.

3.9 Evaluation of research methodology

The study's qualitative research design using a case study approach was useful in ascertaining the "contemporary" (Yin, 2014: 12) state of services of UCT Libraries in order to understand the shape and form of the 21st century academic library.

The data collection instruments, that is, the questionnaires and interview guide, used in tandem with relevant data culled from the literature review as well as with the organizational learning theory informing the study, were adequate in responding to the research questions generated to address the objectives of the study.

The targeted populations were adequate for the study. With library staff being critical to this study, the researcher both interviewed and disseminated questionnaires to this segment of the population. Users were delimited to students (undergraduate and postgraduate), and researchers and academics, thus providing the study with a very representative user sample. Each of these strata within the user population was given an

opportunity to respond to questions by means of specifically targeted questionnaires. The selected sampling techniques served the study well and yielded adequate return rates. Although the response rate was not optimal for the researcher/academic population, the researcher nevertheless received rich responses beneficial to the study.

The interview guide assisted in guiding the conversations in the interviews thus providing a healthy crop of data for the study. In terms of the questionnaires, with the items included were sufficient for the study, in hindsight the 'skip logic' feature could have been used in the design of the online instrument to prevent respondents from responding to items not pertaining to them (based on a previous response). 'Skip logic' is a feature in which, depending on a response to a certain item, the respondent gets directed to the next appropriate item. Notwithstanding this small anomaly, the data collected for the study was, on the whole, adequate to address the study's objectives. Before analysis, the data was cleaned to ensure accurate reporting. The data analysis, by means of content analysis and where necessary, by descriptive statistics, was appropriate for this largely qualitative study.

3.10 Summary

This chapter discussed the research design and methods that the study employed. It outlined the study's population as well as its sampling methods and the reasons for the sampling choices made. The chapter also discussed the data collection methods that were adopted for the study. A pre-test report was also included in this chapter. Data analysis, reliability and validity, ethical considerations and evaluation of research methodology were all presented in the latter part of this chapter. The next chapter presents the findings based on the analysis of the data collected.

Chapter 4 : Presentation of findings

4.1 Introduction

Chapter 3 discussed the research design and methods and the data collection instruments employed to gather data for this study. This chapter presents the findings of the study.

The objective of the study was to ascertain the shape and form of the 21st century academic library in South Africa, including the expectations (from both staff and users) of services rooted in technological advances of the digital era. The research questions generated to address this objective are as follows:

1. To what extent have academic libraries worldwide embraced technological advances in their services?
2. How far along are UCT Libraries in the continuum of establishing itself as a 21st century academic library service?
3. To what extent are staff accepting changes and new technologies in the academic library and how readily are they adapting their skills to accommodate these developments?
4. What are the expectations of users of the modern academic library?

The literature reviewed in Chapter 2 attempted to respond to the first research question. The remaining research questions are responded to using the empirical data collected for this study. Data was collected in the form of interviews with purposively selected UCT library staff (see Appendix B) to respond to the second and third research questions. To supplement this data, questionnaires were distributed to a selected sample of UCT library staff (see Appendix C). Questionnaires were also distributed to a sample of UCT library users (see Appendices D, E and F) to respond to the fourth research question.

In this chapter Section 4.2 presents the return rates from the data collected while Section 4.3 discusses reliability and validity issues relating to the study. In adherence to the order and structure of the research questions, this chapter then presents the findings under Section 4.4 as follows: 4.4.1 provides a brief summary of the literature in response to

Research Question 1; 4.4.2 reports on the data collated from interviewing selected library staff and from the questionnaire disseminated to selected library staff in response to Research Questions 2 and 3; and 4.4.3 reports findings resulting from the data collected from the library user population (undergraduate students, postgraduate students, researchers and academics) in response to Research Question 4 . The instruments that were used to gather data from the library staff (interviews and questionnaires) had an overlap in questions and themes for purposes of triangulation. Findings are presented using graphs and tables for frequency counts and percentage distributions, and narratives for qualitative reporting.

4.2 Return rates

The return rates for the questionnaires and interviews were reflected in Table 3.2 in Section 3.5.4 of Chapter 3.

Section 3.5.4 of Chapter 3 provides an explanation for the low response from the researchers/academics segment of the user population. As explained the research could continue because the student survey yielded an adequate crop of returns (for both postgraduate and undergraduate students) and the response from researchers and academics, though small, yielded some rich and valuable responses sufficient for a study of this size.

4.3 Reliability and validity

Reliability and validity of research instruments are important in ensuring the quality of data collected. The validity of an instrument depends on whether the instrument measures what it is set out to measure (Bless, Higson-Smith & Sithole, 2013: 229). Validity in this study was ensured by triangulation (using more than one type of data collection instrument, that is, questionnaires and interviews, to gather data); an attempt to “get a ‘true’ fix on a situation by combining different ways of looking at it” (Silverman, 2010: 277).

Reliability refers to the extent to which the same test, if repeated, will yield the same results (Bless, Higson-Smith & Sithole, 2013: 221). In the Social Sciences, there is concern about “establishing regularities of perceptions, opinions, behaviours, etc.” (Bless, Higson-Smith &

Sithole, 2013: 223). This means that if regularity is observed in a study, the likelihood of something meaningful being measured is high. Reliability and validity are addressed in more detail in Chapter 3, Section 3.7.

When using items in the research instrument with "dichotomous or polytomous selections" (where two or more selections are made available) (Multon & Coleman, 2010), one can estimate reliability. Several frameworks are used to estimate reliability. To estimate internal consistency reliability, this study employed Cronbach's Alpha. Cronbach's Alpha is used to test reliability in polytomous items such as questions that make use of a Likert scale (Multon & Coleman, 2010). Reliability tests are also dependent on the sample size. Multon and Coleman (2010) state that "typically, large numbers of subjects (…in excess of 200) are needed to obtain generalizable reliability estimates". In view of this, Cronbach's Alpha was only calculated using the Postgraduate Student Questionnaire and the Undergraduate Student Questionnaire. Cronbach Alpha scores between 0.0 and 1.0, with a score closer to 1.0 being more reliable. Scores 0.70 to 0.79 indicate good or adequate reliability (Multon & Coleman, 2010). The scores presented in Table 4.1 reflect scores in this margin, indicating good reliability. The 'number of items' refers to the number of questions using the Likert scale in the instruments.

Table 4.1: Reliability estimates

Instrument	**Number of items**	**Cronbach's Alpha**
Postgraduate Questionnaire	5	0.73
Undergraduate Questionnaire	6	0.71

4.4 Presentation of findings

As aforementioned, the findings are presented according to the sequence of the research questions guiding this study. Although the instruments served to answer different research questions, an overlap in data collected from the library staff necessitated that the findings responding to Research Questions 2 and 3 be presented in one section. Thus, Section 4.4.1 draws from the literature reviewed in Chapter 2 as a response to Research Question 1,

Section 4.4.2 reports findings responding to Research Questions 2 and 3 while Section 4.4.3 groups the findings in response to Research Question 4.

4.4.1 Academic libraries globally

To what extent have academic libraries worldwide embraced technological advances in their services? As indicated at the outset of this chapter, the literature reviewed in Chapter 2 was the source of data for responding to this research question. Hence this section will outline salient findings from the literature on the extent to which academic libraries globally have embraced technology in their services.

In the library industry, academic libraries are at the forefront of accommodating technological advances. Findings from the literature reviewed for this study suggest that academic libraries globally are responding to users' use of technology and shaping their collections accordingly (Holmberg et al., 2009: 669; Michalak, 2012: 413-414; Shoniwa & Hall, 2007: 76). The use of mobile technologies (such as e-readers, tablets and smartphones) in the classroom has necessitated academic libraries to change and to add to the delivery modes of traditional services in order to accommodate current technology-oriented user behaviour (Michalak, 2012: 414, 422; Shoniwa & Hall, 2007: 77-78). Innovations such as QR codes have been incorporated into academic library services in libraries across the world. For example, the University of Utah Libraries in the United States of America use the service to link their print resources with relating e-resources (Lombardo, Morrow & Le Ber, 2012: 16).

In order to establish and maintain digital collections, digital scholarship centres (or similarly named) have been instituted in higher education libraries (McCullough, 2014; Vinopal & McCormick, 2013). The extent of the services that these centres offer is dependent on the needs of the user population of the parent institution. Many of these centres are successful because of collaborations and partnerships with various departments and units within their institutions (most commonly Information and Communications Technology departments). Due to the rapidly evolving information landscape globally, capacity building in specialized disciplines such as digital and data curation have become necessary. These new skills sets are being incorporated into centres such as the digital scholarship centre (Vinopal &

McCormick, 2013: 36) to service the research needs of scholarly communities increasing engaging in e-research. In building digital collections, libraries have had challenges in assimilating collections of resources such as e-books. Thus, unlike in the commercial sphere, e-books have taken off relatively slowly in academic libraries (Vasileiou, Rowley & Hartley, 2012: 218).

The popularity of open access has risen exponentially mainly because of the rising costs of subscription based resources (Guédon, 2004: 315; Oppenheim, 2008: 580). Academic libraries have become key stakeholders in the open access movement because of the expertise in the management of scholarly communications already residing within academic libraries. Open access has the potential to fill gaps in collections of academic libraries that cannot afford high subscription costs. A means of publishing research via open access is through an institutional repository. Like many of the digital services in an academic library, repository services fall under the umbrella of digital scholarship centres.

The literature indicates that technologies and digital innovations that are available commercially and that are being utilized by the user population for purposes relating to education and research, can be accommodated in the services of an academic library. Transforming higher education pedagogy (Raju & Schoombee, 2013: 27) makes it imperative that academic libraries worldwide are in synchronization with adopting new services based on technological advances in the commercial space. The literature reviewed for this study (discussed in greater detail in Chapter 2 and alluded to in other sections of this findings chapter), offers evidence of the fact that academic libraries globally have been very proactive in embracing technological advances in their services.

4.4.2 UCT Libraries as a 21st century academic library

As mentioned in the introduction of this chapter, this section presents data collected through interviews with selected UCT library staff (refer to Appendix B) and via questionnaires administered to a purposive sample of UCT library staff (Appendix C) in response to Research Question 2: How far along are UCT Libraries in the continuum of establishing itself as a 21st century academic library service?; and Research Question 3: To what extent are staff accepting changes and new technologies in the academic library and

how readily are they adapting their skills to accommodate these developments? The respondents reported on in this section are the library staff. Questionnaire respondents were 39 in total and interview respondents 15.

4.4.2.1 Respondent profiles

The respondent profiles present the biographical data collected via the research instrument.

In order to get a sense of all the organizational information and the reach of that information, questionnaires were disseminated and interviews were conducted across varying levels of employment in UCT Libraries. The levels of employment of the respondents (from both the questionnaire survey and the interviews) are shown in Table 4.2.

Table 4.2: Current designations of library staff surveyed (N=54)

Designation	**Frequency**
Librarian	20 (37.04%)
Senior Library Assistant	15 (27.78%)
Section Manager	11 (20.37%)
Branch Librarian	3 (5.56%)
Senior Management	2 (3.70%)
Project, project support and marketing	2 (3.70%)
Technician	1 (1.85%)

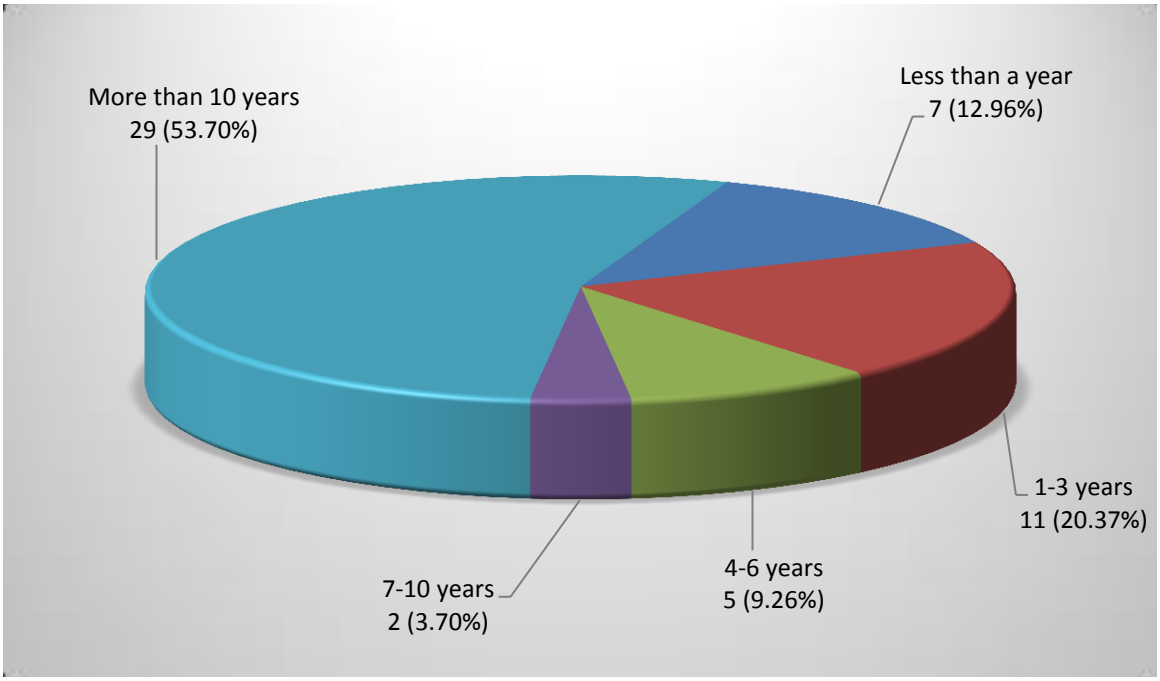
In order to get a fully representative sample of the library staff, the respondents were selected from sections across the organization. Only questionnaire respondents were asked to respond to the question about library section employed in. The researcher felt it important to be able to gauge representation of staff from all sections from the questionnaire survey. The sampling for the interview was purposive, thus there was no need to include the question in the interview. Table 4.3 presents the range of sections in the Library from which the questionnaire survey sample was drawn.

Table 4.3: Section of UCT Libraries at which employed (N=39)

Section	Frequency
Branch Libraries	14 (35.90%)
Client Services	11 (28.21%)
Technical Services	9 (23.08%)
Special Collections	2 (5.12%)
Access Services	2 (5.12%)
No Response	1 (2.56%)

Respondents were asked to indicate how long they have been employed by UCT Libraries. More than half of the respondents have been employed at UCT Libraries for longer than 10 years. This bodes well for their organizational knowledge and therefore the information garnered from them. Figure 4.1 depicts the length of period of employment for both interview and questionnaire library respondents.

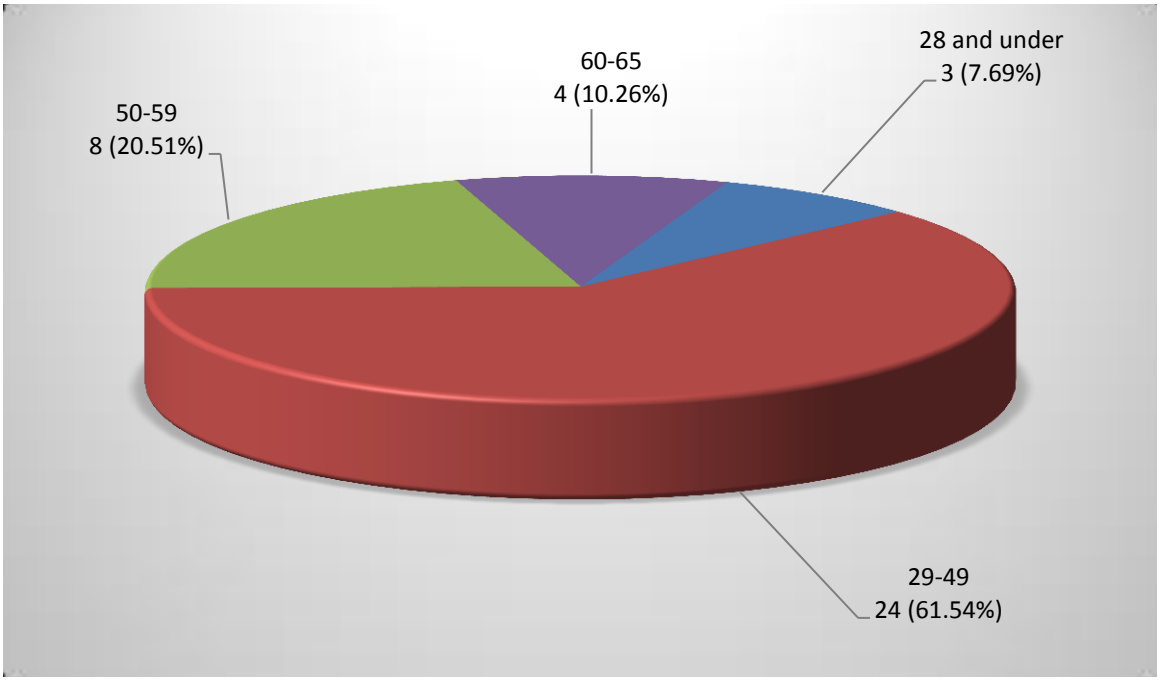
Figure 4.1: Length of period of employment at UCT Libraries (N=54)



Under the biographical information section, questionnaire respondents were also asked to state their age range. The age groups were divided into the age ranges as set out in Figure

4.2 to accommodate, as far as possible, the different groups of affiliates to technology and the Internet, namely, the Net Generation (also known as digital natives, Generation Y and the Millennial Generation), Generation X and the Baby Boomers (Pletka, 2007: 27-35; Tapscott, 2009: 16). The majority of the questionnaire respondents (over 60%) fall within the 29-49 age bracket, thus belonging to Generation X. According to Tapscott (2009: 15), Generation X, being the closest generation to the Net Generation, is the "oldest segment of the population whose computer and Internet habits resemble those of Net Geners".

