Chapter Two

The Shape and Form of the 21st Century Academic Library, with Particular Reference to a South African Case

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Abstract

This chapter reports on a study of the 21st century academic library. Academic libraries are confronted by the need to restructure services in response to the pervasive influence of technology on higher education. The study's objective was to ascertain the shape and form of the 21st century academic library, using the case of the University of Cape Town (UCT). Themes emanating from literature include, inter alia, digital curation, digital scholarship, open access and collaboration. A largely qualitative research approach and case study design inform the study's methodology. The study concludes that UCT Libraries are in the process of establishing themselves as a 21st century academic library; their infrastructural developments for new service delivery modalities gives them the 'form' necessary to establish a new 'shape' commensurate with the digital age.

Keywords: academic libraries; 21st century; higher education; technological advances; South Africa

Introduction

Traditionally, libraries have been aggregators of knowledge in its print form. With the advancements in information production and dissemination brought on by technological innovations, 'libraries have grown much broader and are now inclusive to any medium that makes access to knowledge and information possible' (Tise & Raju 2012: 7). This development is strengthened by academic libraries traditionally being positioned at the centre of a campus; a reflection of its place as 'a crossroads for intellectual activity' (Council on Library and Information Resources 2008: 5). Academic libraries, being at the 'forefront of accommodating advances in IT [information technology] and the internet' (Kim & Lee 2011: 76), are faced with the challenge of developing and growing virtual space to house these developments. In a blog post more than ten years ago, Farkas (2004) asserted that

> …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.

Farkas (2004) went on to state that the nature of librarianship is changing and that a new skills set will have to be developed by librarians so that they are able to survive in the modern academic library. 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 the use of building-based statistics (Michalak 2012: 413). Hence collections are moving away from the physical library structure and more to where the user is.

This chapter reports on a study (Pietersen 2015) conducted at the University of Cape Town (UCT). The objective of the study was to ascertain the shape and form of the 21st century academic library in South Africa, including library staff and users' expectations of services rooted in the technological advances of the digital era – using the case of the academic library of UCT, a leading research-intensive South African university.

The study was further informed by the following sub-objectives: 1) to ascertain, via rigorous review of literature, how far along academic libraries worldwide are with incorporating technological advances in their services; 2) to empirically determine the progress of UCT Libraries in establishing themselves as a 21st century academic library; 3) to establish how readily staff adapt to changes and new technology in the library; and, 4) to find out what user expectations of a modern, digital era academic library are.

Supporting theory

The aspect of the study that focused on staff development and adaptation to change in the academic library was supported by theory relating to organisational learning. According to Danielson and Wiggenhorn (2003: 17), 'today's progressive corporations have moved from treating [organisational] learning as an obligatory cost factor to regarding it as a weapon in the battle for competitive advantage'. Organisational learning is driven by 'the globalisation of markets and ever keener worldwide competition, the shortening of development cycles for individual products, demographic shifts in the world's industrialised countries and reduction in the half-life of knowledge' (Maier, Prange & Von Rosenstiel 2003: 14). In the context of this study, organisational learning would be driven by technological advances in the social sphere and in the Library and Information Services (LIS) sector, as well as by the resulting increase in the production of academic research outputs. Clifford and Thorpe note that organisations always require people who are able to perform effectively in their jobs and this is becoming more apparent and important in a context of increase in the pace of change. Hence they argue that 'employees are required to adapt and respond to these changes quickly and without the loss of productivity' (Clifford & Thorpe 2007: 6-7). This study used Szulanski and Cappetta's (2003: 518-521) four stages of knowledge transfer (initiation, implementation, ramp-up and

integration) to guide its investigation into staff adaptation to change and to new technology in UCT Libraries.

The literature and emerging trends in academic libraries

In response to the study's first sub-objective, a review of literature was undertaken to ascertain how far academic libraries worldwide have currently advanced with incorporating technological advances in their services. This review is presented in the sub-sections that follow themes 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.

