Perception on Adoption and Application of Web 2.0 Technologies in Selected Academic Libraries in Tanzania

Kelefa Mwantimwa (PhD)
University of Dar es Salaam, Dar es Salaam
Address: P.O. Box 35092, Dar es Salaam, Tanzania
E-Mail: mwantimwa3@gmail.com

Alice Nkhoma-Wamunza
Associate Professor
University of Dar es Salaam, Dar es Salaam
Address: P.O. Box 35092, Dar es Salaam, Tanzania
E-Mail: nkhoma_wamunza@yahoo.ie

Abstract

The main objective of the present study was to find out perceptions of librarians regarding integration of Web 2.0 technologies in library operations and services. Specifically, to determine the level of awareness, reasons for integration, and the challenges of Web 2.0 in supporting library operations and services at SUA and UDSM libraries. This study used mixed methods research design (both qualitative and quantitative). Non-probability sampling procedure was used to select the sample size of 40 librarians from the two university libraries (UDSM = 21, SUA = 19). Primary data was collected through face-to-face interviews and questionnaires with both open and closed-ended questions. SPSS was used to analyse the descriptive statistics and the findings are presented in frequency tables and percentages. Pearson Chi-square test was used to establish the relationships between different variables. The key findings suggest that there was a significant positive correlation [R= .555, N= 40, p = .000] between awareness and use of Web 2.0 technologies in non-library operations and an insignificant negative correlation [R = -.142, N = 40, p = .383] for library operations and services. Also, the findings show that the majority (70%) of the librarians in the selected university libraries were of the opinion that effective integration of Web 2.0 technologies can strengthen library operations and services. Further, it was revealed that Web 2.0 technologies also pose major challenges in library operations and services. Finally, this study recommends that policy frameworks should be formulated to facilitate effective adoption and integration of Web 2.0 technologies in the library operations and services.

INTRODUCTION

"Unprecedented developments in the field of information and Communication Technology and the rapid advancements in the internet technologies and services influence how information is accessed and disseminated globally. This transformation facilitates access to large quantities of information and to a wide variety of services and has enhanced usage and delivery of information. While acknowledging the changes taking place in service delivery and usage of technology, library professionals must re-discover and re-evaluate their services, re-vitalize the users and re-invigorate the library profession because the future of libraries and information centres largely depend on qualified information professionals who understand in-depth the emerging changes taking place and who are equipped with the needed skills" (ETTLIS, 2010).

The term "Web 2.0" was reportedly first conceptualized and made popular by Tim O'Reilly and Dale Dougherty of O'Reilly Media in 2004. The term Web 2.0 technology describes the trends and business models that survived the technology sector market crash of the 1990s (O'Reilly, 2005). The term is now widely used and interpreted, but Web 2.0, is essentially, not a web of textual publication, but a web of multi-sensory communications. While the conceptual tenets of Library 2.0 might be dependable, envisioning the technological specifics of the next generation of electronic library services is fraught with inevitable error, but is absolutely necessary. As Web 2.0 technologies continue to evolve, the question on how libraries might utilize and leverage Web 2 technologies for their patrons, is inherently hidden, since they are wholly about innovation. But the conceptual underpinning of a library's web-presence and how it must evolve into a multi-media presence that allows users to be present, both with the library or librarians and with one another needs further development (Maness, 2006).

Rapid changes in Information and Communication Technologies (ICT), have completely transformed library and information centers (Tripathi & Kumar, 2010 citing Stuart, 2010). For example, usage of Web 2.0 technologies and innovations constitute a meaningful and substantive change in the history of libraries. Web 2.0 technologies are interactive and fully accessible (Maharana, 2008). These technologies have also impacted the daily activities in the academic libraries including the librarians. Many academic libraries in USA, UK, Canada, Australia and other parts of the world are embracing and leveraging the power of these technologies in order to provide better and more relevant services to their patrons (Tripathi & Kumar, 2010; McManus, 2009). For example, they have integrated Web 2.0 technologies into their web presence, library instruction programs, and reference services. In fact, Web 2.0 technologies are becoming part and parcel of library patron primary activities and online information access (McManus, 2009), hence overcoming the barriers to communication and the distance between the libraries and users (Tripathi & Kumar, 2010 citing Stuart, 2010). Sperring (2008) summarizes that Web 2.0 fits into the new library paradigm. He further concludes:

> *Library users are there for one common reason, to find information, and if we don't provide them with that they will go elsewhere to find it.*

Based on this argument, one could argue that if Web 2.0 technologies are not integrated in the library operations and services this would result in loss of clients. Libraries which have not integrated Web 2.0 into their services and systems discourage the users from creating, describing, posting, searching, collaborating, sharing and communicating online content in various forms (see McManus, 2010; Virkus, 2008; Macaskill & Owen, 2006).