Figure 4.2: Respondent age brackets (N=39)



4.4.2.2 Education and training

Several questions were asked with regard to education and training. These questions were important to establish the frequency of LIS qualifications, the perceived usefulness of LIS qualifications and the frequency of training.

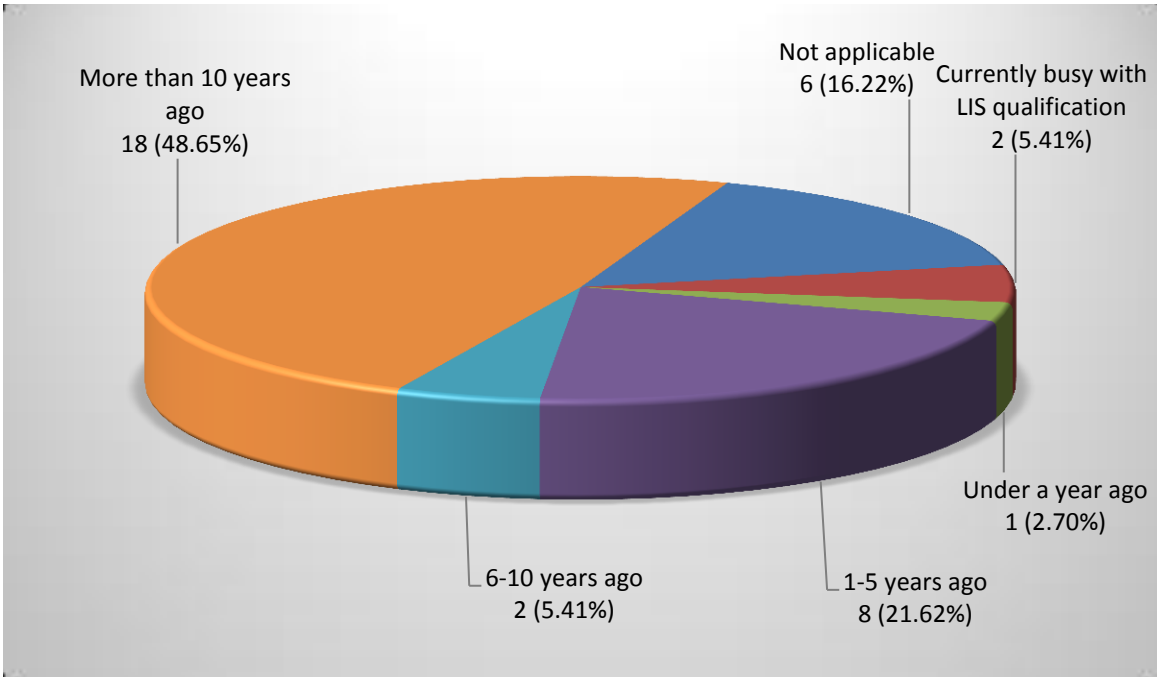
Table 4.4 displays both the highest academic qualifications amongst library staff surveyed as well as the frequency of LIS qualifications. Thirty-seven (37) of the 39 questionnaire respondents stated their LIS qualifications and only 36 indicated their highest academic qualification. All 15 interview respondents provided responses to both items.

Table 4.4: LIS and other academic qualifications

	LIS qualification (N=52)	Highest academic qualification (N=51)
Postgraduate Diploma	15 (28.85%)	6 (11.76%)
Honours	8 (15.38%)	11 (21.57%)
Master's	8 (15.38%)	11 (21.57%)
None	8 (15.38%)	3 (5.88%)
Bachelors	5 (9.62%)	14 (27.45%)
Doctorate	2 (3.85%)	2 (3.92%)
Higher Diploma	2 (3.85%)	0 (0.00%)
Diploma	2 (3.85%)	3 (5.88%)
Certificate	1 (1.92%)	0 (0.00%)
Other	1 (1.92%)	0 (0.00%)
High school	0 (0.00%)	1 (1.96%)

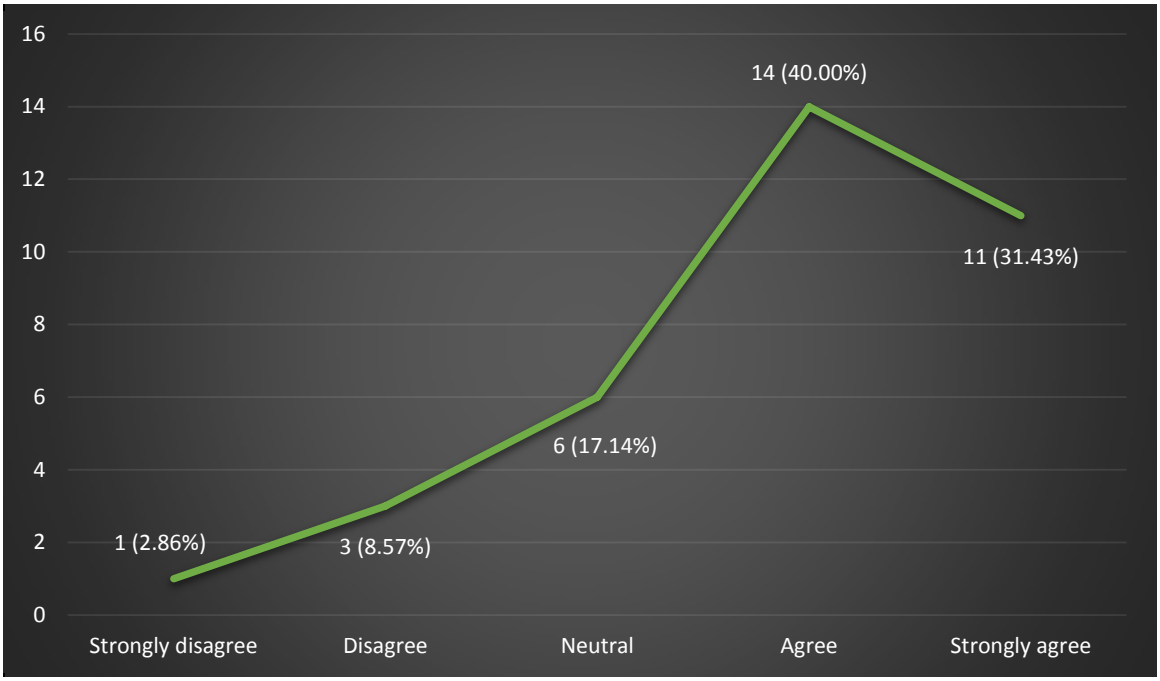
In view of the dynamic nature of the LIS field, the researcher felt it necessary to establish how long ago library staff obtained their LIS qualifications. Only the questionnaire respondents were asked to respond to this. Two of the respondents opted not to respond to this item. Figure 4.3 captures the findings of this. Almost 50% of the questionnaire respondents received their LIS qualification more than 10 years age and this has implications for the readiness with which staff would embrace technology and other developments essential for the modern academic library. It augurs well for UCT Libraries that a significant number of the questionnaire respondents (11 – 29.73%) are either busy attaining LIS qualifications, or are fairly recent graduates equipped with modern technology skills and attributes.

Figure 4.3: How long since obtaining LIS qualification (N=37)



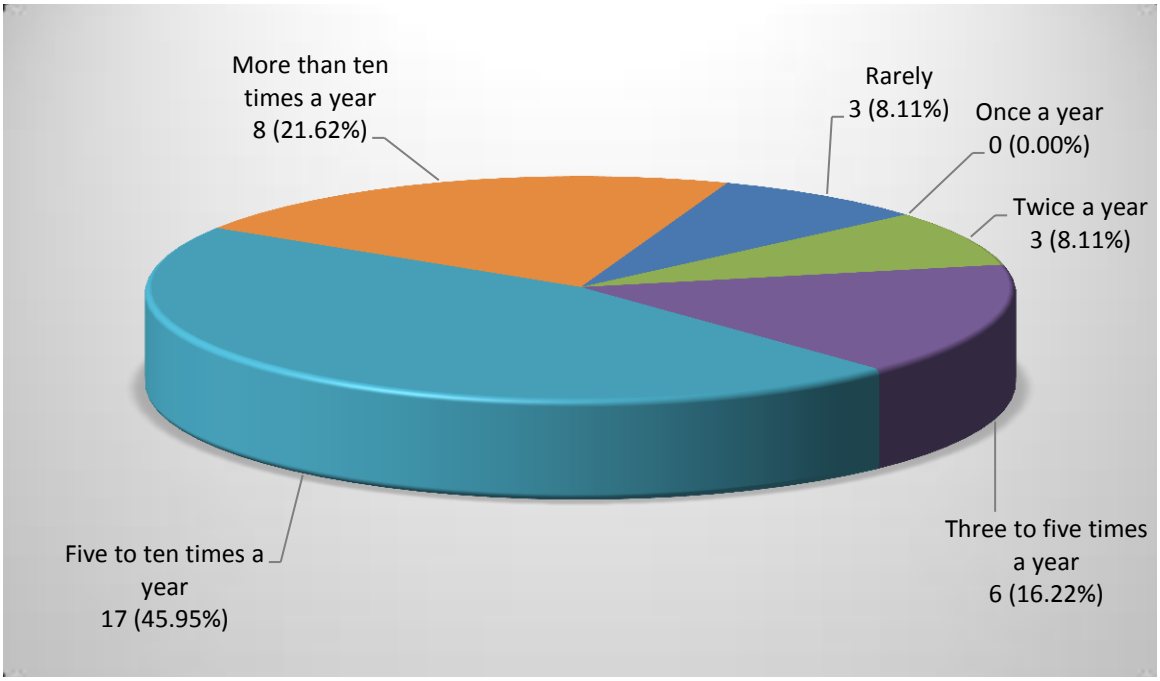
Many of the activities of the modern academic library fall outside the scope of the traditional library roles. As depicted in Figure 4.4, it is interesting to find that just four out of the 35 questionnaire respondents (approximately 11%) did not find their LIS qualifications useful for their current duties in the Library. Four of the 39 questionnaire respondents did not respond to this item.

Figure 4.4: Significance of LIS qualification to current job (N=35)



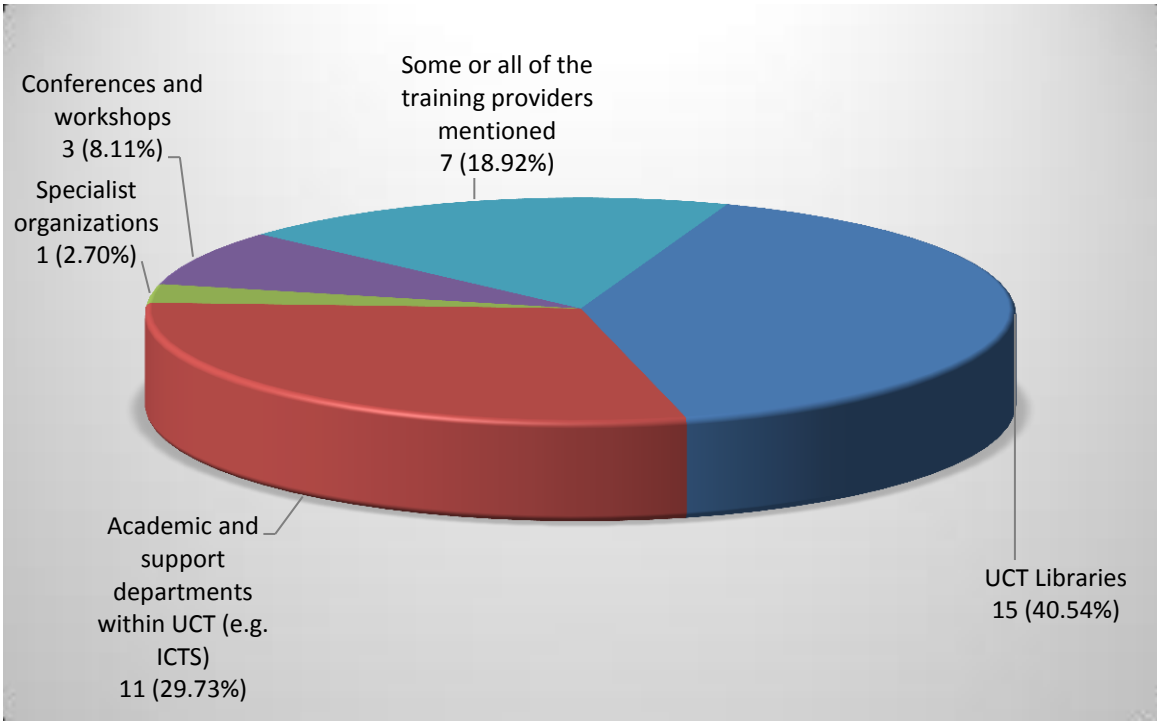
Many of the library staff undergo training through the year. The frequency of training throughout the year is shown in Figure 4.5 which captures findings from the questionnaire survey of library staff. Two of these respondents did not respond to this item. It is interesting to note that more than three-quarters of the questionnaire respondents attended training of some sort pretty frequently with significant instances of five to ten times a year (almost 46%) and more than 10 times a year (nearly 22%) – an indication of intensive ongoing training.

Figure 4.5: Training attendance (N=37)



Questionnaire respondents were asked who the providers of such training are. The results from 37 of the 39 questionnaire respondents (two did not respond) in Figure 4.6 indicate that UCT Libraries (with a frequency of almost 41%) provide the majority of the training.

Figure 4.6: Training provider (N=37)



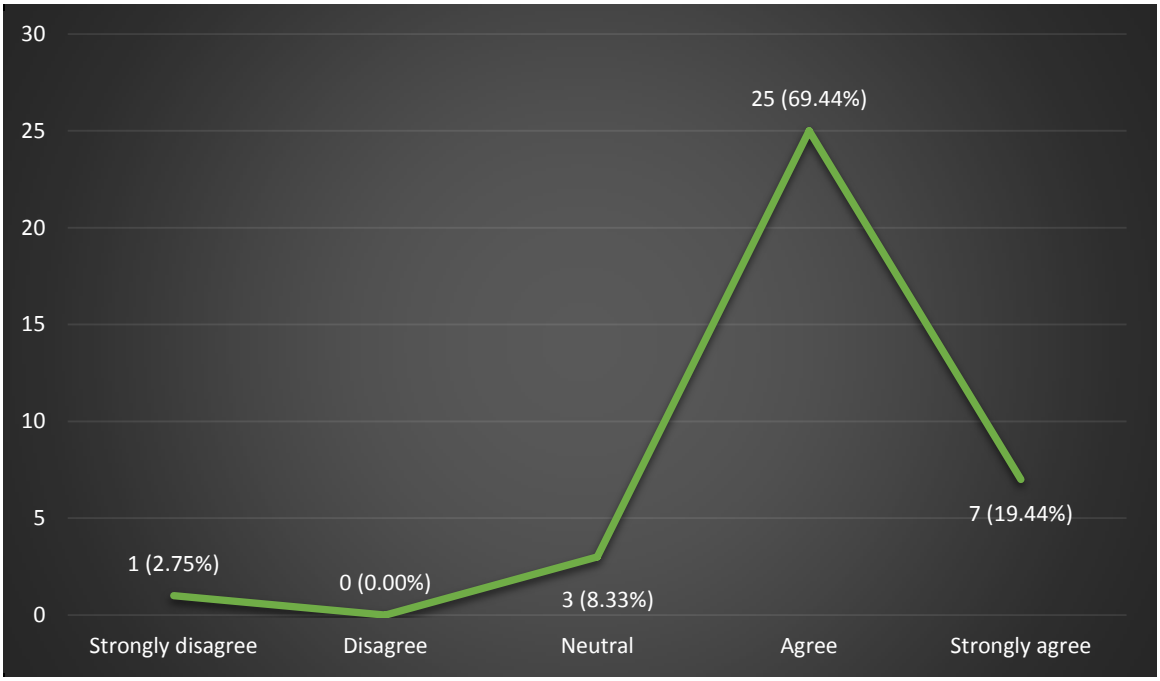
A phenomenon perceived when conceptualizing the study was the impact that training has on the day-to-day duties of library staff. Thus, it seemed amiss to leave out a question on the impact of training on workloads. When asked this, there was an almost equal split in the response to the question. Out of 37 questionnaire respondents (two did not respond to this item), 18 (49%) of the respondents agreed that training does affect their daily duties, while 19 (51%) did not think so. When asked to elaborate on why the respondents feel their daily schedule is affected by training, minus one respondent, there was a consensus that work piles up when away on training. Tasks are delegated to other staff, but certain queries and operational tasks cannot be delegated.

4.4.2.3 Changing higher education environment and library collaboration

Some of the librarians interviewed found maintaining the relevance of the academic library in the changing higher education sphere, worrying. One mentioned that the Library does not have all of the competencies required for the modern academic library. Another mentioned that UCT Libraries has been slow with regard to keeping up with national and international trends. One interviewee commented that the institutional repository at UCT being located outside the Library until recently, hints at the possibility of the Library becoming irrelevant. However, the majority of the interviewees did not think that academic libraries are losing any relevance. According to Danielson and Wiggenhorn (2003: 17) on the topic of organizational learning, "today's progressive corporations have moved from treating learning as an obligatory cost factor to regarding it as a weapon in the battle for competitive advantage". In the context of academic libraries, it makes sense then, for academic libraries to gain expertise in as many professional services as possible so as to remain relevant.

It is evident in Figure 4.7 that the findings from the questionnaire survey of library staff (minus three respondents who did not respond to this item) more or less correlated with the findings from the interviews discussed above. Questionnaire respondents were asked if they agree that the services offered at UCT Libraries are relevant to the current higher education context – the majority (89%) agreed.

Figure 4.7: Academic library relevance in higher education context (N=36)



There was a sense, amongst the library staff interviewees, that subject librarians are making use of e-learning at UCT, but interactions with students and academic staff are limited. The e-learning platform is used mainly to keep an eye on what is happening in the different subject areas. One of the branch libraries makes use of Vula (UCT's online learning management platform) to keep users informed of citation methods and to provide users with citation manager guides as well as to administer tasks and tests to first-year students on information literacy. The access to course sites on Vula given to librarians, differ from department to department in the University. Some of the interviewee respondents indicated that they are inundated with content uploaded on each course site they are party to. The new developments in the Library proposed by Senior Management, and reported by a Senior Management interviewee, suggest that the Library will not be encouraging staff to immerse themselves in curricula (especially being added to course sites) so as to cut back on the time that librarians use to familiarize themselves with courses and course content.

