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**The adoption of Web 2.0 technologies in
academic libraries: A comparative exploration**

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Abstract

This paper addresses the adoption and non-adoption of communication methods such as social media and explores the implementation of Web 2.0 technologies and their use in academic libraries. I interviewed 16 library employees from six academic university libraries in the Flanders region of Belgium and in South Africa. I explored five academic university libraries in the urban regions of Flanders and South Africa and one situated in a rural region of South Africa. This article discusses the benefits of using social media as a communication tool to engage with students. The results demonstrate that ‘ease of use’ was portrayed as a beneficial construct and has a positive influence on behavioural intention and use of Web 2.0 technologies. A comparison on the adoption of social media between the two countries indicate that financial resources, infrastructure and management support are crucial determining factors in service delivery.

Keywords

Academic libraries, Belgium, social media user engagement, South Africa, Web 2.0 and Library 2.0

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Introduction

Libraries have a well-established tradition of going where users are (Bell, 2008: 45) and Library 2.0 represents a model of change in library services (Kwanya et al., 2009: 74). Social media have changed the landscape of academic libraries across the globe. The Internet has facilitated this, irrespective of distance and space, and academic libraries are following suit. Concurring with Kelly and Glazer (2013: 27) social media created a new landscape for academic librarians where duties include managing academic libraries' social media channels through platforms that can reach the student community instantaneously. Referring to the fourth industrial revolution Yilmaz et al. (2017: 251) and Frederick, (2016: 10) articulate this as a new phase in industrial transformation which places innovative technology into perspective as it appears to have two main streams. The first stream is what these new technologies can do to improve and augment the lives and bodies of human beings, while the second stream accepts hi-tech industrial processes (Frederick, 2016: 10). Equally, academic libraries, in an effort to provide convenient and effective service, have been eager to implement new technologies. As Web 2.0 technologies are becoming popular and growing rapidly (Harinarayana and Raju, 2010: 77), academic libraries have been equally quick to start 'liking', tweeting and creating friendships on a variety of platforms (Hicks, 2012: 190). Academic libraries use social media to transmit information and connect with patrons (Shulman et al., 2015: 178) by using Web 2.0 tools to offer traditional services in an innovative manner and address the information requirements of techno-savvy users (Tripathi and Kumar, 2010: 205).

This article explores the use of social media, Facebook and Twitter, by academic libraries and provides an insight into the benefits and technological deterrents faced. The main objectives of the study were to establish whether academic libraries in Belgium and South Africa have adopted Web 2.0 technologies and how these technologies are applied to their operations and services. In the past, South Africa was dominated by the Afrikaner nationality, also known as the Dutch-speaking white farmers and, based on the colonialist, apartheid era and post-apartheid era, the historically and ethnically diverse history between the Dutch and South Africa has led me to benchmark these two countries. Belgium, in particular its Dutch-language region Flanders, and South Africa share a long history based on close language and cultural ties (Embassy of the Republic of South Africa, 2006). The Afrikaans dialect spoken today originates from the Dutch language spoken by early settlers in the 1600s (South African History Online, 2011). Much of the history has created a divided and oppressed society of

clashes between land, ethnicity and socio-economic division. The uneven diffusion of information and communications technology (ICT), essential for socio-economic development, impacts on all spheres of individual and collective life. In this global digital age, those who are unable to access ICTs are increasingly disadvantaged (Nkondo et al., 2014: 93). The disparity caused by the apartheid era has had direct consequences. On 2 February 1990 the ruling party's president, Frederik Willem de Klerk, one of the driving forces in ending apartheid, announced the unconditional release of Nelson Mandela (Beck, 2000: 180), moving the country from apartheid to democracy.

The selection of university libraries from the two countries provides a diverse account of their socio-economic, infrastructural differences and use of social media for educational purposes. Similarly, the University of Antwerp and University of Limpopo are partner universities in several Erasmus Mundus Partnership programmes including EUROSA coordinated by the University of Antwerp (University of Antwerp, 2017). Based on these partnerships, I have chosen South African and Belgian University Libraries to examine the use of social media between these two countries. The study presents the disparities in academic libraries between the historically advantaged institutions (HAI) and the historically disadvantaged institutions (HDI) in South Africa. Two higher education institutions participating in this study, Cape Peninsula University of Technology and the Gauteng University, are HAI whereas the University of Limpopo is a HDI with significant disparities. The participating academic libraries in this study are summarised and described below.

The population of the study was comprised of academic library professionals from two geographically diverse populations, the Dutch-speaking Flemish region of Belgium (Flanders) and South Africa. The participating Flemish academic libraries in Belgium were the University of Antwerp Libraries (UAL), Free University of Brussels Libraries (FUBL) and Catholic University of Leuven Libraries (CULL). Participating university libraries in South Africa were the Gauteng University Libraries (GUL), Cape Peninsula University of Technology Libraries (CPUTL) and the University of Limpopo Libraries (ULL). In this study, the University of Limpopo is the only academic institution situated in a rural area. The fundamental aim of the university is to be a leading university that addresses the needs of the African rural communities (University of Limpopo, 2013). The Limpopo Province is one of the poorest and predominantly rural provinces in South Africa (Mabila et al., 2006: 297). The academic

libraries in this study provide variation in terms of location, urban and rural, to ascertain if geographical location has an impact on the adoption process. For consistency, the university libraries in this study were referred to as 'University Libraries'.

