

**Technology initiatives in academic libraries: status of Library 2.0
within the Libraries of the University of KwaZulu-Natal**

By

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**A Dissertation submitted to the School of Social Sciences, Information
Studies Programme of the University of KwaZulu-Natal, Pietermaritzburg
Campus, as partial fulfilment of the requirement for the degree of Master
of Information Studies (MIS).**

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2012



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Abstract

The Library 2.0 model is one of many library service models. It has its origin in, and borrowed concepts from, Web 2.0 which is associated with Web applications that facilitate participatory information sharing, interoperability, user-centred design and collaboration on the Web. The focus of Library 2.0 is on user-centred change and participation in the creation of content.

Different scholars and researchers have discussed Library 2.0 and numerous articles have been written discussing the implementation of the model in academic libraries. Findings are that academic library users, who are becoming more involved and familiar with Web 2.0 technologies, no longer want to use the library only as a reading space or a place to use books and journals without being able to make suggestions and have their views heard. The Library 2.0 model facilitates this and, as it encourages sharing and participation, is considered a suitable model for academic libraries.

The purpose of this study was to investigate the implementation of Library 2.0 within the libraries of the University of KwaZulu-Natal (UKZN) and the difficulties encountered when using Library 2.0 technologies to deliver their services. To achieve the purpose of the study both primary and secondary sources of data were used, including literature from various sources (journals, books and information found on websites).

Interviews and self-administered questionnaires were the instruments used to collect data. The population of the study consisted of all subject librarians on the UKZN campuses, the campus librarians, and the Library Director. Data were analysed through content analysis and the use of SPSS and presented in the form of figures.

It was found that UKZN libraries were slow in terms of involving the technologies associated with Library 2.0 in their services. Only Facebook and a weblog are used by the UKZN libraries and it is evident that more needs to be done in terms of implementing and promoting the technologies that encourage collaboration and interaction with users – the essence of Library 2.0. It has been said by different scholars and researchers that institutions that are perceived to be slow in involving new technologies in their services, are at risk of becoming irrelevant to their users. These users will then move to other services who can better meet their needs. Therefore, it is crucial for UKZN libraries to embrace these technologies if they want to keep up and remain relevant to the ever changing needs of their users.

Acknowledgements

Without the advices, encouragement and support of my friend, family and especially my academic supervisor, this dissertation could not be accomplished. I would like to express my deep gratitude to my supervisor Mr Athol Leach for his patience, kindness and for always being there when I needed him most.

I thank all the academic staff of Information Studies Department, including Professor Christine Stilwell, Mrs Fiona Bell, Dr Ruth Hoskins and Mr Athol Leach for their joint effort to support me throughout my postgraduate studies.

Thanks are due to my Mom and Dad, the rest of my family and friends for their support and belief in me have always inspired me throughout the duration of my study.

This dissertation is lovingly dedicated to my Parents, Mrs and Mr Muhambe Zakule; my brothers and sisters, Lushuha, Nsimire, Bakya, Moyo, Mugisho, Biringa, Kilolo and Amina; my friends Aimee Mwenge, Timothee, Theo, Marcel, Joshua, Delhomme, Sanzi, Thierry, Ciza and Mugaru for the love, support and inspiration they gave in the completion of this work. I finally thank the Almighty God for giving me the strength to finish my Masters Degree.

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List of acronyms and abbreviations

%:	Percentage
API:	Application Program Interface
CNN:	Cable News Network
ICT:	Information Communication Technologies
IM:	Instant Message
IT:	Information Technology
LIS:	Library and Information Science
OPAC:	Online Public Access Catalogue
RSS:	Really Simple Syndication
SMS:	Short Message Service
SPSS:	Statistical Package for the Social Sciences
UKZN:	University of KwaZulu-Natal
UP:	University of Pretoria

Chapter one: Introduction

1.1.Introduction

Academic libraries have been around for many years and are traditionally considered to be collections of information and services or storehouses of books, with the librarian being the caretaker. Today the idea of the library as just a 'storehouse of books' has changed and people now widely understand that for the successful development of an educational institution, a different role of the library is essential. The involvement of technological development in the academic library has influenced change in collecting, storing, and managing information. According to Griffin (1998), technological development in the library has made the distribution of knowledge resources wider and more effective, thus serving library users even better.

Unlike the libraries in the past that contained only print material, modern libraries are now thought of as having a wider access to information and knowledge in many formats and from many sources. Towards the end of the 20th century, there was significant development in libraries with the introduction of integrated library systems and online catalogues that were able to provide access to information on library collections using an internet connection from anywhere (Holmberg *et al* 2008). The concept of the library as being just a storehouse of books changed when much of the visibility of the library collection was on the screen (Wallis 2007).

The internet has been an essential vehicle in terms of facilitating these developments and the World Wide Web (Web), as one of the services of the internet, has become a crucial component of academic library services in particular. Advances within the Web have resulted in the emergence of what is referred to as Web 2.0 and, more recently in the library context, Library 2.0. It is this development which has added a new dimension to library services, characterised by user contribution and interaction (Maness 2006).

Library 2.0 has its origin in, and borrowed concepts from, Web 2.0 which is associated with Web applications that facilitate participatory information sharing, interoperability, user-centred design and collaboration on the Web (Miller 2005). The focus of Library 2.0 is on user-centred change and participation in the creation of content. According to Cohen (2007), Library 2.0 is a new way of providing library services through new internet technologies, with emphasis on ‘user-centred’ change and interaction. Like Web 2.0, a full-featured Library 2.0 Online Public Access Catalogue (OPAC) improves the extent to which users are involved in the process of interacting with the catalogue and sharing the content.

According to Miller (2005), based on the rise of Google, Amazon, Wikipedia and an increasing number of institutions using Web 2.0 technologies to provide information, there is an oft-stated fear that many knowledge seekers will bypass institutions that are perceived to be slow, unresponsive, unimpressive, boring, and unattractive, in favour of a more direct approach to services. Thus, Miller (2005) suggests that one way to retain these knowledge seekers is to keep the library updated with technological developments, such as those occurring with Web 2.0.

The University of KwaZulu-Natal (UKZN) is one of the largest research universities in Africa. It has five campuses, 17 libraries, over 5000 staff members, and about 40,000 students (UKZN General Information 2011) including international students among whom are students from universities that have already adopted the Library 2.0 model. In order to facilitate the services of the libraries and to compete on an international level, the University of KwaZulu-Natal’s libraries should be seizing every opportunity to promote their genuinely valuable content and service delivery by using these new information communication technologies (ICTs), such as those of Web 2.0. This research, therefore, will assess the status of Library 2.0 as part of the technology initiatives within UKZN libraries.

1.2. Rationale of the study

One of the fundamental duties of the librarian is to ensure the library mission is accomplished. By doing so she/he has to ensure information is delivered to the user at the right time, in an appropriate format and at an effective cost. New technologies such as the internet have made people ‘lazy’ in the sense that they are now used to getting much of the information they want right at the place they are sitting. Many organisations, such as banks,

realise this, which is one of the reasons that they provide services such as internet banking. According to Curran, Murray and Christian (2007), “Web 1.0 took people to information; Web 2.0 takes information to the people.” They further stressed that for the library to provide a relevant and timely service to the net generation, or millennial and digital natives, as the current generation of computer users are sometimes referred to, it is essential to keep pace with technological developments.

Traditional library services were offered by libraries when users had no other option but to physically go to look for information that the librarians made available in their own time. However, librarians in the Web 2.0 scenario do not wait for users to approach them in order to satisfy their information needs, but rather make information available and accessible to users in their own space. The Library 2.0 model seems to be the more appropriate library service model for users who expect to get all the information they need in their own time and in the format they require.

Today, libraries need to implement new technologies, such as social networking, blogs and wikis, in order to improve the services they offer. Social networking, such as Facebook for example, has become common place. Students use these media to share their common interests, to communicate with each other, and more frequently as a place for entertainment. Thus, when using the internet, students arguably spend a considerable amount of time on social networking sites such as these (Cuesta 2006). By implementing Library 2.0, UKZN libraries could improve their services by spending more time interacting with students in an easier and more cost effective way.

The outcome of this research should help to identify the extent to which Library 2.0 has been implemented in UKZN libraries and the difficulties that the libraries encounter, or anticipate encountering, in using Library 2.0 technologies to deliver their services. This study will provide recommendations on what needs to be done in terms of implementing (or further implementing) Library 2.0 and how UKZN libraries can benefit from the Library 2.0 technologies.

1.3 Conceptual framework

The conceptual framework for this study is based on the ideas of O'Reilly (2005) who is the 'father' of Web 2.0 from which Library 2.0 emerged; it is also based on the ideas of Casey (2006) who coined the concept of Library 2.0. The term Web 2.0 was first conceptualised by Tim O'Reilly in 2004. It was used to describe the trends and business models that survived the technology sector market crash of the late 1990s (O'Reilly 2005).

According to O'Reilly (2005), companies and their services and technologies that survived the crisis had certain characteristics in common. In nature they were collaborative, dynamic, and interactive and the relationship between the creator of the content and the consumer in these environments was indistinct; this means that users were creating content in these sites as much as they were consuming it. After observing and understanding the applications of Web 2.0 theories, Casey used the same application and theories but to the aspect of librarianship and this is how he came up with Library 2.0.

According to Maness (2006), a theory for Library 2.0 should be conceptualised in the following four elements:

- It is user-centred: In the Library 2.0 environment, the role of librarian and user is not always apparent because both librarian and user are the creators of the content and services viewed in the library's website;
- It is socially rich: When there is the presence of both librarian and users online, there are both synchronous and asynchronous ways for users to communicate with one another and with librarians;
- It is communally innovative: The library being a community service, should not only change with the community but also the community (users) should be allowed to change the library as well; and
- It provides a multi-media experience: In the Library 2.0 environment, both the services and collections contain text, images, video and audio components.

Library 2.0 is a social network interface that the library users design, or a personalised OPAC that gives access to really simple syndication (RSS) feeds, blogs, tags, wikis, and user profiles within the library's network. Maness (2006) conceptualised Library 2.0 as "a virtual reality of the library" a place where users do not only search for books or journals, but the

place to interact with librarians, community, and share knowledge and understanding with them. The previous model of the library (Library 1.0) brought about significant change in library services by moving collections into the online environment; Library 2.0 is moving the full set of library services into the electronic medium. Library 1.0 created a web-presence for the library, and Library 2.0, provides a way for its users to join it. Further elaboration of Web 2.0 and Library 2.0 will be provided in Chapter two.

1.4 Research problem

As library users are becoming more familiar with ICT tools especially Web 2.0 technologies, competition has increased between libraries and other alternative sources of information which incorporate Web 2.0 technologies into their services. Because implementation of the Library 2.0 model will not only impact on library services but also help to boost the University's standing at both a national and international level, it becomes increasingly important for UKZN libraries to incorporate the Library 2.0 model in order to ensure that relevant services are delivered to users and to contribute to raising their institutional profile. Thus, arguably, academic libraries which have not embraced the Library 2.0 model meaningfully in the next two or so years, will face the possibility of becoming irrelevant to their users which may affect the institution's growth and visibility both locally and globally. It is the above problem which provided the necessary stimulus to undertake the study.

1.5 Aim and key questions to be asked

The aim of this study was to investigate the status of the Library 2.0 model within the libraries of the University of KwaZulu-Natal. The key research questions which emerged in terms of this aim were as follows:

- Does Library 2.0 exist in the UKZN libraries? If so, how is it defined and how does it work?
- What are the potential benefits of implementing the Library 2.0 model within UKZN libraries?
- What are the challenges that can prevent the UKZN libraries from fully implementing the Library 2.0 model?

1.6 Limitations and delimitations

The research included only the main or central library on each of the four campuses of UKZN and it is the subject librarians, campus librarians and the Library Director who were involved. Due to time constraints, and the nature of the coursework dissertation, students were not included in the study. The reason for focusing on the subject librarians in particular, was due to the fact that subject librarians regularly interact with users, so they are expected to know users' needs in terms of technology development.

1.7 Definitions of key terms

The following are the key terms used in the study which are briefly defined:

1.7.1 Academic library

An academic library is a library that is attached to a tertiary academic institution, serving the teaching and research needs of students and staff. "Academic library refers to the totality of the institution - people, services, collection, access to information, and social space" (Hoare 1997:2).

1.7.2 Web 2.0

There are numerous definitions of Web 2.0. Graham (2005) defines it as follows: "Web 2.0 is associated with web applications that facilitate participatory information sharing, interoperability, user-centred design and collaboration on the World Wide Web. A Web 2.0 site allows users to interact and collaborate with each other in a social media dialogue as creators of user-generated content in a virtual community, in contrast to websites where users are limited to the passive viewing of content that was created for them" (Graham 2005).

1.7.3 Social network software

Social network service is an online service, platform, or site that focuses on the building and reflecting of social networks or social relations among people, who for example, "share interests and/or activities. A social network service essentially consists of a representation of each user (often a profile), his/her social links, and a variety of additional services. Most social network services are web based and provide the means for users to interact over the

internet” (Boyd and Ellison 2007). Facebook, MySpace, YouTube, Flickr, and Twitter are the most used social networking tools.

1.7.4 Weblog (Blog)

A weblog is a type of website or part of a website. Weblogs are usually maintained by an individual with regular entries of commentaries, descriptions of events, or other material such as graphics or videos. Entries are commonly displayed in reverse-chronological order (Blood 2000).

1.7.5 Wikis

Wikis are essentially open web-pages, where anyone registered with the wiki can publish to it, amend it, and change it (Maness 2006).

1.7.6 Tagging

Tagging allows users to add and change not only content (data), but content describing content (metadata). In Flickr, users can tag pictures. In the Library 2.0 environment, users could tag the library's collection and thereby participate in the cataloguing process (Shanhi 2006).

1.7.7 Facebook

Facebook is a social networking service and website. It allows users to create a personal profile, add other users as friends, and exchange messages, including automatic notifications when they update their profile. Additionally, users may join common interest user groups, organised by workplace, school or college, or other characteristics (Carlson 2010).

1.7.8 YouTube

YouTube is a video-sharing website on which users can upload, share, and view videos. It was created by three former PayPal employees in February 2005 (Hopkins 2006).

1.7.9 RSS (Really Simple Syndication)

RSS is a format for syndicating content on the web. It is XML-based and allows bloggers to send their content to subscribed readers. It allows people to subscribe to the site's RSS feed and get a notification (Crawford 2006).

1.7.10 Podcast

A podcast is a digital media file, or a related collection of such files, which is distributed over the internet using syndication feeds for playback on portable media players and personal computers (Foresman 2010).

1.7.11 Mashups

Mashups are digital media content containing text, video, audio, animation, and graphics drawn from pre-existing sources, to create a new derivative work. Digital text mashups like the comedic mashups, appear by the thousands every day as users of blogs and online forums copy and paste digital text in juxtaposition to comment on topics of interest. They represent a new phase in the re-use of existing works, not so much conceptually as in ease of use (Wikipedia 2011).

1.7.12 MySpace

MySpace is a social networking website that offers an interactive, user-submitted network of friends, personal profiles, groups, blogs, photos, music and videos sharing. It is based in Beverly Hills, California, United State of America (Foresman 2010).

1.7.13 LibraryThing

LibraryThing is a social cataloguing Web application for storing and sharing book catalogues and various types of book metadata, it is used by individuals, authors, libraries and publishers (Wikipedia 2010).

1.8 Summary of the chapter

It is evident that the Library 2.0 model should be implemented if libraries take seriously their obligations, such as delivering an efficient, timely and relevant service in accordance with their users' demands. Once implemented, librarians can no longer rely on notice-boards and plain websites to transmit information to their users.

Chapter two: Literature review

2.1 Introduction

Technological developments have been implemented in academic libraries for many years. This chapter provides an overview of technological initiatives in academic libraries, specifically the implementation of Web 2.0 in which the Library 2.0 model has emerged. This chapter covers relevant literature related to various models of library services. The first part of the literature review covers different models of library service from the traditional to the digital library, including their characteristics and features. The second part covers the Library 2.0 model, Web 2.0 tools as core applications of Library 2.0 and how these tools are getting used in academic libraries.

Prior to doing so brief note, however, needs to be made of the emergence of Library 3.0 and Web 3.0. As Belling *et al* (2011:4) point out, “Web 3.0 has already integrated itself into our online lives, through new generation social media applications, the semantic web, and easier information finding and sharing.” The authors argue that it is the semantic Web in particular which has “changed the face of the Internet” and that while the concept of Library 3.0 is still under development library services are beginning to respond to the emergence of the semantic Web in terms of the way they “conduct their online business and deliver services such as OPACs and federated searching” (Belling *et al* 2011).

The purpose of the literature review is to ensure that the researcher understands what has already been said about the topic she/he is researching, and to understand the different approaches used and the key debates involved. According to Kaniki (2006) and Levy and Ellis (2006), a literature review is one of the important parts of academic research in that it serves to identify knowledge gaps and concretise the research problem; to identify a theoretical framework, and issues and variables related to the research problem; to identify conceptual and operational definitions; and finally it serves to identify a methodology suitable for the study.

Many scholars and researchers have discussed Library 2.0 and numerous articles have been written discussing and exploring the history, operation and use of Library 2.0. General studies on the implementation of Library 2.0 in academic libraries have been conducted worldwide (Kwanya 2010; Casey and Savastinuk 2007; and Curran, Murray, and Christian 2007). Habib (2006) in his Master's dissertation at the University of North Carolina, on the implementation of Library 2.0 in the academic library, argues that there are four significant effects that Web 2.0 might have on library services: to allow user tagging on the OPAC; to set up an account with a photo sharing site, such as Flickr in order to share library photos with users; to promote library events to students through a Facebook or MySpace account; and finally Web 2.0 services might have an effect on the environment in which academic libraries function. Nimsomboon and Nagata (2003) showed how libraries improved their services in order to survive the challenges caused by globalisation. They point out that implementing the Library 2.0 model enables the library to expand its user base and even reach those people that it had previously not been able to reach. The Library 2.0 model calls for the library to keep up with rapidly changing technology, social trends, and user expectations should it wish to remain relevant (Caser and Savastinuk 2007).

Kwanya, Stilwell and Underwood (2009) argue that Library 2.0 is neither revolutionary nor evolutionary since the core functions of the traditional library remain the same except in some areas of service such as convenience and speed of service delivery where technologies have played a significant role. In terms of speed of service delivery, Kwanya (2010) points out that Library 2.0 is the preferable model for the research library because it has the potential to create a library platform on which users can develop and control their own library experience in their own time and at the point of need. Casey and Savastinuk (2007:77) are of the opinion that "Library 2.0 is about doing more with the same or fewer resources; it's about efficiency without sacrificing quality; it's about reaching out to new users without losing those we already have."

Library 2.0 is one of many existing models of library service. To provide a better understanding of why the Library 2.0 model is suitable for the academic library and why it is suggested that it be implemented within UKZN libraries, the following section provides an overview of some of the well-known library service models.

2.2 Library service models

There are different models of library services, with some involving technology and others not. Kuhn (2005) defines a 'model' as the representation of type of product or service which is identifiable through a unique characterisation. Library service models can therefore be understood as types of library services which are differentiated through unique characterisations. Generally a library service model describes an approach whereby a librarian aims to satisfy a user's demands.