In terms of MOOCs, the Library is not providing support for students who are undertaking any MOOCs, according to some of the librarians interviewed. One of the branch libraries posts MOOCs of interest on its website. Currently, through collaboration with the Centre for

Higher Education Development (CHED) at UCT, the Library is establishing ways to support academic staff and departments in their efforts to provide MOOCs.

Many of the interviewees attested to the Library having well established collaborations and partnerships with various academic, administrative and support departments outside of the Library. In some areas of the Library, there is collaboration with the institutional Research Office, the Centre for Higher Education Development and the Student Representative Council. There exists smaller collaborative efforts with academic departments for ventures such as exhibitions.

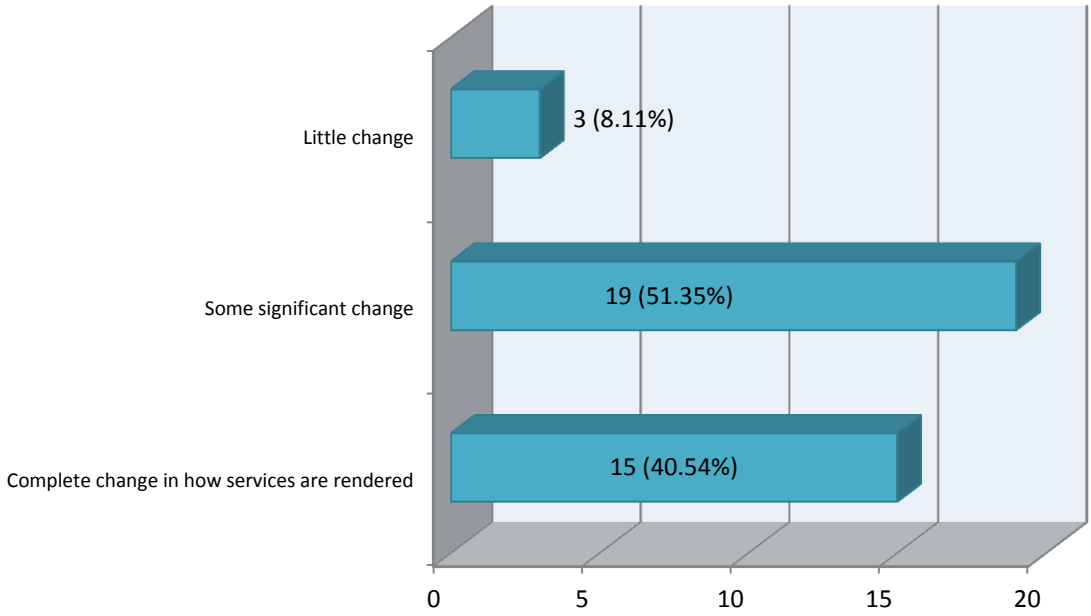
One aspect of collaboration between the Library and the university community is the embeddedness of the librarian in academic departments. Gauging from the responses from library staff interviewees, very few librarians occupy office space in academic departments. One of the interviewees who does occupy such space, reported that it is very valuable being so close to the user population. A criticism of this, made by another of the interviewees, is that the librarian becomes so occupied with users and inundated with course information, that too much time is spent just trying to keep up with what is happening in all the courses. According to the interviewees, in the restructuring of the Library, management is envisioning that in the future there would not be subject designations anymore, but rather liaison services. These services will act as a link between the Library and academic departments. The Library will provide resources for self-directed learning rather than do all the work for the users.

When asked if library staff felt overwhelmed by the changing space and services in the Library, out of 35 questionnaire respondents (four did not respond), 12 (34%) responded 'Yes' they are, while the majority of 23 (66%) indicated that they are not overwhelmed. Respondents who indicated that they are overwhelmed mentioned that new services which the Library has yet to or has already begun to offer (research data management; bibliometrics; altmetrics; open access; citation managers; and e-book platforms) are worrying, because there is lack of space and time needed to upskill. Communication between the different sections of the Library also seems to be a concern.

4.4.2.4 Web developments

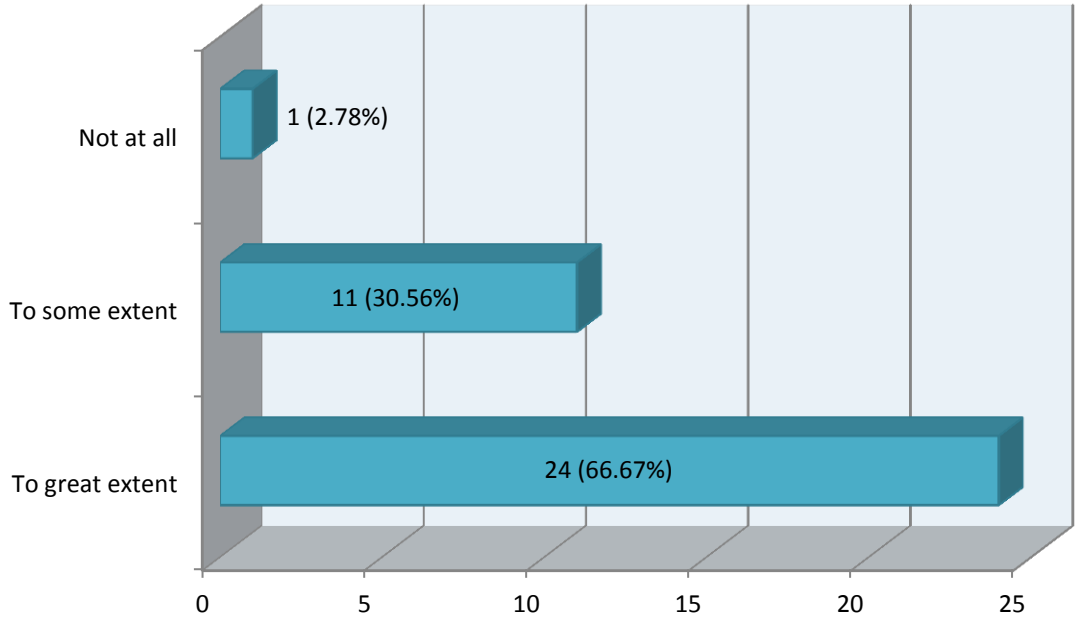
Through time, as with most other organizations, the Library website has gone through many changes. Changes, like the development from Web 1.0 to Web 2.0, have altered the way libraries deliver services. Figure 4.8 depicts the extent of changes to the Library service due to technology and web developments, as perceived by questionnaire respondents (of which two did not respond) when this question was put to them.

Figure 4.8: Perceived change in the Library service due to technology and web developments (N=37)



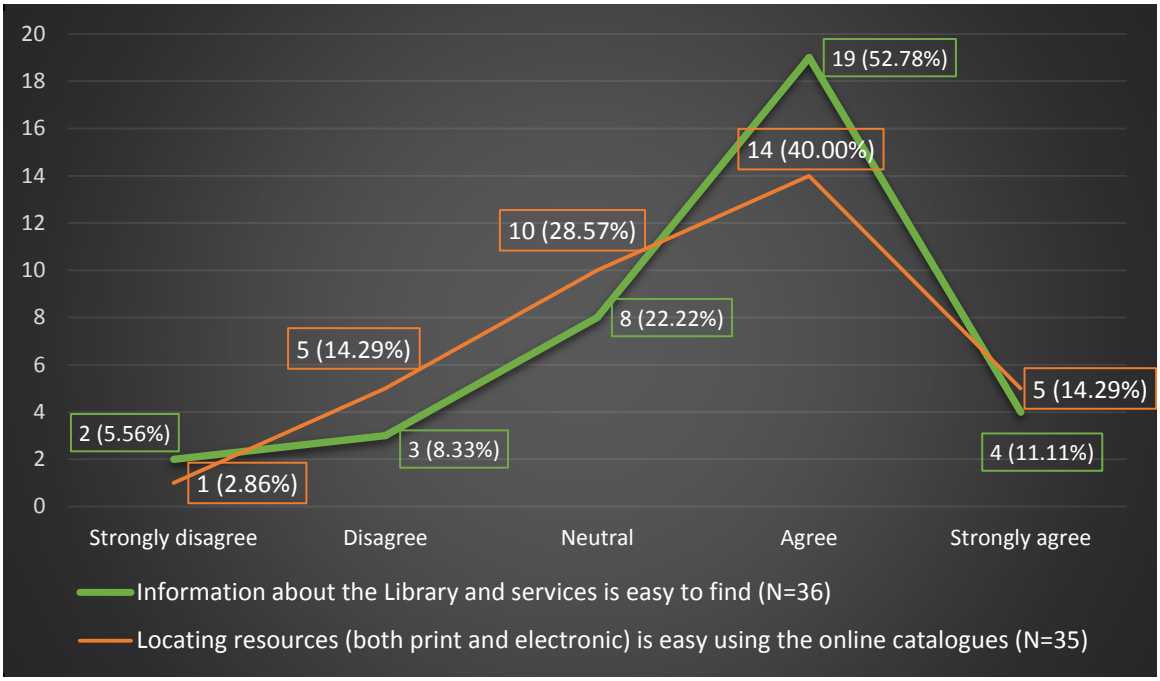
Library staff were also asked in the questionnaire survey to indicate the extent to which technologies have been incorporated into their day-to-day activities in the Library. Figure 4.9 presents 36 responses (three chose not to respond to this item).

Figure 4.9: Extent to which technologies have been incorporated into daily activities (N=36)



The Library website was recently upgraded to the university website platform. According to one interviewee, the upgrade of the website was focused on optimizing viewing for most mobile phones and tablets. Every time something is placed on the Library website, certain steps have to be followed to ensure optimization. Hence library staff were asked in the questionnaire about the ease of finding information and resources on the Library website. Three of the respondents did not respond to the item on the ease of finding information and four did not respond to the item on the ease of locating resources. The responses are reflected in Figure 4.10. It stands the Library in good stead that both lines peak on the 'agree', meaning that both information and resources are fairly easy to find using the website and online catalogues.

Figure 4.10: Ease of finding information and resources on the Library website

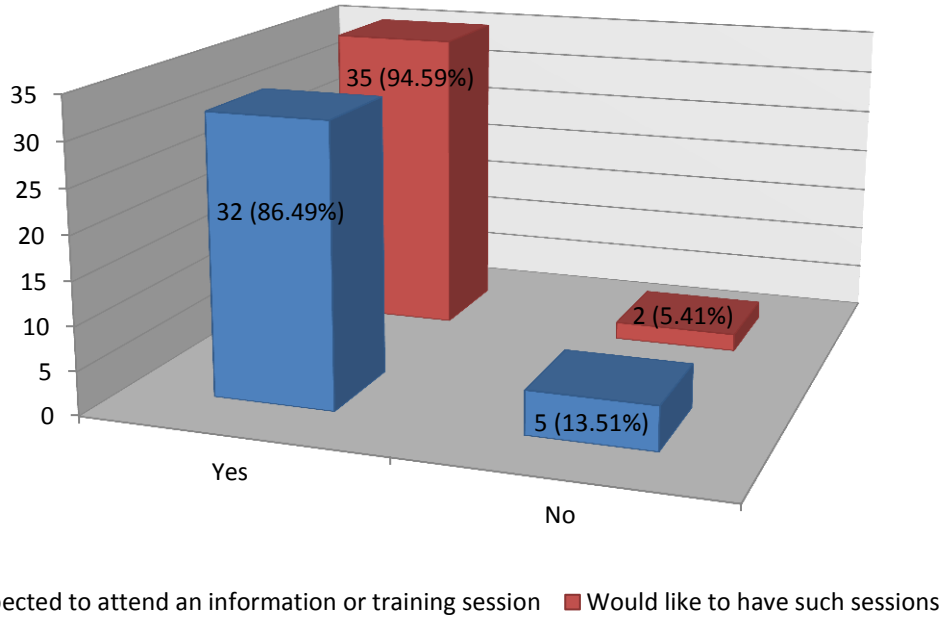


In recent years, UCT Libraries has introduced a federated search facility. This facility searches across all catalogues and databases available to the Library. More recently, there has been a change from one service provider to another, namely, from Primo.uct to WorldCat. Library staff were asked (via the questionnaire survey) if this change made it easier to navigate the catalogues. Out of the 37 library staff who responded to this item: nine respondents (24.32%) agreed that the change did make navigating the catalogues easier; 18 respondents (48.65%) responded in the negative, disagreeing that the change provided more ease in navigating the catalogues; and the remaining 10 respondents (27.03%) indicated that the question was not applicable to them. In their elaboration of these responses, respondents were critical about the usability of either search facility. Respondents mentioned that there is a loss of accuracy when using a federated search tool.

Figure 4.11 presents the responses to questions on information training sessions for library staff. Questionnaire respondents, of which two did not respond, were asked whether they are required to attend information sessions or training sessions when catalogues are changed and whether they want such sessions. As evident in Figure 4.11 (the blue bar), many of the staff are required to attend information sessions when catalogues are changed, and the red bar indicates that an overwhelming number of the respondents (nearly 95%)

indicated that they would like to have such training when there is a change in the catalogues.

Figure 4.11: Attending information sessions when catalogues are changed (N=37)



Most of the librarians interviewed who were asked about QR codes did not think it would be taken up despite a staff member (who unfortunately has since left the services of UCT Libraries) undertaking research into this area. Middle and Senior Management acknowledged the usefulness of QR codes. Some interviewees recognized the potential of placing QR codes on the shelves for quick access to electronic resources, but also commented that it would take time to develop.

In terms of e-books, interview respondents recognized that it has become a trend to purchase books in e-format and librarians have been made aware that the Library prefers new acquisitions in e-format. Some disciplines are still heavily print based and still prefer having resources in print. One of the branch libraries servicing such a discipline is in the process of developing an e-reserve collection (e-books on short loan).

Library staff (questionnaire respondents) were asked if they see UCT Libraries being successful in adopting a lending model for e-book readers and tablets. The response was split. Out of 34 responses (five did not respond to this item), 18 (52.94%) responded 'Yes'

and 16 (47.06%) responded 'No'. Many library staff elaborated that budget constraints could restrict such a development and that the risk of theft is high. There was also an indication that an infrastructure has to be established before e-book reader lending can be considered.

4.4.2.5 Digital scholarship

While Digital Curation is an emerging area of expertise, most of the interview respondents recognized that the Digitisation Unit in UCT Libraries makes use of these kinds of skills. Interviewees explained that as the Library IT Department will be supporting the new Digital Scholarship Centre that is being developed at UCT Libraries, Library IT has and is continuing to develop Digital Curation skills to support the Unit. Opportunities for staff training in these skills are being looked at by Library Management, according to a member of Management that was interviewed. Another group of staff, according to some of the interviewees, that is known to be using Digital Curation skills is the staff responsible for initiating and launching UCT's institutional repository, OpenUCT. At the moment, however, these staff members belong to a unit outside of UCT Libraries. Further, one of the branch librarians interviewed mentioned using a specialized service offered by the Baxter Theatre, a performing arts theatre in close physical proximity to the University with strong ties to the institution, to digitize their older audio collections.

In terms of Research Data Management (RDM), it emerged from interviews with library staff that some staff have embarked on a Geographic Information System (GIS) project. This project essentially deals with RDM and hence acts as a pilot for RDM at UCT Libraries. Interviewees reported that none of the library staff dealing with users has yet been approached for assistance with RDM. Some of the interviewees predicted that soon users will expect this type of service from the library.

When establishing the institutional repository at UCT Libraries there were technical challenges relating to making the website user friendly and developing templates for easy deposit. An interviewee mentioned that the literature is quite clear that institutional repositories have not taken off like it was anticipated and part of the reason for this is that

academics do not want any more administrative work; administration being uploading their own materials into the repository.

One of the questions in the interview schedule asked library staff interviewed to state whether they advocate the use of open access (OA) resources to users. Two of the interview respondents purported that there was not yet an appropriate space for that type of advocacy. Other interviewees were actively participating in advocating OA resources to their users. One of the interviewees claimed that she shares OA resources on social media where some of her users follow her. Another interviewee explained that she attends academic departmental meetings and is able to advocate OA at this level. One of the branch libraries, explained a branch librarian who was interviewed, has well established OA platforms which students make regular use of. An interviewee claimed: "We still have to educate people that [open access] is definitely valid".

It would seem that currently digital preservation plays a very minor role in UCT Libraries. According to one interview respondent, in terms of digital preservation, not a lot has been invested in the Library and not enough is being invested. An argument posited by one of the interviewees is that while the Library has extensive digital collections, the collections have not been around long enough to warrant preservation strategies, but the collections have been migrated to different servers. Although Campus IT Services can probably provide support for preservation, digital preservation is a library function, so the duty will not be moved outside the library, explained Senior Management interviewed.

4.4.2.6 Training and professional development

There was an overwhelming sense from the interviews conducted that line managers are very supportive of staff developing themselves by attending training sessions. Senior Management staff interviewed indicated that the Library provides a substantial amount of funds for staff to undertake training. With the move towards developing itself as a 21st century academic library, according to Senior Management interviewed, UCT Libraries finds it necessary to make funds readily available for librarians' development so that new roles and responsibilities resulting from the new services emerging, can be filled in-house. One of the factors that produce a work environment conducive to learning is support from top

management. Danielson and Wiggenhorn (2003: 22) refer to top management support as dichotomous, “you either have it or you don’t”. Findings in this study relating to training and development is indicative that there is support from Senior Management for organizational learning. Danielson and Wiggenhorn (2003: 25) emphasizes the role of management in organization learning by stating that “good management is key to retention [of staff] – good development is key to good management”.

All interviewees were unanimous in acknowledging that time is made available for staff to undertake training, but that there is an expectation on the part of line managers that staff will prioritize and find a balance between work and training.