Despite the application of Web 2.0 technologies to library functions and services, journals and other more traditional literature has yet to fully address this concept (see Miller, 2006a; Notes, 2006; Maness, 2006). It is evidenced that most libraries in Europe, USA, Australia and Asia are embracing and leveraging and experiencing the power of Web 2.0 technologies (McManus, 2009; Breeding, 2006), yet some libraries in Tanzania have not adopted or embraced this technology. Studies (Tripathi & Kumar, 2010; King & Porter, 2007; Bradley, 2007; Huffman, 2006) have highlighted the benefit potentials of Web 2.0 tools and their implications in enhancing library services. Indeed, knowledge, attitudes perceptions on the adoption and

application of Web 2.0 technological innovations in academic libraries in Tanzania are not clearly known. Maness (2006) suggests that there is a need to explore and provide context and the relationship between evolving Web 2.0 and the library in order to enhance information and the electronic services. In 2009, Tripathi recommended that the use of Web 2.0 tools in public universities and how these can be used to support library services needs to be studied. It is against this backdrop, that this study examined perceptions of librarians on the use of Web 2.0 technological innovations in library service provision in selected academic libraries in Tanzania.

Objectives
General objective
The main objective of this project was to find out perceptions of librarians regarding integration of Web 2.0 technologies in library operations and services.

Specific objectives
Specifically, the objectives were to:
- Determine the knowledge of librarians on Web 2.0 technologies in library service provision.
- Find out perceived reasons for adoption and application of Web 2.0 technologies in supporting library operations and services.
- Examine the challenges of adoption and application of Web 2.0 technologies in the selected academic libraries.

RESEARCH METHODOLOGY
The research design integrated both qualitative and quantitative aspects. Quantitative data included questions on types of Web 2.0 technologies, frequency of access and use, while qualitative approach was used to establish perceptions on the use of Web 2.0 technologies in strengthening library services at UDSM and SUA libraries. This study was conducted between March and September 2011. The two university libraries were selected because of two major reasons; first, the researchers are affiliated with academic libraries therefore they are familiar with library practices and understand library services and systems. The second reason is that UDSM and SUA libraries are among the academic libraries in Tanzania that have embraced and leveraged the power of ICT as building blocks in supporting the integration and utilization of Web 2.0 technologies. Hence, the units of investigation and analysis for the study were libraries and the library staff. Non-probability sampling was used to select the sample. The final sample size was 40 librarians from the two libraries (UDSM = 21, SUA = 19). Primary and secondary data were collected. Primary data were collected through face to face interviews and a standardised questionnaire. Self-administered questionnaires were distributed to 40 librarians. Accordingly, secondary data were collected through documentary review. Both published and unpublished books, journal articles research reports and electronic resources were reviewed and major points summarized. Data were analysed both quantitatively and qualitatively. SPSS was used to analyse the descriptive statistics and derive frequencies and percentages. Further, Chi-square test was used to measure the level of significant difference of different variables including gender, age and level of education on the one hand and usage of Web 2.0 technologies on the other hand. Additionally, the relationship between independent and dependent variables were determined through correlation analysis. Qualitative analysis

included descriptions and narratives to further our understanding of the results of quantitative data. The next section presents the findings of the study:

FINDINGS AND DISCUSSION
Awareness and use of Web 2.0 tools and services
Assumption 1: Awareness on Web 2.0 has a direct influence on the use of technologies in library operations and services

The respondents were asked to show their awareness and frequency of use of Web 2.0 tools and services. Descriptive statistics ware used to determine awareness and use of Web 2.0 tools and services. Further, statistical measure (X^2 test) was used to establish the level of significant difference on the application of Web 2.0 technologies in the selected academic libraries. As shown in Table 1, 33 (82.5%) respondents were aware and use the technologies. Accordingly, 5 (26.3%) were aware but not using it, while only 1 (2.5%) said was not aware of these technologies. Furthermore, 16 (40%) respondents agreed that they use it for library operations. Table 1 provides data on awareness and use of Web 2.0 technologies:

Table 1: Awareness and use of Web 2.0 tools   N=40

Awareness and use	Non Library services			Library services		
	UDSM	SUA	Total	UDSM	SUA	Total
I'm aware of these and using it frequently	14 (66.7%)	9 (47.4%)	23 (57.5%)	4 (19%)	7 (36.8%)	11 (27.5%
I'm aware of and use it occasionally	6 (28.6%)	4 (21.1%)	10 (25%)	2 (9.5%)	3 (15.8%)	5 (12.5%)
I'm aware of and not using it	1 (4.8%)	5 (26.3%)	6 (15%)	15 (71.4%)	8 (42.1%)	23 (57.5%)
I'm not aware of these technologies	0 (.0%)	1 (5.3%)	1 (2.5%)	0 (0%)	1 (5.3%)	1 (2.5%)
Total	**21 (100%)**	**19 (100%)**	**40 (100%)**	**21 (100%)**	**19 (100%)**	**40 (100%)**

Chi-square test: $X^2 = 2.406$; df = 1; p value = .001

Table 2: Summary of Pearson (R) test of correlations

Category (N= 40)		1	2	3
1. Awareness on Web 2.0 technologies	R	1	.555[**]	-.142
	Sig.		.000	.383
2. Use in non library services	R	.555[**]	1	.316[*]
	Sig.	.000		.047
3. Use in library services	R	-.142	.316[*]	1
	Sig.	.383	.047	
	N	40	40	40

*. Correlation is significant at the 0.05 level (2-tailed) and **. Correlation is significant at the 0.01 level (2-tailed).

On the whole, the findings show that the majority (82.5%) of the librarians at UDSM and SUA libraries were aware and use these technologies. For what purpose did they use the technologies? The findings revealed that 40% used the technologies for library operations. Further, Pearson Chi-Square test suggests that there was a significant difference [x^2 = 2.406; df = 1; p value = .001] since *p* < .05 between UDSM and SUA on the use of Web.2.0 technologies to enhance library operations and services. Furthermore, Pearson correlation test suggests that there was a significant positive correlation [R= .555, N= 40, P = .000] between awareness and use of Web 2.0 technologies in non-library operations, but an insignificant negative correlation [R = -.142, N = 40, P = .383] in the library operations and services. The assumption on the awareness and use of technologies in library operations is rejected because of the insignificant negative correlation revealed.

In fact, the findings revealed that most librarians in the selected libraries have neither effectively adopted nor used Web 2.0 tools in the library operations and services. These findings are not supported by Baro *et al.* (2013) that the librarians in Nigeria use Web 2.0 technologies mostly to access reference services online, library news/events, training resources, and image and video sharing. Similarly, Kumar (2013) observes that a greater proportion of the librarians have good knowledge about Web 2.0 technologies, which provided innovative and interesting resources for librarians to serve their users quickly and effectively. Why such discrepancies? This was attributed to lack of policies, shortage of ICT infrastructure, lack of innovative strategies and guidelines and fear of adoption, use risks, negative perceptions and lack of skills and knowledge for integrating these technologies, hence impeding the effective adoption and utilization of the technologies.

Awareness and use of Web 2.0 by Age
It was important to establish the relationship between level of awareness, use and age. Descriptive statistics were used to determine the relationship between dependent (age) and dependent (awareness and use) variables. Table 3 shows the relationship between awareness, use, and age.

Table 3: Awareness, use of Web 2.0 by age

Awareness & use (N = 40)	Age			Total	
	19-28	29-38	39-48	49-58	59+
I'm aware of Web 2.0 and use them frequently	10	5	6	1	1
	58.8%	50%	60%	100%	50%
I'm aware of the	1	6	3	0	1

technologies but only use them occasionally	10%	35.3%	30%	.0%	50%
I'm not aware of these concepts	4	1	1	0	0
	40%	5.9%	10%	.0%	.0%
Total	10	17	10	1	2
	100%	100%	100%	100%	100%