2.2.1. Traditional model

The traditional model of library service known as the "Acquire-Catalogue-Circulation" model (Murray 2006) is the oldest model of library service and is basically defined by physical place and collection since it only relies on its physical collection. Based on the limitations of the traditional model of library service (acquisition, cataloguing, storing and lending), there is a debate whereby some argue that this model is out-dated and describe it as an "archaic" model, but others argue that the traditional model is still relevant and will never be replaced by any other model; not even the digital library model (Kwanya 2010). According to Remelts (2005) "other models of library service will only co-exist with the traditional one and complement each other but not replace it."

Features of the traditional model

- One size fits all

The traditional model of library service has been described by showing its negative side (Borbinha 2002; Lim 2002 and Farkas 2004 in Kwanya 2010). It is argued that this model still applies the 'one size fits all' policy in which users' preferences and interests are least considered, since users' comments and suggestions are interpreted as a challenge to librarians' authority and expertise.

- Site-based

A library using a traditional model is physically based somewhere and for a user to access the library service, she/he must physically visit the library. This means that the traditional library only serves those users who are able to visit the library physically, at a time determined not by the users but by the operating times of the library.

- Authority

As far as the use of authoritative information is concerned, Kwanya (2010) argues that “libraries using the traditional model have quality control mechanisms to ensure only credible information resources are acquired and delivered to the libraries.” Krupa (2006) supports Kwanya, adding that during the information retrieval process, the intervention of the librarian (librarian-mediation) is very important and information retrieved through tested techniques, is more rewarding and reliable than that retrieved with no librarian-mediation.

- Just in case collection

Some other scholars argue that the traditional library model uses the ‘just-in-case’ collection policy. This policy has no limit or control on information resources. Everything is taken and kept in the library with the hope that someday it may be requested by a user. This approach is opposite to the ‘just-in-time’ approach that has been adopted by other librarians using a model consisting of acquiring information that is needed when it is needed (Honson 2007).

To conclude this section, the above indicates that there are advantages and disadvantages attached to the traditional model. There are suggestions that the traditional model should be re-engineered in order to remain relevant and to satisfy its users (Kwanya 2010).

2.2.2 Community library model

The community library dates from the 1860s in Britain (Stilwell 1999), where a library service was offered to a specific neighbourhood. It is argued (Stilwell 1999) that community libraries emerged from public libraries which were perceived as dispassionate. Therefore with the aim of moving away from the passive traditional public library system to an active service-oriented and user-friendly system based on neighbourhoods, the community libraries emerged to provide problem-related information to particular communities (Kwanya 2010, Stilwell 2001 and Mostert 2002). For instance in South Africa, based on political factors such as apartheid policies which deprived some communities of access to public library services, community libraries emerged as a response to these policies (Stilwell 2001).

Characteristics of the community library model

There are many factors that distinguish the community library model from other library models. Stilwell (1999) argues that community libraries perform common functions such as

self-help, practical help, simple directional information, and support for other information services or groups of information workers, advice, advocacy, community action education, counselling and outreach. According to Mostert (2002), a community library model should be characterised by:

- inclusion of more community involvement in the management of the library;
- allocation of funds to purchase specific material needed by the community; and
- development of specific skills to enable the library staff to render a pro-active community library service.

Functions of the community library model

Since community libraries are community-based services, they should be able to satisfy the community's need in terms of information provision. Atuti (2001) states that there are three main functions community libraries should develop in order to respond to a particular community's information needs:

- to encourage the community to identify its information needs and to involve its participation in the establishment of new sources of information for their use and mutual benefit;
- to be an advocate for society's appreciation of the role and importance of the library and information services in modern socio-economic and cultural settings; and
- to develop partnerships and strengthen co-operation with the community, and to utilise available community resources through mobilisation and to supplement government efforts in providing library and information services in rural areas.

The literature shows that most community libraries are in rural and/or disadvantaged areas where there is no access to or presence of conventional library services (Atuti 2001).

2.2.3 Bookstore model

In terms of the bookstore model of library service, the library contains only books. In this model of library, books are arranged according to their topic as they do not have classification numbers. This system seems to be easy for both librarians and customers as books are easily retrieved by narrowing down topic and subject areas. New and important books are shelved in the entrance or where they have high visibility and usability (Kwanya 2010). Kwanya (2010) further emphasises that the bookstore librarians always do their best

to minimise the time that their customers spend in the library, and therefore do not provide a comfortable reading place. The reason behind this is to prevent the customers from reading the book before they buy or borrow it.

Characteristics of bookstore model libraries

According to Kwanya (2010) libraries that use the bookstore model have some characteristics in common such as:

- They have no stocks of reference material;
- They strive to keep only the latest publications;
- Their collection development is determined by the usage;
- Since they are commercial, they tend to have a fresh attractive look, brighter lighting and better displays than the other library models;
- They are strategically located (easily accessible, next to schools, shopping centres and parks), and
- Some have background music in the reading area.

Some of the major disadvantages of the bookstore model are that when a book is misplaced by the user, it is hard to find its exact location as there is no call number and they tend to be more expensive than other library models as they are more focused on business (profit).

2.2.4 Information commons model

The concept of the information commons library model refers to the shared knowledge-base and the processes that facilitate its use. Beagle *et al* (2006) explain that the information commons library refers to a physical space, usually in an academic library, where users can participate in the processing, researching, gathering and production of information. Similarly, Kwanya (2010) states that the model

refers to a library service that combines flexible instructional settings and collaborative learning space with a full range of digital library resources, productivity software applications, expert professional and technical assistance.

Characteristics of the information commons model

The literature shows that all the information commons are characterised by the following aspects:

- They are collaborative: when compared to traditional libraries which provide a quiet space for individual study, information commons offer an opened and shared space for users to gather to share their common interests (Kwanya 2010);
- They are more technical: information commons use innovative technologies more than traditional libraries. According to Lippincott (2006), unlike computer workstations in traditional libraries that only allow users to access the library's catalogues, computers in the information commons have more software, allowing users to do more. Lippincott (2006) adds that based on these facilities, the information commons may be abused by young students who come to use them, not for academic pursuits, but for their own social activities;
- Many of the information commons offer services for free; they incorporate democratic values, and free expression, and intellectual freedom prevails (Kranich 2004);
- They are interactive, encouraging discourse and exchange among their users; (Kranich 2004), and
- They get richer and more valuable as more users participate by posting more information such as tutorials and comments to share on the library website (Lippincott 2006).

The information commons model of the library incorporates both academic and social use. They can be collaborative places since they accommodate diverse learning styles, such as small group coaching and individual research consultation but should not be seen as a computer lab or a reference area with rows of computers (Lippincott 2006).

2.2.5 Digital library model

The digital library sometimes described as an 'electronic library', 'virtual library', or 'paperless library' is the type of library in which collections are stored in digital format and accessed by computers. The digital content can be stored locally, or can be accessed remotely via computer networks. There are a number of controversies and arguments on how the digital library should be defined and be determined. Some scholars (Greenstein and Thorin

2002) argue that digital libraries are those libraries which have only digital collections, others (Microsystems 2002) argue that digital libraries are those which have more digital collections than physical ones, while others (Greenstein and Thorin, 2002) assert that they are those libraries which only offer services electronically.

Candela *et al* (2008) define the digital library as “an organisation, which might be virtual, that comprehensively collects, manages and preserves for the long term rich digital content, and offers to its user communities specialised functionality on that content, of measurable quality, and according to codified policies”. Prasad and Swarnalatha (2005) understand the digital library as an organisation that provides resources (including technologies and skilled staff) to offer intellectual access to interpret, preserve the integrity, distribute, and to ensure the persistence overtime of collections of digital works in order to be readily and economically used in the present and in the future by a defined community or set of computers.

Characteristics of the digital library model

The literature shows that the involvement of technology in libraries has made a huge difference to the services provided. The major characteristics and advantages of the digital library model from the literature reviewed (Gertz 2000; Singh 2003; Baohua, Xiaoyan and Fei 2002; Lagoze *et al* 2005) include:

- No physical boundaries: when using the digital library, users don't have to be physically in the library, they can gain access to the information from anywhere in the world as long as they are connected to the internet. The fact that information resources are digitalised makes library use convenient, and facilitates fast service delivery.
- Round the clock availability: access to the information at any time is one of the major advantages of digital libraries. The digital library bridges the gap between developed and developing countries and provides equitable access to the information anytime, day or night.
- Multiple accesses to the collection: unlike the traditional library that has only copyright material which may require a license for lending out only one copy at a

time, the digital library users and other institutions can simultaneously use the same resources although they are also subject to copyright and licence restriction.

- Information retrieval: digital libraries provide very user-friendly interfaces. By using word, phrase, name, subject or title, users can easily search the entire collection.
- Preservation and conservation: digitisation is not a long-term preservation solution for physical collections, but does succeed in providing access to copies of material that would otherwise become degraded from repeated use. Preservation and conservation of digitalised libraries emphasises the quality and usefulness of the collection as opposed to quantity.
- Space: unlike traditional libraries, which are limited by storage space, digital libraries have the potential to store as much information as possible, simply because digital information requires very little physical space and media storage technologies are getting more affordable than ever before.
- Added value: certain characteristics of objects, primarily the quality of images, may be improved. Digitisation can enhance legibility and remove visible flaws such as stains and discoloration.

Aligned to the concept of the digital library, and with the goal of open access, many academic libraries are today building academic depositories where their institution's books, theses, dissertations, papers, and other works can be digitised and stored. This includes materials which are 'born digital'. Some of these repositories are now made available to the users freely and with few restrictions, in contrast to the publication of research in commercial journals, where the publishers often limit access rights (Ngcobo 2010).

2.2.6 Library 2.0 model

The Library 2.0 model can be understood as a model for a modernised form of library service that reproduces a transition in the library in terms of service delivery (Mathews and Pardue 2009). They further explain that librarians continue to look more like information technology (IT) professionals as technology continues to change, so too do the skill sets required by librarians. This involvement of technology in the library poses a big challenge for the library and information science (LIS) profession since operations such as service delivery of a modernised library (Library 2.0) are now determined by librarians having the necessary technology related skills.

As noted in Chapter one, Library 2.0 has its origin in, and has borrowed concepts from Web 2.0 which is associated with Web applications that facilitate participatory information sharing, interoperability, user centred design and collaboration on the Web (Miller 2005). The focus of Library 2.0 is on user-centred change and participation in the creation of content. The reason for implementing Web 2.0 applications in the library can be explained by the fact that users are becoming more technical and they do not want to use the library passively anymore. According to Kwanya (2010), users no longer want to use the library as only a place to collect books or journals, or as a reading space or for utilising the provided resources without making any suggestions - they want their views to be heard.

2.2.6.1 Web 2.0

Before the introduction of Web 2.0, the vision of the old World Wide Web was based on the Web 1.0 paradigm of websites, email, search engines and surfing that was created by Tim Berners-Lee (Abram 2007). The technology sector market crash of the late 1990s early 2000s underscored the limitations of Web 1.0 for internet based business companies (O'Reilly 2005). Based on those companies that continued to flourish after the dot-com crash, Tim O'Reilly explained that Web 2.0 was originally formulated in 2004 as a way of understanding how those most successful internet companies differed from their peers (Habib 2006). A list of the methods, concepts, and technologies which set these companies apart from each other was then drawn up. This list was then defined as Web 2.0. Therefore, the original definition of Web 2.0 was itself a list (Habib 2006).

With Web 2.0 being defined as a list, Murley (2008) explains that it caused confusion until the brainstorming session that led to the Web 2.0 Conference in 2004. After much discussion about what Web 2.0 means, a compact definition was posted on the O'Reilly Radar blog:

Web 2.0 is the network as platform, spanning all connected devices; Web 2.0 applications are those that make the most of the intrinsic advantages of that platform: delivering software as a continually updated service that gets better the more people use it, consuming and remixing data from multiple sources, including individual users, while providing their own data and services in a form that allows remixing by others, creating network effects through an 'architecture of participation,' and going beyond the page metaphor of Web 1.0 to deliver rich user experiences.

O'Reilly (2005) supports this definition by referring to Web 2.0 as a perceived second generation of web-based applications and services and in particular the use of the web as a platform for user-generated content and web-based communities, including particularly social networking, wikis and folksonomies. Komiko (2007) understands Web 2.0 as an associated technology to include blogs, social networking sites, wikis, mashups, podcasts and vidcasts, RSS feeds, shared bookmarks and image sites, and is intrinsically linked to the developing 'semantic Web'.

While these definitions are now established, it is apparent from the literature that Web 2.0 is still being interpreted and understood differently with some focusing on the technology and others on the user. Though Web 2.0 may be defined differently in accordance with people's understanding of it, O'Reilly (2005) illustrates the concept of the Web as a platform. He created a Web 2.0 "meme map" in which he construed Web 2.0 with several strong advocates, such as "services, not packaged software," "participation, not publishing," "tagging, not taxonomy," and "an attitude, not a technology."

Thus Web 2.0 "is about the more human aspects of interactivity. It is about conversations, interpersonal networking, personalisation, and individualism. It is focused on content in the context of people, workplaces, markets, community and learning...there is no standard" (Abram 2007). Web 2.0 tools include social networking such as Facebook and MySpace; electronic commerce solutions such as eBay and Amazon.com; search engines like Google; discovery sites such as Stumble Upon; citizen journalism solutions such as YouTube and Flickr; and groupware such as Eventful for sharing calendars and diaries or social booking for sharing bookmarks (Musser and O'Reilly 2007).

Web 2.0 seems to be driven by many factors, but globalisation which increased the ability and the access to internet connection, and transacting business are the primary drivers of Web 2.0. Abram (2007) identifies the following as the fundamental features and functions of Web 2.0:

- RSS (really simple syndication)
- Wikis
- New, simple and revised programming methods like AJAX, J2EE, widgets, gadgets, Mashups, and Application Program Interface (API)
- Blogs and blogging

- Advanced portals and portlets
- Commentary and comments functionality – everywhere
- Personalisation and ‘my profile’ features
- Personal media such as podcasting and MP3 files
- Streaming media audio and video formats
- Reviews and user-driven ratings
- Personalised alerts
- Web services for enhancement and data mining
- Instant messaging and virtual reference including co-browsing
- Folksonomies, tagging and tag clouds
- Photos (e.g. Flickr, Picasa)
- Social networking software
- Open access, open source, open content
- Socially driven content
- Social bookmarking (such as del.icio.us).

Web 2.0 as a platform for technology communication tools, is characterised by the following elements (Habib 2006, Musser and O’Reilly 2007):

- The Read/Write Web: the term Read/Write Web was given to describe the main differences between New and Old Media (Web 2.0 as new media and old media including Web 1.0, newspapers, radio and more). The main difference between these two Medias is that Web 2.0 users have the ability to actively interact with the content, alter and add to the pages they visit. Blogs and social networking such as Facebook, MySpace and Twitter are excellent examples of Web services that incorporate read/write characteristics to promote conversation instead of broadcast (a programme or speech on radio or on television).
- Web as a platform: this quality allows applications to leverage the Web as a communication network. What this means is that users are able to execute applications straight from their browsers, to own and control the data on the Web 2.0 platform.
- The Long Tail: this term was introduced to describe how the Web makes it possible to provide services to small niche groups, for instance the ability to publish and

distribute materials for minimal cost on the Web; it virtually eliminates barriers of storing space; and the ability to connect people who have the same narrow interests.

- **Collective intelligence:** the ability of users to add value to the content of Web 2.0, which leads to a massive building of a robust body of knowledge. Wikipedia is a very good example of this. Because users are encouraged to contribute, the more the number of users increases, the more it increases in contributions. This in turn creates better articles which attract new users.
- **Lightweight programming models:** this includes simple and user-friendly ways to loosely share and process datasets between partners. It does not require specialist knowledge to apply. Google Maps is a good example of lightweight programming models where people are able to create mashups by combining the Google Maps data and application with other geographic datasets and applications.

The following figure shows a general comparison between Web 2.0 and Web 1.0.

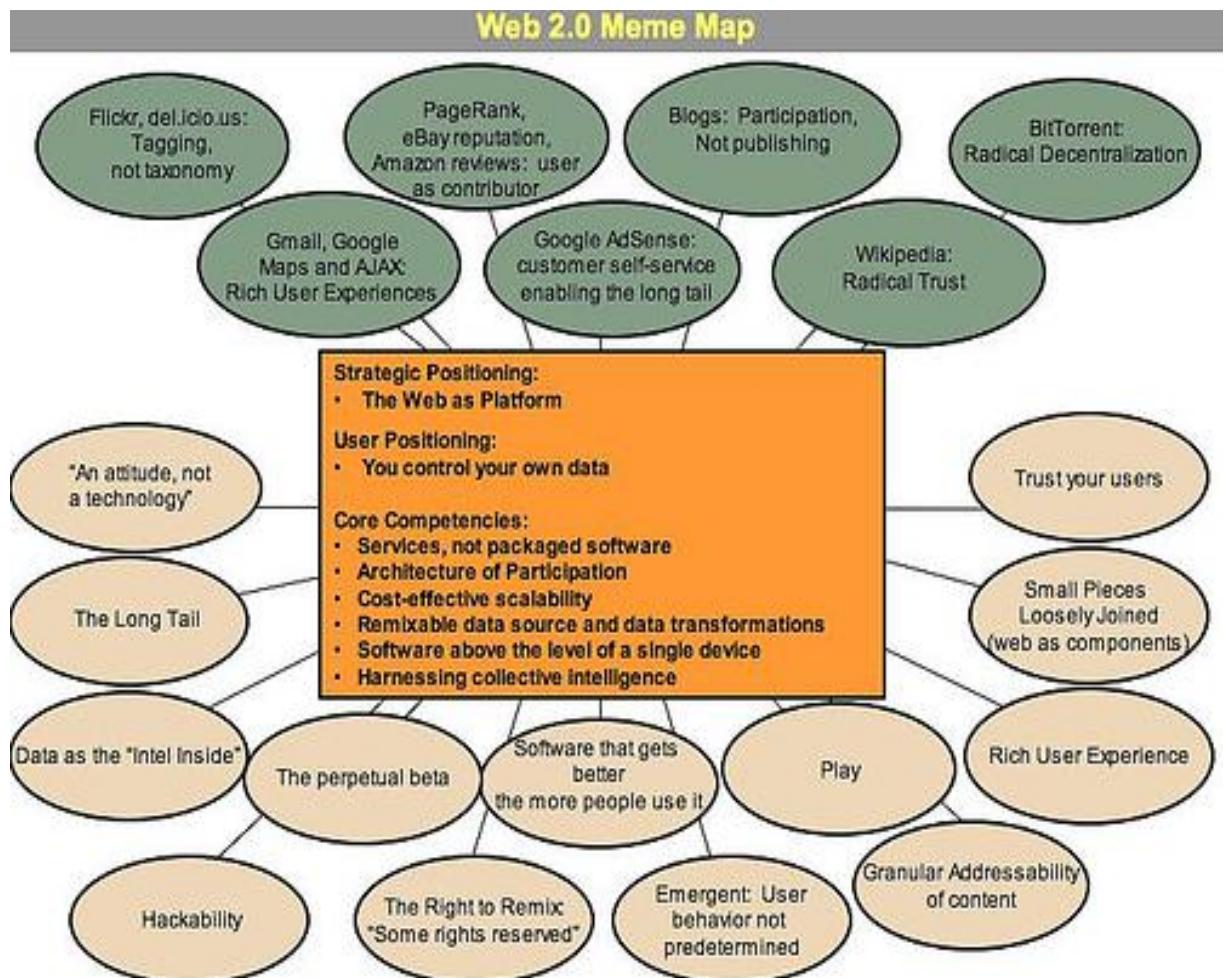
Figure 1: General comparison between Web 2.0 and Web 1.0

Characteristic	Web 1.0	Web 2.0
Mode of usage	Read	Write and contribute
Unit of content	Page	Record
State	Static	Dynamic
How content is viewed	Web browser	Browser, RSS readers, Mobile devices, etc.
Creation of content	By website authors	By everyone

Source: Curran, Murray, and Christian (2007)

O'Reilly (2005) proposed a meme map to graphically illustrate the concept of Web 2.0. The centred orange rectangle in Figure 2 below represents the fundamental principles of Web 2.0, such as Web 2.0 as a platform, Read/Write Web, and as collective intelligence. The green oval shapes on top represent the tools of Web 2.0 and the brown oval shapes from the middle down represent the characteristics and the use of Web 2.0.