Library staff, it would seem, are generally keen to participate in training in new areas. One of the interviewees commented that staff who have been in the institution longer tend to be more sceptical and careful when choosing training opportunities, while newer staff are keen to become involved. With the restructuring of the Library, there seems to be enthusiasm to contribute to the restructuring agenda. It was explained by a Senior Management interviewee that part of this enthusiasm may be because the model of service being adopted is novel in the academic library sphere. According to Senior Management staff interviewed, the Library is going through a restructuring process. New services are being developed to align the Library with the institutional structure. Thus, according to this interviewee, there would be three clusters of support, namely: teaching and learning; research; and, access and visibility. “At least 60% of the services rendered in the future will be new”, explained the Senior Management staff member interviewed. Another interviewee stated that new concepts are coming to the fore, but there are little skills currently present in the system to fill these posts. According to yet another, library staff are keenly exploring the electronic environment and are trying out new ideas confidently. The interviewee ended off with saying: “This is the time for most opportunities in librarianship”.

All the interviewees were in agreement that conference attendance is encouraged by Library Management. According to some of the interviewees, one of the conditions for attending a conference is presenting to the rest of the staff what one has learnt by attending the conference. Interviewees agree that this is a fair expectation. Funds are

available for staff who wish to attend conferences and thus a portion of UCT Libraries staff attend conferences every year. Unfortunately, according to one interviewee, there are some who attend many conferences and others who do not attend any.

There were conflicting views on what the professional body, the Library and Information Association of South Africa (LIASA), has to offer for the academic librarian. Some of the interviewees mentioned that the Higher Education Libraries Interest Group (HELIG) has particularly relevant seminars and workshops for the academic librarian, while other interviewees find LIASA to be more focused on other library sectors (that is, other than academic libraries). Only a small group of UCT librarians participate in contributing to the workshops and seminars offered through LIASA, explained an interviewee.

The interviewees acknowledged that Management does not force them to join any professional body, but they do encourage them to join the national body (LIASA), and to attend and contribute to its annual national conference.

4.4.2.7 General comments

There were nine (of the 39 questionnaire respondents) who chose to comment generally at the end of the questionnaire. The highlights of these comments were: users are not taking the extra step to explore the Library website properly; information on new developments in the Library should be shared with all library staff; the lack of staff appointments in frozen posts causes work to pile up and librarians are not able to invest time in training and upskilling themselves; different forms of learning must be embraced and what is learnt should be shared readily with other staff; and, because technology has become so important in librarianship, perhaps a basic knowledge of IT should be undertaken by students before graduating with a librarianship qualification.

4.4.3 User expectations of a modern academic library

This section addresses Research Question 4: What are the expectations of users of the modern academic library? Findings from across the user populations (undergraduates, postgraduates, researchers and academics) are combined and presented in this section.

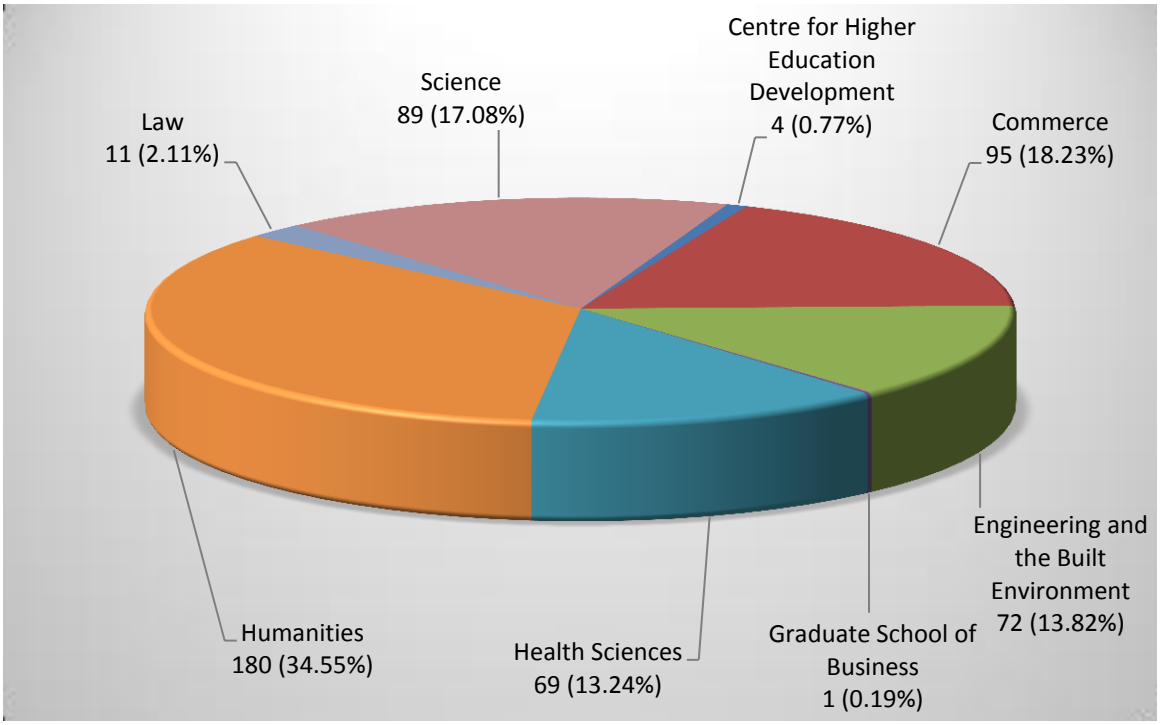
Hence the reporting in this section uses an N figure of 521. This figure comprises 20 researchers and academics, 231 postgraduate students and 270 undergraduate students.

4.4.3.1 Respondent profiles

In line with the previous section, the respondent profiles present the biographical data collected.

User respondents were asked firstly to state their faculty of study or employment/affiliation. This data is presented in Figure 4.12. It is not surprising that the biggest number of respondents emanated from the Humanities Faculty – after all this is UCT's largest Faculty. It is good to observe that user respondents in this study emanated from all faculties and even included the Centre for Higher Education Development (CHED) and the Graduate School of Business (GSB), which also carry faculty status at UCT.

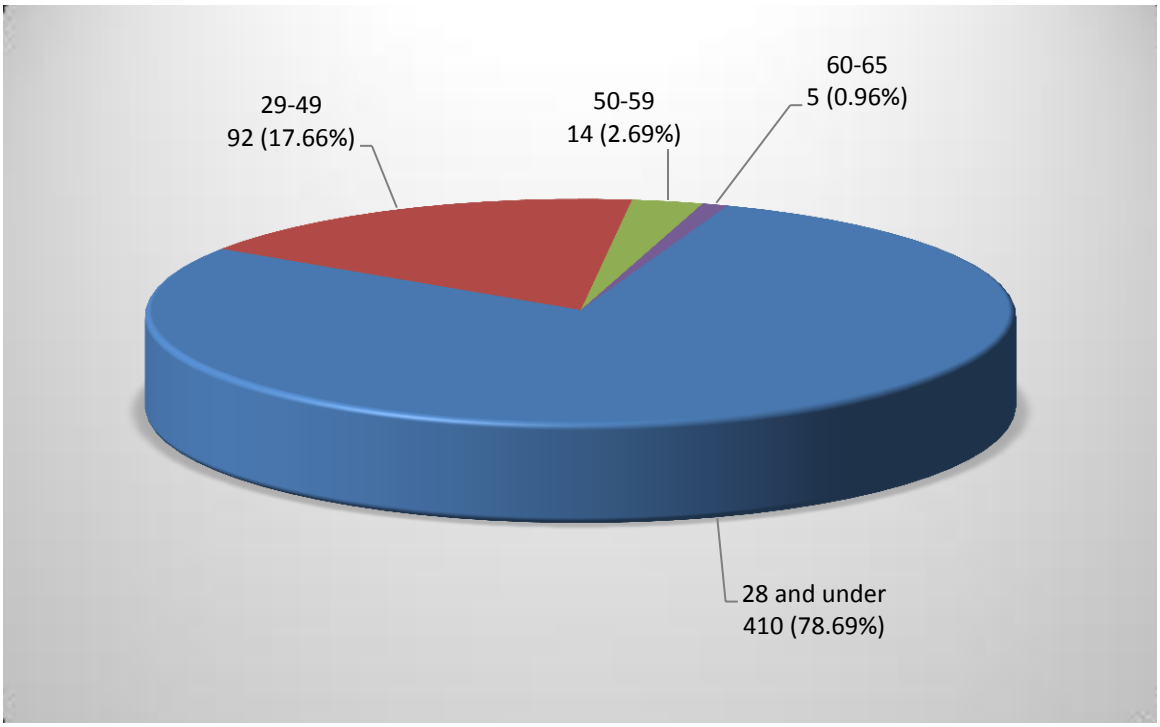
Figure 4.12: Faculty of respondents (N=521)



In the next question, user respondents were asked to indicate their age range. Figure 4.13 captures the age profile of respondents. It is not surprising that almost 80% of the user respondents were under the age of 28, given the predominance of postgraduate and

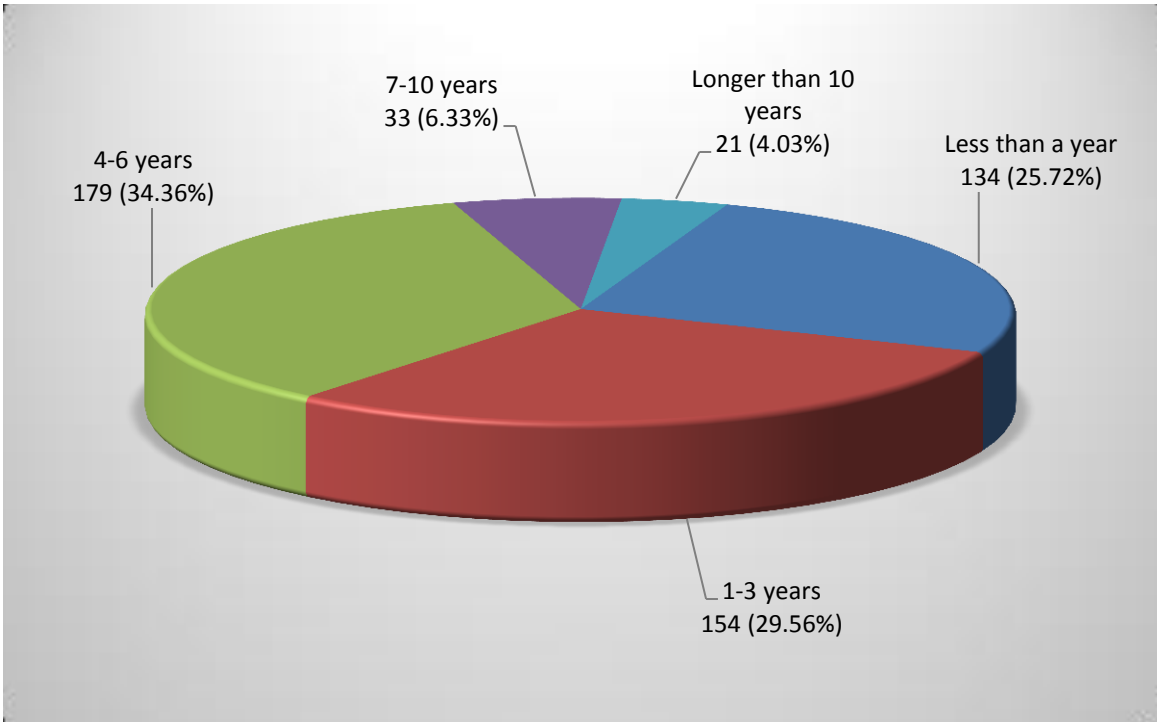
especially undergraduate students in this study. This has significant implications for the way technology would be embraced by this 'younger'/Net Generation set of library users.

Figure 4.13: Age profile of users (N=521)



The researcher found it useful to establish the length of time users have spent at UCT (having access to the Library services). This is illustrated in Figure 4.14. In keeping with the predominance of undergraduate and postgraduate student users in this study, it is not surprising that the shorter time spans dominate in the graph.

Figure 4.14: Length of period of time at UCT (N=521)



Researchers and academics were asked to state their current designations at UCT. The results are tabulated in Table 4.5.

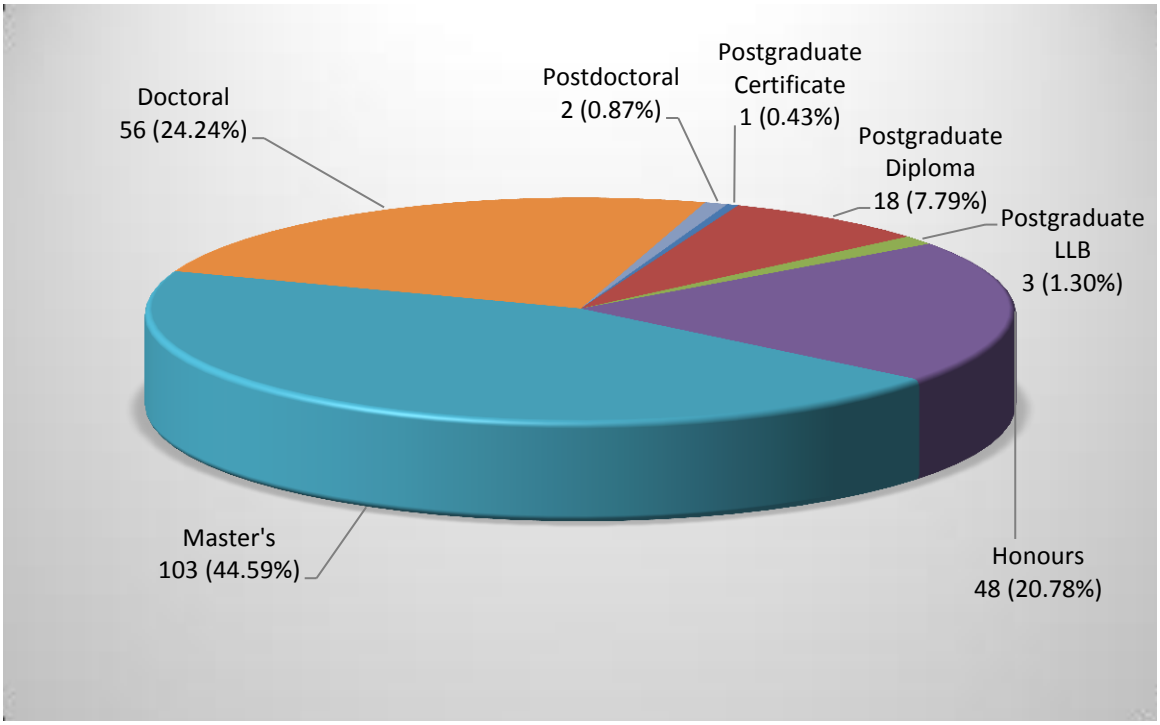
Table 4.5: Current designations of researchers and academics surveyed (N=20)

Designations	**Frequency**
Lecturer	6 (30%)
Senior Lecturer	5 (25%)
Associate Professor	2 (10%)
Professor	2 (10%)
Professor and Research Chair	1 (5%)
Clinical Researcher	1 (5%)
Research Officer	1 (5%)
Researcher	1 (5%)
Project Manager	1 (5%)

Researchers and academics were further asked their highest academic qualifications. Out of the 20 respondents, four (20%) had Master's degrees, 15 (75%) had Doctoral degrees and the remaining respondent (5%) had a medical degree (MBChB).

The postgraduate students were asked to state their level of postgraduate study. A larger portion of the respondents were studying towards their Master's degrees, with significant numbers doing Doctorates and also Honours degrees. The findings are detailed in Figure 4.15.

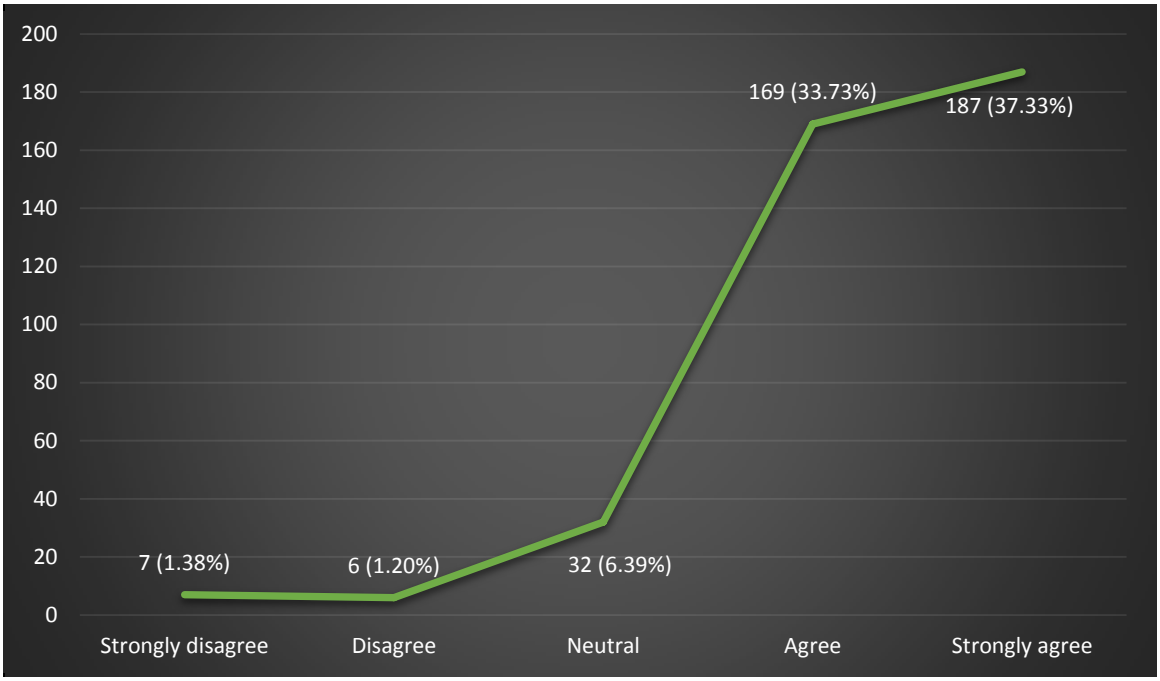
Figure 4.15: Level of postgraduate study (N=231)



4.4.3.2 Changing higher education environment

In Section 4.4.1, the research reports on data collected from library staff on the question about the relevance of the academic library to the current Higher Education context. Figure 4.16 in this section reports on the responses to the same question directed at the user populations. Here, a majority of the respondents (356 – 71.06%) agreed that the services of UCT Libraries are relevant to the current Higher Education context. Of the 521 respondents, 20 chose not to respond to this item. It is interesting to note that this graph peaks at 'Strongly agree' while, when posing the same question to library staff, Figure 4.7 (in Section 4.4.2.3) shows that responses peaked at 'Agree'.

