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Alfred Said Sife

Sokoine University of Agriculture, Tanzania, sifesas@yahoo.com

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Web Search Behaviour of Postgraduate Students at Sokoine University of Agriculture, Tanzania

Alfred S. Sife,
Senior Librarian,
Sokoine University of Agriculture,
P.O.Box 3022, Morogoro, Tanzania
Email: sifesas@yahoo.com

Abstract

A study was conducted on the Web search behaviour of postgraduates at Sokoine University of Agriculture. Specifically, the study sought to understand the search characteristics of postgraduates, reasons for using the Web, usage of various web features, web search skills and problems faced while using the Web. The study population comprised of all postgraduates pursuing masters and doctoral programmes at SUA. Data were collected using self-administered questionnaire that were distributed randomly and they were analyzed using SPSS. The findings indicate that most postgraduates were experienced Web users and they accessed the Internet mostly through their own modems. Most students relied on Web resources for their research, class assignments, and communications, and they had positive attitudes towards these resources. Many students were using search engines such as Google and Yahoo as well as social media tools mostly Facebook and Wikis. The findings also indicate that majority of students were using simple search while advanced search features were rarely used. The use of e-journal databases among postgraduates at SUA was very low. Slow Internet connectivity and restrictions in downloading e-resources were regarded serious constraints in using the Web resources. It is recommended that libraries and their parent should promote e-resources and integrate information literacy into their curricular. Libraries should address contextual and technical issues in order to promote usage levels. Libraries should also look into the possibility of integrating e-resources into OPACs for greater visibility and to enable users search several databases simultaneously.

Keywords: Web, search behaviour, e-resources, postgraduate students, Tanzania

1. Introduction

The use of information and communication technologies (ICTs) particularly computers and the Internet has become an integral part of today's educational system. Many educational functions such as research and scholarship, teaching and learning as well as management and administration increasingly become dependent upon ICTs. This is so because information and communication are central to any educational system. Internet use in education enhances sharing of information; increases collaboration among students, academicians and institutions; improves

provision of distance education; and has resulted in new forms of pedagogy, among many other benefits. The World Wide Web (Web), which is a portion of the Internet comprised of hypermedia links, has become a diverse source of information to the extent that it is now common for people to opt for it when finding information. Increasingly, students and instructors prefer Web-based than print information resources, and hence deserting traditional physical libraries (Greenstein and Healy, 2002; Chandel and Saikia, 2012).

The Web is characterized by rapid increase in the volume of unorganized information that is made available through multiple formats such as graphical, audio, and textual, and stored in a variety of web-based databases. While some online resources have restricted access, the amount of information that is freely available on the Web continues to increase. Access to print resources is also made easy through online systems such Online Public Access Catalogues (OPACs). Hence, authors, publishers and libraries increasingly use the Web as an important platform to increase visibility and access of their information resources. Furthermore, the emergence of web social media such as Facebook, Twitter and YouTube has changed the way users experience the Web. Users are becoming active co-producers of knowledge rather than passive consumers of content (Lee and McLoughlin, 2010). Generally, the Web is transforming the information landscape and revolutionizing the ways in which teaching, learning, research and scholarly communication are conducted.

Unlike traditional information systems which have rather homogeneous groups of users, the Web has more heterogeneous groups of users (Kim, 2001). Web users vary from computer novices to experts, users having training in information retrieval and those without search skills, as well as those of different ages and education backgrounds. Different user groups may have different information needs, search strategies, and goals when using the Web (Hölscher and Strube, 2000; Chadwick-Dias *et al.*, 2003). Hence, for users to obtain information from the Web, they require quite different skills from those required in traditional print environment. As a result, the Web is having impact on information seeking behaviours of users. According to Chandel and Saikia (2012), users' information seeking behaviour has changed to less reliance on physical libraries; more dependence on online resources; considerations on convenience and instant accessibility; and that many users get satisfied with what is easily available even at the cost of quality.

Studies on the web search behaviour of users around the world have sought to understand different aspects including searcher's background and experience, tasks performed in searching, perceptions on web resources and how they search (Hsieh-Yee, 2001). Jansen and Pooch (2001) found that there were differences in the search behaviour of web users and users of traditional systems in using terms per query, searching session length, and use of Boolean operators or advanced search features. Batthini and Madnani (2003) found that many Library and Information Science (LIS) professionals depended on search engines and a good number were familiar with

the engines' advanced search options. Similarly, Bond (2004) found that the most successful way of finding web documents was by the efficient use of search engines. However, poor searching skills were the main underlying factors for the successful retrieval of web documents. This supports earlier observations that searching for relevant information on the Web is often a laborious and frustrating task (Holscher and Strube, 2000).