Figure 2: The Web 2.0 meme map



Source: O'Reilly (2005b)

Web 2.0 offers many opportunities for libraries to serve their existing users better and to reach out beyond the walls and websites of the institution to reach potential beneficiaries wherever they are and in association with the task they are undertaking at that time (Miller 2005).

2.2.6.2 What is Library 2.0?

Library 2.0 is mainly concerned with using the Web 2.0 opportunities in a library environment. The term "Library 2.0" was first used by Michael Casey on his LibraryCrunch blog in 2005 where he explains how Web 2.0 can be used in the library to empower the users, encourage constant change, and reach those who do not use libraries (Casey and Savastinuk 2007). Despite his writing on the blog about Library 2.0, the meaning of the term "Library

2.0” was still not well defined and many blogging librarians began to explore what it might mean. Because of the disparate discussion with very wide parameters, controversy was evoked over the definition and relative importance of the term Library 2.0. However, no matter how Library 2.0 may be defined, Casey and Savastinuk (2007:5) state that it should include the following:

- Library 2.0 is a model for constant and purposeful change.
- Library 2.0 empowers library users through participatory, user driven services.
- Through the implementation of the first two elements, Library 2.0 seeks to improve services to current library users while also reaching out to potential library users.

Therefore, Casey and Savastinuk (2007:6) define Library 2.0 as:

A model for library service that encourages constant and purposeful change, inviting user participation in the creation of both physical and virtual services they want, supported by constantly evaluating services. It also attempts to reach new users and better serve current ones through improved customer-driven offerings. Each component by itself is a step toward better serving our users; however, it is through the combined implementation of all of these that we can reach Library 2.0.

Habib (2006) argues that Library 2.0 should not only be defined as library services which directly apply Web 2.0 applications. He accepts that the Web 2.0 applications are still the core subset of Library 2.0 because it focuses largely on information based services, which makes it of particular interest to the library profession. Habib (2006:8) points out that Web 2.0 is primarily a commercial term which has a profit motive behind it, whereas, when Web 2.0 methodologies and technologies are used in libraries, the conversation is focused on providing quality library services. He further argues that Library 2.0 should also not be defined as “a concept of a very different library service that operates according to the expectations of today’s library users. In this vision, the library makes information available wherever and whenever the user requires it.” Habib (2006) suggests that in order to understand the term Library 2.0, the characteristics of both “Web 2.0” and “library user’s need” need to be combined to create a unique concept. As a result, Library 2.0 should describe a unique service model that arises when a library takes Web 2.0 services into account. Based on the above argument Habib (2006:9) proposed that “Library 2.0 describes a

subset of library services designed to meet user needs caused by the direct and peripheral effects of Web 2.0.”

Maness (2006) states that a more exact definition and theory for Library 2.0 should necessarily focus its discussion and experimentation within the community, and it should be valuable in the implementation of new web-based services in the years to come. Thus, according to him, Library 2.0 can be understood as “the application of interactive, collaborative, and multi-media web-based technologies to web-based library services and collections (Maness 2006).”

The main focus of Library 2.0 is on four core values, which are user-centred change, provision of a multimedia experience, user participation in content creation and communal innovation (Casey 2005). Casey (2005) further argues that the library expresses these values by “changing the way library designs its systems and services, and by applying interactive, collaborative and multimedia web-based technologies in order to build library based applications.” All the successful libraries’ services that use the Library 2.0 model have some characteristics in common, the following are the most important and well known (Chad and Miller 2005, Kwanya 2010, Crawford 2006):

1. Library 2.0 is a library with no barriers: information resources managed by Library 2.0 are readily available and barriers to use them are minimised.
2. Library 2.0 embraces its communities and changes with them.
3. Library 2.0 is everywhere: it is beyond the notion of the “library without walls” where physical library services were digitally reproduced. The literature shows that the Library 2.0 model provides services at the appropriate time, in an appropriate format and with appropriate devices. It attempts to be all things to all people and serves information needs under all circumstances.
4. Library 2.0 has flexible systems: it develops a new relationship between librarians and users in which both parties push together the limit of what is possible at the same time as ensuring that the core services continue to operate reliably.
5. Library 2.0 is a multimedia experience: its collection and services consist of video, audio, text, and pictures.
6. In the Library 2.0 environment, the roles of librarians and users are indistinct.

7. Library 2.0 is socially rich because of its robust Web presence which encourages a two-way communication environment between users and librarians, and
8. Library 2.0 invites user participation.

Figure 3 below shows the principles of Web 2.0 from which Library 2.0 was directly developed.

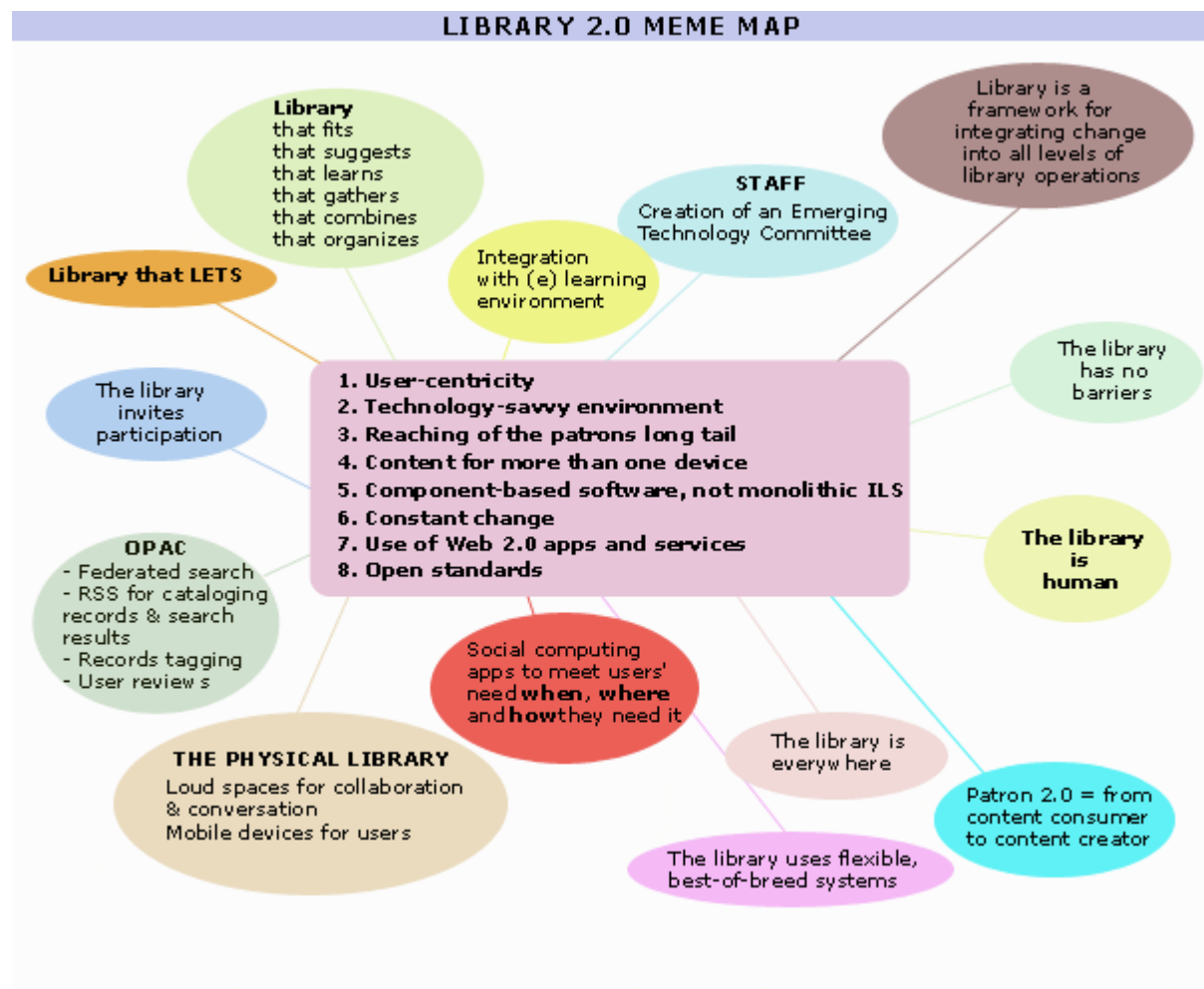
Figure 3: The principles of Web 2.0.

Principle	Explanation
Freeing of data	This allows the application to be uncovered and manipulated indifferent ways.
Building of virtual applications	This enables data and functionality to be taken from various different sources. Web 2.0 permits users to use a mash-up of different applications available on the Web to create new applications.
Participative	Users actively participate online by blogging or sharing files. This feedback is then given back to the application and makes it available to all users to view and comment on.
Works for the user	Web 2.0 locates and assembles content that meets the needs of the user.
Modular	Applications are modular with developers and users able to pick and choose in order to build the application that they need.
Sharing	Web 2.0 is about sharing code, concept and ideas, with money still being made.
Communication and facilitating community	Web 2.0 couldn't facilitate the back-and-forth of true communication but it did so to a degree through the use of blogs and similar applications.
Remix	Rather than having to go from one area of the Web to another and having to navigate through numerous annoying advertisements, the user can choose what they require and incorporate it into something new.
Smart	Web 2.0 applications will use knowledge for the user, know where the user has been and know what the user is doing. This will then enable the application to deliver a service that will meet the user's needs.
Long tail	This phrase describes certain business and economic models such as Amazon. The term "long tail" is also generally used in statistics often applied in relation to wealth distributions or vocabulary use.

Source: Curran, Murray, and Christian (2007)

Figure 4 shows a Library 2.0 Meme Map (Biancu, 2006) which discloses all the principles and important parts of Library 2.0 that need to be in place for it to be as effective and efficient as possible.

Figure 4: Meme map of Library 2.0.



Source: Biancu (2006)

The central rectangle part of this meme map represents the foundations of the Library 2.0 model, and all the surrounding branches represent principles and conditions that facilitate the creation and sustenance of an effective environment for the Library 2.0 model.

2.2.6.3 Library 1.0 vs. Library 2.0 services

Libraries, as any other organisation, ensure that all the services they offer (regardless of whether they are new or old) work towards their goal and mission. Casey and Savastinuk (2007) state that offering old or new services do not matter as long as the goals are met and users are satisfied. The satisfaction of users is critical. One of the ways to determine whether users are satisfied and to find out whether the services offered are still relevant, is by welcoming feedback and comments from users. Library 2.0 is all about this, and it uses Web 2.0 applications in order to obtain comment and feedback from users.

Though a multitude of benefits are offered by the Library 2.0 model, this model is not suitable for all user categories, for example, those based on age and literacy levels. The Library 2.0 model is most suitable for academic libraries where users are mostly educated and are expected to have knowledge of the newer technologies. This is in contrast to public libraries which serve a variety of users including those who only use libraries for newspaper reading (job hunting), and children (and adults) who cannot use computers.

Deschamps (2008) argues that there is no need to implement Library 2.0 (elaborate strategies and a long process of planning are required) while the Library 1.0 model can still serve users effectively. According to him, if Library 2.0 is there to improve on Library 1.0 services, then it should develop a more active policy and break the barriers that prevent people using the library effectively rather than launching blogs which really accomplish little in improving customer service.

Kwanya, Stilwell and Underwood (2009), and Rothman (2006) do not see any controversy between Library 1.0 and Library 2.0. They argue that Library 2.0 involves more technologies but the core objectives of the traditional library are still the same. Rothman (2006) states that implementing a new model does not mean that the old one is bad or irrelevant but that the new one can facilitate better services, especially in light of changes in what he/she refers to as the “infosphere”. Schneider (2006) shows how the Library 2.0 model differs from the Library 1.0 model in Figure 5 below.

Figure 5: Differences between Library 1.0 and Library 2.0.

Library 1.0	Library 2.0
Closed stacks	Open stacks
Collection development	Library suggestion box
Pre-organised Information and Library Services	User tagging
Walk-in services	Globally available services
“Ready-only” catalogue	Amazon-style comments
Print newsletter mailed out	Team-built blog
Easy=dumb users	Easy = smart users
Limited service options	Broad range of options
Information as commodity	Information as conversation
Monolithic applications	Flexible, adaptive modules
Mission focus is output	Mission focus is outcome
Focus on bringing them in	Focus on finding the user
ILS is core operation	User services are core

Source: Schneider (2006)

2.3 Library 2.0 model in the academic library

With the introduction of Web 2.0, librarians find themselves in the age of participation, a time when all users are technically motivated and empowered to contribute to library content unconditionally and regardless of their background or position (Rice 2011). The following are the Web 2.0 tools suitable for the academic library:

2.3.1 Weblogs (blogs)

In the Library 2.0 environment, weblogs serve as the library’s first contact with users online. They are open to users, provide information and open a space for participation and feedback. Instead of pushing information such as upcoming library events or services via announcements or calendars, blogs can be used since they offer to users the ability to ask

questions and comment. By doing so, the response will be available to the entire community of users. Casey and Savastinuk (2007) argue that for every one student who asks where a section or particular item is located in the library, there are five to ten more students who did not have time to ask or were afraid to ask.

Academic libraries use blogs as a medium to promote their service, to display book reviews, to advertise events, enable group discussions, and inform users about database upgrades, library renovations, and recent acquisitions (Kroski 2008). Academic library catalogues need blogs, such as author, to be built into the system in order to interest enough people to communicate (Courtney 2007). Kroski (2008) goes on to point out that:

academic librarians are using blogs to exchange and gather up-to-the-minute news and developments in the field. They are blogging conference sessions for their readers, sharing job experiences, providing summaries and statistics from industry reports, writing scholarly articles, and recommending resources. Librarians within the biblioblogosphere are in the middle of a dynamic and often scholarly conversation that has to reach the broader audience faster than traditional journals.

William and Goodwin (2007) identified five important ways that academic libraries use blogs:

- Replace a standard Web subject guide with a blog. At some universities such as Georgia State, subject librarians instead of using old web-based subject guides, use blogs because they are more easily updated and RSS feeds created from these subject blogs can easily be posted on course webpages to update classes about the new resources available;
- Have faculty staff post their important resources to the subject blogs;
- Use a blog to answer frequently asked questions;
- Use a blog to teach searching techniques and provide tips, and
- Proactively view blogs for possible opportunities to teach/ help.

When users visit a certain blog for the first time, they will only come back to the blog if it was useful for them. Updating the blog is crucial in this regard and it is argued that blogs should not be started if subsequent updating is going to be problematic (William and Goodwin 2007). In addition to blogs there are also podcasts which are audio blogs, typically

updated weekly or daily. Podcasts, like weblogs, are also used in academic libraries that users can access using their iPods or MP3 player, and downloadable audio file.

2.3.2 RSS

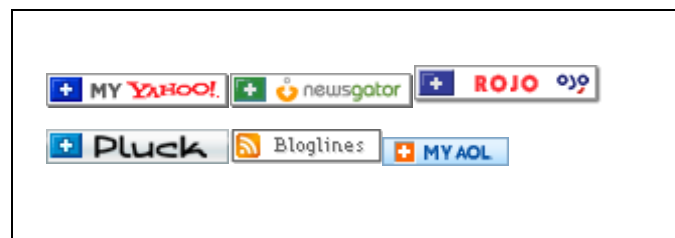
Really Simple Syndication (RSS) is simple to employ and a very powerful tool. RSS allows users to customise their information and remain informed about services and materials they are interested in (Courtney 2007). Krosky (2008) recognises that one of the important progressions that marked the bridge from Web 1.0 to Web 2.0 was the “development of a standardised distribution method for online material where RSS technology played a very important role by enabling publishers to syndicate news and other content on the Web.” He further argues that the simplicity of RSS has served to lower the barriers to the publishing process, by allowing ordinary users to distribute their content to the masses. Talk show hosts, amateur journalists, and even filmmakers are able to distribute their content as easily as CNN.

Kroski (2008), William and Goodwin (2007), and Parkes and Walton (2010) have noted that academic libraries use RSS in many ways, including:

- News outlet: to push the latest information about the library such as new events or resources. An RSS feed can be inserted on the home page of the library blog as a quick way to access the latest news about the library;
- Library workshop: RSS feeds can be used to keep users updated about new library instructions and training workshops;
- Current awareness/SDI tool: some databases such as ProQuest and PubMed have already started making searches available as an RSS feed. This is done by creating a feed that highlights a local author’s work in order to help students;
- Track library materials: with RSS feeds, the library can enable users to track due dates of library materials;
- Journal articles: the library can supply a list of the table of contents of journals;
- Subject guide feeds: it is possible to create a feed that will go along with a lecturer’s blog for a course. This RSS feed can be incorporated in the blog and list new resources, searching tips or new items of interest for the class, and
- New acquisitions: the library can present users with RSS feeds that update users about new digital images they have acquired.

Through RSS, people can subscribe to tags, podcasts, articles, database searches, video blogs and blog posts. RSS allow users to aggregate personal and customised information into portals such as a Google personalised page or My Yahoo! (Krosky 2008). There are many things that RSS does on the internet and in essence it allows users to choose exactly what content to view. Figure 6 below shows examples of the symbols of RSS.

Figure 6: Examples of RSS symbols.



2.3.3. Wikis

Both blogs and wikis are Web technologies that significantly reduce the technical barriers to Web content creation. Basically Wiki “is a piece of server software that allows users to freely create and edit Web page content using any Web browser. Wiki supports hyperlinks and has simple text syntax for creating new pages and crosslinks between internal pages on the fly” (Wiki.org 2002) the emergence of the read/write Web such as wikis, has led to a spirit of collaboration and community and has created an atmosphere in which users are contributing and sharing their expertise to their online resources. Wiki technology provides a ground for effortless collaboration and knowledge sharing among communities of librarians and users. It allows users and librarians, without any programming knowledge, to come up with subjects, work together on projects, and to create training resources (Kroski 2008). Wikipedia is the largest and most well-known wiki. Basically, wikis include the following features:

- Page or article: basic feature of wikis is that any user with access to a page can edit, create, overwrite and update content, or revert back to an earlier state;
- Text markup: wikis make the creation of links and new webpages easy, and most wikis use simple markup syntax for formatting the content text;
- Easy to add a new page: wikis provide a space to type the content and use the toolbars for formatting text and adding links;

- Search function: wikis provide a box for searching and include a simple keyword search engine to enable searching in order to locate relevant data;
- Files and attachments can be uploaded to wikis;
- Security / anti-spam: some wikis include features such as CAPTICHAs or spam blacklist to protect the content against vandalism by automated spamming bots;
- Discussion page: each page of wiki offers an area for discussion and comment, and
- Revision history: this is one of the key features of wikis that tracks all the edited versions of a given wiki page (Kroski 2008; Courtney 2007, and William and Goodwin 2007).