Figure 4.16: Academic library relevance in higher education context (N=501)



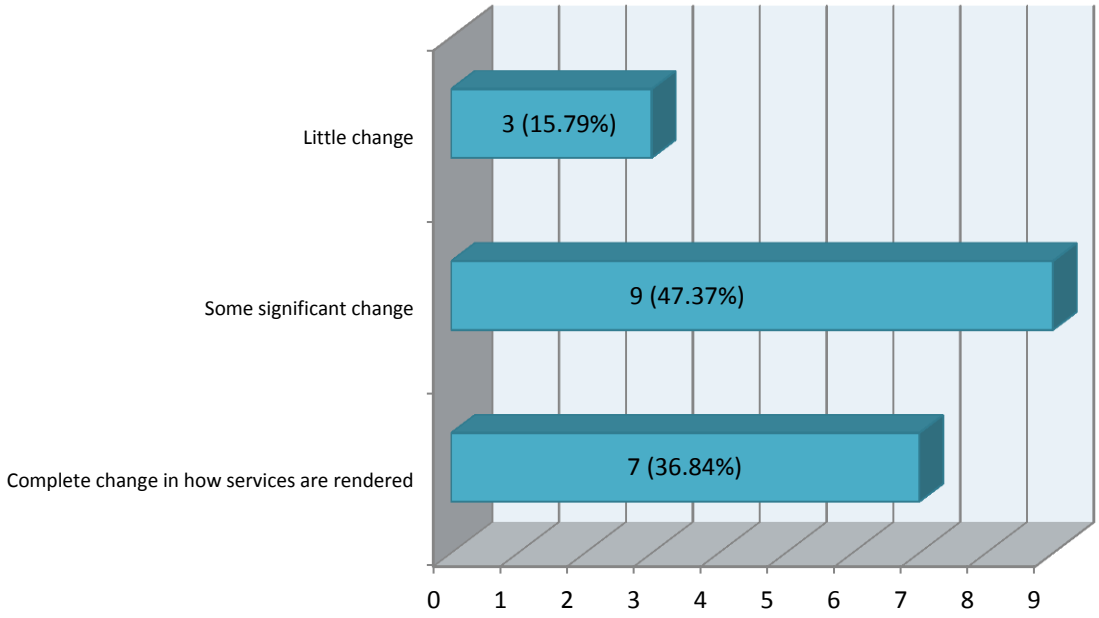
Change is inevitable in a library. As information becomes available in different forms, so must the library services adjust to accommodate these changes. For both library staff and users, change can be perceived negatively especially if enforced too suddenly. To this end, postgraduate students, researchers and academics were asked if they felt overwhelmed by the changing space and services in the Library. Of the 241 respondents (10 did not respond to this item), 34 (14.11%) responded 'Yes' and the majority, 207 (85.89%), responded 'No'. Compared to the library staff, the user population (excluding undergraduate users – they were not asked this question) seem less overwhelmed. A third of library staff indicated feeling overwhelmed. When asked to elaborate on the 'Yes' response, users who selected this option mentioned that the layout of the physical collection is not intuitive and is therefore sometimes difficult to navigate. Some of the users highlighted information overload (in the virtual space) as an overwhelming factor. If one is not comfortable with the Internet or search engines, information seeking can be daunting, claimed some respondents.

4.4.3.3 Web developments

One of the biggest contributors to change is technology and web developments. For example, as discussed in the literature review in Chapter 2, the change from Web 1.0 to

Web 2.0 makes for more dynamic viewing of web pages and many more added services to the web environment. Researchers and academics were therefore asked the extent of change in the Library service due to technology and web developments. Figure 4.17 captures the response. One researcher/academic did not respond to this item. This finding is more or less commensurate with the response by library staff (see Figure 4.8).

Figure 4.17: Change in the Library service due to technology and web developments (N=19)

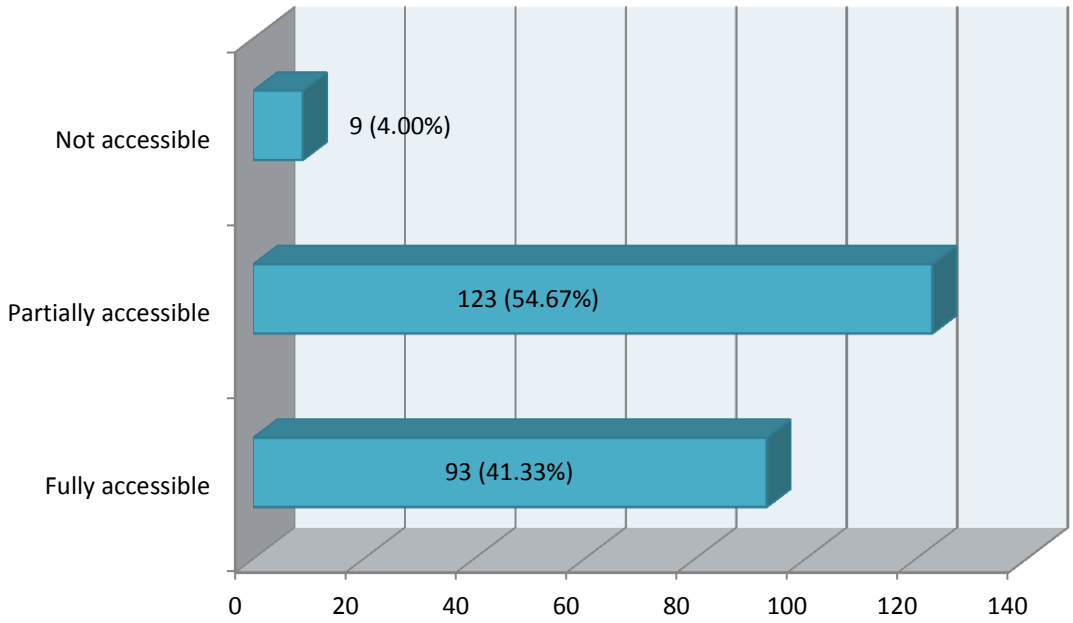


One of the web developments in recent years is the capability of making web content device neutral. This means that whatever web-capable device one is using (desktop computer, laptop, tablet, mobile phone), the content on the web page will recognize the type of device and adjust accordingly. Many library users have access to mobile devices, thus one of the questions asked of postgraduate and undergraduate students and academics and researchers, was if they have accessed any of the Library services using a mobile device. Out of 476 responses (45 did not respond to this item), 217 (45.59%) respondents indicated that they have accessed services using a mobile device while the remaining 259 (54.41%) admitted that they have not.

Furthermore, users who have accessed services on their mobile devices indicated the accessibility of the services, as represented in Figure 4.18. Despite being asked to only

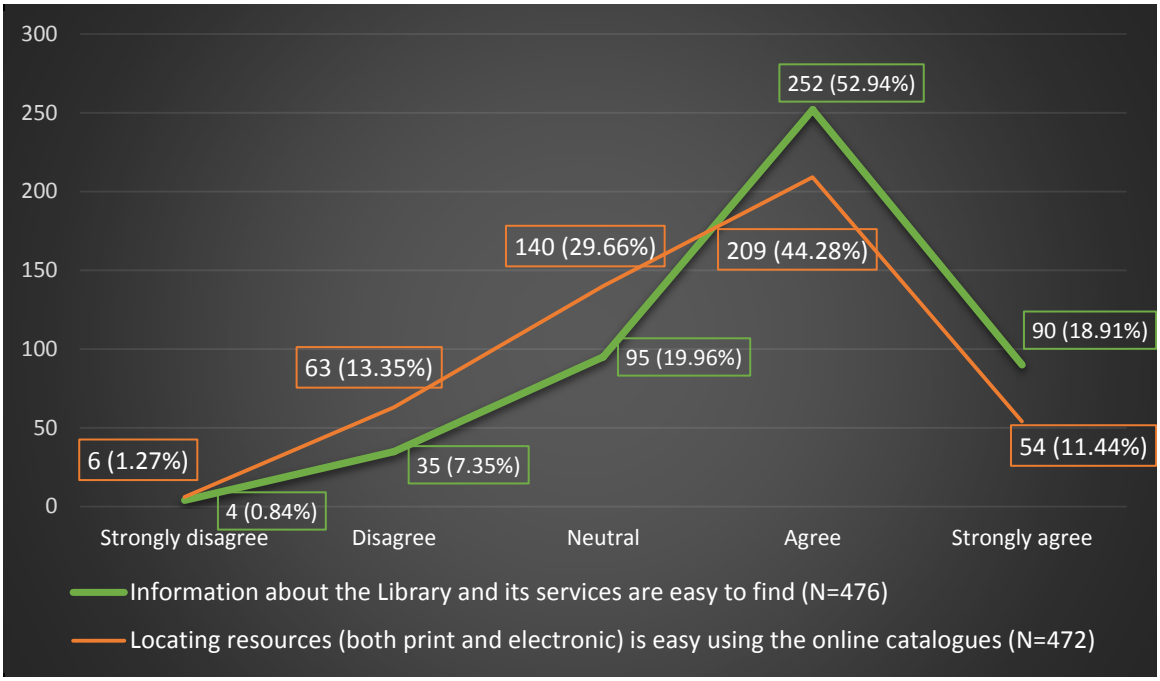
respond to this item if the response to the previous question was 'Yes', some users who responded in the negative responded to this item. Hence the slightly inflated N figure of 225 in Figure 4.18.

Figure 4.18: Accessibility of Library services on mobile devices (N=225)



One of the important functions of a website is to provide access to online services and resources. For this, the layout should be clear and fairly straightforward to navigate. Users, like library staff (reported earlier), were asked whether it was easy to find information about the Library and its services on the Library website, and whether it was easy to locate resources (print and electronic) using the online Library catalogues. User responses are captured in Figure 4.19 and as with library staff responses (see Section 4.4.2.4), with users too both the graph lines tend to peak on 'Agree'. Of the 521 respondents, 45 did not respond to the first item and 49 did not respond to the second.

Figure 4.19: Ease of finding information and resources on the Library website

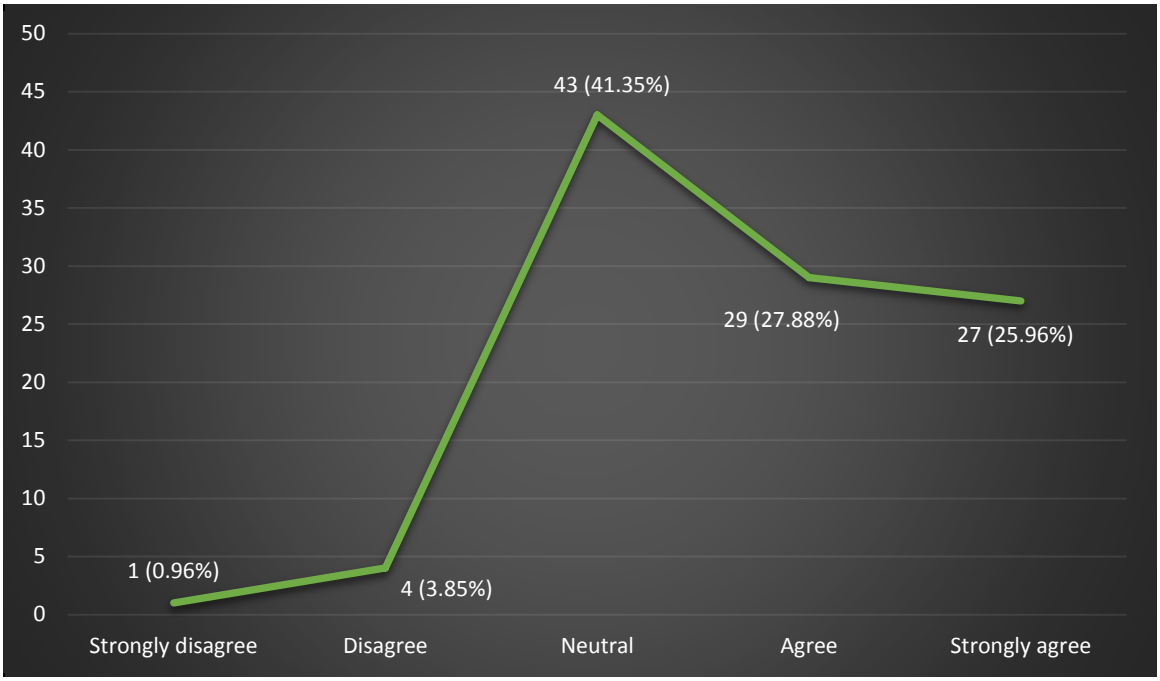


As aforementioned, one of the recent developments in the Library is the change in federated search facilities. Users were asked if they were aware of the change from Primo.uct to WorldCat. Out of 454 responses (67 did not respond to this item), 103 (22.69%) responded 'Yes' and a large majority of 351 (77.31%) responded 'No'. Of those who responded 'Yes', it was asked if this change made navigating the catalogues easier. There were responses from 92 of the 103 users. Out of this 92, 49 (53.26%) agreed that searching was easier while 43 (46.74%) disagreed – an almost split response. Compared to the same question asked of library staff in Section 4.4.2.4, almost 25% agreed that searching was easier, almost 50% disagreed and just over 25% indicated that the item was not applicable.

There is a virtual 'Ask a Librarian' service that the UCT Libraries offers. The researcher asked the user respondents to indicate whether they were aware of the service. Out of 476 respondents (45 did not respond to this item), 228 (47.90%) indicated that they were aware of the 'Ask a Librarian' service and 248 (52.10%) indicated that they were not (an almost 50% split in response). Those users who responded 'Yes' were then asked if they had made use of the service. Two hundred and sixty seven (267) users opted to respond to this item even though only 228 were required to, as stipulated by the previous item on the questionnaire. A minority of 65 (24.34%) had made use of the service while a majority of

202 (75.66%) had not. Those that responded 'Yes' were also asked whether the service is useful or not. Figure 4.20 captures these findings. Respondents not required to respond to this item responded nevertheless, hence the inflated N figure. Interestingly, the graph line peaks on 'neutral'; neither agreeing nor disagreeing.

Figure 4.20: Usefulness of 'Ask a Librarian' service (N=104)



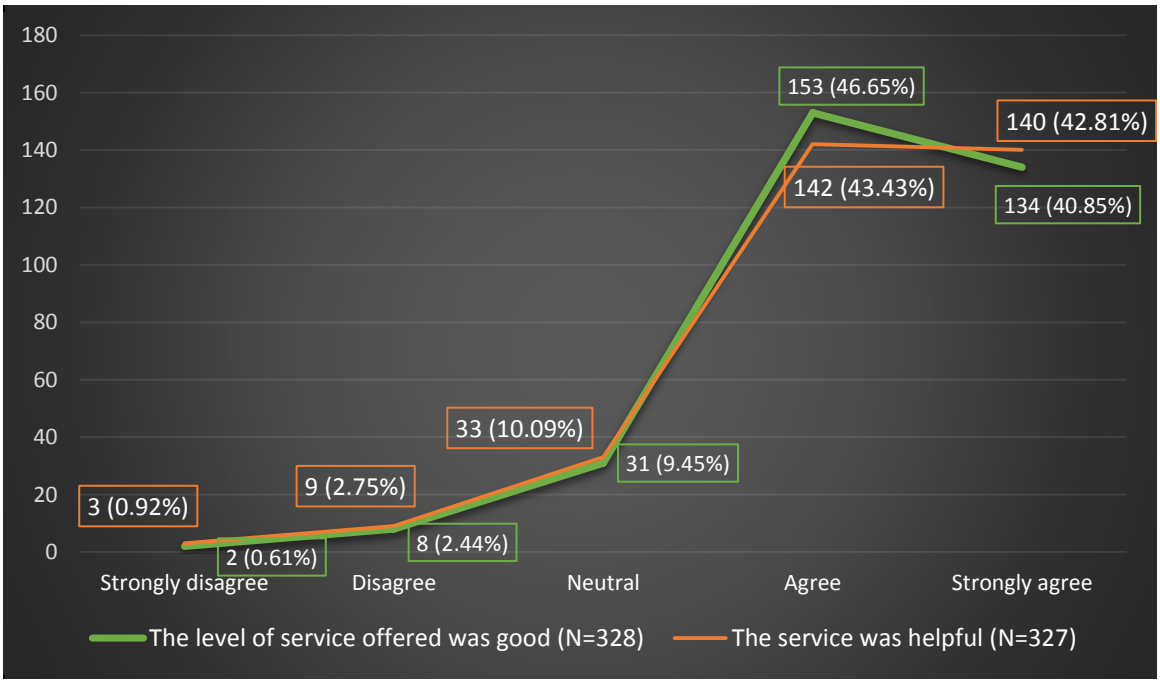
4.4.3.4 Information literacy

It is important for the users to be able to use the systems provided by the library. Large amounts of information can be bulky and difficult to navigate, thus information literacy sessions are often offered by academic libraries. Respondents were first asked if they had received an information session on how to conduct searches using the online Library catalogues and/databases. Out of 463 respondents (58 of the 521 respondents did not respond to this item), 297 (64.15%) indicated having attended a session and 166 (35.85%) not. Those who indicated having attended an information session were then asked if they had found it to be useful. There were 325 users who responded even though only 297 indicated that they had attended a session. From the responses, a majority of 257 (79.08%) found the session useful while a smaller figure of 68 (20.92%) did not. Those who responded that they did not attend an information session (166) were asked whether they would like to have such an information session. Out of the 138 who responded to this item, a

significant 90 (65.22%) indicated that they would and 48 (34.78%) said that they would not like to have such a session.