Academic libraries in the context of universities and higher education

The essential purpose of a library is to serve the community in which it is situated. Organisationally, the academic library is located in a higher education institution. Thus, when assessing change in the academic library, it is important also to consider changes in the higher education sector. The higher education landscape, globally, is changing. As with the academic library, teaching practices also utilise Web 2.0 tools to support learning at universities. According to Eijkman (2009: 240) the internationalisation of higher education draws learners from different cultures and languages. Web 2.0 tools such as the social media present a 'driver supportive of more discursively inclusive learning spaces' (Eijkman 2009: 241). The technological advances that the library adopts do impact on how the physical collection of the library is maintained and how many of the resources are diverted to cater for the web-based library services. Hence, even if Library 2.0 refers to the development of technology and web presence in the library, there is concomitant impact on the physical aspects of the library.

In higher education, emerging technologies have had a 'significant impact on educational technology' (El-Hussein & Cronje 2010: 12), particularly e-learning. E-learning is learning facilitated by 'technological infrastructure with applications and software that manage courses and users' (Kumar 2009: 1). According to Abram and Cromity (2013: 43), in order to add value to e-learning the library can advance and promote information literacy training through the learning management system. Mobile learning, or m-learning, is similar to e-learning, but with the use of mobile devices (primarily smartphones) and this too has found been found to be prevalent in higher education with significant implications for the delivery of information services by academic libraries (Walton, Childs & Blenkinsopp 2005: 57-58; Chandhok & Babbar 2011: 639).

While academic libraries have had success in developing e-collections, the adoption of e-books in particular as part of e-collections seems to have been slow. According to Ashcroft (2002), cited in her later work (Ashcroft 2011: 398), issues regarding 'the introduction of e-journals, 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). Vasileiou, Rowley and Hartley (2012: 225), in their study on the future of e-books in academic libraries, suggest that academic libraries should work collaboratively and in consortia with other libraries to 'benchmark evolving practice, and to support engagement across the academic library community with evolving standards, technologies, and licensing and pricing', issues that are ongoing and the subject of constant review in present day academic libraries.

According to the ACRL Research Planning and Review Committee, prioritising student success forms part of the list of top trends in the academic library's list of priorities. 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 collaborative relationships

with other stakeholders in order to place emphasis on student success in academia (ACRL Research Planning and Review Committee 2014: 297). The ACRL review report asserts that 'libraries must … align their missions with institutional and state student success missions, and focus resources on those students most in need of support'. Similar imperatives also apply to academic libraries in other parts of the world.

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 report referred to earlier (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).

Students and researchers increasingly access library and other university affiliated services through mobile applications and sites. Mobile technology has infiltrated the scholarly workflow and this fact makes it important for libraries to optimise and integrate their services for mobile access (Johnson, Adams Becker, Estrada and Freeman 2014: 8). In a study conducted at a Ghanaian university, researchers found that nearly all the respondents in their study owned at least one mobile device. On making this observation the researchers state that an affirmation of the ownership and use of mobile technology 'is essential if the [library] plans to deliver some of its services by means of mobile technologies' (Akeriwa, Penzhorn & Holmner 2015: 291). It is particularly significant that the University of Development Studies Library (Ghana) has few automated library services; yet the permeation 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).

Digital curation

Curatorship is becoming increasingly vital as electronic resources are increasing in importance and research data is multiplying. Digital curation also forms part of digital scholarship (discussed below). 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 digitisation 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 Department of Arts and Culture (DAC) and the National Council of Library and Information Services (NCLIS: 2014: 20), digital curation is also the act of 'establishing and developing long term repositories of digital assets for current and future reference by researchers, scientists, and historians, and scholars generally'.

'Digital curation' and 'data curation' are terms that are sometimes used interchangeably. For the purpose of the current study, 'data curation' is seen as a subset of 'digital curation' and refers to the management of research data specifically. 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'; 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 realisation that 'much of the data that they are paying to have generated is not being properly curated or fully utilised and is often lost' (Heidorn 2011: 663). Although it has not traditionally been the role of the librarian to manage research data, libraries are equipped to curate and disseminate research data successfully (Heidorn 2011: 663).

Another aspect of digital curation is digital preservation. 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 rapidly changing technologies, 'there is a risk that information becomes inaccessible and unusable' (Muir 2004: 73). Preserving digitally-born content, involves issues of licensing and copyright. Further, digital materials often bound to specific software which make them prone to corruption (Ross 2012: 44). Therefore when a library undertakes the task of creating a repository for digital materials, policies and standards have to be adapted and implemented in order to ensure consistency in quality. Digital preservation makes it possible for rare artefacts to be shared widely without transporting or damaging the artefact. The library, being a traditional storehouse of information resources, stands in good stead to accommodate digital preservation as part of its services to the university community.