This research provides an explorative comparison and further examines the role that internal and external factors play in the adoption of Web 2.0 technologies. The study compares the two countries in an attempt to better understand the use of social media in academic libraries and how the Global North can contribute with their experience and expertise to better inform the Global South. The research questions were designed with the intention to extract information that could assist this study to explore the use of Library 2.0 and question the potential of Web 2.0 technologies for academic libraries. As this was a selective approach and sought the insight of social media administrators by means of interviews, a qualitative research method was employed. The research question: How do academic librarians use Web 2.0 technologies in their professional environment? is answered by secondary research questions (SRQs). SRQ1: Have Web 2.0 technologies been adopted by academic libraries? SRQ2: How is this technology applied in libraries' operations and services? SRQ3: What are the challenges faced in keeping abreast with changing technology or remaining current with new developments within the profession?

Theoretical framework

Technology acceptance is an active area of research where several models and theories have been proposed to understand the drivers of technology adoption (Akbar, 2013: 2). The theories, Library 2.0 and perceived ease of use, studied in this research explain the technology acceptance of the predicted behaviour of academic librarians. These theories portray equal relevance to the study. Derived from Davis' (1989: 320) construct, in this study 'perceived ease of use' refers to the degree to which academic librarians perceived social media as easy to understand and operate.

Web 2.0 is an advanced technology of the 21st century and offers academic libraries a virtual environment beside more traditional forms of communication such as electronic mail or snail mail. The term 'Web 2.0' originates from the Web 2.0 summit held in 2004, and includes principles such as 'harnessing collective intelligence' and 'trusting users as co-developers' as outlined by O'Reilly and Battelle (2009: 1). Chua and Goh (2010: 203) define Web 2.0 in a

similar way, as an emerging form of applications that has the potential to enable collaboration. The phrase 'Web 2.0' gained popularity and people began to look at the rise of sites such as Facebook; as a result, the term 'social media' has become the preferred term since 2005 (Bradley, 2015: 3). Michael Casey (2005) coined the term 'Library 2.0', prompting library practitioners and researchers to actively explore how Web 2.0 applications could be introduced to libraries for service enhancement and to encourage participatory librarianship. Habib (2006: 10) suggests the concept of Academic Library 2.0, and clarifies Library 2.0 as a foundation to develop Library 2.0 services. In separating the terms 'Library' and '2.0' where 2.0 derives directly from Web 2.0, it is clear that the term describes the relationship between Web 2.0 and libraries. He defines Library 2.0 as a subset of library services designed to meet user needs caused by the direct and peripheral effects of Web 2.0. Xu et al. (2009: 330) proposed a Library 2.0 framework which is based on three components: information, users and librarians. The framework outlines the interaction between Web 2.0, Library 2.0, the librarian and the user, providing a two-way communication transmission of information.

Using an empirical approach, Xu et al. (2009: 325–327) surveyed the websites of 81 academic libraries in New York State to establish whether Web 2.0 technologies were adopted. They found that 42% adopted Web 2.0 technologies of which four academic libraries adopted Facebook to create virtual communities within the library environment. Members of these virtual communities mostly consisted of librarians and a few students as participants. They also highlighted the key qualifications and roles required by academic librarians in the digital age to encourage user participation (p. 329). Mahmood and Richardson (2011: 372) found an overwhelming acceptance of various Web 2.0 technologies in large academic libraries of the United States. They surveyed the websites of 100 member academic libraries of the Association of Research Libraries, United States of America and found Facebook and Twitter to be very popular, showing an increase in social media adoption.

Since then, several studies, globally, have been conducted to explore the adoption and use of Web 2.0 applications in libraries. For instance, Collins and Quan-Haase (2014: 63) researched the adoption of social media at university libraries in Ontario, Canada. Despite their finding that two-thirds of academic libraries maintained a social media presence on at least one platform, it was perceived as a low adoption rate. Chu and Du (2012: 66–70) explored the use of social media in academic libraries and found that 71.1% of academic libraries in Asia, North America and Europe had adopted social media, 13.1% planned to use these tools in the future

and 15.8% had not adopted social media. Non-adopters reported on the challenges and difficulties experienced in adopting social media. These include limited time and resources and inadequate mastery of technology (Chu and Du, 2012: 72). The non-adopters reported that there were no benefits in using social media, primarily because students did not use the tools. Chu and Du (2012: 70) also noted the limited use of social media as they are mostly used for communication and marketing purposes. Exploring the adoption and use of Facebook among Malaysian academic libraries, Ayu and Abrizah (2011: 239) employed content analysis to examine the uses of the library's Facebook page and found that three out of the 14 academic libraries use their Facebook page. Despite the overwhelming adoption rate of social media, low usage was reported. Similarly, Nesta and Mi (2011: 88) examined the websites of academic libraries in New Jersey and Hong Kong to document the adoption of Web 2.0 technologies. They found that the adoption process was not properly evaluated. The rush of academic libraries to adopt Facebook has to be weighed against the very low participation of their targeted users (p. 86). Measuring the value of academic libraries and students, Bell (2008: 45) encourages a design strategy for technological innovation and stated that many libraries are employing new technologies without due consideration of the feasibility, benefits and appropriateness. Likewise, an academic library in the United States, implemented strict regulations to control the misuse of computer facilities by students to access Facebook for non-work-related matters (Charnigo and Barnett-Ellis, 2007: 28).