Source**:** Field Data 2013

The overall findings suggest that the younger (19-38) and middle-aged (39-48) librarians in UDSM and SUA libraries were aware and utilize the technologies in different ways. This was attributed to familiarity, knowledge and skill of use, peer motivation and acceptance of the technologies. Also, these findings could be influenced by the sample size and age range distribution of the librarians. Hudson (2008) argues that "age alone is not a particularly strong indicator that someone is likely to use these new tools". This argument entails that there are other factors that motivate someone to use the technologies. Further, Hudson (2008) concludes that the younger and middle-aged librarians are more likely to use Web 2.0 tools (e.g. Facebook, MySpace or beebo type page) and are actively involved in posting photos or videos and comments. Indeed, the age of the librarians has an influence on the awareness, adoption and use of the technologies.

Awareness and use of Web 2.0 by gender

Assumption 2: Gender has an influence on awareness and use of Web 2.0 technologies in the library services.

It was important to establish the relationship between use application of Web 2.0 technologies and sex. The findings shows that 17(68%) males are aware and use Web 2.0 technologies frequently, compared to 6 (40%) female.

Table 4 presents the data on the usage of Web 2.0 technologies by sex:

Table 4: Awareness and use of Web 2.0 by gender

Awareness & use of Web 2.0 tools and services (N=40)	Gender		Total
	Female	Male	
I'm aware of these and using it frequently	6	17	23
	40%	68%	57.5%
I'm aware of the technology & use it occasionally	5	6	11
	33.3%	24%	27.5%
I'm not aware of these concepts	4	2	6
	26.7%	8%	15%
Total	**15**	**25**	**40**
	100%	**100%**	**100%**

Chi-square test: $X^2 = 4.603$; df = 2; & p = .100

Data confirms that 68% of the males were aware and use Web 2.0 tools frequently for non-library operations compared to their female counterparts. Statistical measure of association [$x^2 = 4.603$; df = 2; & p value = .100) indicates no significant difference between female and male on the level of awareness and usage of Web 2.0 technologies since p > .05, hence our

assumption on gender influence is rejected. According to these findings, gender alone is not the main factor that influences level of awareness and use of Web 2.0 tools in the academic libraries under study. Moreover, factors such as skills and knowledge in internet usage, interest and nature of networks, support from top management, policy on use of new web tools and availability of technical services support, influence adoption and use of Web 2.0 tools. By contrast, Kumar (2013) argues that in terms of knowledge of various concepts of web 2.0 tools, the males had more knowledge compared to their female counterparts. This further, confirms that respondents with excellent internet search skills are more likely to adopt Web 2.0 technologies and their application in the library operations.

Awareness, use and level of education
The findings in Table 5 indicate that 8 (80%) librarians with bachelor's degree were aware and use Web 2.0 technologies for non-library operations frequently. These are followed by those with PhD 4 (66.7%), masters 6 (54.5%) and diploma 8(50%). Further, Table 4 indicates that only a few librarians were not aware of Web 2.0 concepts and its technologies. Table 5 presents the outputs:

Table 5: Awareness and use Web 2.0 by level of education

Awareness and use N=40	Qualification					Total
	PhD	Masters	Bachelor	Diploma	Certificate	
I'm aware of Web 2.0 and use them frequently	4	6	8	2	3	23
	66.7%	54.5%	80%	50%	33.3%	57.5%
I'm aware but use occasionally	2	4	2	0	3	11
	33.3%	36.4%	20%	.0%	33.3%	27.5%
I'm not aware of web 2.0 technologies	0	1	0	2	3	6
	.0%	9.1%	.0%	50%	33.3%	15%
	6	11	10	4	9	40
	100%	100%	100%	100%	100%	100%

Overall, findings suggest that the level of education does not influence usage and application of Web 2.0 technologies in library operations. Further, the findings indicate that the majority of the librarians with bachelor's degrees were more aware and use Web 2.0 technologies in non-library operations, followed by those with PhD, masters and diploma holders. Basically, what these findings suggest is that the level of education has no significant influence on awareness and applications of web 2.0 tools in the library functions in the surveyed academic libraries. This was probably being attributed to the sample size, skills and knowledge and personal interests of the respondents.