Digital scholarship

The term 'digital scholarship' lends itself to many interpretations which are dependent on the particular culture of the institution, institutional organisation and the environment (McCullough 2014: 187). Andersen (2004: 16) defines digital scholars as people who are aware of the expanded options available to them, their students and their 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 digitisation, 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) observe that these services are offered in conjunction with a unit of the Information Technology Services at New York University. This places emphasis on the role played by academic libraries in collaboration and in connecting resources in order to offer superior services. Each institution has different cultures and needs, thus the scope of the services offered by a digital scholarship centre in a library depends on institutional need (McCullough 2014: 190). The term 'digital scholarship' easily encompasses most library services that are delivered through technology.

Adams and Gunn (2013) describe digital humanities (DH) as being 'an emerging, interdisciplinary movement which looks to enhance and to redefine traditional humanities scholarship through digital means'. Arguably (DH) falls within the scope of digital scholarship. However, Fitzpatrick (2012: 14) argues that DH particularly contributes to digital scholarship in its exploratory investigation of the difference that digital practices can make in work processes and also the difference it makes to our methods of communication. DH is not confined to one field but is highly collaborative and encourages contribution from all sectors (Adams & Gunn 2013). The modern academic library, rich in technology applications, has a role to play in the promotion of DH.

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 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 promotion, tenure and funding allocations are not OA.

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 be a substitute for conventional journals. This means that the library will be able to cut away some subscriptions (Bailey 2007: 376). For access to journals, libraries are victims of 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 has major implications for the scholarly e-resources.

In a study conducted by Rodriguez (2014: 609) on the awareness of and attitudes toward OA in the university, she concludes that while researchers have not fully come to terms with restricted access (due to subscription costs), most of the large publishing houses are experimenting with incorporating an OA option in their publications which makes it necessary for librarians to play advisory roles in evaluating OA journals for the purposes of quality and OA mandates.

Collaboration

The internet and social networks have enabled the sharing of information across the globe instantly. For the library to fully embrace the new academic environment, collaboration is critical. According to Neal (2010: 71), the core needs of research libraries and the needs of big science complement one another, hence partnerships across campus play a role in the advancement of scientific discovery and progress, and support the interests of individual scientists as well as teams of researchers, universities and research centres, and funding agencies.

Cook (2000) cited by Dixon (2006: 6) reiterates this view stating 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, 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. Collaboration should not be limited to the librarian-faculty level because the research process extends beyond the faculty and library. As articulated under the theme digital scholarship, partnerships with sectors on campus like the information technology unit, give substance to the view that academic libraries lie at the centre of the research process.

The preceding review of literature, in response to the first sub-objective of the study being reported here, ascertained that academic libraries, globally, are indeed embracing technological advances to enhance their services in a changing higher education pedagogical and research environment itself affected by advancing technology. The review of literature informed the empirical aspect of the study.

Empirical investigation

The study employed a largely qualitative research approach as well as use of some quantitative data collection for purposes of supporting its qualitative approach. It adopted UCT, a leading research-intensive university in South Africa, as a case study in order to respond to its remaining

sub-objectives. A case study design (Yin 2014) was considered optimal for ascertaining the shape and form of UCT Libraries' services. For the purposes of triangulation to enhance validity of data collected, the study employed both interviews and self-administered online questionnaires. Two population groups were targeted in the study, namely, library staff (interviews and questionnaire) and library users (questionnaire). Purposive sampling was appropriate for the library staff population of which two groups were sampled (one group was interviewed and the other surveyed via an online questionnaire).

The library user group, divided into three strata (namely, undergraduate students; postgraduate students, and researchers and academics), were sampled using stratified random sampling. The sample sizes were determined using a random sampling table (Sekeran 2003: 294). The eventual response rates for each of the sampled population groups are reflected in Table 1. Administrative error resulted in a low return rate for researchers and academics. Although the yield from researchers and academics was low, the response from the library user population as a whole was deemed adequate for the study at 49% (especially as the study draws conclusions and makes recommendations based on the responses of the library user population as a whole).