Concurring with the findings above, Owusu-Ansah et al. (2015) note that social media platforms are adopted by academic libraries but used minimally for communication purposes. They examined the application of social media and Web 2.0 for research support in selected African academic institutions in four different countries. Their findings reported the use of social media at Rhodes University Library in South Africa as a result of a formal social media strategy, whereas the University of Education, Winneba Library in Ghana, Makerere University Library in Uganda and the University of Nigeria Library did not encourage the use of social media for research support but used it mostly for communication and interaction with colleagues. The authors discovered that the latter university libraries did not have a social media strategy in place. Tella et al. (2013), undertaking a survey on the use of social networking sites (SNSs) by academic librarians in six states of Nigeria, concur that academic librarians are making use of these sites to connect with other libraries and librarians. Their study uses the responses of 200 academic librarians and found that in terms of professional development SNSs provide opportunities for sharing knowledge and serve as a source of

educational information. Knowledge sharing in librarianship is seen as a good means of professional development that could lead to innovation and creativity. Information that educates librarians on the latest development on various aspects of librarianship and information science are received from SNSs and include workshops, seminars, congresses, conventions, conferences and training for better development and continued relevance (Tella et al., 2013: 284).

Geographic locations seem to play an important role in the popularity of specific technologies and social media (Collins and Quan-Haase: 2014: 51). Chua and Goh (2010: 203) researched the adoption of social media within the same geographic countries in public and academic libraries and found that libraries in North America were significantly in the lead and seemed more proficient in sharing information in all Web 2.0 applications compared with European and Asian academic libraries. At the time of their study, Internet usage in North America was at 69.7%, Europe at 38.9% and Asia at 10.7%. High Internet connectivity could have led to North American academic libraries aiming to meet the needs and expectations of university students. Twitter and Facebook were equally popular (Chu and Du, 2012: 66; Collins and Quan-Haase, 2014: 63; Kwanya et al., 2012: 10; Mabweazara, 2014: 73; Mabweazara and Zinn, 2016: 4).

Complementing these quantitative studies, AlKarousi et al. (2015) used a qualitative approach and conducted 31 interviews with library staff at four academic libraries in Oman. They found no benefits in the use of Web 2.0 applications in the library without students having a culture of willingness and awareness of how to use these applications. They state that there is an increased need for information awareness among students for academic libraries to highlight the actual benefits of using social media (AlKarousi et al., 2015: 11). Most academic libraries in Oman have not adopted Web 2.0 applications to enhance their services and reported social media as non-beneficial to their students' needs. One of the few studies conducted on this topic in South Africa notes the importance of Web 2.0 applications and its impact on the practice of scholarly research and emphasises the role university libraries play in supporting students' needs (Penzhorn, 2009: 1). Echoed by Mabweazara (2014: 65), social media tools develop innovative library services. Their study consisted of a comparative analysis using two academic libraries in two adjacent countries. It analysed the perceptions of 59 library staff members at the University of the Western Cape (UWC), South Africa and the National University of Science and Technology (NUST), Zimbabwe, and questioned the

appropriateness of social media for service delivery. Respondents expressed the importance of adopting and using Web 2.0 tools to offer collaborative delivery of services with colleagues and students and keeping abreast with current trends in the profession (Mabweazara, 2014: 59).

Exploring the reasons for (non-)adoption of social media in academic libraries, the study conducted by Shill and Tonner (2003: 432) stresses the importance of environmental factors. Findings based on a survey of 354 academic libraries describe the types of projects undertaken to improve environmental factors. The authors found that adequate student facilities and services are needed to attract and retain students. Aging buildings lack the infrastructure required to permit flexible use of technology, while academic libraries have expanded their electronic resources and services. By making these services and the library's collections available to remote users, librarians have made it less necessary for students to visit the physical library to address many of their research and information requirements. Many libraries are examining the services they offer to ascertain whether these can be modified to better serve patrons (Sodt and Summey, 2009: 105). Therefore, strategic planning forms part of the decision-making process. Ganster and Schumacher (2009: 115–116) demonstrate the planning stages for the use of Facebook at the University of Buffalo Libraries using customisable applications. Facebook offers a basic page customisable template allowing page administrators to edit and update the Facebook page as well as have control over permissions by keeping a single presence to represent the university libraries as one entity.

Research methodology

Analysis of interviews: Emerging themes

Purposive sampling was used for this study, based on differences in terms of geographic region. This type of sampling is strategic to establish good communication between the research questions and sampling; the researcher samples on the basis of interviewing people who are relevant to the research questions (Bryman, 2004: 333). Purposive sampling has a purpose and involves handpicking cases to form samples that researchers deem satisfactory for their needs (Trochim, 2006: 56). It is used in qualitative research for the identification and selection of information-rich cases related to the phenomenon of interest (Palinkas et al., 2015: 533). Creswell (2014: 19) describes qualitative research as a narrative design with open-ended questions; the researcher seeks to examine an issue where information is collected.