Perceived usefulness of Web 2 technologies
Librarians in the selected academic libraries were asked to identify the kinds of Web 2.0 tools and social networking which can be used to improve library operations and services. As shown in Table 6, wikis (87.5%), forum (80%), instant messaging (65%), news feeds (62.5%) and blogs (55%) were rated most useful Web 2.0 tools in supporting the library operations and

services. Further, Table 6 shows that 87.5% of the respondents were not familiar with podcast (62.5%) with tagging and (52.5%) streaming media. Responses are shown in Table 6 below:

Table 6: Perceived usefulness of Web 2.0 tools in library services

Web 2.0 Tools (N=40)	Most useful	Not very useful	I don't know
Wikis	35 (87.5%)	4 (10%)	1 (2.5%)
Forum	32 (80%)	8 (20%)	0 (0%)
Instant messaging	26 (65%)	13 (32.5%)	1 (2.5%)
Blogs	22 (55%)	2 (5%)	16 (40%)
News feeds	25 (62.5%)	9 (22.5%)	6 (15%)
Streaming media	9 (22.5%)	10 (25%)	21 (52.5)
Tagging	11 (27.5%)	15 (37.5)	9 (22.5%)
Podcast	1 (2.5%)	4(10%)	35 (87.5%)

The findings show that 77.5% of the respondents said facebook was the most useful social network identified. This was followed by googlegroups (67.5%) and youtube (52.5%). Other social networking media including orkut, ning, tagged, netlog, Hi5, shelfari, wikis and delicious were perceived as not the most useful to support library operations and services. Table 7 presents results on perceived usefulness of social networking sites with regard to the library services.

Table 7: Perceived usefulness of social networking sites N=40

Category	Most useful	Not most useful	I don't know
Youtube	21 (52.5%)	8 (20%)	11 (27.5%)
Facebook	31 (77.5%)	8 (20%)	1 (2.5%)
Hi5	6 (15%)	13 (32.5%)	21 (52.5%)
Netlog	1 (2.5%)	3 (7.5%)	36 (90%)
Twitter	6 (15%)	28 (70%)	6 (15%)
Orkut	0 (0%)	2 (5%)	38 (95%)
Ning	0 (0%)	1 (2.5%)	39 (97.5%)
Shelfari	2 (5%)	2 (5%)	36 (90%)
Googlegroups	27 (67.5%)	10 (25%)	3 (7.5%)
Linkedin	2 (5%)	3 (7.5%)	35 (87.5%)
Yahoogroups	2 (5%)	2 (5%)	36 (90%)
Delicious	1 (2.5%)	2 (5%)	37 (92.5)

70% of the librarians in the selected university libraries (UDSM and SUA) were of the opinion that effective integration of Web 2.0 technologies can strengthen library operations and services. Further, the findings suggest that according to the respondents interviewed, wikis forum, face book, googlegroups, instant messaging, news feeds, blogs and youtube were the most useful Web 2.0 technologies to effectively support library operations and services, such as online reference, communicating, sharing materials and video, acquisitions, accessing e-resources, training and publishing library news, regulations and rules. Baro *et al.* (2013) findings that in Nigeria, the librarians are more familiar with social networking sites, instant

messaging, media sharing sites, blogs and wikis, also concur with our findings. Why such trends? These are attributed to popularity, familiarity and knowledge on its application potentials in non-library operations. For example most librarians have facebook accounts and subscribe to googlegroups and use youtube for non-library functionalities.

Other Web 2.0 technologies including orkut, ning, tagged, netlog, Hi5, shelfari, wikis and delicious were also considered to be useful in supporting library operations and services, but were not popular among the librarians in the UDSM and SUA. Further, the findings revealed that the librarians were not familiar with podcast, tagging, and streaming media. This was due to the fact that Web 2.0 technologies are not static, they are rapidly changing and growing. These findings are in line with Baro *et al*. (2013), who found that Web 2.0 tools like Flickr, RSS feeds, podcasts, social bookmarking are the least used. In fact, the power of Web 2.0 technologies is not formally and effectively leveraged to support library operations and services at SUA and UDSM libraries. The major constraining factors include lack of policy framework and guidelines for Web 2.0 utilization. Undeniably, the underutilizations of Web 2.0 technologies limit information dissemination and sharing in the selected libraries.