The interviews were unstructured, but an interview guide was produced to guide the direction of the conversation. The purpose of the interview guide was to be as exhaustive as possible in the interview regarding the developments at UCT Libraries. The subject of this study was UCT Libraries as an organisational entity (making it opportune to employ organisational learning as the supporting theory for the staff development and adaptation aspect of the study). Thus these aspects of the interview guide were designed to interrogate the organisational entity and not the interviewees per se.

Copies of the questionnaire were distributed amongst purposively selected library staff working in different departments of UCT Libraries. These copies of the questionnaire were distributed electronically in August 2014 in the Chancellor Oppenheimer Library (main 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. Library users 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 the library users selected for participation in the study using stratified random sampling. Before disseminating or administering, each of the research instruments was pre-tested in June 2014 to ensure reliability. *KwikSurveys*, an online survey builder, was used to construct the questionnaires and collate results. Ethical clearance was obtained from UCT to use it as a research site.

Main findings and discussion

Main findings from the study are discussed according to the sub-objectives of the study responding to the overall objective of ascertaining the shape and form of the 21st century academic library in South Africa.

Academic libraries globally

According to the literature reviewed, digital scholarship has gained traction in academic libraries because of the array of added services and expertise that this development has to offer the research community. While there is much debate as to what digital scholarship services entail, the literature suggests that these services are dependent on institutional design and the needs of the library user population (Vinopal & McCormick 2013: 33). OA, institutional repositories, digital preservation and RDM all form part of digital scholarship, and hence indicate that digital scholarship is a core service of the modern academic library. Typically, these new technology-driven services require expertise in digital (including

Table 1: Response rates by population

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

data) curation, a skills set that is becoming increasingly sought after in academic libraries.The increasing volume of research data being produced and digitized in higher education institutions further necessitates skills in data curation (Abbott 2008).

As academic libraries the world over proactively embrace technology advances in their services (Peters & Dryden 2011; Phillips 2011; Lombardo, Morrow & Le Ber 2012; Corrall, Kennan & Afzal 2013; 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.

UCT Libraries as a 21st century academic library

The professional basis of the LIS sector is the Library and Information Science qualification. The majority of the library staff members (about 85%) in UCT Libraries have professional Library and Information Science 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 Library and Information Science qualifications may not necessarily address new roles in the modern academic library, but are usually indicative of the staff member having LIS experience which is valuable in servicing a scholarly community.

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. The latter interviewee went on to say that UCT Libraries 'has a significant budget for training and development. This is partly because of the transition from very traditional services to 21st century services'. When asked whether they are overwhelmed by the changes in the academic library, 34% of the 35 library staff respondents who acknowledged that they are overwhelmed, indicated the reasons for their anxiety as being the lack of mental space and time to upskill in areas such as RDM, OA, bibliometrics, altmetrics, citation managers and e-book platforms. According to some of the library staff interviewees, expertise in some of these areas, such as OA and citation managers, already exists in the Library. The 100% positive responses from researchers and academics (18 in total) regarding the desirability of uploading of their own materials on to an OA institutional repository indicate that mature library users (such as researchers and academics) are open to taking advantage of novel developments that the Library is willing to explore. Even more telling is the finding regarding research data management: from the 16 researcher/academic respondents, 19% indicated that they knew that library staff had some expertise in RDM. The latter is a recent development in the LIS sector and hence the 19% of members who were aware of it indicates the Library's development with regard to this skills' set.

Collaboration is important in the academic library environment. 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. This collaboration includes, but is not exclusive to, the UCT Research Office, the Centre for Higher Education Development and the Student Representative Council.

Modern 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. Recognising 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 modern technology and 37% indicated that there has been complete change. The library staff response is further emphasised by almost 70% of these same respondents indicating that modern 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 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 this service. Of those who knew about the service, approximately 25% made use of it and of these, just over 50% found the service to be useful. This trend is bound to grow in the future. Farkas (2004) did indeed advise a decade ago, 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's institutional design. It emerged from an interview with a senior manager that UCT Libraries is in the process of restructuring. Following 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, primarily client services and technical services – an important issue that requires serious attention.

While it is evident that UCT Libraries has been making advances in adopting 21st century services trending in the literature, at the same time, some library staff respondents pointed out that there is still work to be done to address staff development to fully embrace these advances. In terms of Szulanski and Cappetta's (2003: 514) four stages of knowledge transfer (or organisational learning), namely, initiation; implementation; ramp-up; and, integration, it would seem that UCT Libraries is still in the initiation stage of knowledge transfer. Both staff and senior management seem to realise that there are gaps in the knowledge of the organisation and senior management is making an effort to address this.