One of the easiest ways to navigate the academic library is to enlist the assistance of a librarian. The user respondents were asked whether they have ever consulted with a librarian. Four hundred and sixty three (463) users out of 521 responded to the question. Of these, a healthy 315 (68.03%) have consulted with a librarian and 148 (31.97%) have not. The former (315) respondents were then asked to rate the service received from librarians consulted. Figure 4.21 reflects the feedback. Both lines peak at 'Agree' indicating that a majority of users find that librarians offer a good and helpful service. Only 315 respondents qualified to respond to this item, but 328 and 327 users responded to the sub-items.

Figure 4.21: Service level of librarians



4.4.3.5 Digital scholarship

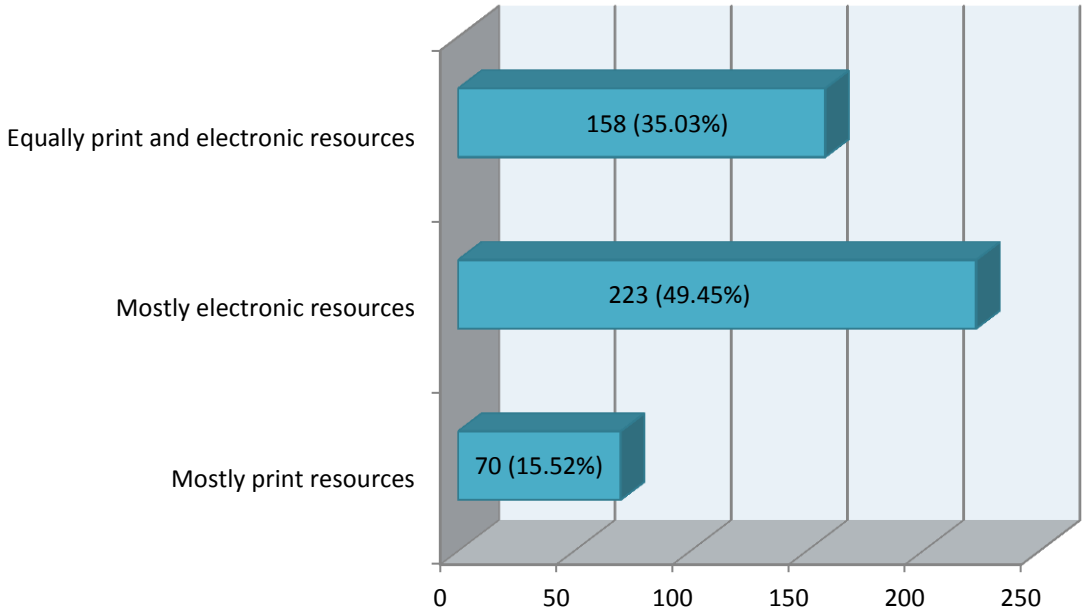
In the area of Digital scholarship, UCT Libraries is active in creating and implementing the use of an Open Access institutional repository. It is for this reason that questions about this were included in the questionnaire for researchers and academics who are largely the knowledge producers in the University. This particular category of users was asked if they were aware of policies being developed by funding agencies and at higher education

institutions that will implement and facilitate the use of Open Access tools such as institutional repositories. There were 18 responses to this item. Of these, 13 (72.22%) were aware and the remaining five (27.78%) were not aware. These user respondents were asked if they would support an Open Access institutional repository (by, for example, submitting research output for inclusion in such a repository). Again there were 18 responses. All of these respondents indicated that they would include research output in the institutional repository, if given the opportunity to do so.

4.4.3.6 Collection development

Collection development is an important aspect of academic libraries. All three user groups were asked what types of resources they make use of. Figure 4.22 displays the types of resources users make most use of. Of the 521 users, 70 did not respond to this item. It is not surprising, considering the current digital age and the age categories of the majority of the users, that the "Mostly electronic resources" option is the front runner.

Figure 4.22: Types of resources used (N=451)



One of the popular e-resource vendors, EBSCOHost, has established an e-book collection on their database platform and which UCT Libraries subscribes to. Users were asked whether they were aware of this e-book collection. Out of 451 respondents (70 did not respond to

this item), 215 (47.67%) were aware of the e-book collection and 236 (52.33%) were unaware.

The rise in popularity of e-resources has made mobile devices such as e-readers and tablets also popular for access. Researchers and academics were asked whether they would like UCT Libraries to make mobile devices like e-readers, tablets and laptops available for loan for research purposes. The responses were equally split amongst the 16 (out of 20) who responded to this item. In elaborating, many of the respondents said that it would be a useful service, but a few were worried about theft and some felt that it is not the Library's responsibility to provide these devices.

Master's and Doctoral students at UCT have access to the Research Commons which already provides laptops for loan. Out of the 214 postgraduates who responded to this item, only 21 (9.81%) were aware that they had access to this service. When asked whether other mobile devices (e-readers, tablets) should be made available for loan for postgraduate students, out of 214 respondents who responded to this item, a majority of 135 (63.08%) said 'Yes' and a minority of 79 (36.92%) said 'No'. Many of the respondents elaborated that access to such devices would make research much easier, it would benefit those who do not have the financial means to purchase their own devices and that trends dictate the Library should be offering such a service. Other respondents brought up the issues of theft, misuse and that some of them own most of these devices already.

The undergraduate student users were asked whether they would like such a service (provision of e-readers and tablets for loan) available to them. Of the 221 undergraduate respondents (49 did not respond to this item), a majority of 147 (66.52%) said 'Yes' and a minority of 74 (33.48%) said 'No'. Many of the respondents elaborated that mobile devices would be an added convenience to their learning, would be useful, would assist UCT Libraries in cutting down on the print collection and would elevate UCT's status to that of a modern university. Some respondents indicated that it is an unnecessary service.

With regard to collection development, the last question that user respondents were asked was whether UCT Libraries adequately cater for their resource requirements (that is, whether there is an adequate print and or electronic collection). There were 451 responses

(70 of the 521 respondents did not respond to this item). Of these, an overwhelming majority 375 (83.15%) indicated that their resource requirements are met and a minority of 76 (16.85%) indicated that resources are not adequate. Those who responded in the negative were asked to elaborate. These respondents pointed out that there are top scientific journals that the Library does not subscribe to, that some of the collection is outdated, that requests to purchase newer books are often unsuccessful and that more information on the interlibrary loans service should be made readily available. Some respondents acknowledged that they understand that a single library cannot be expected to have infinite holdings.

4.4.3.7 Collaboration

For the benefit of a library and its parent institution, it is important for the library to establish relationships and collaborations to better serve its users. In a university environment, it would be optimal for the library to be aware of research and teaching. Thus, collaborations with faculty are important. Researchers and academics were asked whether there are collaborations between their departments and subject specialists in the Library. Of the 16 who responded to this item, eight replied in the affirmative and eight, negatively. Table 4.6 reflects the extent of the collaborations among the eight positive responses. Many respondents made use of more than one collaborative means.

Table 4.6: Extent of collaboration (N=8)

	Frequency
Provision of information literacy training for new students	8 (100.00%)
Provision of reference lists of materials available in the library	7 (87.50%)
Provision of lists of new materials	6 (75.00%)
Library subject specialist is stationed part-time within the department	3 (37.50%)
Give presentations to graduate students in research methods classes	1 (12.50%)

One of the new trends in academic libraries is research data management. It is not a new phenomenon, but in the digital environment the need for this expertise has become heightened. Libraries, especially academic libraries, have the professional expertise to

manage and archive research data. Researchers and academics were asked whether they consult library staff to assist with research data management processes. Of the 16 who responded to this item, three (18.75%) indicated that they do and the other 13 (81.25%) said that they do not. Upon elaboration, some respondents indicated that they did not know the Library could assist with research data; that they do not know what research data management processes entail and that there is no need to reach out for assistance with RDM yet. These are indications that this is still an emerging skills area which the future would see growth in, for academic libraries.

4.4.3.8 General comments

Six from the researchers and academics user group chose to include comments at the end of the questionnaire. One response was that there should have been some questions on open educational resources. Other responses include: there are broken links to pages in some databases and finding alternative ways to access articles takes time; the scope of online scientific resources are limited and this is limiting for research; the Library has been an asset and continues to be an asset to the University and has also been brilliant at keeping up with technology; conversations of new developments and policies pertaining to data collection and storage often take place in closed circles - the Library should host public seminars to inform users; and, there seems to be a disparity in the level of service from different subject sections.

There were 75 responses in the general comments section of the postgraduate questionnaire. The comments were generally positive. Two problems stand out particularly: that is, the complexity of the online services offered by UCT Libraries, and the lack of marketing of the services available to library users. Other comments include prolonging the lending period for modular students; services need to be more apparent on the Library website and the R400 fee for loaning a book outside South Africa through Interlibrary Loans is often more expensive than buying the book oneself.

Thirty nine (39) undergraduate students left comments in the general comments section. Like with the postgraduate questionnaire, the responses were generally positive. Students commented on the complexity of locating resources using the online facilities. Some

students commented on how busy the library is, resulting in often having to queue for an available computer. One of the students commented that he/she only received training because he/she is a tutor and this type of training should be made more readily available to other students.

4.5 Summary

This chapter presented the findings of the study emanating from the data that was collected to establish the shape and form of the 21st century academic library using UCT Libraries as a case study. Data was collected in the form of questionnaires and interviews. Questionnaires were disseminated to the user population made up of undergraduate students, postgraduate students, academics and researchers to establish user expectations. Both interviews and questionnaires were used to collect data from library staff. The next, and final, chapter will discuss the main findings in terms of the objectives of the study and its research questions, as well as in the context of the literature reviewed for the study and the theory informing the study. Based on this discussion, conclusions will be drawn and recommendations will be made.

Chapter 5 : Discussion of main findings, conclusions and recommendations

5.1 Introduction

The previous chapter presented findings from the analysis of data collected, using interviews and questionnaires. These findings were presented in the order of the research questions generated to address the objectives of the study. This chapter discusses the main findings relating to the objectives of the study in the context of the literature reviewed and the theory informing the study. Based on this discussion, conclusions are drawn and recommendations are made.

The objective of this study was to ascertain the shape and form of the 21st century academic library, using the case of the University of Cape Town Libraries. This objective is unpacked by the following sub-objectives:

1. to ascertain, via a rigorous review of literature, how far along academic libraries worldwide are with incorporating technological advances in their services;
2. to identify the progress of UCT Libraries in establishing itself as a 21st century academic library;
3. to ascertain how readily staff adapt to changes and new technology in the library; and,
4. to ascertain user expectations of a modern, digital era academic library.

5.2 Discussion of findings

Findings are discussed in order of the sub-objectives listed above. The research was informed by the theory of organizational learning.

5.2.1 Academic libraries globally

Libraries play a supporting role in their parent institutions; hence an academic library service should align itself with the missions and goals of the university it serves. The rise in popularity of MOOCs and e-learning and m-learning platforms in higher education institutions gives basis for the types of digital environments the academic library has to grow accustomed to.

Digital scholarship has gained traction in academic libraries because of the array of added services and expertise that this development has to offer for the research community. While there is much debate as to what digital scholarship services entail, the literature suggests that these services are dependent on the institutional design and the needs of the library user population (Vinopal & McCormick, 2013: 33). Open access, institutional repositories, digital preservation and research data management all form part of digital scholarship, and hence indicates that digital scholarship is a core service of the modern academic library. Typically these new technology-driven services require expertise in digital (including data) curation, a skills set that is becoming increasingly sought after in academic libraries. The increasing volumes of research data being produced and digitized in higher education institutions further necessitates skills in digital curation (Abbott, 2008).

As academic libraries the world over, proactively embrace technology advances in their services (Corrall, Kennan & Afzal, 2013; Lombardo, Morrow & Le Ber, 2012; Peters & Dryden, 2011; Phillips, 2011; Zhao, 2014), it is important for them to document and share progress so that academic libraries worldwide can stay abreast of best practices to support research and academia.

5.2.2 UCT Libraries as a 21st century academic library

The professional basis of the library and information services sector is the Library and Information Science (LIS) qualification. The majority of the library staff in UCT Libraries (about 85%) have professional LIS qualifications and almost 30% are either in the process of obtaining their professional qualifications, or are fairly recent graduates. Having a workforce with a largely professional staff complement, including a significant cohort of recent graduates, in the context of a rapidly evolving and technology-driven changing profession like that of the LIS sector, bodes well for a library service requiring professional and newly emerging skills sets. Older LIS qualifications may not necessarily address new roles in the modern academic library, but is indicative of experience which is valuable to servicing a scholarly community. Further, despite UCT Libraries having almost 50% of library staff respondents with qualifications more than 10 years old, only about 11% of the 35 questionnaire respondents indicated that their LIS qualifications are not significant for their

current jobs. This finding suggests that the Library embraces both traditional and more modern academic library services.

Very few of the library staff respondents disagreed that the academic library is losing its relevance. A library staff interviewee stated that the Library does not have all the competencies that are required of a modern academic library, but a Senior Management interviewee mentioned that skills are being developed to supplement this shortage. When asked whether they are overwhelmed by the changes in the academic library, 34% of 35 library staff respondents who acknowledged that they were, indicated reasons for their anxiety as being the lack of space and time to upskill in areas such as research data management, open access, bibliometrics, altmetrics, citation managers and e-book platforms. According to some of the library staff interviewees, expertise in some of these areas, such as open access and citation managers, already exist in the Library. The 100% positive responses from researchers and academics (18 in total) regarding the uploading of their own materials into an open access institutional repository indicate that advanced library users (such as researchers and academics) are open to take advantage of novel developments that the Library is willing to explore. Even more telling is the finding regarding research data management. Chapter 4 reports that of the 16 researcher/academic respondents, a significant 19% indicated that they knew that library staff have some expertise in research data management. Research data management is a sub-discipline of Digital Curation (Abbott, 2008) which is only a recent development in the LIS sector. Hence the 19% awareness reported speaks volumes of the Library's development with regard to this emerging, or even what may be regarded as a scarce, skills set.

Collaborations are imperative in the academic library environment. Neal (2010: 66) explains that collaboration "combines rapidly evolving user requirements, a recognition of the need to rethink redundant inefficient library operations… [and] a focus on the need to achieve scale and network effects through aggregation". Many of the library staff interview respondents could attest to the fact that there is much collaboration between UCT Libraries and other departments on campus. These collaborations include, but are not exclusive to, the institutional Research Office, the Centre for Higher Education Development and the Student Representative Council.

Technology has already had much impact on the services rendered by UCT Libraries. Just over 50% of the 37 library staff questionnaire respondents agreed that there is some significant change in the library services because of technology while just over 40% indicated that there has been complete change in the services offered by the Library because of technology. Recognizing that technology is changing the way libraries deliver services is a positive step towards accepting and adapting to these changes. The researcher/academic population was asked to respond to the same question. Similar to the responses from the library staff, 47% of the 19 researcher/academic respondents agreed that there has been some significant change in the library services because of technology and 37% indicated that there has been complete change. The library staff response is further emphasized by almost 70% of these same respondents indicating that technologies have been incorporated into their daily activities to a great extent. One aspect of library service that has changed as a result of technology is the reference service, now offered virtually by UCT Libraries in the form of the 'Ask a Librarian' service. Findings in the study indicate (Section 4.4.3.3 of Chapter 4) that across all three categories of users surveyed (undergraduate students, postgraduate students and, researchers and academics), there was almost a 50% spilt response in knowing about the service. Out of those that knew about the service, about 25% made use of it and out of these, just over 50% found the service to be useful. Farkas (2004) did indeed advise that "reference work is going to be done more and more online as electronic collections grow and virtual reference becomes more common".

The new service model that Senior Management of UCT Libraries is proposing links strongly with the University institutional design. It emerged from an interview with a Senior Manager that UCT Libraries is in the process of restructuring. Mimetic of UCT's institutional design, the restructuring would culminate in three clusters of service support, namely: teaching and learning; research; and, access and visibility. Hence, according to this Senior Manager "at least 60% of the services rendered in the future will be new". Amidst all this development, however, library staff questionnaire respondents indicated that there is an issue with communication between the different sections of the Library – an important issue that requires serious attention.

While it is evident that UCT Libraries has been making advances to adopt modern services, at the same time, as some library staff respondents have pointed out, there is still work to be done to address staff development to accommodate these advances. According to Szulanski and Cappetta (2003: 514), there are four stages to knowledge transfer (or organizational learning). In reflecting on these four steps (see Chapter 2, Section 2.2) it is apparent that UCT Libraries is still in the initiation stage of knowledge transfer. Both staff and Senior Management seem to realize that there are gaps in the knowledge of the organization and Senior Management is making an effort to address this.

5.2.3 Staff adaptation to technology and change

Academic libraries are dynamic in nature. As mentioned earlier, academic libraries are at the forefront of accommodating technological advances. This means that staff are always required to upskill to be able to better adapt to change. Danielson and Wiggenhorn (2003: 19) identify three most fundamental challenges to organizational learning. The one most relevant to the LIS setting is identified as "affecting real learning". This is defined as "understanding and managing the forms of learning […] that can improve the work performance of individuals and nourishing a culture where learning takes place as a natural consequence of work and progression in the firm" (Danielson & Wiggenhorn, 2003: 19).