Studies on Web searching by students show that they use the Web for academic and non-academic activities; they may spend hours on searching; and their search skills vary. Chang and Perng (2001) reported extensive use of Internet by the students, mostly web-based databases, electronic journals, and search engines. Reviewing research conducted in 1998-99, Ebersole (2005) concluded that students believe the Web to be an important and valuable resource for academic purposes. Lal *et al.* (2006) observed that the use of the Internet for educational purposes was higher among the postgraduate medical students. A study on information-seeking behaviour of students in a digital scholarly environment suggested that students constituted the biggest users in terms of sessions and pages viewed, and they were more likely to undertake longer online sessions (Nicholas *et al.*, 2009).

Other studies have sought to understand search engines use by students. Analyzing Internet search behaviour of students and faculty members of Kuvempu University, Birader (2008) found that Google and Yahoo were the most preferred search engines. Similarly, Lewandowski (2008) found that Google and Yahoo were used more frequently than other search engines. Mohamed and Jina (2011) found that a good number of students used web-mail and social networking sites very frequently; all students used simple search methods; and that Google was the most preferred search engine followed by Yahoo. Very few students used e-journals and databases. It was also found that major reasons of underutilization of web-based information resources include lack of training, lack of computer infrastructure, lack of fulltext e-journals and low Internet.

Recent studies have sought to understand the use of Web social media by various groups. Surveys on the use of social media for education-related purposes indicate mixed feelings. On one hand, there is evidence that students are already using social media such as Facebook for education-related communications. For instance, Ophus and Abbitt (2009) found that more than three quarters of students surveyed used Facebook to communicate with other students in their courses. Similarly, Towner and Muñoz (2011) reported that more than half of surveyed students use Facebook to ask other students questions about class assignments or projects. However, other studies have shown that students and faculty had reservations in using Facebook for more formal, instructional purposes. Roblyer *et al.* (2010) found that approximately half of faculty surveyed felt that Facebook should not be used for education because it is personal or social. Towner and Muñoz (2011) also reported that 57 percent of students felt that Facebook should not

be used for course or instructional purposes and only 13 percent of instructors surveyed were using it for formal educational practices.

In Tanzania, some empirical studies have attempted to assess the use of Internet by students. Luambano and Nawe (2004) found that many students at the University of Dar es Salaam were not using the Internet because of inadequate computers, lack of search skills, and slow speed of the Internet. It was also found that most students who used the Internet did not use it for academic purposes. In assessing conditions under which e-resources were used in Tanzania, Manda (2005) found out that there were limited access to computers, variations among institutions in accessing e-resources, inadequate user training, slow Internet, inadequate search skills, and frequent power cuts. Malekani (2007) found that most students at the Sokoine University of Agriculture had positive attitudes towards the use of Internet for academic purposes and they perceived information from Internet as current and easier to retrieve compared to print resources. However, effective use of the Internet was hampered by several factors including low bandwidth, few internet access points, and inadequate skills. Manda and Mkangara (2007) examined the association between gender and the use of e-resources among postgraduate students at the University of Dar es salaam. The findings revealed that male postgraduate students were more likely to use e-resources than female students. The study also revealed that the use of electronic databases and e-journals among postgraduate students was low but the use of search engines such as Google and Yahoo and other free internet resources was high and frequent. Lwehabura (2008) also observed that students in Tanzanian universities had inadequate knowledge and skills in using electronic information resources.

Although a body of literature related to Internet use exists, studies on Web search behaviours in various contexts are required because of the rapid-changing electronic environment. In view of that, this study sought to understand the Web search behaviour of postgraduates at Sokoine University of Agriculture. Specifically, the study sought to understand the search characteristics of postgraduates, reasons for using the Web, usage of various web features, web search skills and problems faced while using the Web. It is imperative to note that postgraduates are basically research students who require lots of information to complete their academic assignments and fulfill other information needs. Hence, information search is a very essential activity in postgraduate studies. This study would assist higher learning institutions to develop strategies, policies and plans to improve the use of web-based information resources.

2. Study context

The Sokoine University of Agriculture (SUA) was established in 1984 out of the former Faculty of Agriculture, Forestry and Veterinary Science of the University of Dar es Salaam. SUA is the only agricultural university and second oldest public university in Tanzania. Currently, the University has four campuses namely the Main Campus and Solomon Mahlangu Campus in

Morogoro, Olmotonyi Campus in Arusha, and Mazumbai Campus in Tanga. There are four faculties namely the Faculty of Agriculture, Faculty of Forestry and Nature Conservation, Faculty of Veterinary Medicine, and the Faculty of Science. Other academic units include the Directorate of Research and Postgraduate Studies, Institute of Continuing Education, Development Studies Institute, Computer Centre, Pest Management Centre, SUA Centre for Sustainable Rural Development, and the Sokoine National Agriculture Library. Currently, postgraduate studies are offered in the Faculty of Agriculture, Faculty of Forestry and Nature Conservation, Faculty of Veterinary Medicine, and the Development Studies Institute.