Staff adaptation to modern technology and change

Academic libraries are dynamic in nature. As mentioned earlier, academic libraries are at the forefront of accommodating modern technological advances. This means that staff members are always required to upskill to be able to better adapt to change. Danielson and Wiggenhorn (2003) identify three fundamental challenges to organisational 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 had been at the Library for longer than ten years. If this is representative of the whole organisation (UCT Libraries), then there are both benefits and disadvantages to having a large cohort of staff working for more than a decade in the organisation. A major benefit is staff having extensive organisational 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: 'they would rather go for something that is going to help them [with current work processes rather than new applications of technology], especially with technology advancing at such a rapid rate'. Newer staff members 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.

Just over 20% of library staff in the questionnaire survey indicated that they attend more than ten training sessions throughout the year. The largest segment, about 45% of staff, stated that they attend five to ten training sessions per year. The amount of training that staff members are exposed to is indicative of UCT Libraries' endeavours to accommodate change and development. 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 organisation (UCT Libraries) and indicates the Libraries' preparedness 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 refers to the challenges of an academic library (UCT Libraries) situated within a parent institution (the University). 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 were aware of this problem.

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 are required to attend these training sessions, 95% of the same respondents indicated that they would like to attend these sessions. This could be a reflection of willingness on the part of library staff to attend training for purposes of adapting to modern technology and software.

Dale (2011: 30) states that this is a challenging time for librarians because of the rapid progression of modern 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 older library staff members have a more tentative approach to training in new ways of doing things, but that a large cohort of staff are younger, thus promoting organisational learning by making the transition to the 'new' easier for the organisation as whole.

User expectations of a modern academic library

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

Across all three categories of the user population, as can be seen in Figure 1, there was overwhelming agreement that the academic library is relevant in the higher education context. This was also the case in the response from library staff members (see Figure 2). 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 at the end of all three of the user surveys spoke positively of the quality of the Library's services, one saying 'this is my 4th university and the staff here deserve real credit' and another, 'the library has been brilliant in keeping up with technology'.

Compared to the 34% of library staff surveyed who indicated that they were overwhelmed by the changes in the Library, only 14% of the postgraduate students and researchers and academics surveyed felt this way. This finding could be attributed to the fact that most student users remain on cam pus for a much shorter time than staff typically do, and thus they are not as affected by system overhauls due to technological advances. The affirmative 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.

One of the traditional functions of an academic library is to provide support to the user via librarian-user consultations. In this study, users were asked to assess the level and the helpfulness of the service. 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 users indicated that they make use of mostly electronic resources. Electronic resources allow users to work from remote locations rather than having to visit the physical library. 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 relating 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 OA access. All of them indicated that they would if given the

Figure 1: Users' perceptions of relevance of academic libraries (N=501)