Wikis have been used by many organisations in different ways and for different purposes. Courtney (2007), William and Goodwin (2007), Lamb (2004) and Mitchell (2006) suggest some important ways libraries can use wikis:

- Internal communication (intranet): many libraries have a staff intranet and Web page that facilitates communication among all the library staff. These intranets are usually maintained by an administrator or by those few people who have access to the server. The problem is that these intranets are always out-of-date since only a few people are maintaining and adding the content. Wikis are the best option to resolve this problem since everyone can be an administrator and anyone can add and edit content anytime;
- Institutional collaboration: a common way that wikis can be used in the academic setting is to foster and support collaboration among the large community of users that the library serves. “For students, wikis can be used as a pedagogical platform for instruction in the writing process, and for lecturers and researchers wikis can be used as an online writing tool to provide collaborative preparation of the research paper and curriculum materials;”
- Research guide: also called a subject guide. Unlike a blog where users post only comments, with wikis librarians create a subject guide and users can significantly contribute materials to them;
- Conference planning: wikis are increasingly being used for conference planning in library and higher education by providing a shared information platform where conference planners and participants from different places can share information with all conference attendees.

Much like a blog, wikis help libraries capture user's knowledge in a manageable way and make it accessible to everyone and it can serve as a depository for document and multimedia content. So the library can get 'richer' as many users contribute. Furthermore, a wiki can help to create a place for online discussion in the library. Discussions of articles placed on Wikipedia are good examples of wiki-discussions (Casey and Savastinuk 2007).

2.3.4 Social networking

- Social networking sites suitable for the academic library include Facebook, Twitter, and MySpace. Despite the differences in their functions and abilities, most social networking websites are built around a core set of features such as user profile, friends list, groups, individual messaging, announcements, photos, searching, user comments, and privacy controls (Courtney 2007). Academic librarians are now using these social networking sites as vehicles for outreach and promotion, as a means of connecting with users and as a portal to the library (Kroski 2008). Librarians are no longer waiting for users to come to them, they are going to where the users are by joining online communities, advertising, and providing library services to them wherever they are. Rice (2011) in his study on how students push their Facebook use further into course work, shows that Facebook is "valuable" or even "extremely valuable" to students' academic success.

Academic libraries are using social networking in the following ways:

- New acquisitions: using MySpace or Facebook, librarians are providing a slideshow of new book covers and giving brief information about their new materials. A link to the library catalogue and electronic database for more information is provided;
- Library portal: some universities such as Brooklyn College are using MySpace as their library portal. Links direct users to their library website;
- Library service promotions: MySpace, Twitter and Facebook are considered useful places to promote initiatives such as online book clubs, as done by the University of Central Florida;
- Remote library catalogue: libraries are allowing users to search their OPAC from a search box which is displayed in a user's MySpace or Facebook profile;

- Library events, news and information: libraries are using their MySpace and Facebook profile to display their workshop calendar, study hours and contact information (Kroski 2008; Courtney 2007; Rice 2011, and Casey and Savastinuk 2007).

Academic libraries are using social networking sites to participate in the social Web. Both librarians and users are joining forces to create, organise, consume and share knowledge and information within online communities. In addition, both librarians and users are forming connections and building social capital among their peers.

2.3.5 Video and photo sharing

Online video-sharing websites such as YouTube and photo-sharing sites such as Flickr, enable users to share, watch, comment, tag, and rate digital collections remotely from any web-based device that will support them. Academic libraries are using photo-sharing sites such as Flickr and video-sharing sites such as YouTube in the following ways:

- Marketing and promotion by uploading pictures and videos of their library collections, library activities and initiatives, and library publications;
- New acquisitions: to display photos of book covers;
- To display videos and photos of library conferences and events and of the library building;
- Library instruction: some universities such as the Georgia Institute of Technology provide webcasts to instruct users on how to conduct cited reference searches (Kroski 2008).

2.3.6 Social bookmarking

Social bookmarking applications allow users to bookmark websites, blog posts, articles or any web-based materials for easy future retrieval in online space. Users arrange, sort, and share their information and by doing so, they are collectively creating a depository of their recommended resources available to be explored by people with the same interests (Kroski 2008). Unlike personalised social networking, such as Facebook or MySpace which give priority to developing relationships, social bookmarking sites such as del.icio.us or Furl focus on managing and sharing information.

Academic libraries use social bookmarking applications to provide users with subject guides, reader's advisory sources, and recommended Web and staff resources. Librarians can bookmark websites, images, and podcasts in subject areas in order to offer users an up-to-date guide to the best of the Web (Kroski 2008).

2.3.7 Social cataloguing

Traditionally, cataloguing of library materials was reserved only for librarians. However, with the advent of Library 2.0 applications, users have been given a space to catalogue their own collections, to develop their own personal taxonomy and to encounter likeminded people. Through sites such as LibraryThing, Listal, and Shelfari, ordinary users without any cataloguing experience are organising and managing their collections, holding book discussions, voicing their opinions, and evaluating library material such as DVDs (Kroski 2008). LibraryThing is the most used social catalogue. According to Kroski (2008), it is being used in academic libraries in many ways, including the following:

- New acquisitions: many libraries catalogue their new books in LibraryThing and display their new acquisitions on their website;
- Website gadgets: some libraries link their learning resource centre website to their LibraryThing catalogue to display items from their collection. Other libraries use their LibraryThing widget tool to display their new books on the front page of their website;
- Subject-specific collections: LibraryThing can be used to keep special collections;
- Display cover art: in order to present new book covers on the library website, some libraries catalogue their new titles in LibraryThing, and
- Social OPAC: libraries are incorporating user-developed social features into their online catalogue such as book recommendations, tagging and user reviews.

2.4. Library 2.0 in Africa

Not much research has been conducted on Library 2.0 in the African context. A recent study was done by Kwanya (2010) in the form of a PhD thesis. He investigated the potential of Library 2.0 for research libraries in Kenya and concluded that these libraries are likely to face some challenges while implementing the Library 2.0 model. He argued that despite the challenges faced by librarians such as funding, understaffing, unreliable ICT infrastructure

and copyright issues, research libraries in Kenya are also facing scalability challenges such as good coordination and harmonisation of the various preferences of the users which in return are likely to hold back the efforts to apply the Library 2.0 model.

In the South African context, Penzhorn and Pienaar (2009) conducted research on “The use of social networking tools for innovative service delivery at the University of Pretoria Library”. According to them, the implementation of Facebook, blogs, YouTube, Wiki, Gaming, and Skype within the University of Pretoria (UP) Library, has improved UP Library in terms of service delivery. Activities such as marketing “the book of the month” by users via a blog and the creation of awareness of the UP Library via a video on YouTube have been exceptionally well received and significantly improved the quality of the UP libraries services.

In terms of UKZN specifically, Ngcobo (2010) did a preliminary study of library staff understanding of Web 2.0 technologies as well as their application in libraries. Questions were also asked of staff at the University of Pretoria. In addition to library staff, ICT staffs were also included in the study. A conclusion reached was that “there was no question about the importance of Web 2.0 technologies in libraries” and that implementation of these technologies at UKZN would require careful monitoring and assessment.

2.5. Summary of the chapter

The involvement of technology in academic libraries has changed the way librarians deliver information to their users. This seems to be inevitable since most users are becoming more familiar with Web 2.0 technologies and expect their libraries to move with them at the same pace in terms of technological development. Therefore academic libraries must take their mandate of delivering a relevant, timely and efficient service seriously in order to remain relevant. Based on some elements such as the sharing of information, changing the way libraries design their systems and services, and by applying interactive, collaborative and multimedia web-based technologies in order to build library based applications, the Library 2.0 model seems to be more appropriate for academic libraries than other service models.

Chapter three: Research methodology and methods

3.1. Introduction

This section discusses the methods used to understand the status of Library 2.0 within the libraries of the University of KwaZulu-Natal. Thus, it covers research design, population, data collection instruments and procedure, validity and reliability of data.

3.2. Research design

This study used both qualitative and quantitative research approaches. For the quantitative approach, the survey research method was chosen because the objective was to measure, describe, compare, classify, analyse and interpret the status of Library 2.0 in the UKZN libraries. For a qualitative approach semi-structured interviews were used. The purpose of using qualitative research according to Glesne and Peshkin (1992:7) is to contextualise and interpret results using induction to derive possible explanations based on observed phenomena. According to Robert (1999), a qualitative approach is important as “it helps to provide rich descriptions of phenomena and enhance understanding of the context of events as well as the event themselves.” On the other hand, the quantitative approach generalises and predicts findings based on the use of formal instruments such as questionnaires.

According to Bryman (1998 cited in Ngulube 2003:197) there are situations and topics in research that are better served by a marriage of the two traditions (qualitative and quantitative methods). In addition, Cohen, Manion and Morrison (2000:112) suggest that the paradigms can be used together to demonstrate coexisting validity from both methods. Thus, the quantitative approach benefited the present study in determining the status of Library 2.0 within UKZN libraries, and the qualitative approach was employed to obtain the views of the campus librarians and the Director of the UKZN libraries.

This study used a self-administered questionnaire and semi-structured interviews to collect data. The questionnaire was distributed to 21 subject librarians and the semi-structured interviews were held with four campus librarians and the Library Director (see below).

3.3. Population

The population of the study can be defined as a theoretically specified aggregation of the study elements (Babbie and Mouton 2001). Thus the choice of the population should be made carefully in order to include appropriate elements of the study.

3.3.1 Size of population

The population for this study was 29 UKZN library staff; this included all the subject librarians of the main libraries from all five campuses (23 subject librarians), five campus librarians from each campus and one Library Director.

3.3.2 Subject librarians

The reason why this population was chosen is because the subject librarians are in contact with students, they interact with them, and they provide information to library users. Therefore, they are expected to know the users' needs. Because successful implementation of the Library 2.0 model does not depend only on ICTs being in place, but also with the subject librarians' ability to use them effectively, their views were considered very important.

3.3.3 Campus librarians

It was considered important to include campus librarians since they are well informed about the existing ICTs in their libraries. Thus they are expected to know the reason/s behind UKZN libraries implementing or not fully implementing the Library 2.0 model. They would also be familiar with budgetary constraints in this regard.

3.3.4 Library Director

Finally, the Library Director being the representative of UKZN libraries in UKZN management was interviewed as her views on the concept and implementation of Library 2.0 are important in terms of future plans.

3.3.5 Data collection instruments and procedures

This study used two methods of data collection, the interview schedule and the self-administered questionnaire. While questionnaires are usually completed by respondents independently of the researcher, the latter was available at any time to answer any questions related to the questionnaire.

3.3.6 The questionnaire

The questionnaire was designed to obtain the views of the subject librarians on the implementation of the Library 2.0 model in UKZN libraries. The questionnaire consisted of three pages and contained 16 questions (see Appendix 5). A questionnaire was used because when reporting on assessment ratings or performance, respondents may feel able to give more information in an anonymous and confidential way.

The questionnaire was divided into three sections:

- Section A: personal information of subject librarians. The questions in this section elicited information on gender, title and level of study of subject librarians.
- Section B: familiarity of the subject librarians with Web 2.0 technologies. The questions asked in this section aimed to explore the subject librarians' knowledge of Web 2.0 technologies and their involvement in these technologies.
- Section C: UKZN libraries and Library 2.0. This section contains the questions that helped to discover and understand the model that is currently used in UKZN libraries, the status of Library 2.0 and problems faced by the UKZN libraries that constitute stumbling blocks for the full implementation of the Library 2.0 model.

Both open and closed questions were used in this questionnaire.

3.3.7 Open-ended questions

Open-ended questions are a type of question which allows the respondent to answer freely a question in his/ her own words (Bertram *et al* 2010). Thus on some questions such as questions from number 8 to 16, the respondents were asked to explain in their own words. With open-ended questions, the researcher does not have any control over how the

respondents answer these questions, therefore the questions can be difficult to code and analyse. Such questions require some form of content analysis.

3.3.8 Closed questions

Closed questions are those questions where respondents are given the option to choose answers from a given list of answers. They are easier and faster to complete and are also easier and faster to code and analyse (Bertram *et al* 2010). In the present study, the close-ended questions were from question number 1 to number 7.

3.4 Interview schedule

An interview is a structured conversation between researcher and the respondents, where the researcher has in mind particular information that she/he wants from the respondents (Bertram *et al* 2010). The reason for using the interview was because these respondents comprised the UKZN library management and it was important to get as much information from the respondents as possible. Equally importantly was that the interview allows for probing and clarification of answers – an important consideration in this study. Two sets of interview schedules were used - one for the campus librarians and one for the Library Director. The interview schedule for the campus librarians contained 13 questions and the schedule for the Library Director contained 11 questions. Most of the questions in the schedules were open-ended ones because the purpose of the interview was to understand the status of the Library 2.0 model and the reason/s, if applicable, of not fully implementing this model.

Before undertaking any of the interviews and distributing questionnaires, written request letters (consent letters) were sent to participants including the Library Director in order to ask permission for the interviews, as well to get permission to distribute questionnaires to the subject librarians (Appendix 1 and 2).

3.5. Pre-test

In this study the questionnaire was pre-tested on two subject librarians from the Durban University of Technology, before the study was conducted. This was to allow the researcher to determine whether all instructions and the questions in the questionnaire were understood

or not. No problems were encountered by the subject librarians and the questionnaire was readied for distribution to the UKZN subject librarians.

3.6. Data collection

Questionnaires were distributed electronically to some respondents who were far from the researcher, and manually to others who were closer. The distribution of questionnaires took three days (from 29 to 31 October 2011). All the respondents (seven) who received questionnaires in hard copy responded within five days (from 31 October to 4 November). Out of the 16 questionnaires distributed electronically only nine were returned within one week. For the respondents who received questionnaires electronically but could not return them, the researcher followed up by providing them with a hard copy. Of these, two did not respond. Thus out of 23 UKZN subject librarians selected as part of the population of this study, 21 responded to the questionnaire giving a response rate of 91.3%.

The interviews took place in different places. The researcher met with the campus librarians at their libraries on their respective campuses. The Library Director was interviewed at the Alan Paton Centre on the Pietermaritzburg Campus. Of the five campus librarians selected as part of the population, only four were interviewed and one was on leave during this period. The interviews took ten days (from 3 to 10 November). Therefore the whole data collection process took about 15 days (from 29 October to 10 November, 2011) and consisted of 26 respondents. Permission was granted by the interviewees to use a voice recorder to record interviews and these were later transcribed.

3.7. Data analysis

After collecting the data, the next procedure performed was data cleaning. According to Diamantopoulos and Schlegelmilch (1997), data cleaning is very important since it helps to identify omissions, ambiguities and errors in the responses. Bertram *et al* (2010) define analysis as a process that includes three main steps that the researcher needs to undertake. The first step is to analyse or to ask what the data say, the second step is to interpret or to ask what the data mean, and the third step consists of presenting the analysis to readers. As noted above the study used both quantitative and qualitative methods of data collection, therefore the analyses will be discussed separately.

3.7.1 Analysis of qualitative data

McMillan and Schumacher (1997) argue that “qualitative researchers integrate the operations of organising, analysing, and interpreting data and call the entire process data analysis.” It is important to note that qualitative data basically means textual or visual data. The raw qualitative data that the present researcher collected was the audio taped interviews which were transcribed and some of the open questions from the questionnaire. The qualitative data was analysed using thematic content analysis techniques. This was considered a suitable approach for collecting and organising information systematically in a standard format as it allowed the analyst to draw conclusions about the characteristics and meaning of the recorded material (Alreck and Settle 1995:271).

3.7.2 Analysis of quantitative data

Quantitative data, sometimes called numerical data, is the data measured or identified on a numerical scale. Quantitative data is essentially analysed using statistical methods, and results can be displayed using tables, charts, histograms, and graphs. Therefore data are something we collect and interpret in order to reach the research conclusions (Blaikie 2003). May (1997:95) states that it is very important to code the questionnaire in order to classify responses into analysable and meaningful categories. Thus in the present study, the variables in the questionnaire were given codes before entering the quantitative data into SPSS, the computer program used to analyse quantitative data. The reason why SPSS was used is because it does not only save time but also helps to perform complex data manipulation with straightforward instructions (Larson-Hall 2010). With the help of SPSS, frequency tables, graphs, and pie charts were created and used for quantitative analysis and subsequent presentation (see Chapter four).

3.8 Validity and reliability

Litwin (1995) argues that the only way to ensure the validity and reliability of research is to evaluate both the method and the instrumentation used, in order to determine if they measure the issues pertinent to the topic of the study. He further emphasises that validity and reliability refer to the different aspects of a measure’s ‘believability’. According to Golafshani (2003), “validity and reliability are conceptualised as trustworthiness, rigor and

quality in qualitative research.” Litwin (1995) also states that “validity and reliability are statistical measures of how reproducible the survey instrument’s data are.”

3.8.1 Validity

It is generally accepted that “the concept of validity addresses the nature of reality; therefore, validity refers to the extent to which a concept, conclusion and measurement are well-founded and correspond accurately to the real world” (Büttner1997). Put in another way, it helps to understand whether a study is able to scientifically answer the questions that are intended to be answered.

In this study, to help ensure the validity of the results the researcher used both questionnaires and interviews, a comparison of results obtained from participants, and an appropriate population, whose members were considered appropriate to respond to the questions posed. In addition, and as mentioned above, the main instrument was pre-tested – an important consideration in terms of ensuring validity of one’s findings.

3.8.2 Reliability

Reliability can be regarded as the extent to which a measuring procedure produces the same result repeatedly. In other words, a reliable measure is measuring something consistently (Mugenda and Mugenda 1999 in Kwanja 2010). Reliability does not imply validity although the converse holds true. Apart from repeating the study (beyond the scope of this research) there was no other mechanism to test the reliability of the results. However, the researcher is of the opinion that should the study be repeated a similar set of results would be obtained.

3.9. Summary of the chapter

The research methodology and methods that were used to address the research problem were discussed in this section. This includes a detailed discussion of the questionnaire and interviews as the data collection methods used in this study. Important issues such as research design, population, and data collection instruments, pre-test of questionnaire, validity and reliability were discussed.

Chapter Four: Presentation of results

4.1 Introduction

This chapter presents the research findings. This study set out to assess the status of Library 2.0 as part of the technology initiatives within UKZN libraries. In doing so the questionnaire and interview schedule were designed to answer the key questions as posed in Chapter one.

4.2 Results of the survey of subject librarians

The questionnaire had three main headings. The first section of the questionnaire required personal information from the respondents; the second section sought to understand the UKZN subject librarians' familiarity with Web 2.0 technologies; and the last section of the questionnaire dealt with UKZN subject librarians' level of understanding of the Library 2.0 concept and to investigate the status of the Library 2.0 model within UKZN libraries.

Twenty one of the population of 23 subject librarians responded giving an excellent response rate of 91.3%.