At the time of this study, SUA had 30 undergraduate, 46 masters and five non-degree (certificate and diploma level) programmes mainly in agricultural sciences, forestry, animal sciences, education, food sciences, rural development and ICT. The University also provides doctorate studies in these many of these disciplines. During this study, SUA had a total of 6,891 students of which 5,632 (903 males and 356 females) were undergraduates and 1,259 were postgraduates. Of the 1,259 postgraduates, there were 1029 masters (744 males and 285 females) and 130 PhD (71 males and 59 females) students. Overall, female students constituted 31% of all undergraduate and 28.8% of all postgraduate students.

3. Methodology

A survey was carried out between August and September 2012 at SUA's main campus in Morogoro where all postgraduate students are based. The target population comprised of all postgraduates pursuing masters and doctoral programmes at SUA. The list of registered postgraduates was obtained from the Directorate of Research and Postgraduate Students. Data were collected using self-administered questionnaire that were randomly distributed to all postgraduate students. A total of 150 (12% of all postgraduate students) questionnaires were distributed, of which, 126 (84%) completed questionnaires were returned. Data were analyzed using SPSS and the findings presented mainly using frequencies and percentages. The limitation of this study is that the study population was not stratified on the basis of disciplines, departments or study programmes in order to make comparisons.

4. Results and Discussion

4.1 Characteristics of respondents

The study findings in Table 1 indicate that of the 126 respondents, nearly three quarters (73.8%) were masters and the rest (26.2%) were doctoral students. The findings also show that most (61.1%) respondents were males. These results reflect the ratio of doctoral to masters as well as that of male to female students at SUA reported in section 2 above. In addition, gender inequality in enrolment is more pronounced in higher education in Tanzania, particularly in science programmes. Many (57.9%) respondents were aged between 25 and 35 years followed by those aged between 36 and 45 years, which is an expected age group for postgraduates.

Table 1: Demographic characteristics of respondents (N=126)

Variable	Category	Frequency	Percent
Programme	Masters	93	73.8
	Doctoral	33	26.2
Sex	Male	77	61.1
	Female	49	38.9
Age	25 - 35	73	57.9
	36 - 45	31	24.6
	45 and above	22	17.5

The findings in Table 2 indicate that most (63.2%) respondents had more than five years of Internet use experience. Considering that these are postgraduates who had spent more than three years of undergraduate education, it is possible that they had good experience with computers and the Internet. It is common for students in Tanzania to start using computers and the Internet at the University level. The findings on Internet access points indicate that most (88.1%) students accessed the Internet through their own modems followed by those who were accessing through the University local area network (65.1%), cybercafés (32.5%) and through mobile phones (29.4%). These findings suggest that Internet accessibility is improving through the use of modems and mobile phones, which was not the case in the past. Over three-quarters (77%) of the respondents were using the Internet every day and many (54%) spent between one and three hours a day. Previous studies (Greenstein and Healy, 2002; Chandel and Saikia, 2012) have also indicated students' increasing reliance on Web based information resources. More than half (58.4%) of the respondents had received specific training on Web searching either during their undergraduate or postgraduate studies at SUA. The fact that 41.6% of the respondents had not received specific training on Web searching supports previous studies (Manda, 2005; Malekani, 2007; Lwehabura, 2008) which identified lack of information search skills as a constraint in using e-resources among university students in Tanzania.

Table 2: Internet usage characteristics

Variable		Frequency	Percent
Internet use experience	up to one year	7	5.6
	2 -3 years	26	20.8
	4 - 5 years	13	10.4
	more than five years	79	63.2
Access points	University	82	65.1
	Home	28	22.2
	Internet café	41	32.5
	Using own modem	111	88.1
	Mobile phone	37	29.4
	Others	11	8.8
Frequency of using Internet	Everyday	97	77

	2 -3 days a week	25	19.8
	Occasionally	4	3.2
Amount of time spent on the Internet per day	Less than 1	7	5.6
	1 – 3 hours	68	54
	4 – 6 hours	34	27
	More than 6 hours	17	13.5
Specific training on Web searching	Yes	73	58.4
	No	52	41.6
Where received training	Through postgraduate studies at SUA	29	23
	Through seminars/workshops at SUA	6	4.8
	Through seminars/workshops at elsewhere	13	10.3
	Through undergraduate studies at SUA	29	23
	Through undergraduate studies elsewhere	11	8.7
	Through postgraduate studies elsewhere	4	3.3
	Others	12	9.5