Reasons for using Web 2.0 technologies
The respondents were asked why they should adopt and use Web 2.0 in improving library operations and services. According to Table 8, 33 (82.5%) respondents indicated that Web 2.0 technologies can be used to strengthen communication and dissemination of information, 22 (55%) to improve access to e-resources, 22 (55%) to promote socialization, 19 (47.5) to provide a platform for debates, 17 (42.5%) to improve access and the use of information, 16 (40%) to interact with new librarians, 16 (40) share information resources, 14 (35%) to create awareness, 14 (35%) to enhance information seeking, 10 (25%) cope with the changing information and technological environment, 9 (22.5%) to strengthen publicity, 7 (17.55%) for recreation, and 5 (12.5) said to facilitate teaching and learning. Table 8, presents the responses:

Table 8: Reasons for using Web 2.0 in library operations

Why Web 2.0 services should be adopted and used in libraries?	Frequency	Percent
Strengthening communication and dissemination of information	33	82.5%
Improves access to e-resources	22	55%
It promotes socialisation	22	55%
Provide avenue for debating of new issues/topics	19	47.5%
Enhance the access to and use of information and services	17	42.5
Finding new library friends	16	40%
Easy sharing library resources, materials and views	16	40%
Provide opportunity for creating awareness	14	35%
Improves information seeking and use behaviour	14	35%
Cope with the changing information and technological environment	10	25%
Encouraging and attracting the library	9	22.5%

users		
Publicity	9	22.5%
For recreation	7	17.5%
Facilitate teaching and learning	5	12.5

Effective integration of Web 2.0 technologies can enhance and support library operations and services in academic libraries. According to the respondents, potential benefits of Web 2.0 technologies include strengthen communication and dissemination of information through the use of facebook, wikis, Google groups, youtube, newsfeeds, instant messaging and blogs. One of the respondents indicated that images, videos, materials, and news can be effectively shared using social media networks. Other respondents were of the opinion that Web 2.0 technologies enhance information-seeking and use behavior and provide a platform for sharing experiences on how to cope with the changing information and technological environment. Furthermore, integrating Web 2.0 technologies in the library services facilitates information literacy training for lecturers and students, promotes access and sharing of electronic resources, provides a platform for debates on new topics and services and is used to find new friends of the library and awareness creation. These findings revealed that the librarians in the selected libraries were of the opinion that effective adoption and use of Web 2.0 technologies can improve library operations and services. Indeed, Web 2.0 is one of the ingredients in sustaining library and information services, not only in the academic libraries but in other kinds of libraries too. For example, one respondent commented:

> *In this paradigm, academic libraries can offer services at any time and place, allowing the users to walk with library collection in their pockets or hands by pulling down all the mountains and hills of information.*

Web 2.0 technologies provide users with the opportunity access and use library information resources in a timely manner by removing all the barriers. In addition, Web 2.0 are user-centred and user-friendly, and provide multimedia experiences which are socially rich and communally innovative (Maness, 2006). In fact, it allows more comfortable patron interactions and user feedback about library services (Bradley, 2007). In the same vein, the findings of this study support the argument made by Lankes in 2007 that embracing participatory Web 2.0 tools can advance, not only the library users' interaction with the resources, but also library positions within.

Web 2.0 Challenges
Adoption of and the usage of Web 2.0 tools poses many challenges for libraries. The respondents were asked to mention the obstacles constraining effective adoption and use of Web 2.0 tools. Generally, effective adoption and utilization of Web 2.0 tools to augment library services and needs of library users at UDSM and SUA is constrained by various factors. Table 9 shows that 24 (60%) respondents indicated that effective adoption and use of Web 2.0 technologies is constrained by fear of change, 11 (27%) said it is time-consuming, 7 (17.5%) said they are not familiar with Web 2.0 tools, 4 (10%) know very little about Web 2.0 technologies and 2 (5%) lack of management support is a major challenge, while 2 (5) said low level of awareness on benefit potentials of Web 2 .0 technologies were the major challenges. Table 9 presents the results:

Table 9: Perceived challenges of utilizing Web 2.0 technologies

Category	Frequency	Percent
Fear of adopting and using and applying Web 2.0 in library activities	24	60
Lack of authoritative knowledge on Web 2.0 technologies	24	60
Lack of Management support	18	45
Time-consuming	11	27.5
Lack of familiarity on utilization of Web 2.0 technologies	7	17.5
Lack of technical knowhow	4	10
Low level of awareness on benefit potentials of Web 2.0 tools	2	5