To obtain the sample, personal invitations were submitted to social media administrators from three academic libraries in Flanders and three in South Africa. The sample was based on the following criteria:

- Respondents were heads of departments or library professionals responsible for managing and updating social media content;
- Respondents considered themselves to be knowledgeable on one or more social media platforms;
- Respondents expressed a willingness to participate in the study.

Theory development is dependent on the specification of patterns and relationships between concepts (Bazeley and Jackson, 2013: 261), following the examination of similarities and differences between themes.

Researchers engage in projects involving interpretation of unstructured or semi-structured data which may include exploration, description, comparison, pattern analysis, theory testing, theory building or evaluation (Bazeley and Jackson, 2013: 2). Qualitative methods are chosen in situations where a detailed understanding of a process or experience is wanted, where more information is needed to determine the boundaries or characteristics of the issue being investigated, or where the only information available is in non-numeric form. Such investigations typically necessitate gathering intensive and/or extensive information from a purposively derived sample (p. 2).

When conducting qualitative research one has to consider one's own position, i.e. are you entering the field as an insider or outsider. An 'insider' is a researcher who personally belongs to the group to which their participants belong, whereas an 'outsider' is not a member of that group (Hayfield and Huxley, 2015: 91). This queries the value and significance of both insider and outsider positions (p. 92). For the purposes of this study, I consider myself an insider having 24 years' experience in the profession and in many ways share similar viewpoints with participants.

To gather participants' meanings and ideas on the topic, I relied on the judgement and experiences of respondents to provide insight and depth to the results, outlining their perceptions on and understanding of the use of social media. Interviews were recorded and

lasted between 35 and 75 minutes. Interviews were transcribed and data were organised and coded into theme nodes, using NVIVO. Interviews were held between June 2015 and November 2016.

Interview methods

Selecting informants for qualitative research was relevant for gathering ideas and perspectives of respondents regarding their academic libraries' social media practices. The purposive sampling technique is a type of non-probability sampling that is most effective when one needs to study a certain cultural domain with knowledgeable experts within.

In Belgium in-depth semi-structured, one-on-one, face-to-face interviews were conducted with respondents residing in Flanders.

In South Africa, initially, Skype seemed an effective medium of communication to reach distant library employees in South Africa, but owing to access limitations, such as computer settings, various other means were implemented. The following methods were employed with respondents residing in South Africa: in-person, face to face, telephonic and Voice over Internet Protocol (VoIP) interviews were conducted. VoIP calls included Skype and WhatsApp calling systems to suit individual respondents. Bryman (2004: 326) terms the distance interview process as the telephonic interview method. Coupled with the distance interview process, the VoIP system portrayed by Cater (2012) allows individuals to use Internet connectivity to make video or audio calls, thereby allowing interviews from anywhere in the world as long as the respondent has access to a telephone or computer with a headset or webcam. Hanna (2012: 239) provides insight into the use of Skype to reap the same benefits as the traditional face-to-face interview process in qualitative research.

Interviews were held with 16 consenting respondents, eight from Flanders and eight from South Africa. The study ensures anonymity and pseudonyms were used to conceal the identities and personal information of respondents. The sample consisted of three men and 13 women. Their ages ranged from 25 to 57 years. The designations of respondents ranged from library assistant to assistant director, which allowed for the construction of knowledge and expertise to provide an interpretative approach of realism.

The responding academic libraries in this research were located on various campuses where social media profiles are either designed to cater for the library as a whole, or are campus or subject specific. Social media profiles were created under the banner of the university and conformed to the prescriptions of institutional branding; they were managed by a team of experts or selected individuals.

Universities in Flanders and South Africa. Due to a confidentiality agreement with one academic library I cannot disclose the real name of this institution. It was agreed to use a pseudonym to protect the university's/library's identity. The following references are used in this article, 'Gauteng University' or 'Gauteng University Libraries (GUL)'.

The University of Antwerp originated after a merger between three separate institutions in October 2003 (University of Antwerp, 2016a). As the third largest university in Flanders, the University of Antwerp has approximately 20,350 students (University of Antwerp, 2016b). The Free University of Brussels was founded in 1970 and is a modern university with two campuses in Brussels and has approximately 18,500 students (Vrije Universiteit Brussel, 2016). The Catholic University of Leuven is situated in the heart of Western Europe and is one of the oldest and most renowned universities in Europe. The university caters to more than 40,000 students (Study in Flanders, 2016).

The Gauteng University is one of the largest universities in South Africa. The university serves more than 50,000 students in the suburbs of a major city. The Cape Peninsula University of Technology has humble beginnings dating to the early 1900s. The institution was established on 1 January 2005, when the Cape Technikon and Peninsula Technikon merged. It is the only university of technology in the Western Cape and serves more than 30,000 students (Cape Peninsula University of Technology, 2016). The merger between the University of the North (Turfloop) and the Medical University of Southern Africa (Medunsa) occurred in January 2005 and the institution was renamed the University of Limpopo. Both campuses are situated in the middle of densely populated old 'homeland' areas. The University of Limpopo serves approximately 20,000 students (Southern African Regional Universities Association, 2007). Since the merger there were ongoing discussions about a demerger. The University of Limpopo was officially demerged on 1 January 2015 and the Turfloop campus retained the name.