4.2 Purpose of Web searching

A large proportion of students were frequently using the Web for research (94.4%), class assignments (80.6%) and communications (73.8%). The Web was also frequently used for accessing news and current affairs (58.8%) (Table 3). These findings support earlier studies (Cmor and Lippold, 2001; Chang and Perng, 2001, Ebersole, 2005; Lal *et al.*, 2006; Malekani, 2007; Nicholas *et al.* 2009; Malik and Mahmood, 2009) which indicated a growing reliance of students on Web-based information resources for education purposes. For research students, the Web is particularly important because they can conveniently obtain and share a wide range of up to date scholarly literature that is not easily available from print collections in libraries. The findings also confirm that the Internet is an important communication means where students can maintain and expand interactions among colleagues, families and other groups with common interests. Online communication can replace, complement or add new dimensions in learning and research processes. The results also emphasize that the Web is an important source of news.

Table 3: Web usage purposes

Purposes	Often	Occasionally	Never	Total
Class assignments	100 (80.6%)	21(16.9%)	3 (2.4%)	124 (100%)
Entertainment/recreation	27 (25%)	73 (67.6%)	8 (6.3%)	108 (100%)
Research	117 (94.4%)	6 (4.8%)	1(0.8%)	124 (100%)
Downloading software	34 (30.1%)	64 (56.6%)	15 (13.3%)	113 (100%)
Communications	90 (73.8%)	30 (24.6%)	2 (1.6%)	122 (100%)
Accessing news and current affairs	67 (58.8%)	41(36%)	6 (5.3%)	114 (100%)

4.3 Use of various Web search tools

Search engines and web directories play important roles for users to retrieve Web-based information. Search engines allow users to enter search queries whereas web directories allow users to browse information resources that are organized into subject categories. The findings in Table 4 indicate that Google (92.9%) and Yahoo (72%) were the most frequently used search engines. However, Google scholar was frequently used by only a third (32.7%) of the respondents despite its importance in searching for scholarly material. These findings correspond other global ratings (Griffiths and Brothy, 2002; Kaur *et al.*, 2011; Gupta, 2012) in which Google and Yahoo were often rated as preferred search engines. Similar trends of search engine use among students were also reported by Mohamed and Jina (2011), Birader (2008), Lewandowski (2008) and Ngwuchukwu, (2012). The findings suggest that search engines have become important tools for finding information on the Web. On the other hand, very few respondents were using subject directories despite the fact that these are meant to overcome the problem of unorganized web content. Yahoo directory was frequently used by 37.9% of the respondents followed by Open Directory (25%) while other subject directories had very few users. This could be due to lack of awareness and training among students.

Table 4: Frequency of using various search tools

Search engine	Often	Occasionally	Never used	Total
Google	117 (92.9%)	9 (7.1%)	0 (0.0%)	126 (100%)
Yahoo	90 (72%)	33 (26.4%)	2 (1.6%)	126 (100%)
MSN Search	5 (5%)	38 (38%)	57 (57%)	100 (100%)
Infoseek	3 (3.2%)	7 (7.5%)	83 (89.2%)	93 (100%)
Altavista	1 (1.1%)	9 (9.8%)	82 (89.1%)	92 (100%)
Google scholar	35 (32.7%)	39 (36.4%)	33 (30.8%)	107 (100%)
Ask.com	6 (6.3%)	31 (32.3%)	59 (61.5%)	96 (100%)
Gigablast	1 (1.1%)	5 (5.3%)	89 (93.7%)	95 (100%)
Searchalot	1 (1.1%)	5 (5.4%)	87 (93.5%)	93 (100%)
Directory				
Open Directory	26 (25%)	28 (26.9%)	50 (48.1%)	104 (100%)
PINAKES	2 (2.1%)	7 (7.4%)	85 (90.4%)	94(100%)
Librarians' Internet Index	11 (11.6%)	24 (25.3%)	60 (63.2%)	95 (100%)
Yahoo! Directory	39 (37.9%)	29 (28.2%)	35 (34%)	103 (100%)
Virtual Library	5 (5.6%)	20 (22.2%)	65 (72.2%)	90 (100%)

4.4 Web search skills

Assessment of search techniques used by postgraduates at SUA revealed that nearly three quarters (74.6%) of the respondents were using simple search the most. Only a few students were frequent users of advanced search features such as phrase searching (26.8%), Boolean searching (20.8%), query modifiers (22.9%), word truncation (15%) and combining search tools (14.6%) (Table 5). Previous research (Spink *et al.*, 2001; Spink and Jansen, 2004; Malik and Mahmood,