In establishing the respondent profiles of the library staff, respondents were asked to state the length of their employment at UCT Libraries. Over 50% of the 54 library staff respondents (questionnaire and interview respondents) indicated that they have been at the Library for longer than 10 years. If this is representative of the whole organization (UCT Libraries), there are both benefits and disadvantages to having a large cohort of staff working for more than a decade in the organization. A major benefit is staff having extensive organizational knowledge. A disadvantage of this set-up is a change-adverse staff. A library staff interviewee mentioned that older staff are typically sceptical about which training sessions they would want to attend. Newer staff are keener to undertake diverse training modules. The majority of the library staff questionnaire respondents in this study (about 60% of 39) ranged between 29 and 49 years of age. According to Tapscott (2009: 15), this age range falls within the Generation X category. This generation is the oldest group that is familiar and comfortable with the habits and norms of the "Net Geners" (Tapscott, 2009:

15). It augurs well for UCT Libraries to have such a large cohort of staff falling within this age range. They would be in a position to relate to the student population (which makes up the majority of the user population) which typically comprises the Net Generation.

As illustrated in Figure 4.5 (Section 4.4.2.2 of Chapter 4) just over 20% of library staff in the questionnaire survey indicated that they attend more than 10 training sessions throughout the year. The largest segment, about 45% of staff, stated that they attend 5 to 10 training sessions per year. The amount of training that staff are exposed to is indicative of UCT Libraries attempting to accommodate change and development. In order to maintain competitive advantage in the academic library sector, training is necessary. According to Danielson and Wiggenhorn (2003: 17), there is rising expenditure in progressive corporations for "both traditional and technology-driven learning activities". A UCT Libraries Senior Management interviewee, in acknowledging that substantial funds are made available for staff training, corroborates this assertion. Over 40% of the training activities take place in-house. This is indicative that many of the skills required for upskilling staff are already present in the organization (UCT Libraries) and indicates the intent to embrace development. The learning process is a natural one, brought on by a need to solve problems within a social context (Danielson & Wiggenhorn, 2003: 43) – the social context in this case referring to the challenges of an academic library (UCT Libraries) situated within a parent institution. The presence of ongoing training and commitment to providing time, space and funding for training augurs well for UCT Libraries striving to be as a 21st century academic library. The only issue that arises from frequent and ongoing training, is the workload that continues to pile up while staff are away. Approximately 50% of the library staff questionnaire respondents attested to this phenomenon.

Challenges with intensive and frequent training are the effect that this has on day-to-day duties of library staff. There was an almost equally split response when library staff were asked if training affects their daily responsibilities. The reason cited for training affecting work negatively, was that work piles up. Findings from interviews with library staff suggest that typically there should be communication between staff and their line managers to establish a balance between workloads and training.

On the issue of whether they are expected to attend training sessions when catalogues are changed and whether they would like to attend these sessions, while 86% of those surveyed indicated that they required to attend these training sessions, 95% of the same respondents indicated that they would like to attend these sessions. The willingness of library staff to attend training speaks highly of the culture of adaptation to upgraded technology and software.

Dale (2011:30) states that this is a challenging time for librarians because of the rapid progression of technology, social networks and web developments. Notwithstanding this, UCT library staff appear to readily accept and adapt to changes brought on by technology. Findings indicate that the older library staff have a more tentative approach to training in new ways of doing things, but that a large cohort of staff are younger, thus making the transition to the 'new' easier for the organization as whole.

5.2.4 User expectations of a modern academic library

The user population, as mentioned earlier, comprises of undergraduate students, postgraduate students and researchers and academics. Almost 80% of the three groups of user respondents were under the age of 28, making them part of the Net Generation. This implies that a majority of the library users are completely comfortable with modern technology and technological advances (having been around computer technology their whole lives). This synchronizes well with the library staff comprising mostly of 'Generation X-ers'.

It is interesting to note that across all three categories of the user population, there was overwhelming agreement that the academic library is relevant in the higher education context, even more so compared to the response from the library staff. User responses to this issue peaked at 'Strongly agree' while library staff responses peaked at 'Agree'. The overwhelmingly positive response from the user population to this item stands UCT Libraries in good stead. Comments left at the end of all three of the user surveys spoke positively of the quality of the Library's services.

Compared to the 34% of library staff who indicated that they were overwhelmed by the changes in the Library, only 14% of the postgraduate students and researchers and

academics surveyed, echoed the same sentiment. This finding could be attributed to the fact that most student users remain on campus for a much shorter time than staff typically do, and thus they are not as affected by change. The responses elicited from the researchers and academics regarding the change in services because of changing technology and web developments were consistent with the responses from the library staff respondents. This finding indicates that there is a shared perception between the Library and its users regarding the rate of change in the Library service. This shared perception between the two parties is optimal for a library service.

In terms of mobile accessibility of services (Section 4.4.3.3), about 46% (almost half) of all three user categories collectively, have accessed Library services using their mobile devices. Of these, a majority (55%) indicated that the services were only partially accessible. Interviews with library staff indicated that UCT Libraries are still in the process of optimizing the website and other web services for mobile access. It is important for academic libraries to allow for mobile device use because mobile technology has infiltrated the scholarly workflow (Johnson et al., 2014: 8). Users were also asked about whether accessing services and resources through the Library website is easy. The graphs depicting the responses to this issue from library staff and the user population are very similar (see Figure 4.10 and Figure 4.19 in Sections 4.4.2.4 and 4.4.3.3 of Chapter 4, respectively). Both sets of lines peak at 'Agree' in both graphs. Again, this shared perception between users and library staff is optimal for a library service.

One of the traditional functions of an academic library is to provide support to the user via librarian-user consultations. Users were asked to assess the level of service and the helpfulness of the service (Figure 4.21 in Section 4.4.3.4 of Chapter 4). On both counts over 85% of the three groups of users agreed that the level of service was good and that the service was helpful. Despite the numerous other responsibilities which librarians are required to give attention to in a modern academic library service, users are still pleased with the basic reference assistance they receive from the Library.

Another of the basic services offered by an academic library is the collection of resources. All the users surveyed were asked to indicate whether they make use of print resources,

electronic resources or both. It is not surprising that the graph (see Figure 4.22 in Section 4.4.3.6 of Chapter 4) peaked at 'Mostly electronic resources'. Electronic resources allow users to work from remote locations rather than having to visit the physical library.

When library staff and users were asked whether the Library should make mobile devices (such as e-readers, tablets and laptops) available for loan, the majority response was 'Yes'. However, many users were tentative in their responses because of potential theft and damage to the equipment.

The extent of the collection is one of the areas of the academic library that is most influenced by the users. All three categories of users were asked if their resource requirements were adequately met by UCT Libraries. While over 83% responded positively, there was some negative feedback and these referred to parts of the collection being outdated and that some top scientific journals were not being subscribed to.

Researchers and academics (as user respondents) were asked if they would support open access. All of them indicated that they would if given the opportunity to do so. Hence UCT Libraries building infrastructure to support open access and to increase the capacity of the institutional repository, is in line with what the research community is anticipating. More than half of the researchers and academics surveyed were aware that funding bodies are including open access mandates in their conditions of award. If this response is indicative of the support for open access from the UCT research community, then the issue of non-subscription to top journals lamented by a few (reported earlier) should be eradicated in academic libraries in general.

Researchers and academics were asked whether they consult library staff to assist with research data management processes. Only 19% of those surveyed indicated that they do. Upon elaboration, some respondents indicated that they did not know the Library could assist with research data management. This indicates that there needs to be some form of marketing so that the user population is made aware of such new services.

Half of the researchers and academics surveyed attested to having multiple collaborations in their departments with the library staff. These small scale collaborations are a step towards

collaborative efforts on a bigger scale with faculty and departments in the future. According to Abram and Cromity (2013: 41), the core of sustainable 21st century library strategies is collaboration. This collaborative strategy is not exclusive to campus research offices and ICT departments, but also includes users (students, faculty staff and researchers).

Users' expectations for library services and their collections have changed. This change has been driven by, *inter alia*, networked technologies, freely available powerful search engines, social technologies and large collections of digitized materials (Michalak, 2012: 413). The responses from users regarding the services of the UCT Libraries were positive. Gauging from the general comments left by all three groups of users, users expect the online services to be more intuitive. There is a general sense that accessing online resources is a complex task. The researcher/academic user group indicated that regarding developments in the Library, there should be an open forum to discuss these new developments. Findings indicate that while user expectations are being largely met, there should be open communication between the Library and the user groups.

5.3 Conclusions

Based on the discussion of the main findings the following conclusions may be drawn:

- Academic libraries, the world over, are adapting their services according to user demands and users' use of technology. The literature suggests that modern library services develop according to institutional design and culture. Academic libraries are realizing their critical role as a support service to teaching, learning and research at higher education institutions located within and influenced by, highly digitized contexts;
- UCT Libraries are already in the process of establishing itself as a 21st century academic library. Senior Management in the Library stating that at least 60% of the services will be new after restructuring, indicates how geared towards change UCT Libraries are. The processes and procedures that UCT Libraries have in place to encourage new developments in the service places the organization in good stead towards establishing itself as a 21st century academic library;

- There is a strong emphasis in UCT Libraries on organizational learning in the form of training sessions. The prevailing culture of learning in UCT Libraries bodes well for constantly adapting to new technologies and software. One of the conditions in the work environment that encourages organizational learning is a "major cultural overhaul" (Danielson & Wiggenhorn, 2003: 21). There should be an "environment of frank and open dialogue from top management down through the different lines of business" (Danielson & Wiggenhorn, 2003: 21). This would provide a solution to the issue of communication that was brought to the fore by some of the library staff; and,
- Users are generally satisfied with the services they are receiving from the Library. However, the few comments alluding to not knowing about certain services hints at the possibility that the Library is not marketing its services enough.

Based on the definition of 'form' provided in Section 1.8.5 of Chapter 1, these conclusions represent the current form of UCT Libraries. The ongoing changes or restructuring, a direct result of the 'form', provides the Library with a new 'shape', as per the definition discussed in Section 1.8.5 of Chapter 1. Thus, this study has ascertained the shape and form of the University of Cape Town Libraries. Although the case of UCT Libraries was used in this study, in many ways this case is typical of some academic libraries in other parts of South Africa as well as in other parts of the world and hence this study of the shape and form of the 21st century academic library has relevance to other academic library contexts as well.

5.4 Recommendation for future study

Based on the discussion in Section 5.2, this study makes the following recommendation:

- The data collected through this study was rich. It presented opportunities to go into much deeper analysis of the data collected, but unfortunately that was beyond the scope of this study. Based on the literature reviewed, there is still much to discover on digital scholarship and the establishment of digital scholarship centres. McCullough (2014: 190) states that digital scholarship centres are dependent on the research culture and requirements at the academic institution. UCT Libraries has made efforts to establish services that are akin to those of a digital scholarship

centre. It would be useful to undertake a study to further clarify the value of such a centre in the higher education academic library context and to ascertain the knowledge, skills and competencies required to successfully manage such a centre in the interest of a university's scholarly community.

5.5 Summary and conclusion

This chapter, based on the findings of the study, discussed, in the context of the literature reviewed and the theory informing the study, the main findings in relation to the objectives of the study. Based on this discussion, conclusions were drawn and a recommendation for further study was made.

The methodology – a qualitative research design with a case study research approach – along with the theoretical framework of organizational learning (Easterby-Smith & Lyles, 2003) served well to address the research questions that were generated to address the objectives of the study.

This study was timeous in the current environment of academic libraries taking the lead in adopting modern technology to enhance service delivery to a user community steeped in technology use. The Internet and social networks have reduced the world to a global village resulting in a larger number of users becoming digital scholars (individuals who are aware of the expanded options available to them for research through new technologies). This not only holds true for user populations, but also for the LIS sector as a whole. Thus, while this study used UCT Libraries as a case study, this library service by virtue of its research-intensive institutional affiliation, is a typical example of the modern academic library in the global context and hence the conclusions drawn may be extrapolated and have relevance to academic libraries in general, in South Africa and elsewhere in the world.

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Appendices

Appendix A: Interview consent for library staff

The shape and form of the 21st century academic library in South Africa: the case of the University of Cape Town Libraries

Library and Information Studies Centre
Level 6
The Chancellor Oppenheimer Library

Dear [Library staff]

I am currently undertaking research towards my Master of Library and Information Studies at UCT in the Library and Information Studies Centre. The topic of my study is: "The shape and form of the 21st century academic library in South Africa: the case of the University of Cape Town Libraries". The study is being supervised by A/Prof. Jaya Raju. As part of this study I would need to interview identified UCT Libraries staff and hence would appreciate your participation.

In signing the consent form below, you are agreeing to grant me an interview session with you. The interview will be recorded to ensure that valuable data is not lost. All information gathered in the interview will be treated with confidentiality and anonymity. Participation may be withdrawn at any point during the interview, if you feel the need to do so.

Yours sincerely

Jeremiah Pietersen
Email: jeremiahpietersen@hotmail.com
A/Prof. Jaya Raju
Email: jaya.raju@uct.ac.za

I, _____ , have been asked to participate in the above study. I hereby give Jeremiah Pietersen consent to interview me on [date].

The nature of the research has been explained to me satisfactorily by the researcher. I understand that I may withdraw from this study at any time and that all information shared in this session would be treated with strict confidentiality. I will not be named in any work arising from this study. I give permission to have the interview recorded for the sake of the researcher not losing any valuable data.

Signature: _____ Date: _____

Appendix B: Interview guide for library staff

The shape and form of the 21st century academic library: the case of the University of Cape Town Libraries

I am currently undertaking research towards my Master of Library and Information Studies at UCT. The topic of my study is: "The shape and form of the 21st century academic library: the case of the University of Cape Town Libraries".

The study is underpinned by the theory of organizational learning. In the context of this study, organizational learning would be driven by technological advances in the LIS sector as well as by the resulting increase in the production of academic research outputs.

The literature review for this study responds to the research question:

- To what extent have academic libraries worldwide embraced technological advances in their services?

The literature review highlighted several trends in the modern academic library. These trends include, *inter alia*, e-learning and m-learning, MOOCs, digital preservation, QR codes, digital curation (including digital humanities), open access, closer collaboration with faculties and e-books.

The research question that this interview attempts to respond to is:

- How far along are UCT Libraries in the continuum of establishing itself as a 21st century academic library service?

A. Biographical information

1. What is your current designation or job title?
2. How long have you been employed at the University of Cape Town Libraries?
3. What is your highest academic qualification?
4. What LIS qualifications do you hold?

B. Changing higher education sphere

5. Are you worried about maintaining the relevance of the academic library in the changing higher education sphere?

6. *E-learning has proven to be a useful supplement to classroom learning in higher education.*

   Do librarians get involved with e-learning?
7. *Currently MOOCs are trending globally. The Postgraduate Centre at UCT offers space and support for postgraduates wanting to partake in certain MOOCs.*

   What kind of support is the Library currently providing?

C. Digital scholarship

8. *Digital curation is the process of selecting, organizing and presenting information that is in digital form (either digitized or born digital).*

   Are digital curation skills being put to use by the Library? If so, in which areas?
9. What about research data management? Are librarians at UCT approached by academics or researchers for assistance in managing research data?
10. *Open access (OA) is a movement geared towards providing free online access to academic resources and is gaining momentum worldwide.*

    What are UCT Libraries' challenges in establishing an institutional repository that can be picked up by OA harvesters like OpenDOAR?
11. *The SFX tool used by the Library website to locate electronic resources also picks up on open resources, but often the open platforms are not interoperable with the Library website in the sense that the SFX tool cannot take one directly to the article, but rather to the website.*

    How is UCT Libraries responding to this?
12. Do you advocate the use of open access resources rather than proprietary resources when in consultation with students, researchers or academics?
13. *Digital preservation continues to play an important role in the academic library.*

    How much time and resources are directed at digital preservation at UCT?

D. Web developments

14. *UCT Libraries started promoting visiting their website using QR codes placed around the Library. I noticed that the website is not fully compatible with mobile devices (tablet and cellphone).*

Is the Library in the process of optimising the website for mobile viewing?

15. In what other ways are QR codes used in the Library?
16. How much room does the Library give to explore innovative thinking around the uses of new applications like QR codes in the library?
17. *In the current digital age, the topic of e-book acquisition comes up in the literature.* Has the Library made any further advancements in terms of acquiring an e-book collection besides the one provided by EBSCOHost?

E. Collaboration

18. Do UCT librarians find themselves working closely with faculty staff?
19. If so, how much library work is done outside of the Library, that is, in faculties?

F. Training and professional development

20. Are there are any policies that require librarians in specific areas of the Library to upgrade their skills regularly?
21. How readily does management make time available for staff to undertake training?
22. How ready are staff to take up training in new areas?
23. *Conferences often discuss new developments in a profession.* Are academic librarians encouraged to attend conferences?
24. How well are conferences attended by Library staff?
25. Does the LIS professional body in South Africa, the Library and Information Association of South Africa (LIASA), play a role in upgrading the skills of academic librarians?
26. If the professional body allows for training opportunities, how involved are UCT librarians?
27. Is there any encouragement from UCT Library management for librarians to join the professional body?

Thank you for consenting to this interview. If you have any queries regarding the interview or the study, please do not hesitate to contact the researcher at the contact details provided below.

Jeremiah Pietersen
Master of Library and Information Studies student
Library and Information Studies Centre
University of Cape Town
Email: jeremiahpietersen@hotmail.com
Mobile: 071 207 6778

Appendix C: Questionnaire for library staff

The shape and form of the 21st century academic library in South Africa: the case of the University of Cape Town Libraries

I am currently undertaking research towards my Master of Library and Information Studies at UCT in the Library and Information Studies Centre. The topic of my study is: "The shape and form of the 21st century academic library in South Africa: the case of the University of Cape Town Libraries". The study is being supervised by A/Prof. Jaya Raju. As part of this study, I would need to survey library staff to gain an understanding of the changing user services in the modern academic library and how skills development and training are implemented at UCT Libraries. Hence your participation would be much appreciated. Please be assured that information provided would be treated confidentially and anonymously and will be used for research purposes only.

Instructions:

Please respond to items by ticking, where applicable, or providing responses where text boxes are provided. Items marked with an asterisk are compulsory.

A. Biographical information

1. *What is your current designation or job title?

2. *In which section of the University of Cape Town Libraries are you employed?

3. *How long have you been employed at UCT Libraries?