Results

This section interprets the data collected from six university libraries in Belgium and South Africa using a qualitative interview process. The main objective of this study was to investigate the adoption and use of Web 2.0 technologies, Facebook and Twitter, for academic library purposes. Against the background of the latter objective, this section presents the responses seeking the perceptions of library professionals on the adoption and non-adoption process and use of social media. Furthermore, answering the three research questions, the adopters created professional identities within their academic library environments to enhance information dissemination. Social media offer additional methods of communication and information sharing, implying ease of use to suit the needs of the student population they serve. Respondents expressed their views regarding non-adoption and the challenges faced in keeping abreast with changing technologies.

Theme 1: Adopters and non-adopters and the use of Web 2.0 technologies by academic libraries

Two types of presences were portrayed: an institutional library presence (adoption), used for library user engagement, and a non-presence (non-adoption). All three of the Flemish academic libraries, UAL, FUBL and CULL, were adopters of one or more social media. Two of the university libraries in South Africa, the GUL and CPUTL, were adopters of at least two social media whereas the ULL constituted a non-adopter and played an inactive role in social media. The adopters in this study were active users of social media.

South African academic libraries, like those in Flanders, were using one or more social media platforms to ensure that users were reached on a medium convenient for them. The adopters had official Facebook and Twitter profiles accessible through the library's webpage. These academic libraries provided access to students through WiFi connectivity or stand-alone computers in the library, except for CULL, which provided both stand-alone computers, laptops and tablets at some campuses. As one of the respondents, pseudonym of respondent = Bryson (Library = CULL, gender = m, age = 37) shared:

The library uses Facebook and Twitter a lot to communicate with our students. We submitted a survey to the students regarding our website and even though it is perceived as 'ok', students really know the library from our Facebook and Twitter pages.

Adoption: Facebook and Twitter

Different types of social media platforms afford different kinds of interaction and information provision. As a result, academic libraries must integrate various social media platforms to develop and maintain successful social media profiles (Collins and Quan-Haase, 2014: 64). Academic libraries post news and events information on Facebook and Twitter in an attempt to reach a wider student audience. It is logical to assume that different users may have accounts on different Web 2.0 applications because of their varied interests (AlKarousi et al., 2015: 7).

Although academic libraries in Belgium adopted and implemented popular social media such as Facebook and Twitter, Facebook seems to be more widely used owing to its ease of use. For instance, Charmaine (CULL, f, 26) states:

We use Facebook, as it is really easy to use and nice to connect with your students when we share information about studying or general information about what is happening in the library.

The analysis confirms Davis' (1989: 331) concept that accessibility and identification of ease of use are positively related to user acceptance of a specific technology. Compared to Twitter, some academic libraries viewed Twitter as a medium of communication that presents ease of use whereas others felt it was complicated. Twitter is a microblogging application (Akinola, 2015: 181) and allows the transmission of short messages of up to 140 characters and keeps followers updated on daily activities, events, news, contributions and comments (Ogunleye, 2015: 212).

While Twitter is a relatively new tool, it appears to have caught up with Facebook in terms of popularity in academic libraries (Chu and Du, 2012: 67). Citing similarities as well as differences, the Flemish academic libraries expressed their views on the unique features offered by Twitter while still providing students with a Facebook platform for relationship building.

Concurring with the latter statement by using a medium of communication that is known to students, Bryson (CULL, m, 37) states:

Most of the students use Twitter so if you want to get the message out fast and wide, you use those two media. We want something more lasting and for the Catholic

University of Leuven Libraries we put it on our website but if we want to communicate information urgently to our students, we use our Facebook and Twitter accounts.

The UAL uses Twitter exclusively for its special collections, as it is a platform to network ideas and topics.

I wanted the opportunity to communicate more specifically and I had a feeling that Twitter was the better medium to do that. Twitter is smaller and less fixed than the big Facebook page. (Xavier, UAL, m, 33)

FUBL has a Twitter account for the entire university's libraries with the freedom of branch libraries to create social media profiles on other social media platforms catering specifically to their students' needs.

We use Twitter; it is one Twitter account for the whole university library. (Tara, FUBL, f, 37)

Another respondent felt differently:

I don't know whether the information on Twitter reaches our students or not. I know students use Facebook; therefore, I created a Facebook page exclusively for this campus. (Mila, FUBL, f, 40)

One of the respondents from CULL expressed the importance of assessing user needs, stating that academic libraries need to choose the right channels of communication suited to their target audience. One of the campuses at the CULL, catering to the Faculty of Theology and Religious Studies, noted that the library has both older and younger clientele:

Our users are professors and mostly elderly students, who find it hard to work with technology and rather prefer print material. (Irvin, CULL, m, 25)

Catering to their needs requires different approaches. Irvin (CULL, m, 25) explained the various approaches used to reach their audience:

It is difficult to get your communication to all your visitors (students and the general public) because the older people do not have Internet at home. They need physical communication. On the other hand, the students prefer online communication, so Facebook would be suitable for them.