2009) has also reported on the rare usage of advanced search features. These findings also support earlier studies (Manda, 2005; Malekani, 2007; Lwehabura, 2008) which identified lack of Web usage skills among university students in Tanzania. Limited use of advanced search operators could be due lack of familiarity with such features; misguided assumption that they are intended for advanced users; because simple search is offered as the primary search interface; or due to lack training in information literacy skills. At SUA, the Sokoine National Agricultural Library¹ (SNAL) has been attempting to include information literacy in the University curricula since 1999 but in vain. Instead, there have been occasional informal seminars for library users although these have not been very successful in terms of attendance as they fall outside the university timetable. Observations inform that in the 2011/2012 academic year, only masters students in the Faculty of Forestry and Nature Conservation were trained in information literacy.

Table 5: Frequency of using different search techniques

Search tools	Often	Sometimes	Never	Total
Simple search	85 (74.6%)	12 (10.5%)	17 (14.9%)	114 (100%)
Phrase searching	26 (26.8%)	26 (26.8%)	45 (46.4%)	97 (100%)
Boolean operators such as AND, OR, AND NOT	20 (20.8%)	22 (22.9%)	54 (56.3%)	96 (100%)
Word truncation	14 (15.2%)	18 (19.6%)	60 (65.2%)	92 (100%)
Query modifiers such as intitle: and filetype:	22 (22.9%)	25 (26%)	49 (51%)	96 (100%)
Combined search	14 (14.6%)	26 (27.1%)	56 (58.3%)	96 (100%)

4.5 Usage of e-journals

Postgraduate students were also asked to indicate their frequency of using various e-journal databases licensed to the university and open access databases. This question was important because research students are expected to make heavy use of scholarly literature. They are also expected to rely on e-journals because the university library does not subscribe to any print journals due to budgetary constraints. Surprisingly, the use of e-journal databases among postgraduate students at SUA was very low. AGORA is the only e-journal database that was frequently used by nearly a half (49.1%) of the respondents followed by HINARI (22.8%) and OARE (23.2%) databases. It is unfortunate that even open access databases such as DOAJ were rarely used. Mohamed and Jina (2011) also found that very few students were using e-journals and databases at Calicut Medical College. These results support previous studies (Manda, 2005; 2008) which indicated low usage of scholarly e-resources in Tanzania. The findings also support Kinengyere's (2007) argument that available information is not necessarily accessed and used by users because users may not be aware of the availability of such resources or they do not know how to access the resources. These findings suggest that postgraduate students at SUA rely

¹SNAL is a university library for SUA and a national agricultural library for Tanzania.

predominantly either on free Web resources obtained through search engines or grey literature mainly theses and dissertations available in the library.

Table 6: Frequency of using various journal databases

Journal databases	Frequently	Occasionally	Never	Total
AGORA	57 (49.1%)	42 (36.2%)	17 (14.7%)	116 (100%)
HINARI	23 (22.8%)	32 (31.7%)	46 (45.5%)	101 (100%)
OARE	23 (23.2%)	22 (22.2%)	54 (54.5%)	99 (100%)
AJOL	16 (16.5%)	31 (32%)	50 (51.5%)	97 (100%)
JSTOR	8 (8.5%)	28 (29.8%)	58 (61.7%)	94 (100%)
Sage Journals	9 (9.7%)	13 (14%)	71 (76.3%)	93 (100%)
Taylor & Francis Journals	3 (3.3%)	12 (13.2%)	76 (83.5%)	91 (100%)
DOAJ	9 (9.6%)	19 (20.2%)	66 (70.2%)	94 (100%)
Emerald	2 (2.2%)	8 (9%)	79 (88.8%)	89 (100%)
Springer Link	16 (16.7%)	19 (19.8%)	61(63.5%)	96 (100%)

4.6 Usage of social media

The study findings in Table 7 indicate that Facebook (61.8%) was the most frequently (daily or several times a week) used tool followed by Wikis (51.5%), Blogs (37.3%), and YouTube (34.6%). These findings indicate a relatively low usage of web social media among postgraduates as compared to previous studies (Hargittai, 2008; Jones and Fox, 2009; Matney and Borland, 2009; Smith and Caruso, 2010) conducted elsewhere. However, this difference could be reflecting the existing digital divides among societies, institutions and individuals.