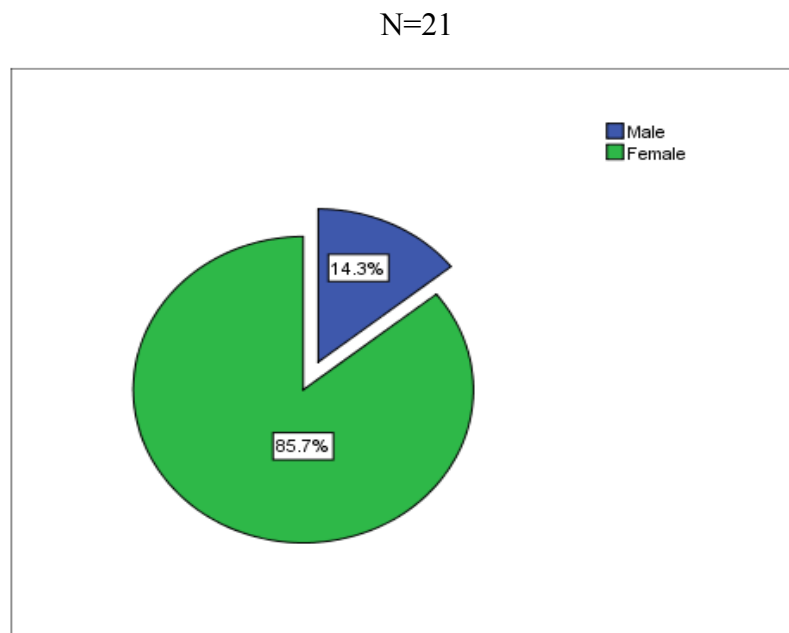
4.2.1 Section A: Personal information

The section on personal information required the respondents to provide information related to their gender, education level and age.

4.2.1.1 Gender

The respondents were asked to specify their gender (Question 1). The results illustrated in Figure 7 show that there were 18 (85.7%) female and three (14.3%) male respondents.

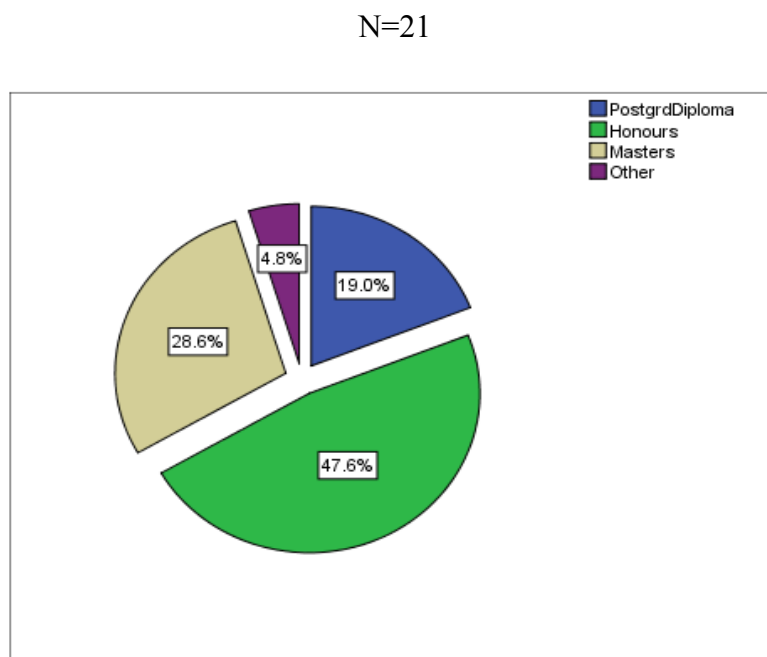
Figure 7: Gender



4.2.1.2 Educational qualification

The respondents were asked to specify their highest educational qualifications (Question 2). Figure 8 below represents their highest qualifications.

Figure 8: Highest qualification

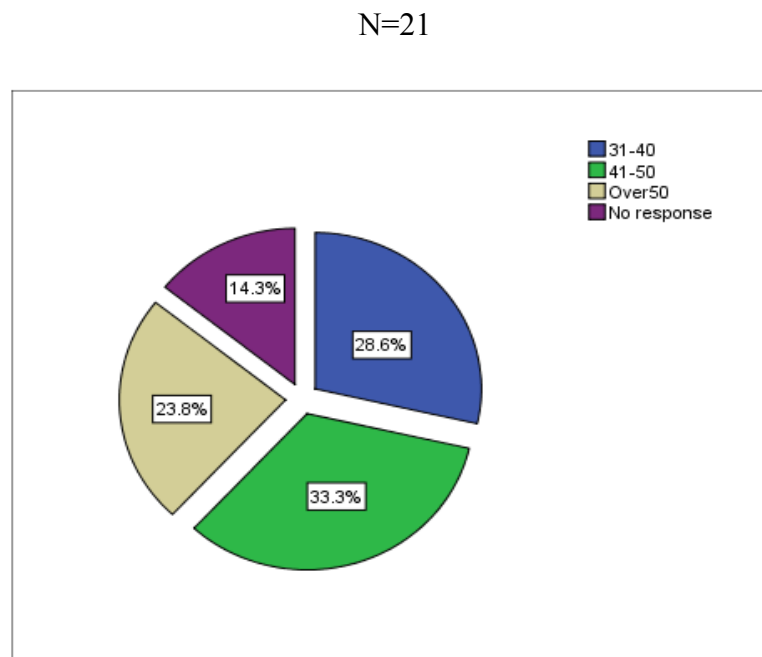


All 20 of the subject librarians who replied held post-graduate qualifications. Ten (47.6%) of the respondents held Honours Degrees; six (28.6%) held Masters Degrees, four (19%) had Post-graduate Diplomas and one (4.8%) did not specify.

4.2.1.3 Age

Respondents were asked to indicate in what range their ages fell (Question 3). The age ranges were arranged in the following way: 20-30; 31-40; 41-50; and over 50. The highest number of respondents, seven, (33.3%) fell within the range of 41-50; there were six (28.6 %) respondents between the age of 31-40; and five (23.8%) who were over 50. Three (14.3 %) respondents did not give their age

Figure 9: Age



4.2.2 Section B: Awareness of Web 2.0 technologies

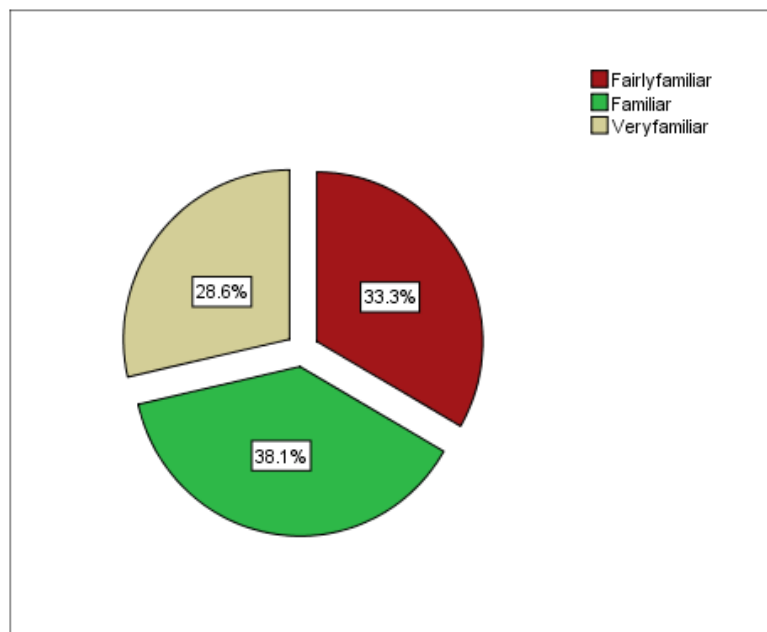
The questions asked in this section investigated how familiar respondents were with the services of Web 2.0 technologies.

4.2.2.1 Web 2.0 technologies familiarity

Respondents were asked how familiar they are with Web 2.0 technologies (Question 4). They were given degrees of familiarity. The results in Figure 10 below show that seven (33.3%) respondents were less familiar; eight (38.1%) considered themselves as familiar and six (28.6%) as very familiar with the services of Web 2.0 technology.

Figure 10: Web 2.0 technology familiarity

N=21

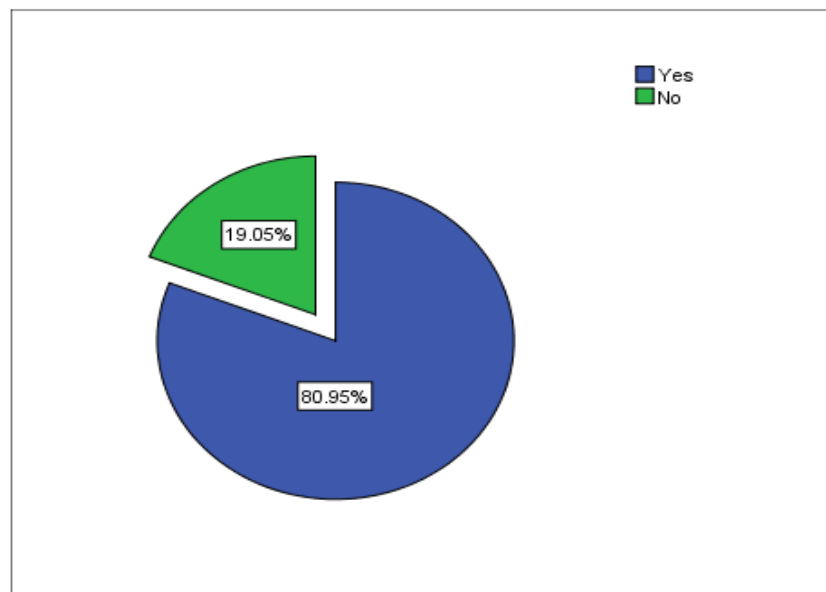


4.2.2.2 Subscription to social networking service

Respondents were asked if they personally subscribed to a social networking service (Question 5). Out of 21 respondents the vast majority 17 (81%) indicated that they did so.

Figure 11: Subscription to social networking service

N=22



4.2.2.3 Social networking service subscribed to

Those respondents, who were subscribed to a social networking service, were asked to specify the service they were subscribed to (Question 6). Figure 12 below indicates that all 17 (100%) of the respondents who were subscribed to a social networking service used Facebook. Eight (47%) subscribed to Twitter; five (29.4%) to LinkedIn; four (23.5%) to YouTube and one (5.8%) to MySpace.

Figure 12: Social networking service subscribed to.

N=17

Social networking subscribed on	Number of respondents	%
• Facebook	17	100
• Twitter	8	47
• Other (Linked In)	5	29.4
• YouTube	4	23.5
• MySpace	1	5.8

4.2.2.4 Cross tabulation of Age with Web2.0 tools familiarity

Figure 13 presents a cross tabulation of respondents' Web 2.0 tools familiarity with their age. Among the respondents(six) of age between 31 and 40, three were familiar with Web 2.0 technologies, three of seven people between the ages of 41 to 50 were very familiar and four of five people over 50 described themselves as 'fairly familiar' with Web 2.0 technologies.

Figure 13: Age and Web2.0 tools familiarity cross tabulation

N=21

Age	Web2.0 tools familiarity			Total
	Fairly familiar	Familiar	Very familiar	
31-40	2	3	1	6
41-50	1	3	3	7
Over 50	4	0	1	5
No response	0	2	1	3
Total	7	8	6	21

4.2.3 Section C: Status of Library 2.0 model in UKZN libraries

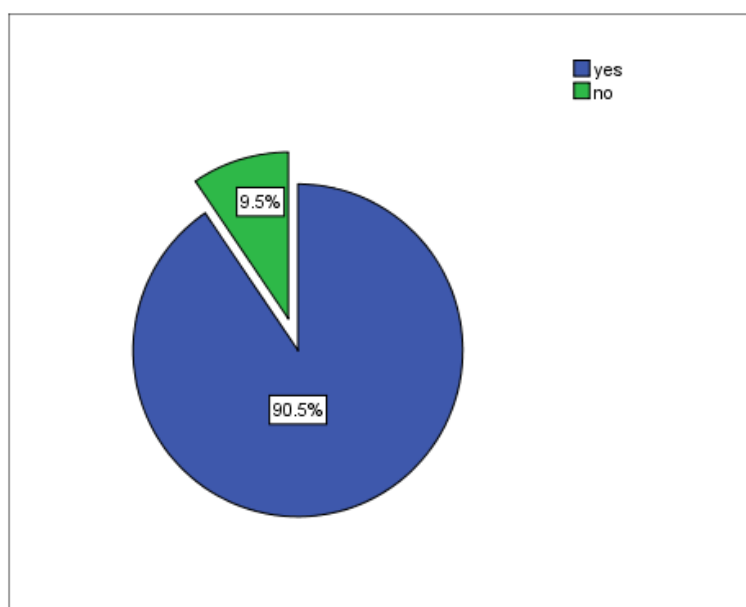
This section sought to assess the respondents' understanding of Library 2.0, and the status of Library 2.0 within the libraries of the University of KwaZulu-Natal.

4.2.3.1 The use of Web 2.0 technologies in UKZN libraries

Respondents were asked whether their UKZN library utilises Web 2.0 technologies such as Facebook, Blogs, Twitter, YouTube and MySpace (Question 7). Most of respondents, 19 (90.5%) said yes, only two (9.5%) said no.

Figure 14: Do UKZN libraries utilise Web 2.0 technologies?

N=21



4.2.3.2 Specific Web 2.0 technologies used by UKZN libraries

Respondents, who said yes to the previous question, were asked to specify the Web 2.0 technologies that their UKZN library utilises (Question 8).

Figure 15: Web 2.0 technologies used by UKZN libraries.

N=19

Web 2.0 technologies used by UKZN libraries	Number of respondents	%
• Facebook	19	100%
• Blogs	18	94.7%

Multiple responses received.

The results in Figure 15 above show that Facebook and Blogs are the only two Web 2.0 technologies used by the UKZN libraries, with the former being mentioned slightly more than the latter (100% as opposed to 94.7%).

4.2.3.3 The benefits to the library of each of the tools specified

The respondents were required to highlight what they considered to be the benefits to the library of each of the Web 2.0 technologies mentioned (Question 9). Nineteen respondents answered and the responses are reflected in Figure 16.

Figure 16: Benefits to the library of the tools specified

N=19

Benefits	Number of respondents	%
• Library marketing	10	52.6
• Ability to connect with large number of users at the same time	9	47.3
• Easy communication	8	38.1
• Fast communication	8	38.1
• Meet users in their space	7	36.8
• Involve users in library events	6	31.5
• To get comments, suggestions, and feedback	5	26.3
• User friendliness	3	15.7
• Facilitate tutorials	3	15.7

Multiple responses received

4.2.3.4 Students' benefits from tools specified

Respondents were required to highlight what they considered to be the benefits to students of each of the Web 2.0 technologies specified (Question 10). The 21 respondents provided the following multiple responses:

Figure 17: Students' benefits from tools specified

N=21

Benefits	Number of respondents	%
• Communication in real time	7	33.3
• Platform for conversation and participation	7	33.3
• Sharing of knowledge and experiences	6	28.6
• Fast interaction with librarians	5	23.8
• Remote access	5	23.8
• Bridging the gap between young and old	5	23.8
• Keeping students updated on library events	5	23.8
• Freedom of expression	5	23.8
• Communication in the comfort zone	4	19.0
• Online research	4	19.0
• Time saving	2	9.5

Multiple responses received

4.2.3.5 Problems associated with Web 2.0 tools

The respondents were asked to provide the problems they consider to be associated with the use of each of the Web 2.0 technologies specified, first the perspective of the library, and secondly from the perspective of the students (Question 11). Figure 18 below reflects the responses given by the 19 respondents who answered. Responses reflecting the two perspectives have been combined.

Figure 18: Problems associated with Web 2.0 tools

N=19

Problems	Number of respondents	%
• Lack of training	6	31.5
• Technology requirements	6	31.5
• Time consuming	6	31.5
• Need for staff monitoring	5	26.3
• Cost	4	21.0
• Librarians age group (advanced age of librarians)	4	21.0
• Staff lack of motivation	4	21.0
• Electricity dependency	3	15.7
• Staff unfamiliarity with Web 2.0 technologies	3	15.7
• Unreliability	3	15.7
• Bandwidth issues	2	10.5

Multiple responses received

4.2.3.6 Reasons for not using Web 2.0 technologies

The two (9.5%) respondents, who replied in the negative to question seven, were required to provide the reason/s for the non-use of these technologies in their UKZN library (Question 12). The reasons given are provided in Figure 19 below.

Figure 19: Reasons for not using Web 2.0 technologies

N=2

Reasons	Number of respondents	%
• Not initiated	2	100
• Still in process	2	100
• Notice boards are useful	1	50

Multiple responses received

4.2.3.7 How technologies could be used if available in UKZN libraries

Respondents were asked to explain how they would use tools such as Facebook, Twitter, YouTube, wikis, and blogs, if they were available in their library (Question 13). Figure 20 below contains the responses from the 21 subject librarians.

Figure 20: How technologies could be used if available in UKZN libraries

N=21

Uses	Number of respondents	%
• For library news	14	66.7
• To market library services	12	57.1
• Immediate up-to date messages	5	23.8
• To create subject information page	5	23.8
• To facilitate online searching	4	19.0
• To promote new book acquisitions	4	19.0
• Platform for subject information	4	19.0
• Linking with academic modules	2	9.5
• Online catalogue	2	9.5

Multiple responses received

4.2.3.8 The benefits of implementing social networking tools in UKZN libraries

Respondents were asked to give their opinion, based on their understanding of social networking tools, what they would consider to be the benefits of implementing these tools in their libraries (Question 14). Responses given by the respondents are provided in Figure 21.

Figure 21: Benefits of implementing social networking tools

N=21

Benefits	Number of respondents	%
• Real time communication	10	47.6
• Using the new generation language	8	38.1
• Marketing	8	38.1
• Access to professional 24 hours	8	38.1
• Information sharing	7	33.3
• Better understanding of users' needs	6	28.6
• Improve the image of library to users	5	23.8
• Encouraging dialogue	4	19.0
• Save students' time and money	3	14.3

Multiple responses received

4.2.3.9 Major problems associated with implementing and offering social networking tools in UKZN libraries

Respondents were asked what they considered to be the major problems associated with implementing and offering these tools in UKZN libraries (Question 15). Responses are reflected in Figure 22.

Figure 22: Major problems associated with implementing and offering social networking tools in UKZN libraries

N=21

Problems	Number of respondents	%
• Updating	8	38.1
• Negative staff attitude to social networking tools	6	28.6
• Time consuming	6	28.6
• Lack of skills and training	6	28.6
• Junk and spam mail	5	23.8
• Financial Budget	4	19.0
• Affection of internet performance	3	14.3
• Lack of ICT infrastructure	3	14.3
• Internet Networking access	3	14.3

Multiple responses received

The final question asked respondents if they had any additional comments or suggestions (Question 16). Four respondents replied to this question providing a total of six comments. Responses are given verbatim below.

- It is crucial for libraries to embrace these technologies if they want to keep up with the ever changing needs of their users.
- It's sincerely no longer about how we can get them to the library, it's more about how we can get them to access the information from wherever they are facilitating seamless access.
- It can be better if all librarians can implement the tools and make sure the library is marketed to students and users.
- Perhaps support from someone experienced in a Web 2.0 technology, when setting up, getting going on it, would help subject librarians to use another 2.0 technology.
- Library needs to be selective about what tools they utilise and use them effectively than spread their communication too thinly.
- Staff needs to be trained on using social networking tools in order for the library to become relevant and keep current with technology.

4.2.4 Results from the interviews with the Library Director and campus librarians

The UKZN Library Director and the four campus librarians were interviewed using a semi-structured interview. The interview schedules were almost the same, with only one question (question four) being different. Given this the results will be combined (with the exception of question four) but it will be made clear in the presentation of the results below which responses came from the Director and which came from the campus librarians.