From a South African perspective, Twitter was seldom used because of its intricate nature; it did not present ease of use as indicated by one of the respondents. CPUTL reported low usage of their Twitter platform. One respondent noted the following regarding users' social media preference:

The library has both a Facebook and a Twitter account. The lecturers and students prefer Facebook, so I use a medium that the students are familiar with. (Sharna, CPUTL, f, 44)

Similarly, noted by Lisma (GUL, f, 57), GUL adopted both Facebook and Twitter and presents an innovative use of these platforms to engage with students, to promote the library's resources in support of teaching, learning and research. Aware that everyone does not 'like' or 'follow' the library on social media, the library is conscious of the importance of attracting students and of considering new innovative means of communication. This ever-evolving phenomenon could become a part of library and information services as GUL strive to ensure their visibility by catering for different students on a variety of platforms suited to the students' preference.

Non-adoption: University of Limpopo

As noted above, although the ULL did not have a social media presence, respondents perceived Library 2.0 as a trendy and innovative means of communication.

I have submitted a request to adopt Library 2.0. It is very hard for us to reach out to the students who are advanced in technology when we are not even visible. (Cassie, ULL, f, 36)

Respondents from ULL seemed positive and hopeful that Library 2.0 would be implemented in the near future; however, there was an element of doubt and scepticism as one respondent envisioned that it was most unlikely that these would be adopted soon:

I am not sure how much time it would involve during the planning phase. (Aisha, ULL, f, 47)

Similarly, Chu and Du (2012: 71) note the financial and time implication, ‘time and manpower costs were considered to update information and monitor incoming messages’. Although the ULL can make use of the university’s social media platforms, under the guidance of the Marketing and Communication Division, the general consensus was that the library should have its own social media platforms. When asked about these platforms, respondents were in favour of adopting both Facebook and Twitter to ensure that students were reached on platforms they were comfortable with. In envisioning the future, it is clear that librarians from ULL are eager to move to a more digital library environment; however technological limitations hinder this, and therefore the ULL stagnate at a certain point.

Facebook is much needed because it can be used to market resources and advertise information literacy training. (Tina, ULL, f, 37)

Theme 2: The application of Web 2.0 technology in academic libraries’ operations and services

Respondents had different roles of specialisation and these provided a broad spectrum of where and how social media could be used in academic libraries. Social media were used to communicate to their student clientele as well as for linking, liking and following other libraries’ pages to keep abreast of developments in the field, and also to share and re-tweet information among library employees. Some examples:

I would sometimes share book products, for example, I recently shared information about the ‘Rappport Boekprys’. I keep students informed about scholarly information, university news, library updates, new library resources and articles of interest as well as photographs. Most importantly, I invite students to participate in competitions. I also post information about staff members and staff member news and events, for example I made a book of our librarians for ‘Librarian’s Day’ and then I shared that clip. (Lisma, GUL, f, 57)

I follow many special collections libraries and colleagues. What I specifically like about the use of Twitter is the option to give an opinion or enter or follow a debate with people. (Xavier, UAL, m, 33)

Most of the respondents would post three or more times per week for academic purposes. Participants perceived social media to be very helpful in terms of information sharing, as Imelda (CULL, f, 37) explained:

We post information such as changes in opening hours or infrastructural changes ... we have a new area that is currently under construction ... so that's how we inform [students] about it. It really is a communication tool. So it is more informative than just random posts.

Similarly, in the study of Chu et al. (2011: 53), the respondents felt that Library 2.0 was an effective tool for communication. Academic librarians reportedly shared information about new books and newly acquired databases, as it was convenient, easy, and much faster to convey information in this manner than via email. Likewise, students seem to prefer social media to email as a medium of communication.

When society changes, the technology changes. The new generation of students are using social media, which is a platform that they are familiar with. For example, after tracking students for six months via their student email, with no response, we managed to get feedback from them via Facebook. (Ashley, CPUTL, f, 52)

The academic libraries at the Catholic University of Leuven and the Gauteng University are part of the largest universities in Belgium and South Africa, and appear to have similarities in their approach to social media. Both academic libraries designed a strategy plan. CULL formed a Web-strategy team to assist with planning of social media and the library's webpage. Their planning committee comprises all the administrators of their social media pages. This Web-strategy team ensures that the workload is shared amongst administrators, especially when designing social media content of a similar nature for all campuses.

Having a representative from almost each campus library ensures a uniform standard agreed upon by everyone. (Charmaine, CULL, f, 26)

However, respondents at CULL felt somewhat restricted owing to a standardised social media template designed by the library's information technology personnel. The purpose of the template was to ensure that the university's branding, format and layout remained consistent across social media platforms on all campuses to ensure homogeneity. However, social media administrators at CULL do have leeway and freedom to post on social media as well as effect changes to their opening hours, events and communicate with students accordingly. This is reminiscent of the policies discussed by Ganster and Schumacher (2009: 115–116) in keeping a uniformed interface where key items such as library hours, contact details and popular links were included on the university's Facebook page. Like CULL, GUL formulated a New Strategic Plan for the academic years 2016 to 2018. Included in their New Strategic Plan is the social media team task team consisting of four staff members, Lisma (GUL, f, 57) provided an overview:

We have a coach which is one of the executive members so all our plans are submitted via our coach. We had definite objectives and also what are the outcomes. My first objective was to report on the current social media tools at our institution, so my outcome was a report to show what we are currently doing. The action was to determine which social media tools are being used. We conducted a student survey and their use of social media and we also had another interesting report on the research of social media tools. All of these are discussed with our different faculty library members so that they are also aware of the social media tools that researchers [and students] are interested in.