Table 7: Frequency of using the following web social services

Social web	Daily	Several times a week	Occasionally	Never	Total
Facebook	41 (34.7%)	32 (27.1%)	30 (25.4%)	15 (12.7%)	118 (100%)
Twitter	10 (9.4%)	15 (14.2%)	32 (30.2%)	49 (46.2%)	106 (100%)
LinkedIn	7 (7.4%)	10 (10.5%)	38 (40%)	40 (42.1%)	95 (100%)
YouTube	7 (6.7%)	29 (27.9%)	44 (42.3%)	24 (23.1%)	104 (100%)
Blogs	12 (11.8%)	26 (25.5%)	39 (38.2%)	25 (24.5%)	102 (100%)
Delicious	1 (1.1%)	8 (8.6%)	7 (7.5%)	77 (82.8%)	93 (100%)
Wikis	18 (17.5%)	35 (34%)	33 (32%)	17 (16.5%)	103 (100%)
Podcast	2 (2.1%)	4 (4.2%)	12 (12.6%)	77 (81.1%)	95 (100%)
Flickr	0 (0.0%)	4 (4.3%)	11 (11.7%)	79 (84%)	94 (100%)

4.7 Attitude towards Web resources

In order to determine respondents' attitudes towards Web resources, they were provided with three statements to indicate their level of agreement. The findings show positive attitude towards Web resources since almost all (98.5%) respondents felt (agree or strongly agree) that the standard of their academic work would suffer without Web services. Similarly, a vast majority

(91.1%) of the respondents would prefer Web to printed resources if given an opportunity to choose. Over three-quarters (79.7%) of the respondents disagree that they can avoid the use of the Web and still perform better. In other words, the respondents believe that access to Web resources is essential in order to perform well. These findings are in agreement with Swain and Panda (2009) who noted that library users' attitude is shifting towards electronic resources.

Table 8: Attitudes of towards Web resources

Statement	Strongly agree	Agree	Disagree	Total
I feel that the standard of my academic work would suffer without Web services	100 (80.6%)	23 (18.5%)	1 (0.8%)	124 (100%)
I can avoid the use of the Web and still perform better	4 (3.3%)	20 (16.3%)	98 (79.7%)	123 (100%)
If given an opportunity to choose between web and printed resources for my academic work, I would choose web resources	66 (53.7%)	46 (37.4%)	10 (8.1%)	123 (100%)

4.8 Constraints in using Web resources

Possible constraints that postgraduates encountered in using Web services at SUA were provided on a four-point scale ranging from 1 = not a constraint to 4 = major constraint. The results in Table 9 show that slow Internet connectivity was a serious (*constraint* or *major constraint*) constraint (85.1%) followed by restricted downloading of e-resources (69%), poor quality of retrieved information (35.1%), inadequate search skills (31.2%), and limited access to computers (29.5%). Slow Internet connectivity is a result of the low bandwidth. At the time of this study, SUA was subscribing only 10 mbps which was inadequate for the growing university population. The problem of restricted downloading is caused by the fact e-resource providers tend to provide different authentication techniques. As a result, users are often bombarded with several user names, passwords and conditions that they are required to comply when accessing the e-resources. Sometimes the users encounter technical difficulties in applying these user names, passwords and other restrictions. Recent observations reveal that user-authentication based on IP addresses of local area networks is becoming a problem because many users are currently accessing the Internet using modems and mobile phones. Poor quality of retrieved information could be because users rely on free Web resources which are of uneven quality. Problems of inadequate search skills and limited access to computers have been pointed out repeatedly in many higher learning institutions in the developing world.

Table 9: Constraints encountered in using the Web

Constraints	not a constraint	somewhat a constraint	constraint	major constraint	Total
Poor quality of retrieved information	24 (25.5%)	37 (39.4%)	19 (20.2%)	14 (14.9%)	94 (100%)
Slow internet at SUA	2 (1.7%)	16 (13.2%)	37 (30.6%)	66 (54.5%)	121 (100%)
Inadequate search skills	37 (34.9%)	36 (34%)	22 (20.8%)	11 (10.4%)	106 (100%)
Restricted downloading of e-resources (require passwords)	7 (6%)	29 (25%)	27 (23.3%)	53 (45.7%)	116 (100%)
Limited access to computers	56 (53.3%)	18 (17.1%)	20 (19%)	11 (10.5%)	105 (100%)
Unreliable power	36 (37.9%)	35 (36.8%)	15 (15.8%)	9 (9.5%)	95 (100%)
Too much information retrieved	52 (57.1%)	21 (23.1%)	14 (15.4%)	4 (4.4%)	91 (100%)
Lack of assistance from librarians	61 (57.5%)	28 (26.4%)	8 (7.5%)	9 (8.5%)	106 (100%)

5. Conclusion and Recommendations

The findings in this study indicate that most postgraduates had good experienced in using the Web. Most were accessing the Internet more through own modems than other access points such as the university local area network and cybercafés. Most students showed positive attitude towards Web resources and were relying on these resources for their research, class assignments, and communications. They were also using the Web for accessing news and current affairs. Many students preferred using search engines such as Google and Yahoo as well as social media tools such as Facebook and Wikis. However, only a few students were using other important Web tools such as subject directories. The findings also indicate that majority of students were using simple search to retrieve information from the Web. Advanced search features were rarely used. Similarly, the use of e-journal databases among postgraduates at SUA was very low. Slow Internet connectivity and restrictions in downloading e-resources were regarded as serious constraints in using Web resources.