4.2.4.1 Length of time in current position

Question 1 asked respondents how long they had been in their current positions. All participants had been holding their current positions from two to six years.

4.2.4.2 Response of services provided by Campus libraries to technology developments

Respondents were asked whether they felt that, overall, their campus libraries have responded in terms of the services offered to the developments in technology (Question 2). All **five** respondents answered in the affirmative. However, two respondents (campus librarians) qualified their response by saying “not fast”. When asked to elaborate further, respondents mentioned a number of examples of how the libraries had responded to technology. Examples listed were online databases, e-books (Library Director and three campus librarians), electronic services such as e-mail and sms (all the respondents), social networking (Facebook) and the library blog (two campus librarians and Library Director), off-campus service and extending operating times during exam periods (three campus librarians and Library Director).

4.2.4.3 UKZN library services and users' expectations

Respondents were asked whether they thought that their campus libraries consistently offer the services that users want (Question 3). One respondent (Campus Librarian) said no. According to her, in order to know what users want, surveys need to be conducted and this has not been done. Four other respondents, including the Library Director, said yes, pointing out that the UKZN library is doing well in terms of research support and collection development, online tutorials, and remote access.

4.2.4.4 Suggestions on what can be done to keep up with changing needs of library users

The campus librarians were asked about what can be done to keep up with the changing needs of library users (Question 4). The respondents gave multiple responses: two respondents suggested that a survey on users' needs should be done at least once every three years; three mentioned suggestion boxes being placed at the entrance of each library to be in tune with users' wants; two respondents pointed to being in contact with all academic staff in order to know which books are needed; and one respondent suggested an internal review to get staff opinions.

As noted above, question four for the Library Director was different from that of the campus librarians. The Director was asked to explain how well the collection and the service delivery (both offline and online) available at UKZN libraries, met the current needs of the users. According to her, based on the survey conducted a few years ago about UKZN libraries' collections, there are relevant electronic databases and qualified librarians who are offering good service. However, in terms of the print collection, it has been brought to her attention that library users are complaining that there are not enough up-to-date books in UKZN libraries. She further explained that there is an on-going stock taking project within UKZN libraries that will allow management to sort out the print collection problem.

4.2.4.5 Suggestions on what can be done to reach new users

The respondents were asked about what they think the library can do to reach new users (Question 5). Three respondents (campus librarians) emphasised meeting users in their space using new technologies such as social networking. All four campus librarians stressed the need for publicity in order to inform the users what the library has to offer. One respondent stated that while there is an orientation programme for first year students and all the academic departments can send their new staff to the library for orientation, this was not sufficient.

4.2.4.6 Awareness of Library 2.0 model

The respondents (both campus librarians and the Library Director) were asked whether they were aware of the Library 2.0 model and how they understood it (Question 6 for campus librarians but question 5 for Library Director). The results show that one campus librarian was not aware of the model. Two respondents further explained that the Library 2.0 model is

the process to take the library to users; and all five explained that it is a library which is based on Web 2.0 technologies.

4.2.4.7 Web 2.0 technologies used by UKZN libraries

The respondents were asked whether UKZN libraries utilise Web 2.0 technologies, such as blogs, wikis and social network tools especially Facebook, Twitter, YouTube, or MySpace (Question 7 for campus librarians, question 6 for the Library Director). While one campus librarian said no, the other respondents all answered in the affirmative.

4.2.4.8 Extent of Web 2.0 technologies utilisation

The respondents who answered in the affirmative to the previous question were asked to elaborate on the extent to which their library/libraries utilise each of the technologies specified (Question 8 for campus librarians, question 7 for Library Director). In terms of the UKZN libraries weblog, all five respondents said it was efficiently utilised and updated on a weekly basis. With regard to the Library's Facebook entry, respondents pointed out that it was always out-of-date as there was no specific person appointed to administer it. The Library Director further pointed out that the subject librarians use their own Facebook page to communicate with library users.

When asked whether they were considering implementing other Web 2.0 technologies in UKZN libraries (Questions 10 and 9), the Library Director and one campus librarian stated that they were first working on fully implementing the existing technologies (blog and Facebook) before deciding whether to embrace others.

4.2.5.9 Reasons for not using Web 2.0 technologies

The one respondent, a campus librarian, who said no to question 7, was asked to give the reasons for the non-use of these technologies and whether the implementation of these technologies was on their agenda. The respondent replied that the implementation was still in process and did not comment on future implementation.

4.2.4.10 Potential benefits of implementing Web 2.0 technologies

The respondents were asked what they thought were the potential benefits to the UKZN libraries of implementing these technologies (Question 11a for campus librarians, 10 for Library Director). The respondents provided the following multiple responses:

- To reach users efficiently (three campus librarians and Library Director).
- To know users' needs (three campus librarians and Library Director).
- To market what the library has to offer (all five the respondents).
- To get instant responses from users (two campus librarians).
- To occupy the same space with users (two campus librarians).
- To make the library part of the users' world (one campus librarian).
- To remind users about the library (one campus librarian).

4.2.4.11 Potential problems of implementing Web 2.0 technologies

The respondents were asked about what they thought could be the potential problems in implementing these technologies (Question 10b and 11 for campus librarians, question 11 for Library Director). All five respondents pointed to the costs involved in employing a permanent staff member who would be administrating these tools; two campus librarians mentioned that students may abuse the resources by posting inappropriate information; and three campus librarians and the Library Director suggested that the unfamiliarity of staff with Web 2.0 technologies would be a problem.

No further comments were provided by the respondents.

4.3. Summary of the chapter

Chapter four covered the presentation of the data collected using self-administered questionnaires and semi-structured interviews. The researcher collected data from 21 subject librarians at UKZN using a questionnaire and from four campus librarians and the Library Director using a semi-structured interview. The findings were in the main presented in the form of figures. Chapter five, which follows, discusses the above findings.

Chapter five: Discussion of results

5.1. Introduction

The results of the study are discussed in this chapter. The purpose of the study was to investigate the implementation of the Library 2.0 model within the UKZN libraries, and to explore and determine how far UKZN libraries are from the Library 2.0 model. The results of the study are discussed in the light of the research questions posed in Chapter one:

- Does Library 2.0 exist in the UKZN libraries? If so, how is it defined and how does it work?
- What are the current and potential benefits of implementing the Library 2.0 model within UKZN libraries?
- What are the challenges that can prevent the UKZN libraries from fully implementing the Library 2.0 model?

5.1.1 Population and response rate

The population for this study was 29 UKZN library staff; this included all the subject librarians of the main libraries from all five campuses (23 subject librarians) and UKZN library management (five campus librarians from each campus and one Library Director). Questionnaires were distributed to all subject librarians and interviews were arranged with the campus librarians and the Library Director. The response rate was very good - out of the 29 UKZN staff identified, 26 responded, and this included 21 subject librarians, four of the five campus librarians and the Library Director.

5.1.2 Discussion relating to personal information

This section discusses the following variables: gender, education level and age of the respondents.

5.1.2.1 Gender

The results of the study show that of the respondents 18 (85.7%) were female and three (14.3%) male. Thus, UKZN subject librarian staff is dominated by the female gender.

5.1.2.2 Education level

Just under half, 10 (47.6%), of the subject librarian respondents held Honours Degrees, followed by six (28.6%) who held Masters Degrees, four (19%) had Post-graduate Diplomas and one (4.8%) did not specify. Thus beside the one respondent who did not specify his/her qualification, all the respondents had post-graduate qualifications. One can assume that the respondent who did not answer also had such a qualification given that this is a requirement to be employed as a subject librarian at UKZN libraries.

5.1.2.3. Age

The age ranges were arranged in the following way: 20-30; 31-40; 41-50; and over 50. The largest number of respondents seven (38.9%) fell within the range of 41-50; there were six (33.3%) respondents between the age of 31-40; and five (28.8%) who were over 50 years old. Three (14.3%) respondents did not specify their age. The results show that among respondents who responded to this question, seven (67.7%) were over 41 and none were under 30. With Web 2.0 technologies, especially social networking, generally regarded as being directed at 'younger' people, it could be argued that the UKZN subject librarians' age may influence the implementation of Library 2.0 model within UKZN libraries.

5.1.2.4 Length of time in current position (management)

The first question of the interview schedule sought to explore the length of time that respondents (management) have been holding their current position. The results show that all the interviewed respondents had been holding their current positions from two to six years. Thus all of the participants interviewed were expected to have a good understanding of the UKZN libraries services and their users' needs given their experience in the system.

5.2. Discussion of the results of the survey by questionnaire of the subject librarians

A self-administered questionnaire was used as the means of data collection. As noted, 23 questionnaires were distributed to UKZN subject librarians, with 21 completed and returned. The research questions listed above provide the basis for the discussion.

5.2.1. Does Library 2.0 exist in the UKZN libraries? If so, how is it defined and how does it work?

As discussed in Chapter two, Library 2.0 has emerged from Web 2.0 which is associated with Web applications that facilitate participatory information sharing, interoperability, user centred design and collaboration on the Web (Miller 2005). The focus of Library 2.0 is on user-centred change and participation in the creation of content.

This research question captured the overall purpose of the study; it aimed to gather information on the status of the Library 2.0 model in UKZN libraries and to investigate its implementation.

While exploring the status of Library 2.0 in UKZN libraries, some questions were asked about the respondents' familiarity with Web 2.0 technologies in order to find out how they understood the Library 2.0 model.

The results show that seven (33.3%) of the subject librarians were less familiar; eight (38.1%) were familiar and six (28.6%) were very familiar with the services of Web 2.0 technologies. Seventeen (81%) subject librarians were personally subscribed to social networking sites and two (19%) were not subscribed to any social networking services. All the respondents who were subscribed to a social networking service were subscribed to Facebook.

The results from the subject librarians show that Facebook and weblogs are the only Web 2.0 tools that are presently being used by UKZN libraries.

Library 2.0 exists in a particular library when this library makes its space (virtual and physical) more collaborative, interactive, and driven by users' needs. Maness (2006) is of the opinion that with the Library 2.0 model, the library's collection changes, becoming more interactive and fully accessible as do the library's services which focus more on the facilitation of information transfer and information literacy rather than providing controlled access to it (the library collection). Looking at the findings of this study, UKZN libraries'

collection and services have not met these requirements. Maness (2006) further argues that Library 2.0 is characterised by four conceptual underpinnings: it is user-centred; a multi-media experience; socially rich; and communally innovative. UKZN libraries do not have any of these underpinnings.

Partridge, Lee and Munro (2010) argue that there are requirements that are needed from both librarians and the library in order to implement the Library 2.0 model. These are skills and knowledge required by librarians in terms of learning and education, research or evidence based practice, communication, collaboration and team work, user focus, business savvy and personal traits, in the Web 2.0 world. Whether the subject librarians have these skills and knowledge would need to be investigated. The results of this study, however, suggest that not all the respondents were as familiar with Web 2.0 technologies as they could be. It is also important to note that the issue of Facebook being unavailable for students at UKZN during working hours (8am to 4pm) was not stressed by the respondents but it cannot be ignored in this study. It is thus evident that Library 2.0 exists at a minimal level in UKZN libraries and that the one Web 2.0 tool used by the subject librarians and possibly by students which has arguably a great deal of potential (Facebook) is prohibited for students during working hours.

Therefore it seems logical to assume that, based on these findings; Library 2.0 has not been fully implemented in UKZN libraries. Despite having a weblog and Facebook presence, UKZN libraries (and librarians) are not sufficiently engaged in collaboration and interaction with users to warrant their being classed as Library 2.0 libraries. From these results it is also evident that much needs to be done by UKZN library management before full implementation of Library 2.0 in UKZN libraries becomes a reality including, importantly, a survey of users with regard to their use of, and needs concerning Web 2.0 tools and their applicability in the library context.

5.2.2. What are the current and potential benefits of implementing the Library 2.0 model within UKZN libraries?

In order to determine how the respondents understood the benefits of implementing the Library 2.0 model, they were asked to explain how Web 2.0 tools could be used by UKZN libraries. Among the multiple responses given by respondents, 14 (66.7%) stated that they could use them for library news. Only two (9.5%) respondents stated that these Web 2.0 tools

could also be used to provide an online catalogue and to link with lecturers and their modules. Two (9.5%) of the respondents left this question unanswered. Therefore, it is evident that some of the respondents have little, if any, idea of how Web 2.0 tools could be used in the library. As indicated in previous chapters there are a number of ways, not mentioned by the respondents, that Web 2.0 tools can be used to the advantage of both the library and the users. One such tool within the Library 2.0 model is “podcasting” which allows libraries to create content (audio or video) for an audience that wants to listen when, how and where it suits them. As pointed out by Tinkelman (2008) podcasts are making a big difference in libraries when fully implemented. Their use includes recordings of lectures for those students unable to attend the lecture physically and audio recordings of textbook content by chapter allowing students to review or read texts while walking or driving (Tinkelman 2008).

Having 81% of UKZN subject librarians who are using Facebook indicates how this social networking site has become common place, not only for UKZN students, but also for UKZN staff to meet and to share their common interests, and to communicate with each other. Thus simply in terms of Facebook alone there is a great potential for UKZN libraries to make more use of it and by so doing move towards the increasing implementation of the Library 2.0 model.

5.2.2.1 Benefits to students

Questions were asked to investigate whether respondents were aware of the benefits to students of the Library 2.0 model. The results show that the respondents were aware of how the Library 2.0 model could benefit users if fully implemented. Among the benefits most mentioned were: communication in real time; tools for conversation and participation; and access to professionals 24 hours. The least mentioned benefit was “time and money saving”. The findings of this study support the view of Miller (2005) who pointed to the Library 2.0 model facilitating fast communication, and being used to invite users to participate and to share knowledge and experience between themselves and librarians.

The least mentioned benefit mentioned by the respondents, the issue of money-saving, would be of great concern for the users and the student users of the library in particular. Users with internet access could communicate efficiently and effectively with librarians using social networking tools instead of making phone calls or spending money on transport in order to

come physically to the library. One respondent brought in a cultural dimension stating that “In my culture, as an African culture, we grow up knowing that as kids, we are not supposed to face older people when talking to them...it’s not respectful.” According to this respondent and supported by a further four (23.8%) respondents, the implementation of the Library 2.0 model can bridge the gap between younger and older persons, and that it also encourages freedom of expression. Looking at the literature review, Casey and Savastinuk (2007) support this finding. According to them “for every one student who asks where the section or particular item is located in the library, there are five to ten more students who did not have time to ask or were afraid to ask.”

Based on the fact that UKZN libraries have users from different backgrounds and different cultures, including users from African cultures which believe that young people should not be allowed to engage in long face-to-face conversations with elders. Implementing these technologies may well assist in avoiding these kinds of situations and encourage freedom of expression in UKZN libraries and the University more generally.

The capabilities of the Library 2.0 model which enables users to engage the library in reciprocal communication and exchange of knowledge have impacted on the way libraries do business. Many academic librarians worldwide have explored the benefits that Web 2.0 offers, to improve their user engagement and staff development and to provide 24 hour access to the library.

5.2.2.2 Benefits to the library

Respondents were asked to explain what they consider to be the potential benefits to UKZN libraries of implementing and using Web 2.0 technologies. The results show that library marketing, the ability to connect with a large number of users, and using the new generation language were the most mentioned. The least mentioned responses were to facilitate tutorials and encourage dialogue.

The ability to connect with a large number of users can be well understood when using wikis. A library wiki, as one of the Web 2.0 services, can enable social interaction among librarians and users and move a study group room online. Librarians can connect with a good number of users as they share information through the asking and answering of questions while the librarians are doing the same within a wiki. Aligned with this, one can understand that wikis, being able to connect with large numbers of users, facilitate tutorials and encourage dialogue.

Rice (2011) in his study of how students “push” their Facebook use further into course work found that while 90% of his college students said they use Facebook for social purposes, such as updating their status and posting pictures, a small majority (58%) said they feel comfortable using Facebook to connect with other students to discuss homework assignments and exams. One out of four students stated that they think Facebook is “valuable” or even “extremely valuable” to their academic success. Rice’s research shows how Facebook is one of the new generation languages. Therefore UKZN libraries arguably have little or no choice but to fully implement these languages, including Facebook, in their services.

The issue of time and money-saving for the library was least mentioned as one of the benefits of the implementation of the Library 2.0 model. While this was not unexpected William and Goodwin (2007) have pointed out that the RSS feeds of new titles from the catalogue can be big time savers for librarians, and the Instant Message (IM) reference can also save the library money that can be used more efficiently for other services.

There are benefits for both librarians and users that were highlighted by respondents and many more which were not mentioned by respondents. What is evident from the literature reviewed and to a lesser extent from the responses given by the subject librarians, is that the Library 2.0 model opens up many opportunities to libraries, making for increasingly cost-effective services, encouraging large numbers of users to participate in library events, and enabling users to benefit from key pieces of the platform while fulfilling their own needs. Thus UKZN libraries should take heed of the advantages of these services not only to catch up with developments in technology but, more importantly, to offer services which will resonate with their users.

5.2.3. What are the challenges that can prevent the UKZN libraries from fully implementing the Library 2.0 model?

As everything has its advantages and disadvantages, especially in the world of technology, some questions were asked to investigate whether respondents were aware of the current and potential problems of the Library 2.0 model should it be fully implemented in UKZN libraries.

The cost, updating, infrastructure, time consumption, lack of training, and staff unfamiliarity with Web 2.0 technologies were the problems most identified by the respondents. The findings of this study are supported by Deschamps (2008) who also identified that elaborating

strategies and a long process of planning are the challenges of implementing the Library 2.0 model. The issue of younger and older generations was pointed out too in the discussion above. Age was seen by some respondents as a potential stumbling block. As one respondent put it, “it’s not easy for us to officially adopt Facebook as one of the ways of communicating with students, because some of us are old and seem to not understand how Facebook operates and others are just anti-Facebook people.” This statement was re-enforced when a cross-tabulation of respondents’ Web 2.0 tools familiarity with age was made. The results show that most of respondents, who were less familiar with technologies, were those who were over the age of 50 years. Thus the age group of librarians is another factor that could negatively impact on the implementation and performance of the Library 2.0 model within UKZN libraries.

Despite the current and potential problems associated with the implementation of the Library 2.0 model in UKZN libraries, the benefits will still be greater if UKZN libraries continue offering a relevant, timely and efficient service to users through the full implementation and use of the model.

5.3. Results of interviews with management

Interviews were conducted with five UKZN library executives (four campus librarians and the Library Director).

5.3.1. Does Library 2.0 exist in the UKZN libraries? If so, how is it defined and how does it work?

As stated by the subject librarians, the management also pointed out that UKZN libraries utilise only Facebook and a weblog. All five (100%) of the respondents explained that while the UKZN library weblog is regularly (weekly) updated, users still do not participate as expected. They also pointed out that while UKZN libraries have a Facebook presence, it is not kept up-to-date and users do not participate at all.