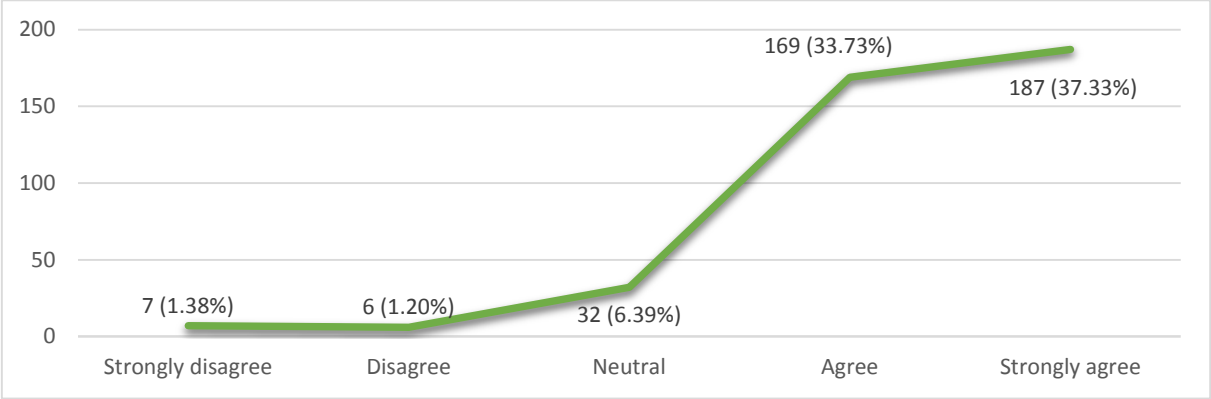
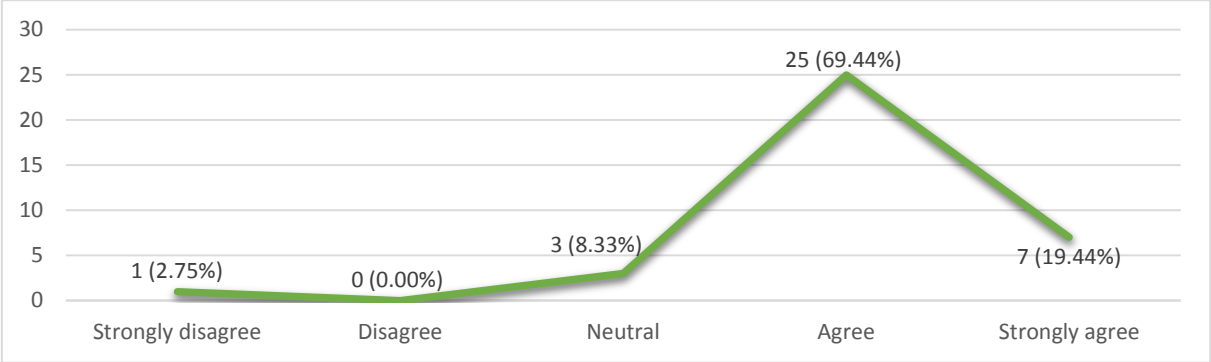


Figure 2: Library staff perceptions of relevance of academic libraries (N=36)



opportunity to do so. Hence UCT Libraries' infrastructure development to support OA and to increase the capacity of the institutional repository, is in line with developments in the research landscape. More than half of the researchers and academics surveyed were aware that funding bodies are including OA mandates in their conditions of award. If this response is indicative of the support for OA from the research community in general, then the issue of non-subscription to top journals lamented by a few (mentioned earlier) could potentially be eradicated in academic libraries in general.

Researchers and academics were asked whether they consult library staff to assist with RDM processes. Only a few indicated that they do. Upon elaboration, some respondents indicated that they did not know the Library could assist with RDM. 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 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 Information and Communication Technology (ICT) departments, but also includes users (students, faculty staff and researchers).

Users' expectations of 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 digitised materials (Michalak 2012: 413). The responses from users regarding the services of the UCT Libraries were largely positive. Gauging from

the general comments made 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 currently 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. Perhaps in the shape of regular meetings hosted by subject or liaison librarians, keeping different academic disciplines separate. These findings indicate that while user expectations are being largely met, there should be open communication between the Library and the user groups.

Conclusion and recommendations

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 realising their critical role in teaching, learning and research at higher education institutions located within, and influenced by, highly digitised contexts. UCT Libraries is already in the process of establishing itself as a 21st century academic library. Senior management in the Libraries have remarked 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 will stand the organisation in good stead in establishing itself as a 21st century academic library. There is a strong emphasis in UCT Libraries on organisational learning in the form of training and willingness to learn and embrace change. 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 organisational learning is a 'major cultural overhaul' (Danielson & Wiggenhorn 2003: 21). The study recommends 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 is something that library management would need to pay serious attention to. The study revealed that users are generally satisfied with the services they are receiving from the Library. However, the odd comment alluding to not knowing about new services hints at the possibility that the Library is not marketing its services sufficiently. Hence it is recommended that rigorous marketing is an area that should receive more attention. In view of the uncertainties around the definition and scope of digital scholarship, another recommendation is for further study to be undertaken to establish the place of digital scholarship in the academic library in the developing context.

UCT Libraries' journey to a 21st century academic library, with infrastructural developments underway for new service delivery modalities, gives it the 'form' necessary to establish a new 'shape' commensurate with the digital age; that is, an academic library service structure informed by technological advances of the current age. While the case of UCT Libraries was used in this study, in many ways this case is representative of academic libraries in other parts of South Africa as well as in other parts of the world. Hence the study of the shape and form of the 21st century academic library, reported in this chapter, has relevance for other academic library contexts as well.

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