In view of these, strategies by libraries and parent institutions are needed to promote utilization of e-resources for academic purposes. It is also recommended that information literacy programmes should be integrated into the curricular in order to optimize the use of Web services. Libraries should address contextual and technical issues such as access to facilities, awareness on available resources, search skills, and access restrictions such as passwords in order to promote usage levels. Libraries should also look into the possibility of integrating e-resources into their OPACs for greater visibility and enable users to search several databases simultaneously. Future research may focus on the web search behaviour of different user groups across fields of study.

6. References

Aula, A. (2003). Query formulation in web information search. International Conference WWW/Internet. P. 403-410. Available at: http://www.iadis.net/dl/final_uploads/200302L052.pdf

Batthini, G., & Madnani, A. (2003). Web search behaviour of LIS professionals of selected libraries of Ahmedabad and Gandhinagar: A study. Available at:
http://ir.inflibnet.ac.in:8080/jspui/bitstream/1944/217/1/cali_48.pdf

Biradar, B.S., Rajashekhar, G.R., & Sampath, K. B.T. (2006). A study of Internet usage by students and faculties in Kuvempu University. *Library Herald*. 44 (4): 283-294.

Birader, B.S. (2008), Use of Search Engines by Research Scholars and Faculty Members of Physics departments in the Universities of Karnataka State. *Annals of Library and Information Studies*. 55:201-207.

Bond, C.S. (2004). Web user's information retrieval methods and skills. *Online Information Review*. 28 (4):254 – 259

Chadwick-Dias, A., McNulty, M., & Tullis, T. (2003). Web usability and age: How design changes can improve performance. Paper presented at the CUU, Vancouver, BC, Canada.

Chandel, A. S. & Saikia, M. (2012) Challenges and opportunities of e-resources. *Annals of Library and Information Studies*. 59 (3) Available at:
<http://op.niscair.res.in/index.php/ALIS/article/download/305/14>

Chang, N. C., & Perng, J. H. (2001). Information search habits of graduate students at Tatung University. *International Information & Library Review*. 33 (4): 341-346.

Cmor, D., & Lippold, K. (2001). Surfing vs. searching: the Web as a research tool. Available at:
<http://staff.library.mun.ca/~DCmor/stlhe/>

Ebersole, S.E. (2005). On their own: Students' academic use of the commercialized Web. *Library Trends*. 53: 530-538.

Goodyear, P. and Ellis, R. (2008). University students' approaches to learning. *Distance Education*. 29 (2):141–52.

Greenstein, D. & Healy, L. (2002). National survey documents effects of Internet use on libraries. *CLIR Issues*. 27:4-12.

Griffiths, J. R. & Brophy, P. (2002). Students searching behaviour in the JISC information environment. *Ariadne* 33. Available: <http://www.ariadne.ac.uk/issue33/edner>

Gupta, B. S. (2012). A Comparative Study of the Results Produced by Search Engines. *IJMRS's International Journal of Engineering Sciences* 1(1) Available: [http://www.ijmrs.com/Published%20 Paper/Volume%2001/Issue%2001/ijes/ijes01/ijes01.pdf](http://www.ijmrs.com/Published%20Paper/Volume%2001/Issue%2001/ijes/ijes01/ijes01.pdf).

Hargittai, E. (2008). Whose space? Differences among users and non-users of social network sites. *Journal of Computer-Mediated Communication*. 13 (1): 276–297.

Hölscher, C., & Strube, G. (2000). Web search behavior of Internet experts and newbies. *Computer Networks*. 33: 337 - 346.

Hsieh-Yee, I. (2001). Research on Web search behavior. *Library & Information Science Research*. 23: 167-185.