Nineteen (90.5%) of the subject librarians and four (80%) of the management respondents agreed that UKZN libraries utilise some of Web 2.0 technologies, the remainder disagreed. This points to some of the respondents not associating Facebook and weblogs with such technologies and suggests, amongst other things, that the implementation of the Library 2.0 model in UKZN libraries has not been taken seriously by the management or by the subject

librarians themselves. When management respondents were asked to explain the reasons for not fully implementing these technologies and whether they were planning to implement other Web 2.0 technologies, the majority three (60%) stated that there was no plan to implement any other Web 2.0 technology anytime soon, since they were still working on the existing ones. As the Library Director put it, “It difficult for us to implement more Web 2.0 tools in our library services while we haven't yet mastered the ones we have.” All the respondents were of the opinions that, overall, UKZN libraries have responded, in terms of their services offered, to the developments in technology even though the full implementation of Library 2.0 was slow. Based on services that are already initiated by UKZN libraries such as online databases, e-books, electronic services (e-mail and text messages), social networking (Facebook) and the weblog, outside campus service and operation time extension during exams periods, respondents were of the opinion that the UKZN libraries were on track with technological developments but acknowledged, as noted above, its slow pace.

In terms of the slow adoption of new technology, Pienaar (2006) argues that the slow uptake of new innovations including Web 2.0 technologies by academic clients and library staff obstruct new and improved services. Ngcobo (2010) supports Pienaar, and according to her, UKZN Libraries’ inability to fully utilise Web 2.0 technologies to reach their clients has stilted the institution’s growth and visibility globally.

5.3.2. What are the current and potential benefits of implementing the Library 2.0 model within UKZN libraries?

Before asking about the potential benefits of implementing the Library 2.0 model within UKZN libraries, respondents were first asked to explain what could be done to keep up with the changing needs of UKZN library users and to reach new users. The following are the suggestions put forward by the UKZN library management: a survey on users’ needs should be done at least once every three years; suggestion boxes should be placed at the entrances of each library; remote access needs to be fully implemented because users prefer to learn from their homes; to be in tune with users wants; to be in contact with all academic staff in order to know which books are in need; and internal reviews need to be done to get staff opinions on what could be done in order to keep up with user needs.

The current and potential benefits of implementing the Library 2.0 model within UKZN libraries were highlighted by the management. It is interesting to note that most respondents

(80%) emphasised that meeting users in their space using new technologies such as social networking, and publicity in order to inform the users what the library has, are the keys to keeping up with the changing needs of library users and to reach new users.

There was little difference between the responses given by library management and the responses given by the subject librarians on the current and potential benefits of implementing Library 2.0 within UKZN libraries. Both groups of respondents came up with similar responses except for the issue of making the library part of the users' world and marketing what the library has to offer which were emphasised more by library management. All the arguments given by the respondents about the potential benefits of implementing the Library 2.0 model, were supported by the literature, for instance, Kwanya (2010) pointed out that, one of the benefits of Library 2.0 is its potential to create a library platform on which users can develop and control their own library experience at their own time and at the point of need. Casey and Savastinuk (2007:77) are of opinion that "the ability of reaching out to new users without losing those we already have" is another potential benefit of Library 2.0.

Based on these findings, one can assume that UKZN library management are aware of the current and potential benefits of the Library 2.0 model.

5.3.3. What are the challenges that can prevent the UKZN libraries from fully implementing the Library 2.0 model?

Responses of library management in terms of the challenges that can prevent the UKZN libraries from fully implementing the Library 2.0 model also differed little from those of the subject librarians. Like the subject librarians, management pointed out that cost, updating, infrastructure, time constraints, lack of training, and staff unfamiliarity with Web 2.0 technologies were the challenges that could prevent the UKZN libraries from fully implementing the Library 2.0 model. It is important to note that the cost variable was more emphasised by library management. All management respondents stated that, for now, UKZN libraries cannot afford to employ permanent staff to administer these tools on a 24 hour basis. As stated by one of the campus librarians, "We acknowledge that the Library 2.0 model is very important, but for now we cannot afford to employ a permanent person just to monitor these technologies."

5.4. Comments

The last question in both the questionnaire and the interview asked respondents to add any further comment on the topic. All (13) respondents who contributed to this question were of the same opinion, saying that as the Library 2.0 model has been implemented in many libraries worldwide and it has helped to improve library services, then it is crucial for UKZN libraries to embrace these technologies as well if they want to keep up with the ever changing needs of their users. One of the respondents was of the opinion that UKZN libraries attendance is dropping year after year, and stated that “It’s no longer about how we can get them to the library, it’s more about how we can get them to access the information from wherever they are.” This statement accurately captures the spirit of the Library 2.0 model and the evolving role libraries play today in the information era. Harinarayana & Raju (2010) in Ngcobo (2010:3) support this statement, arguing that “Web 1.0 took people to information; Web 2.0 takes information to the people.”

Thus, UKZN librarians need to reclaim their intellectual space, as regards participation with Web 2.0 technologies in the Web 2.0 arena in order to ensure that information is taken to users who need it, when they need it, and in the format in which they want it.

5.5. Summary of the chapter

The results of this study were discussed in this chapter. The overall discussion was done in the light of answering the research questions which were reiterated at the beginning of the chapter. The chapter covered the following areas: results discussion of personal information of respondents and their familiarity with Web 2.0 technologies, suggestions on what can be done to keep up with changing needs of library users and to reach new users, the status of Library 2.0 in the UKZN libraries, the current and potential benefits and problems of implementing the Library 2.0 model within UKZN libraries, and respondents’ comments. Chapter six, the final chapter, will provide the conclusion and recommendations of the study.

Chapter six: Summary of findings, conclusion and recommendations

6.1 Introduction

The main purpose of this study was to investigate the implementation of the Library 2.0 model in the University of KwaZulu-Natal (UKZN) libraries, and explore and determine the extent to which UKZN libraries have implemented this model. The study attempted to answer the following three questions:

1. Does Library 2.0 exist in the UKZN libraries? If so, how is it defined and how does it work?
2. What are the potential benefits of implementing the Library 2.0 model within UKZN libraries?
3. What are the challenges that can prevent the UKZN libraries from fully implementing the Library 2.0 model?

Data to answer the research questions and to serve the intended purpose of the study were collected from 21 respondents (all subject librarians), using self-administered questionnaires, and from four campus librarians, and the Library Director using face-to-face interviews.

6.2 Study overview

The introductory Chapter one began with a brief background to academic libraries and how they gradually integrated technology into their services. It also included the researcher's motivation for the study, the conceptual framework and research problem, key questions to be asked, limitations and delimitations, and finally the definitions of keywords.

Chapter two presented the literature review. This included an overview of the various models of library services. The first part of the literature review covered the different models of library services from the traditional to the digital library, including their characteristics and features. The second part presented the Library 2.0 model, Web 2.0 tools as core applications of the Library 2.0 model, and how these tools were being used in academic libraries.

The research methods were described in Chapter three. Two methods were used to gather information on the status of the Library 2.0 model in UKZN libraries. The two methods were the face-to-face interview and the self-administered questionnaire. In addition to these two methods, the review of related literature contributed to the gathering of information.

The findings of the study were presented in Chapter four and interpreted and discussed in Chapter five. The present chapter, Chapter six, presents the summary of the findings, conclusion and recommendations of the study.

6.3 Summary of the findings

This section summarises the findings of the study as per the research questions.

Research question one: Does Library 2.0 exist in the UKZN libraries? If so, how is it defined and how does it work?

Considering how the literature reviewed defined Library 2.0, and the way other academic libraries are using Web 2.0 technologies, one can clearly understand that the Library 2.0 model is not yet fully implemented in UKZN libraries. The findings of this study revealed that while UKZN libraries utilise Facebook and a weblog, they are not sufficiently engaged in collaboration and interaction with users as characterised by Library 2.0. The Library 2.0 model includes full implementation of the most used Web 2.0 technologies suitable for the academic library, namely weblogs, wikis, social networking, Really Simple Syndication (RSS), social cataloguing, social bookmarking, and tools for photos and video sharing. Library 2.0 ensures that both users and the library get the benefits associated with the use of these technologies. This is not the case for UKZN libraries.

Research question two: What are the potential benefits of implementing the Library 2.0 model within UKZN libraries?

As reflected in Chapter four a number of potential benefits were outlined by respondents. The most mentioned benefits were:

- to reach users efficiently and to connect with a large number of users at the same time;
- to market what the library has and offers;

- to get instant responses from users (including comments, suggestions, and feedback);
- to occupy the same space with users, speak their language and communicate in their comfort zone;
- to share information, encourage dialogue and facilitate tutorials;
- to ensure access to professionals whether day or night;
- to improve the image of the library to users;
- to save students' time and money;
- to enable remote access, and
- to facilitate freedom of expression and the breaking down of the gap between young and old.

Nimsomboon and Nagata (2003) and Casey and Savastinuk (2007) support the findings of this study. According to them, libraries need to improve their services in order to survive the challenges caused by globalisation. They point out that the benefits of implementing the Library 2.0 model is to enable the library to expand its user base and even reach those people that it had previously not been able to reach. The Library 2.0 model calls for the library to keep up with the rapidly changing Library 2.0 technology, social trends, and user expectations should it wish to remain relevant.

Research question three: What are the challenges that can prevent the UKZN libraries from fully implementing the Library 2.0 model?

As reflected in Chapter four and discussed in Chapter five, a number of potential problems were outlined by respondents. The most mentioned problems included cost, updating, infrastructure, time consumption, lack of training, and staff unfamiliarity with Web 2.0 technologies.

Deschamps (2008) supports the findings of this study, as according to him the implementation of the Library 2.0 model involves elaborate strategies and a long process of planning, both of which require money and time.

6.4 Conclusions

From the literature reviewed and the findings of the study, it was revealed that when compared to ‘traditional’ communication formats, such as websites (Web 1.0) and notice boards, the Web 2.0 technologies offer, and have the potential to offer, vibrant and relevant communication tools. This study looked at the Web 2.0 technologies in detail and it is evident that they can add much value to libraries. The literature reviewed indicates that those academic libraries which have implemented these tools show a significant improvement in communication between the libraries and their users in the following aspects:

- New acquisitions and library service promotions: with RSS feeds that update users about new digital images they have acquired;
- MySpace, Twitter and Facebook are considered useful places to promote initiatives such as online book clubs as done by the University of Central Florida (Kroski 2008; Courtney 2007; Rice 2011, and Casey and Savastinuk 2007);
- Library workshops: academic libraries use weblogs to teach searching techniques and provide tips;
- RSS feeds can be used to keep users updated about new library instructions and training workshops (William and Goodwin 2007);
- Conference planning and discussion page: wikis are increasingly being used for conference planning in library and higher education by providing a shared information platform where conference planners and participants from different places can share information with all conference attendees; each page of wiki offers an area for discussion and comment (Kroski 2008; Courtney 2007, and William and Goodwin 2007).

Generally speaking, the tradition and mission of libraries are to “enable the access to information across society, the sharing of that information, and the utilisation of it for the progress of the society” (Maness 2006). While Library 2.0 is not only about searching, but also finding, not only about access, but also sharing (Maness 2006), it has become another important mechanism to assist with a better realisation of the mission of the academic library which, as noted in Chapter one, is to deliver the right information to the user who needs it at the right time, in an appropriate format. Thus the full implementation of the Library 2.0

model in UKZN libraries is crucial in order for those libraries to fulfil their basic mission, namely, “providing resources and information services to support the learning, teaching, research, and development endeavours of the University community”. The results of the present study show that the issues of accessing and sharing information were among the main concerns of respondents when asked about the benefits of implementing the Library 2.0 model.

Based on the results on this study, it is evident that the Library 2.0 model is not yet fully implemented in UKZN libraries. Among the tools of Web 2.0 on which the Library 2.0 model is based, only Facebook and a weblog are used by the UKZN libraries. It is also evident that these two tools are underutilised in terms of the amount of collaboration and interaction with users that takes place. As reported by Miller (2005), there is an oft-stated fear that many knowledge seekers will bypass institutions that do not use new technology, such as Web 2.0, or are perceived to be slow, unresponsive, unimpressive, boring, and unattractive, in favour of services that might serve them better. UKZN libraries, therefore, may be faced with losing users to institutions which provide the benefits of the Library 2.0 model.

For this reason it is crucial for UKZN libraries to embrace these technologies despite the challenges presented by problems such as bandwidth, costs, lack of infrastructure and lack of skills and training. As other libraries which have implemented the Library 2.0 model have shown, these challenges are not overwhelming.

It is important to note that UKZN is an international institution and has students from universities whose libraries have already adopted the Library 2.0 model. The results of this study have shown that UKZN libraries need to give serious attention to fully implementing the Library 2.0 model should they wish to ensure their continued relevancy and be able to compete on an international level.

6.5 Recommendations

As advised by various authors from the literature reviewed (Pienaar 2010; Miller 2005; Ngcobo 2010; Cuesta 2006; and Curran, Murray and Christian 2007) libraries which do not embrace the Library 2.0 model meaningfully, will face the possibility of becoming irrelevant to their users, affecting the institution’s growth and global visibility. One way to attract, and keep these knowledge seekers is to keep the library updated in terms of technological developments which means embracing developments associated with Web 2.0.

Thus based on the literature and on the findings of this study, the researcher recommends that:

- In order to keep up with the ever changing needs of library users and to communicate effectively with them, it is crucial for UKZN libraries to fully embrace Web 2.0 technologies. Library staff, especially the subject librarians, needs to be trained in the use of Web 2.0 technologies.
- For the Library 2.0 model to work, and to work effectively for all users, infrastructure and facilities need to be improved. For example, increasing the number of computers in the LANs and libraries and having wireless internet access in the students' residences will help in this regard.
- Librarians should organise training and workshops for users on how to use the Web 2.0 technologies.
- Consideration would need to be given to ensure that staffs are available at all times to assist users.
- All the social networking tools such as Facebook and YouTube should be made permanently available to both students and staff.

6.6 Suggestions for further research

The findings of the present study give an overview of the status of Library 2.0 within the libraries of UKZN. From these findings, fundamental approaches could be developed to enhance the full implementation of the Library 2.0 model within the libraries of UKZN. Considering the fact that little research of this kind has been done at UKZN, there is therefore a need for more studies relating to Library 2.0. These could include:

- A study to determine the UKZN libraries users' needs and the most used Web 2.0 tools.
- Conducting similar studies at other South African university libraries in order to find out if the results, in terms of the benefits and challenges associated with implementing the Library 2.0 model, would replicate the present study.
- A more in-depth study, based on the findings of the present study, but focusing on the feasibility of the actual implementation of the full Library 2.0 model in UKZN libraries.

References

- Abram, S. 2007. Web 2.0, library 2.0 and librarian 2.0: preparing for the 2.0 world. *One source* 2(1).
http://www.imakenews.com/sirsi/e_article000505688.cfm?x=b6yRqLj,b2rpQhRM.
Accessed 02 June 2011.
- Alreck, P.L. and Settle, R.B. 1995. *The survey research handbook*. 2nded. Michigan: Irwin.
- Atuti, R.M. 2001. Managing adaptation of buildings to library use: a case study of the community library in Kenya. *Library review* 50(5): 231-236.
- Babbie, E. and Mouton, J. 2001. *The practice of social research*. Cape Town: Oxford University Press.
- Baohua, W., Xiaoyan, M. and Fey, G. 2002. On the characteristics of the digital library and the influence of the work of reader service.
<http://zoushoku.narc.narc.affrc.go.jp/ADR/AFITA/afita/afita-conf/2002/part7/p529.pdf>
Accessed 12 June 2011.
- Beagle, D.R., Bailey, D.R. and Tierney, B. (contributors). 2006. *The Information Commons handbook*. Michigan: Neal-Schuman.
- Belling, A., Rhodes, A., Smith, J., Thomson, S., and Thorn, B. 2011. Exploring Library 3.0 and Beyond.
http://www.libraries.vic.gov.au/A6D350C0-6F2E-4DED-91D4-C6F3599A3407/FinalDownload/DownloadId-6DC7AC94BFAD00BCEADD4A2FED5AB0E2/A6D350C0-6F2E-4DED-91D4-C6F3599A3407/downloads/20102011_Shared_Leadership_Program_Presentation_Day_/exploring_library Accessed 12 September 2012
- Bertram, C. and Christiansen, I. 2010. *Understanding research*. 3rded. Pietermaritzburg: Faculty of Education, University of KwaZulu-Natal.
- Biancu, B. 2006. Library 2.0 meme map.
<http://www.flickr.com/photos/bonaria/113222147> Accessed 11 July 2011.

Blaikie, N. 2003. Analysing quantitative data: from description to explanation.
http://books.google.co.za/books?id=2c0N782mxnMC&printsec=frontcover&dq=quantitative+data&hl=en&ei=XKDoTuqKJNG0hAftq8DOCg&sa=X&oi=book_result&ct=result&resnum=1&ved=0CDsQ6AEwAA#v=onepage&q=quantitative%20data&f=false

Accessed 30 June 2011.

Blood, R. 2000. Weblogs: a history and perspective.
http://www.rebeccablood.net/essays/weblog_history.html. Accessed 29 March 2011.

Borbinha, J.L. 2002. The digital library.
<http://elpub.scix.net/data/works/att/02-07.content.pdf>. Accessed 05 June 2011.

Boyd, D. and Ellison, N. 2007. Social network sites: definition, history and scholarship.
Journal of computer mediated communication 13(1): 210-230.

Büttner, J. 1997. Diagnostic validity as a theoretical concept and as a measurable quantity.
Journal of clinical chemistry 260 (2): 131–43.

Candela, L. Castelli, D., Ferro, N. and Loannidis, G. 2008. The DELOS Digital Library Reference Model. *Foundations for digital libraries*. Version 0.98, February 2008.

Carlson, N. 2010. At last – the full story of how Facebook was founded. *Business insider*.
<http://www.businessinsider.com/how-facebook-was-founded-2010-3#we-can-talk-about-that-after-i-get-all-the-basic-functionality-up-tomorrow-night-1>.

Accessed 29 April 2011.

Casey, M. 2005. Service for the next generation library: a library 2.0 perspective.
LibraryCrunch. <http://www.librarycrunch.com/>. Accessed 02 August 2011.

Casey, M. 2006. *LibraryCrunch*: bringing you a library 2.0 perspective.
<http://www.librarycrunch.com/>. Accessed 26 March 2011.

Casey, M. and Savastinuk, L. 2007. *Library 2.0: a guide to participatory library service*. New Jersey: Information Today.

Chad, K. and Miller, P. 2005. Do libraries matter? The rise of Library 2.0.

<http://otherlibrarian.wordpress.com/>. Accessed 01 July 2011.

Cohen, L., Manion, L. and Morrison, K. 2000. *Research methods in education*. 5th ed. London: Rutledge Falmer.

Cohen, L. 2006. Library 2.0: an academic's perspective is maintained by Laura B. Cohen, Web Support Librarian. Albany: University of Albany.

Courtney, N. (ed.) 2007. *Library 2.0 and beyond: innovation technologies and tomorrow's user*. Westport: Libraries Unlimited.

Crawford, W. 2006. Library 2.0 and "Library 2.0". *Cites and insights* 6(2):1-32.

Cuesta, C. 2006. Students love social-networking sites and so do employers. <http://www.Foxnews.com/story/0,2933,208175,00.html>. Accessed 04 April 2011.

Curran, K., Murray, M., Norrby, D.S. and Christian, M. 2006. Involving the user through Library 2.0. *New review of information networking* 12(1): 47-59.

Curran, K., Murray, M. and Christian, M. 2007. Taking the information to the public through Library 2.0. www.emeraldinsight.com/0737-8831.htm. Accessed 12 June 2011.

Deschamps, R. 2008. Library 2.0 debased. <http://otherlibrarian.wordpress.com/> Accessed 20 July 2011.