Web 2.0 technologies, like other technologies and innovations are not immune to challenges. These challenges relate to effective utilization of Web 2.0 technologies in the library operations and services which revolve around lack of authority and trust on the use of Web 2.0 technologies. Most librarians mistrust these technologies because they believe they are not reliable tools for strengthening library operations and services. Another challenge relates to time constraint and non-familiarity and low level of awareness on the potential benefits of Web 2.0 in the context of the library environment. Similarly, lack of support from top management was also a critical factor. Findings further revealed that the integration of technologies was constrained by fear of the unknown. For example, Rogers (1995) argues that "the innovators and early adopters represent a group that is usually able to work within their own initiative while early and late adopters require an introduction to the innovation that relates directly to their immediate needs in addition to compelling evidence showing proof of results". In support of this, one respondent said:

> *Despite the potential that Web 2.0 technologies have on strengthening library services, our library still relies on face-to-face interaction with our users. This is a traditional way of providing library services.*

This statement clearly shows that the selected academic libraries rely heavily on traditional interaction approaches with the users. This is attributed to lack of policy frameworks to guide integration of Web 2.0 technologies in the library operations. Another contributing factor is the poor ICT infrastructure and facilities. In his model of the Technology Acceptance Model [TAM], Davis (1989) suggests that when users are presented with a new technology, a number of factors influence their decision about how and when they will use it, notably perceived usefulness and perceived ease-of-use. Perceived usefulness is associated with the degree to which a person believes that using a particular system would enhance his or her job performance, while perceived ease-of-use is a degree to which a person believes that using a particular system would be free from effort. Truly, the librarians have different degrees of beliefs on the use of Web 2.0. In fact, the degree of beliefs has an influence on adoption and application of Web 2.0 to enhance and sustain library operations and services. Generally, these challenges constrain effective applications of Web 2.0 technologies in the library operations and services in UDSM and SUA libraries.

Strategies for speeding up adoption and usage of Web 2.0
Respondents were asked how Web 2.0 tools can be deployed to enhance library services in selected libraries. Findings as shown in Table 10 indicate that 26 (65%) respondents said support from top library management was critical, 25 (62.5%) said ICT infrastructure should be improved, 20 (50%) skills and knowledge on the use of Web 2.0 technologies were critical, 11 (27.5%) said the users should be sensitized on the potential of Web 2.0 tools in the library services, 8 (20%) said online public access catalogues should be personalized, 7 (17.5%) said policies on Web 2.0 technologies should be put in place, while 3 (7.5%) mentioned provision of efficient internet connectivity. In addition, the above respondents were also of the opinion that information on Web 2.0 tools should be of good quality and that more studies should be conducted on the usefulness of Web 2.0 tools. Table 10 shows the responses:

Table 10: Strategies for speeding up the use of Web 2.0

Strategies	Frequency	Percent
Support from the library management on the implementation	26	65
Improve ICT infrastructure and facilities	25	62.5
Skills and knowledge on the use of Web 2.0 technologies	20	50
Sensitize library users on the potential of Web 2.0 technologies	11	27.5
Design a personalized online public access catalogues	8	20
Formulate policies on the application of Web 2.0 technologies	7	17.5
Efficient internet connectivity	3	7.5

Support from top library management was critical and the key to facilitating integration of Web 2.0 in the library operations and services. In this study, the majority of the librarians were of the opinion that ICT infrastructure and the internet connectivity and bandwidth in selected libraries should be improved. Accordingly, training and sensitization on the potential benefits of Web 2.0 was highly required. Indeed, training is critical and a means for capacity building in order for the librarians to participate effectively in the new information and technological environment and reap the potential benefits of Web 2.0 technologies. Other important readiness tools to facilitate the integration of Web 2.0, which are crucial to be in place, include policy formulation and standards. Additionally, further researches are needed in order to deepen the evidence on the potentials of Web 2.0.

CONCLUSIONS AND RECOMMENDATIONS
Web 2.0 technologies offers huge potential benefits for library operations and services and can offset some of the challenges. Top library management's support, capacity building, policy frameworks and guidelines are critical in order to stimulate use and integration of Web 2.0 technologies in library operations and functions in selected academic libraries and its ultimate sustainability.

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