Theme 3: The challenges faced in keeping abreast with changing technology or remaining current with new developments within the profession: South Africa

ULL faced major challenges compared to the other academic libraries in South Africa and Flanders. Respondents at ULL felt that social media were already widely used by students and concerns were expressed about the future of the ULL and its dated infrastructure. One of the respondents, Aisha (ULL, f, 47) explained that students articulated this problem at a meeting:

The Student Representative Council noted that they were not getting notifications on training. They were assured that the library pastes hardcopy notices at the residences and all the popular places where students are usually gathering. They have now posed a request that ULL post information about training and events on social media.

At the University of Limpopo both staff and students were restricted to the use of social media during core working hours. Due to internal environmental factors such as limitations on the university's network and inadequate monitoring tools to monitor the use of Facebook and Twitter, social media were only accessible after hours.

Social media were accessible from 17:00 until 08:00, whereas the library's core working hours were from 07:30–16:00. (Skylar, ULL, f, 40)

Library employees agreed that these restrictions run counter to engaging with students by using innovative methods:

We would like to have access to most networking sites but until the restrictions are lifted we cannot implement or adopt Library 2.0. (June, ULL, f, 41)

The challenges faced by academic libraries concur with international and national research findings by the Taylor and Francis Group (2014: 6) which found that external factors such as Internet connectivity and technological infrastructure may restrict access and the use of social media.

Library 2.0 adopters reported minor restrictions. Respondents at CPUTL reported some restrictions and noted they were limited in respect of data and connectivity. 3G cards and personal data on smartphones were used in some instances when technology failed. 3G, the third generation of mobile technology, is a mobile communications standard that allows mobile phones, computers and other portable electronic devices to access the Internet wirelessly. Mobile services are provided by service providers that own and operate their own wireless networks and sell mobile services to end users, usually on a monthly subscription basis (Lehr and McKnight, 2003: 353–354). Apart from poor technology being an external factor, human

resistance to the use of technology was also experienced at CPUTL, explained Sharna (CPUTL, f, 44):

Some lecturers are against using new technology which is a challenge, as well as using their own data and equipment. Some people are more comfortable with technology that they are accustomed to, so social media is a challenge for them and that is something hopefully that we will address.

This confirms Nkomo's (2012: 108) findings that more students than academics receive formal Internet or Web training. In this respect, academics appear neglected. Collins and Quan-Haase (2014: 64) noted that the staff resources were one of the challenges in ensuring the maintenance of social media. The appointment of dedicated ICT library staff was perceived as contributing to a better-performing library.

I think the problem is, the library does not have dedicated ICT library staff. Whatever we want to publicise, technologically, has to go through the university's ICT department. (Cassie, ULL, f, 36)

Respondents from Flanders painted a different picture, with only minor interruptions recorded. Emma (UAL, f, 36) indicated that their resources, connectivity and ICT personnel were at hand when required:

We have our own specialist team and there is also the ICT department of the university. So, if we have technological issues, they are resolved by those two departments. The university sees to it that we have the technology and necessary resources.

Discussion

The study employed a qualitative methodology to investigate the adoption patterns, extent of social media sites Facebook and Twitter, and the use thereof among academic libraries in Belgium and South Africa. The main objective of the study was to compare and analyse the adoption and usage of Web 2.0 tools at selected universities in Belgium and South Africa. The findings suggest that most academic libraries, in this study, are active users of social media. Despite the low bandwidth and infrastructural challenges faced by the University of Limpopo,

library professionals are eager to adopt the technology, which would be appealing to their student clientele who seek visual content for academic purposes as images have become important for user engagement. Additional barriers could include poor wireless connection, understanding how content works on social media and lack of social media skills which are essential for the administrators of such platforms. The transformation and revolutionary change is evident, as academic libraries must constantly prove their worth by creating and adding value to their services in keeping abreast with user needs and technological change. Concurring with Mabweazara (2014: 65) social media provide a ‘harmonious sharing of ideas’ as ‘interaction leads to fusion of ideas helping libraries to grow’. Social media have evolved from a mere communication platform tool to an interactive, resource-sharing tool. CPUTL has a social media presence with minimal disruptions and infrastructural problems. However, the intricate nature of some platforms causing resistance among academic staff members is key, given the innovative changing nature of these platforms, ascertaining how the technology can be used for academic purpose and implementing employee-training modules. GUL reported freedom and autonomy to populate their social media pages within the scope as prescribed by their New Strategic Plan. Keeping their social media pages alive and encouraging user participation, GUL creates a conducive environment by ensuring cutting-edge technologies are implemented and operational. This is in line with the scope as provided by CULL as academic libraries have to adapt modern, innovative methods of communication that is available 24/7 to cater for students’ needs. Facebook and Twitter seem to be widely adopted in Belgium, as the quality of infrastructure is highly secure.