- ☐ Less than a year
- ☐ 1-3 years
- ☐ 4-6 years
- ☐ 7-10 years
- ☐ More than 10 years

4. *In what age bracket are you?

- [ ] 28 and under
- [ ] 29-49
- [ ] 50-59
- [ ] 60-65

B. Education and training

5. What is your highest academic qualification? (e.g. M.A., MLIS, etc.)

6. What LIS qualifications do you hold? (e.g. PGDipLIS, MBibl, etc.)

7. How long ago did you obtain your last LIS qualification?

- [ ] Currently busy with LIS qualification
- [ ] Under a year ago
- [ ] 1-5 years ago
- [ ] 6-10 years ago
- [ ] More than 10 years ago
- [ ] Not applicable

8. Do you agree with the following statement:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
For my current job duties, my LIS qualification is significantly important.	○	○	○	○	○

9. *How often do you attend training of some sort?

- [ ] Rarely
- [ ] Once a year
- [ ] Twice a year
- [ ] Three to five times a year
- [ ] Five to ten times a year
- [ ] More than ten times a year

10. Who is the provider of this training?

- [ ] UCT Libraries
- [ ] Academic and support departments within UCT (e.g. ICTS)
- [ ] Specialist organizations
- [ ] Conferences and workshops
- [ ] Other (please specify) [ ]

11. *Does your absence from work, due to training, affect your workload and day to day responsibilities?

- [ ] Yes
- [ ] No

12. If yes to item 11, please elaborate.

[ ]

13. *When catalogues are changed or updated (for example, the change from Primo.uct to WorldCat local), are you expected to attend an information session or a training session to learn about the new catalogue?

- [ ] Yes
- [ ] No

14. *Would you want to have such a session?

- [ ] Yes
- [ ] No

C. Changing higher education environment

The functions and services of the academic library are dependent on the needs of the higher education institution. With changes in teaching and learning and in knowledge production processes in the higher education sphere, said functions and services also need to evolve.

15. Do you agree with the following statement:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The services offered by UCT Libraries are relevant to the current Higher Education context.	○	○	○	○	○

16. Do you feel overwhelmed by the changing space and services in the library?

☐ Yes
☐ No

17. If yes to item 16, why do you feel so? Please explain with the use of examples.

D. Web developments

18. *In your time at UCT Libraries, how much change has there been in the services because of technology and web developments?

☐ Complete change in how services are rendered
☐ Some significant change
☐ Little change

19. Do you agree with the following statements:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
19.1 It is easy to find information about the Library and its services on the Library website.	○	○	○	○	○
19.2 It is easy to locate resources (both print and electronic) using the online Library catalogues.	○	○	○	○	○

20. In your opinion, has the change from Primo.uct to WorldCat made navigating the catalogues easier?

- [ ] Yes
- [ ] No

21. Please elaborate on your response to item 20.

E. Technology

22. *Have technologies been incorporated into your day to day activities in the library?

- [ ] Not at all
- [ ] To some extent
- [ ] To a great extent

23. *To accommodate the e-book collection, other electronic resources and for academic purposes, libraries in other parts of the world make available mobile electronic devices (e-book readers and tablets) and laptops.*
Do you see UCT libraries adopting such a model for all its users?

- [ ] Yes
- [ ] No

24. Please elaborate on your response to item 23.

F. General

25. Are there any other general comments you would like to make relating to the issues raised in this questionnaire?

Thank you for taking the time and effort to complete this questionnaire. If you have any queries regarding the questionnaire or the study, please do not hesitate to contact the researcher at the contact details provided below.

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Appendix D: Questionnaire for researchers and academics

The shape and form of the 21st century academic library in South Africa: the case of the University of Cape Town Libraries

I am currently undertaking research towards my Master of Library and Information Studies at UCT in the Library and Information Studies Centre. The topic of my study is: "The shape and form of the 21st century academic library in South Africa: the case of the University of Cape Town Libraries". The study is being supervised by A/Prof. Jaya Raju. As part of this study, I would need to survey library users to gain an understanding of what expectations users have of the modern academic library. Hence your participation would be much appreciated. Please be assured that information provided would be treated confidentially and anonymously and will be used for research purposes only.

Instructions:

Please respond to items by ticking, where applicable, or providing responses where text boxes are provided. Items marked with an asterisk are compulsory.

A. Biographical information

1. *Faculty

- ☐ Commerce
- ☐ Engineering and the Built Environment
- ☐ Health Sciences
- ☐ Humanities
- ☐ Law
- ☐ Science
- ☐ Not applicable

2. *What is your current designation or job title?

3. *In what age bracket are you?

- [ ] 28 and under
- [ ] 29-49
- [ ] 50-59
- [ ] 60-65

4. *What is your highest academic qualification?

- [ ] Master's degree
- [ ] Doctoral degree
- [ ] Other, please specify: [ ]

5. *How long have you been employed at the University of Cape Town?

- [ ] Less than a year
- [ ] 1-3 years
- [ ] 4-6 years
- [ ] 7-10 years
- [ ] More than 10 years
- [ ] Not applicable

B. Changing higher education environment

The functions and services of the academic library are dependent on the needs of the higher education institution. With changes in teaching and learning and in knowledge production processes in the higher education sphere, said functions and services also need to evolve.

6. Do you agree with the following statement:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The services offered by UCT Libraries are relevant to the current Higher Education context.	○	○	○	○	○

7. Over the past few years, the library space and services have changed and evolved. Do you feel overwhelmed by the changing space and services in the library?

- [ ] Yes
- [ ] No

8. If yes to item 7, why do you feel so? Please explain with the use of examples.

C. Web developments

9. *In your time here at UCT, how much change have you perceived in the Library service because of technology and web developments?

- [ ] Little change
- [ ] Some significant change
- [ ] Complete change in how services are rendered

10. *Have you accessed any of the Library services using a mobile device (tablet or cellphone)?

- [ ] Yes
- [ ] No

11. If yes to item 10, how accessible are the services?

- [ ] Fully accessible
- [ ] Partially accessible
- [ ] Not accessible

12. Do you agree with the following statements:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
12.1 It is easy to find information about the Library and its services on the Library website.	○	○	○	○	○
12.2 It is easy to locate resources (both print and electronic) using the online Library catalogues.	○	○	○	○	○

13. *UCT Libraries provides a federated search option on the website. A federated search is when the search engine is able to search all the online catalogues of the library simultaneously. This means searching both the print and electronic resources. Primo and WorldCat are such services.*
Are you aware of the change from Primo to WorldCat?

☐ Yes
☐ No
☐ Not applicable

14. If yes to item 13, has this change made navigating the catalogues easier?

☐ Yes
☐ No
☐ Not applicable

15. *Are you aware of the virtual "Ask a Librarian" service?

☐ Yes
☐ No

16. If yes to item 15, have you made use of the service?

☐ Yes
☐ No

17. If yes to item 16, do you agree with the following statement:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The "Ask a Librarian" service is useful and convenient.	○	○	○	○	○

D. Digital scholarship

Digital scholarship refers to research processes (including products, results and tools) that are either born digital, or converted from analogue to digital format. Open Access forms part of digital scholarship. Open Access is a movement geared towards providing free online access to academic resources.

18. *Are you aware of policies being developed by funding bodies and at higher education institutions that will implement and facilitate the use of Open Access tools like institutional repositories?

☐ Yes
☐ No

19. Would you support Open Access should the library develop an Open Access institutional repository (by, for example, submitting your research output for inclusion in such a repository)?

☐ Yes
☐ No
☐ Not sure, but would like to know more about Open Access

E. Information literacy

20. *Have you had an information session on how to conduct searches using the online Library catalogues and or databases?

☐ Yes
☐ No

21. *If yes to item 20, did you find it useful?
If no, would you like to have such a session?

☐ Yes
☐ No

22. *Have you ever engaged with a subject specialist (librarian) for assistance with finding information resources?

- [ ] Yes
- [ ] No

23. If yes to item 22, do you agree with the following statement:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
23.1 The level of service offered was good.	○	○	○	○	○
23.2 The service was helpful.	○	○	○	○	○

F. Collection development

24. *What type of resources do you make use of?

- [ ] Mostly print resources
- [ ] Mostly electronic resources
- [ ] Equally print and electronic resources

25. *Are you aware that UCT Libraries have an e-book collection on the EBSCOHost database platform?

- [ ] Yes
- [ ] No

26. *Would you like for UCT Libraries to make mobile devices like e-readers, tablets and laptops available for loan for research purposes?

- [ ] Yes
- [ ] No

27. Please elaborate on your response to item 26.

28. *Does UCT Libraries adequately cater for your resource requirements (that is, there is an adequate print or electronic collection)?

- [ ] Yes
- [ ] No

29. If no to item 28, please elaborate.

G. Collaboration

30. *Is there any collaboration between your department/unit and subject specialists in the library?

- [ ] Yes
- [ ] No

31. If yes to item 30, how far does the collaboration extend?

- [ ] Provision of reference lists of materials available in the library
- [ ] Provision of lists of new materials
- [ ] Provision of information literacy training for new students
- [ ] Library subject specialist is stationed part-time within the department
- [ ] Other, please specify:

32. *Do you consult library staff to assist with research data management processes?

- [ ] Yes
- [ ] No

33. Please elaborate on your response to item 32.

H. General

34. Are there any other general comments you would like to make relating to the issues raised in this questionnaire?

Thank you for taking the time and effort to complete this questionnaire. If you have any queries regarding the questionnaire or the study, please do not hesitate to contact the researcher at the contact details provided below.

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Appendix E: Questionnaire for postgraduate students

The shape and form of the 21st century academic library in South Africa: the case of the University of Cape Town Libraries

I am currently undertaking research towards my Master of Library and Information Studies at UCT in the Library and Information Studies Centre. The topic of my study is: "The shape and form of the 21st century academic library in South Africa: the case of the University of Cape Town Libraries". The study is being supervised by A/Prof. Jaya Raju. As part of this study, I would need to survey library users to gain an understanding of what expectations users have of the modern academic library. Hence your participation would be much appreciated. Please be assured that information provided would be treated confidentially and anonymously and will be used for research purposes only.

Instructions:

Please respond to items by ticking, where applicable, or providing responses where text boxes are provided. Items marked with an asterisk are compulsory.

A. Biographical information

1. *Faculty

- ☐ Commerce
- ☐ Engineering and the Built Environment
- ☐ Health Sciences
- ☐ Humanities
- ☐ Law
- ☐ Science

2. *In what age bracket are you?

- ☐ Below 28
- ☐ 29-49
- ☐ 50-59
- ☐ 60-65

3. *What qualification are you currently studying towards? (e.g. PGDip, BA(Hons), MSc)

4. *How long have you been studying at the University of Cape Town?

- ☐ Less than a year
- ☐ 1-3 years
- ☐ 4-6 years
- ☐ 7-10 years
- ☐ Longer than 10 years

B. Changing higher education environment

The functions and services of the academic library are dependent on the needs of the higher education institution. With changes in teaching and learning and in knowledge production processes in the higher education sphere, said functions and services also need to evolve.

5. Do you agree with the following statement:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The services offered by UCT Libraries are relevant to the current Higher Education context.	○	○	○	○	○

6. *Over the past few years, the Library space and services have changed and evolved.*
   Do you feel overwhelmed by the changing space and services in the library?

- ☐ Yes
- ☐ No

7. If yes to item 6, why do you feel so? Please explain with the use of examples.

C. Web developments

8. *Have you accessed any of the Library services using a mobile device (tablet or cellphone)?

- [ ] Yes
- [ ] No

9. If yes to item 8, how accessible are the services?

- [ ] Fully accessible
- [ ] Partially accessible
- [ ] Not accessible

10. Do you agree with the following statements:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
10.1 It is easy to find information about the Library and its services on the Library website.	○	○	○	○	○
10.2 It is easy to locate resources (both print and electronic) using the online Library catalogues.	○	○	○	○	○

11. *UCT Libraries provides a federated search option on the website. A federated search is when the search engine is able to search all the online catalogues of the library simultaneously. This means searching both the print and electronic resources. Primo and WorldCat are such services.*
Are you aware of the change from Primo to WorldCat?

- [ ] Yes
- [ ] No
- [ ] Not applicable

12. If yes to item 11, has this change made navigating the catalogues easier?

- [ ] Yes
- [ ] No
- [ ] Not applicable

13. *Are you aware of the virtual “Ask a Librarian” service?

☐ Yes
☐ No

14. If yes to item 13, have you made use of the service?

☐ Yes
☐ No

15. If yes to item 14, do you agree with the following statement:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The “Ask a Librarian” service is useful and convenient.	○	○	○	○	○

D. Information literacy

16. *Have you had an information session on how to conduct searches using the online Library catalogue?

☐ Yes
☐ No

17. * If yes to item 16, did you find it useful?
If no, would you like to have such a session?

☐ Yes
☐ No

18. *Have you ever engaged with a subject specialist (librarian) for assistance with finding information resources?

☐ Yes
☐ No

19. If yes to item 18, please agree or disagree with the following statement:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
19.1 The level of service offered was good.	○	○	○	○	○
19.2 The service was helpful.	○	○	○	○	○

E. Collection development

20. *What type of resources do you make use of?

- [ ] Mostly print resources
- [ ] Mostly electronic resources
- [ ] Equally print and electronic resources

21. *Are you aware that UCT Libraries have an e-book collection on the EBSCOHost database platform?

- [ ] Yes
- [ ] No

22. Are you aware that Master's and Doctoral students have access to laptops for loan at the Research Commons?

- [ ] Yes
- [ ] No

23. *Would you like for UCT Libraries to make other mobile devices like e-readers, tablets available for loan to postgraduate students?

- [ ] Yes
- [ ] No

24. Please elaborate on your response to item 23.

25. *Does UCT Libraries adequately cater for your resource requirements (that is, there is an adequate print or electronic collection)?

- [ ] Yes
- [ ] No

26. If no to item 25, please elaborate.

F. General

27. Are there any other general comments you would like to make relating to the issues raised in this questionnaire?

Thank you for taking the time and effort to complete this questionnaire. If you have any queries regarding the questionnaire or the study, please do not hesitate to contact the researcher at the contact details provided below.

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Appendix F: Questionnaire for undergraduate students

The shape and form of the 21st century academic library in South Africa: the case of the University of Cape Town Libraries

I am currently undertaking research towards my Master of Library and Information Studies at UCT in the Library and Information Studies Centre. The topic of my study is: "The shape and form of the 21st century academic library in South Africa: the case of the University of Cape Town Libraries". The study is being supervised by A/Prof. Jaya Raju. As part of this study, I would need to survey library users to gain an understanding of what expectations users have of the modern academic library. Hence your participation would be much appreciated. Please be assured that information provided would be treated confidentially and anonymously and will be used for research purposes only.

Instructions:

Please respond to items by ticking, where applicable, or providing responses where text boxes are provided. Items marked with an asterisk are compulsory.

A. Biographical information

1. *Faculty

- ☐ Commerce
- ☐ Engineering and the Built Environment
- ☐ Health Sciences
- ☐ Humanities
- ☐ Law
- ☐ Science

2. *In what age bracket are you?

- ☐ 28 and under
- ☐ 29-49
- ☐ 50-59
- ☐ 60-65

3. *How long have you been at the University of Cape Town?

B. Changing higher education environment

The functions and services of the academic library are dependent on the needs of the higher education institution. With changes in teaching and learning in the higher education sphere, said functions and services also need to evolve.

4. Do you agree with the following statement:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The services offered by UCT Libraries are relevant to the current Higher Education context.	○	○	○	○	○

C. Web developments

5. *Have you accessed any of the Library services using a mobile device (tablet or cellphone)?

☐ Yes
☐ No

6. If yes to item 5, how accessible are the services?

☐ Fully accessible
☐ Partially accessible
☐ Not accessible

7. Do you agree with the following statements:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
7.1 It is easy to find information about the Library and its services on the Library website.	○	○	○	○	○
7.2 It is easy to locate resources (both print and electronic) using the online Library catalogues.	○	○	○	○	○

8. *UCT Libraries provides a federated search option on the website. A federated search is when the search engine is able to search all the online catalogues of the library simultaneously. This means searching both the print and electronic resources. Primo and WorldCat are such services.*
   Are you aware of the change from Primo to WorldCat?

☐ Yes
☐ No
☐ Not applicable

9. If yes to item 8, has this change made navigating the catalogues easier?

☐ Yes
☐ No
☐ Not applicable

10. *Are you aware of the virtual "Ask a Librarian" service?

☐ Yes
☐ No

11. If yes to item 10, have you made use of the service?

☐ Yes
☐ No

12. If yes to item 11, do you agree with the following statement:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The "Ask a Librarian" service is useful and convenient.	○	○	○	○	○

D. Information literacy

13. *Have you had an information session on how to conduct searches using the online Library catalogue?

☐ Yes
☐ No

14. * If yes to item 14, did you find it useful?
If no, would you like such a session?

☐ Yes
☐ No

15. *Have you ever consulted a librarian for assistance with general queries?

☐ Yes
☐ No

16. If yes to item 15, do you agree with the following statement:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
16.1 The level of service offered was good.	○	○	○	○	○
16.2 The service was helpful.	○	○	○	○	○

E. Collection development

17. *What type of resources do you make use of?

☐ Mostly print resources
☐ Mostly electronic resources
☐ Equally print and electronic resources

18. *Are you aware that UCT Libraries have an e-book collection on the EBSCOHost database platform?

☐ Yes
☐ No

19. *Would you like for UCT Libraries to make other mobile devices like e-readers, tablets available for loan to undergraduate students?

☐ Yes
☐ No

20. Please elaborate on your response to item 23.

21. *Does UCT Libraries adequately cater for your resource requirements (that is, there is an adequate print or electronic collection)?

☐ Yes
☐ No

22. If no to item 21, please elaborate.

F. General

23. Are there any other general comments you would like to make relating to the issues raised in this questionnaire?

Thank you for taking the time and effort to complete this questionnaire. If you have any queries regarding the questionnaire or the study, please do not hesitate to contact the researcher at the contact details provided below.

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