Diamantopoulos, A. and Schlegelmilch, B.B. 1997. *Taking the fear out of data analysis*. London: Harcourt Brace.

Farkas, M. 2004. Tech vs. traditional in library schools and libraries. *Information wants to be free*.

<http://meredith.wolfwater.com/wordpress/2004/11/29/tech-vs-traditional-in-library-school-and-libraries/>. Accessed 01 June 2011.

Farkas, M. 2005. Web / Library 2.0 backlash.

<http://meredith.wolfwater.com/wordpress/index.php.2005/12/01/weblibrary-20-backlash/> Accessed 16 July 2011.

Foresman, C. 2010. Myspace concedes to Facebook, changes focus.

<http://arstechnica.com/web/news/2010/10/myspace-concedes-to-facebook-changes-focus.ars>. Accessed 21 July 2011.

Gertz, J. 2000. Selection for preservation in the digital age. *Library resources & technical services* 44(2):97-104.

Glesne, C. and Peshkin, A. 1992. *Becoming qualitative researchers: an introduction*. White Plains: Longman.

Golafshani, N. 2003. *Understanding reliability and validity in qualitative research*. Toronto: University of Toronto.

Graham, P. 2005. Web 2.0. http://en.wikipedia.org/wiki/Web_2.0. Accessed 23 March 2011.

Greenstein, D. and Thorin, S. 2002. The digital library: a biography. *Digital Library Federation*. http://en.wikipedia.org/wiki/Digital_library. Accessed 19 April 2011.

Griffin, S.M. 1998. Digital libraries initiative: a program manager's perspective. www.dlib.org/dlib/july98/07griffin.html Accessed 25 March 2011.

Habib, M.C. 2006. Toward academic Library 2.0: development and application of a library 2.0 methodology. A master's paper for the M.S. in L.S Degree at the University of North Carolina.

http://scholar.google.co.za/scholar?cites=17986842931817216173&as_sdt=2005&sciodt=0.5&hl=en. Accessed 20 March 2011.

Hanson, T. 2007. The development of the electronic library.

http://www.economicnetwork.ac.za/cheer/ch11_1/ch11_1p10.htm. Accessed 26 June 2011.

Harinarayana, N.S. and Raju, N.V. 2010. Web 2.0 features in a university library Web site. *Electronic library* 28 (1): 69-88.

Hoare, P. 1997. Academic libraries. http://en.wikipedia.org/wiki/Academic_library Accessed 25 March 2011.

- Holmberg, K., Huvila, I., Kronqvist-Berg, M. and Widén-Wulff, G. 2008. What is library 2.0? www.emeraldinsight.com/0022-0418.htm. Accessed 6 March 2011.
- Hopkins, J. 2006. Surprise! There's a third YouTube co-founder. *USA today*.
http://www.usatoday.com/tech/news/2006-10-11-youtube-karim_x.htm. Accessed 29 April 2011.
- Kaniki, A.M. 2006. Doing an information search. In Terre Blanche, M.T., Durrheim, K. and Painter, D. (eds.) *Research in practice*. Cape Town: UCT Press, pp.18-32.
- Komiko, L. 2007. *Web 2.0 in libraries*. Michigan: Open University.
- Kranich, N. 2004. The information commons.
<http://www.fepproject.org/policyreports/informationcommons.pdf>. Accessed 25 June 2011.
- Kroski, E. 2008. *Web 2.0 for librarians and information professionals*. New York: Neal-Schuman.
- Krupa, Z. 2006. The internet-a treat or supplement to the traditional library. *World libraries* 16 (1/2).http://www.worlib.org/vol16no1-2/krupa_v16n1-2.shtml. Accessed 13 June 2011.
- Kuhn, T. 2005. What is a model? In Bezivin, J. and Heckel, R., (eds.) *Language engineering for model driven software development: Dagstuhl seminar, 29 February-5 March 2004*. Dagstuhl, Germany: International Begegnungs-und Forschungszentrum für Information (IBFI).
- Kwanya, T. 2010. The potential of library 2.0 for research libraries in Kenya. PhD thesis. Pietermaritzburg: University of KwaZulu-Natal.
- Kwanya, T., Stilwell, C. and Underwood, P. G. 2009. Library 2.0: revolution or evolution. *South African journal for library and information science* 75(1):56-67.
- Lagoze, C., Krafft, D.B., Payette, S. and Jesuroga, S. 2005. What is a digital library anymore, anyway? *D-lib magazine* 11(11) <http://www.dlib.org/dlib/november05/lagoze/11lagoze.html>. Accessed 26 June 2011.
- Lamb, B. 2004. Wide open space ready or not. *EDUCAUSE review*, September/ October: 36-48.

Larson-Hall, J. 2010. A guide to doing statistics in second language research using SPSS. http://books.google.co.za/books?id=uA4w4J8iS6gC&pg=PA373&dq=why+using+spss&hl=en&ei=757oTv7oH82IhQfS58nMCg&sa=X&oi=book_result&ct=result&resnum=2&ved=0CDcQ6AEwAQ#v=onepage&q=why%20using%20spss&f=false Accessed 21 June 2011.

Levy, Y. and Ellis, T.J. 2006. A system approached to conduct an effective literature review in support of information systems research. *Information science journal* 9(2): 181-212.

Lippincott, J.K. 2006. Linking the information common to learning. *Learning space*. <http://net.educause.edu/ir/library/pdf/PUB7102g.pdf>
Accessed 20 June 2011.

Litwin, M. 1995. *How to measure survey reliability and validity*. California: SAGE.

Maness, J.M. 2006. Library 2.0 Theory: Web 2.0 and its implications for libraries. *Webology*3(2): 43-51.

Mathews, J. M., and Pardue, H. 2009. The presence of IT skills sets in librarian position announcements. *College and research libraries* 70: 250–257.

May, T. 1997. *Social research: issues, methods and process*. 2nded. Michigan: Open University.

McMillan, J.H. and Schumacher, S. 1997. *Research in education: a conceptual introduction*. 4thed. Michigan: Longman.

Microsystems, S. 2002. Integration of digital libraries in e-learning. http://www.tlu.ee/~sirvir/Information%20and%20Knowledge%20%20Management/Integration%20of%20digital%20libraries%20in%20e-learning/definition_of_digital_libraries.html
Accessed 10 July 2011.

Miller, P. 2005. Web 2.0: building the new library. <http://www.ariadne.ac.uk/issue45/miller/intro.html> Accessed 09 March 2011.

Mitchell, P. 2006. *Wikis in education*. Oxford: Chandos.

Mostert, J. 2002. Community library: the concept and its application with particular reference to the South African community library system. *The international information and library review* 30(1):71-85.

Mugenda, O. and Mugenda, A. 1999. *Research methods: quantitative and qualitative approaches*. Nairobi: African Centre for Technology Studies.

Murley, D. 2008. What is all the fuss about Library 2.0? *Law library journal* 100(1): 197-204.

Murray, R. 2006. Library Systems: synthesise, specialise, mobilise.

<http://www.ariadne.ac.uk/issue48/murray/> Accessed 24 June 2011.

Musser, J. and O'Reilly, T. 2007. *Web 2.0 principles and best practices*. Sebastopol: O'Reilly Media.

Ngcobo, N. 2010. The introduction of Web 2.0 technologies at UKZN. Unpublished paper for the Carnegie Library Leadership Academy, hosted by the University of Pretoria.

Ngulube, P. 2003. Preservation and access to public records and archives in South Africa. PhD dissertation. Pietermaritzburg: University of Natal.

Nimsomboon, N. and Nagata, H. 2003. *Assessment of library service quality at Thammasata University library system*. Thammasata (Thailand): Thammasata University Library System.

O'Reilly, T. 2005. What is web 2.0? Design patterns and business models for the next generation of software. www.oreilly.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html Accessed 09 March 2011.

Parkes, D. and Walton, G., (eds.) 2010. *Web 2.0 and libraries: impacts, technologies and trends*. Oxford: Chandos.

Penzhorn, C. and Pienaar, H. 2009. The use of social networking tools for innovative delivery at the University of Pretoria Library. *Innovation* 36(1): 66-77.

- Pienaar, H. 2006. e-Information strategy of the academic information service.
<http://ol.up.ac.za/upspace/bitstream/2263/1346/3/eInfostratDitche06.pdf>. Accessed 25 March 2011.
- Prasad, B.S. and Swarnalatha, S. 2005. Digital library infrastructure and architecture.
<http://library.igcar.gov.in/readit-2005/conpro/facets/s1-7.pdf>. Accessed 02 May 2011.
- Remelts, G. 2005. Where research will happen: the traditional library. In Vander-Leest, S.H., Nyhoff, J. and Zylstra, N., (eds.) *Being fluent and faithful in a digital world*. Grand Rapids, MI: Calvin College, chapter 4, section 1.
<http://www.calvin.edu/academic/rit/webBook/chapter4/Sec1/tradlib/>. Accessed 01 June 2011.
- Rice, A. (2011). Students push their Facebook use further into course work.
Chronicle of higher education
<http://chronicle.com/blogs/wiredcampus/students-push-their-facebook-use-further-into-academics/33947>. Accessed 12 January 2012.
- Robert P. 1999. Qualitative methods: what are they and why use them?
<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1089055/?page=2> Accessed 12 June 2011.
- Rothman, D. 2006. Library 2.0.
<http://davidrothman.net/2006/11/30/libaray-20/> Accessed 5 August 2011.
- Schneider, K.G. 2006. Library 2.0 cookbook.
<http://freerangelibrarian.com/presentations/slissouthafrica2006preconf.ppt>
 Accessed 01 August 2011.
- Shanhi, R. 2006. Web 2.0: data, metadata, and interface.
http://www.rashmisinha.com/archives/05_08/web2-data-metadata-interface.html Accessed 27 March 2011.
- Shaw, R. (2005), “Web 2.0? It doesn’t exist”, *ZDNet*
<http://blogs.zdnet.com/ip-telephony/?p¼805>. Accessed 13 June 2011.

Singh, S.N. 2003. Digital library: definition to implementation.

<http://dlist.sir.arizona.edu/236/01/lecture-rcc.26ju103.pdf>. Accessed 30 June 2011.

Stilwell, C. 1999. Community information service: a view of the theoretical foundations. *DESIDOC bulletin of information technology* 19(1):15-33.

Stilwell, C. 2001. Community resource centres: a turn of the century update. In: Stilwell C, Leach, A., and Burton, S., (eds.) *Knowledge, information and development: an African perspective*. Pietermaritzburg: School of Human and Social Studies, University of Natal, pp. 200–214.

Tinkelman, R. 2008. Podcasting comes to med school curriculum.

http://focus.hms.harvard.edu/2006/012706/med_ed.shtml. Accessed 20 July 2011.

UKZN General Information. 2011.

<http://library.ukzn.ac.za/TopNav/GeneralInformation/Aboutus919.aspx>

Accessed 06 Nov 2011

Wallis, R. 2007. Web 2.0 to Library 2.0 – from debate to reality. *New review of information networking* 13(1): 53-64.

Williams, J.M. and Goodwin, S.P. (eds.) 2007. Teaching with technology: an academic librarian's guide. Oxford: Chandos.

Wikipedia. 2009. Mashup. [http://en.wikipedia.org/wiki/Mashup_\(digital\)](http://en.wikipedia.org/wiki/Mashup_(digital)) Accessed 01 August 2011.

Wikipedia. 2010. LibrayThing. <http://en.wikipedia.org/wiki/LibraryThing> Accessed 01 August 2011.

Wiki.org. 2002. What is a Wiki? <http://wiki.org/wiki.cgi?WhatIsWiki>. Accessed 01 August 2011.

Appendices

Appendix 1: Informed Consent (Campus Librarian)

27 October 2011

Dear Participant

My name is Baganda Herman Muhambe, and I am a student currently registered for a Master of Information Studies Degree at the Pietermaritzburg Campus of the University of KwaZulu-Natal (UKZN). The topic for my thesis is:

Technology initiatives in academic libraries: status of Library 2.0 within the Libraries of the University of KwaZulu-Natal.

The purpose of this research is to explore and determine how far UKZN libraries are from the Library 2.0 model. It is anticipated that the findings will be of interest and possible benefit the libraries given what appears to be an increasing trend for university libraries to adopt such a model. In order to carry out the study I would appreciate it if you, as a Campus Librarian would allow me to interview you. The interview should take no longer than 20 minutes.

Any information that is obtained in connection with this study that can be identified with you will remain confidential and will be disclosed only with your permission. Please note that your name will not be included in the report and your confidentiality will be maintained throughout the study.

There are no anticipated risks, compensation or other direct benefits to you as a participant in this interview. You are free to withdraw your consent to participate and may discontinue your participation in the interview at any time without consequence.

If you have any questions about this research protocol, please contact me at the address below or my project supervisor Mr Athol Leach Tel: x5098 or leach@ukzn.ac.za.

Thank you

Yours sincerely

Baganda Muhambe

Email: hemanmuhambe@yahoo.com

Please complete the section below

I..... (Full names of participant) hereby confirm that I understand the contents of this document and the nature of the research project, and I consent to participating in the research project.

I understand that I am at liberty to withdraw from the project at any time, should I so desire.

.....
.....

Signature of participant

Date

Appendix 2: Informed Consent (Director of Libraries)

27 October 2011

Dear Participant

My name is Baganda Herman Muhambe, and I am a student currently registered for a Master of Information Studies Degree at the Pietermaritzburg Campus of the University of KwaZulu-Natal (UKZN). The topic for my thesis is:

Technology initiatives in academic libraries: status of Library 2.0 within the Libraries of the University of KwaZulu-Natal.

The purpose of this research is to explore and determine how far UKZN libraries are from the Library 2.0 model. It is anticipated that the findings will be of interest and possible benefit the libraries given what appears to be an increasing trend for university libraries to adopt such a model. In order to carry out the study I would appreciate it if you, as the Director of Libraries, would allow me to interview you. The interview should take no longer than 20 minutes.

Any information that is obtained in connection with this study that can be identified with you will remain confidential and will be disclosed only with your permission. Please note that your name will not be included in the report and your confidentiality will be maintained throughout the study.

There are no anticipated risks, compensation or other direct benefits to you as a participant in this interview. You are free to withdraw your consent to participate and may discontinue your participation in the interview at any time without consequence.

If you have any questions about this research protocol, please contact me at below address or my project supervisor Mr Athol Leach x5098 or leach@ukzn.ac.za.

Thank you

Yours sincerely

Baganda Muhambe

Email: hemanmuhambe@yahoo.com

Please complete the section below

I..... (Full names of participant) hereby confirm that I understand the contents of this document and the nature of the research project, and I consent to participating in the research project.

I understand that I am at liberty to withdraw from the project at any time, should I so desire.

.....
.....

Signature of participant

Date

Appendix 3: Campus Librarian's Interview Schedule

1. For how long you have been holding this position?
2. Do you feel that, overall, your Pietermaritzburg Campus libraries have responded in terms of their services offered to the developments in technology? Could you please elaborate?
3. Do you think that your libraries consistently offer the services that library users want? Please elaborate.
4. What do you think that your libraries can do to keep up with the changing needs of library users?
5. What do you think the libraries can do to reach new users?
6. Are you aware of the Library 2.0 model? If so, what is your understanding of it?
7. Do your libraries utilize Web 2.0 technologies, such as blogs, wikis and social network tools specially Facebook, Twitter, YouTube, or MySpace?
8. If yes, to what extent (for each of the technologies)?
9. If not, what is the reason for the non-use of these technologies in your libraries?
10. If not, are you considering implementing, in your libraries, technologies such as Facebook, Twitter, YouTube, wikis and blogs?
11. If Yes to Q10, could you please elaborate? Prompt: What do you consider to be the potential benefits to your libraries of implementing these technologies?
If Yes to Q10, what do you consider the potential problems or stumbling blocks to be in implementing and using these technologies?

Appendix 4: Library Director's Interview Schedule

1. For how long you have been holding this position?
2. Do you feel that, overall, UKZN libraries have responded in terms of their services offered to the developments in technology? Could you please elaborate?
3. 3. Do you think that the Howard College libraries consistently offer the services that library users want? Please elaborate.
- 4 Based on the collection and the services delivery (both offline and online) available at UKZN libraries, how well do they meet current needs of the users?
5. Are you aware of the Library 2.0 model? If so, what is your understanding of it?
6. Do UKZN libraries utilise Web 2.0 technologies, such as blogs, wikis and social network tools specially Facebook, Twitter, YouTube, or MySpace?
7. If yes, to what extent (for each of the technologies)?
8. If not, what is the reason for the non-use of these technologies in UKZN libraries?
9. If not, are you considering implementing, in UKZN libraries, networking tools such as Facebook, Twitter, YouTube, wikis and blogs? Could you please elaborate?
10. What do you consider to be the potential benefits to UKZN libraries, of implementing and using these technologies?
11. What do you consider to be the potential problems or stumbling blocks for UKZN libraries in implementing and using these technologies?
12. Do you have any further comments?

Thank you very much for your time.

Appendix 5: Subject librarian's Questionnaire.

My name is Baganda Herman Muhambe. I am a Masters (Information Studies) student at the University of KwaZulu-Natal, Pietermaritzburg Campus. As part of my studies I am carrying out a study entitled: "Technology initiatives in academic libraries: status of Library 2.0 within the Libraries of the University of KwaZulu-Natal". The aim of the study as the title indicates is to investigate the implementation of the Library 2.0 model in UKZN libraries. The subject librarians at UKZN libraries will comprise, in the main, the study population.

I thus hereby humbly request your participation in this study by responding to the questions below. The time for completing the questionnaire will be approximately 15 minutes and your answers will be kept confidential. Your participation is gratefully acknowledged.

Section A: Personal information

1. Gender
☐ Male ☐ Female
2. Education level: ☐ Post-graduate Diploma; ☐ Honours; ☐ Masters; ☐ PhD; ☐ Other
3. Age: ☐ 20 to 30; ☐ 31 to 40; ☐ 41 to 50; ☐ over 50

Section B: Your familiarity with Web 2.0 technologies

4. How familiar are you with the services of Web 2.0 technologies?

- ☐ Fairly familiar
☐ Familiar
☐ Very familiar

5. Are you personally subscribed to any social networking service?

- ☐ Yes
☐ No

6. If yes, please specify

- ☐ Facebook, ☐ MySpace, ☐ Twitter, ☐ YouTube, ☐ Other (Please specify).....

Section C: UKZN libraries and Library 2.0 technologies

7. Does your library utilize Web 2.0 technologies, such as Facebook, Twitter, YouTube and MySpace to reach it users?

- ☐ Yes

☐ No (If No, please go to question 12)

8. If yes, please specify which.....

9. What do you consider to be the benefits to the library of each of the tools specified?

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10. What do you consider to be the benefits to the students of each of the tools specified?

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11. What do you consider to be the problems associated with the use of each of the tools specified? Firstly, from the perspective of the library:

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.....

.....

Secondly: from the perspective of the students:

.....

.....

12. If no to Question 7, what is the reason/s for the non-use of these technologies in your library? (Please explain)

.....

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.....

13. Please explain how you would use tools such as Facebook, Twitter, YouTube, wikis and blogs, if your library was subscribed to them.

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14. In your opinion based on your understanding of social networking tools, what would you consider to be the benefits of implementing these tools in your library?

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15. What do you think could be the major problems associated with implementing and offering these social networking tools in your library?

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16. Anything you would like to add or any suggestions?

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Thank you for your time