The comparative study by academic libraries in Belgium and South Africa revealed three important findings. Firstly, the study revealed that Facebook was less intricate and more user-friendly than Twitter; even though most participating libraries had both Facebook and Twitter accounts, seemingly Facebook will continue to have a popular role among academic libraries. Secondly, the use of visual content, short messaging and video clips provides students with the ability to seek useful information, to connect with academic libraries as it is convenient to access information through these mediums, also noting the response or turnaround time is significantly faster. Thirdly, it is important for academic libraries to have a social media presence on one or more platforms to promote the library’s services, resources and training events in order to stay abreast with the needs of their student community and to enhance their presence.

Conclusion

Although this study was based on a small sample size using purposive sampling, I was able to identify three themes on issues relating to adoption and non-adoption of social media, the application of Web 2.0 technology as well as challenges faced by academic libraries in relation to non-adoption. This study provides the detail from the perspective of the participating academic librarians in Belgium and South Africa to help understand the adoption and non-adoption of social media. By analysing their perceptions on the use of social media, I was able to identify that technological deterrents plays a major role in the non-adoption process. Furthermore, this study was to investigate the adoption and non-adoption of Web 2.0 technologies in an academic library environment and to ascertain their usage. The components within the theoretical framework by Xu et al. (2009: 330) depicted Library 2.0 as an interactive collaborative tool where two-way communication between academic libraries and students was present. Huvila et al. (2013: 198) note that Library 2.0 changes the way libraries interact with their users and agree that technological developments on the Web have a major influence on these changes. Perceived ease of use as well as adequate and inadequate financial resources played a vital role in the rejection or acceptance of Library 2.0.

South Africa

The observations by Charnigo and Barnett-Ellis (2007: 23), where librarians felt social media did not suit the professional landscape of academic libraries, are no longer valid. Academic libraries have changed their perceptions of the use of Library 2.0 since its inception (Kwanya et al., 2009: 70) and social media seem to have been revolutionary in transforming the library profession, with the exception of the ULL where funding and dated infrastructure were viewed as significant barriers. Likewise, Chu et al. (2011: 49–53) note that cost seemed to have an impact on the adoption of Web 2.0 technologies, which may reflect the lack of interest in implementing social media. These internal environmental factors hampered the adoption process. An intervention from the university's executive management is critically needed to increase bandwidth capacity and optimise flow of data at ULL. Similarly, in the study carried out by Nkomo (2012: 108) due to low bandwidth, the use of electronic resources was limited. On these grounds it is assumed the adoption of Web 2.0 technologies is limited in certain academic libraries because of internal and external environmental factors. Smidt and Surssock (2011: 49) noted the importance of lifelong learning at academic universities in Europe,

expressing that the use of the Internet has changed considerably and in order to adapt to social needs the university must rapidly and constantly improve its learning methodologies. Institutional mergers did little to equalise resources among university libraries (Nkondo et al., 2014: 69) and these challenges impact negatively on the quality of the educational experience of the student. The inequalities faced by historically disadvantaged institutions should be addressed nationally. In this global digital age, those who are unable to access ICTs are increasingly disadvantaged as the world's dependence on them grows in all spheres of human activity. Mabweazara and Zinn (2016: 5) stated that librarians who had better Internet connectivity, a well-maintained and bigger ICT infrastructure, were frequent users of social media. Furthermore, South African universities play a pivotal role in offering diverse learning opportunities for those who face disproportionate socio-economic challenges.

Belgium

As indicated by the Flemish universities, this study emphasises the importance of library ICT personnel to assist with the adoption and maintenance of Library 2.0. Academic libraries in South Africa should view the importance of keeping abreast with new technological developments and human resources. Realistically, assessing the new generation, Kwanya et al. (2012: 11) expressed the importance for academic libraries to embrace Web 2.0 technologies as students might find academic libraries which have not embraced the technology as 'insensitive, archaic and unusable'. The research suggests that Library 2.0 be used as a support structure to enhance the library's services and to facilitate liaison between the library and students. Even so, the adoption of Library 2.0 requires strategic planning and a needs assessment to inform decision-making and to ascertain if the technology could be sustained by the library. Library 2.0 forms part of the librarianship evolution and that job descriptions should be updated to recognise the change in the profession. Looking to the future, Kelly and Glazer (2013: 34) point out that the evolution of social media has played a significant role in developing public relations, promotion and outreach opportunities and furthermore stimulating the impulse to use social media by assuming unique responsibilities to ensure visibility on new virtual spaces.

Joint conclusions

The findings of this study, according to the perceptions of adopters and non-adopters, are homogeneous. The research provides an understanding of the acceptance of Library 2.0 as a

tool for communication based on virtual and interactive engagement. Library 2.0 tools might be a step closer towards catering for the needs of the younger student generation. This research provided information that is both new and current, and supplementary to the existing literature.

The study does have limitations. The population was limited to academic librarians and future research could include the faculty and students to assess user requirements and their perceptions on the use of Library 2.0 in academic libraries. As indicated above, the study identified internal and external environmental factors as a major barrier in the adoption process of Library 2.0 at one academic library. The study only researched one academic library in a rural geographic area and could not ascertain if geographic location had an influence on non-adoption. Future comparative research could be conducted using a broader sample among adopters and non-adopters in rural areas to understand facilitating conditions in Flanders and South Africa and to gain a broader perception on geographic region. Due to the small sample size, this study has shown little disparate differences between the Flanders and South African academic libraries; however, the South African libraries have not embraced the technology to its full potential and further studies could be conducted.

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