Jansen, B. J., & Pooch, U. (2001). A review of web searching studies and a framework for future research. *Journal of the American Society for Information Science and Technology*. 52: 235-246. Available at: <http://citeseerx.ist.psu.edu/messages/downloadsexceeded.html>

Jones, S. & Fox, S. (2009) . Generations online in 2009. Pew Internet and American Life Project. Available at: www.pewinternet.org/w/media/Files/Reports/2009/PIP_Generations_2009.pdf

Kaur, M., Bhatia, N. & Singh, S. (2011). Web Search Engines Evaluation Based on Features and End-User Experience. *International Journal of Enterprise Computing and Business System*. 1(2) Available: <http://www.ijecbs.com/July2011/47.pdf>

Kim, K. S. (2001) Information seeking on the Web: Effects of user and task variables. *Library and Information Science Research*. 23:233 – 255. <http://slisweb.lis.wisc.edu/~kskim/Publications/LISR01.pdf>

Kinengyere, A. A. (2007). The effect of information literacy on the utilization of electronic information and resources in selected academic and research institutions in Uganda. *The Electronic Library*. 25(3):328-341.

Lal, R., Malhotra, R., Ahuja, C., Ingle, G. K. (2006). Internet use among medical students and residents of a medical college of north India. *Indian Journal of Community Medicine*. 31(4): 293-294.

Lee, M. J. W., & McLoughlin, C. (2010). Applying Web 2.0 tools in hybrid learning designs. In F. L. Wang, J. Fong, & R. C. Kwan (Eds), *Handbook of research on hybrid learning models:*

Advanced tools, technologies, and applications (pp. 371–392). Hershey, PA: Information Science Reference.

Lewandowski, D. (2008). The retrieval effectiveness of web search engines: Considering results descriptions. *Journal of Documentation*. 64 (6): 915-937.

Luambano, I., & Nawe, J. (2004). Internet use by students of the University of Dare es Salaam. *Library Hi Tech News*. 21(5): 13-17.

Lwehabura, M.J.F. (2008). Skills and training needs for use of electronic information resources (EIRs) among students in four Tanzanian Universities. *UDSM Library Journal*.10 (1&2)

Malekani, A.W. (2007). User Experiences and Perceptions of Online Information Resources in Libraries: A Case of Sokoine National Agricultural Library (SNAL), Tanzania. *UDSM Library Journal*. 9 (2)

Malik, A. & Mahmood K. (2009). Search Behavior of University Students: A Case Study of the University of the Punjab. *Chinese Librarianship: An International Electronic Journal*, Available: <http://www.iclc.us/cliej/cl28MM.pdf>

Malik, A. & Mahmood, K. (2009). Web search behavior of university students: A case study of the University of the Punjab. *Chinese Librarianship: an International Electronic Journal*. 28. Available at: <http://www.iclc.us/cliej/cl28MM.pdf>

Manda, P. A & Mukangara, F. (2007). Gender analysis of electronic information resource use: The case of the University of Dar es Salaam, Tanzania. *UDSM Library Journal*. 9(1): 31–52.

Manda, P. A. (2005). Electronic resource usage in academic and research institutions in Tanzania. *Information Development*. 21(4): 269 – 281.

Matney, M., & Borland, K. (2009). Facebook, blogs, tweets: how staff and units can use social networking to enhance student learning, Presentation at the annual meeting of the National Association for Student Personnel Administrators, Seattle, WA

Mohamed, H.K & Jina, E.M. (2011). Web-based Information Retrieval Pattern of Medical Students. 8th International CALIBER - 2011, Goa University, March 02-04, 2011. Available at: <http://ir.inflibnet.ac.in/dxml/bitstream/handle/1944/1608/18.pdf?sequence=1>

Ngwuchukwu, M.N. (2012). Use of Search Engines by Postgraduate Students of the University of Nigeria, Nsukka, Enugu State, South East Nigeria. *IOSR Journal of Computer Engineering*. 3(2):36-4

Nicholas, D., Huntington, P., Jamali, H.R., Rowlands, I and Fieldhouse, M. (2009). Student digital information-seeking behaviour in context. *Journal of Documentation* . 65 (1):106-132. https://comminfo.rutgers.edu/~tefko/Courses/Zadar/Readings/Nicholas%20Student_digital%20in%20beh%20J%20Doc%202009.pdf

Ophus, J. D. & Abbitt, J. T. (2009). Exploring the potential perceptions of social networking systems in university courses. *MERLOT Journal of Online Learning and Teaching*. 5(4):639-648. Available at: http://jolt.merlot.org/vol5no4/ophus_1209.pdf

Roblyer, M. D., McDaniel, M., Webb, M., Herman, J. & Witty, J. V. (2010). Findings on Facebook in higher education: A comparison of college faculty and student uses and perceptions of social networking sites. *The Internet and Higher Education*. 13(3):134-140. Available at: <http://dx.doi.org/10.1016/j.iheduc.2010.03.002>

Smith, S. D., & Caruso, J.B. (2010). The ECAR Study of Undergraduate Students and Information Technology. Boulder, CO: Educause Center for Applied Research.

Spink, A., & Jansen, B. J. (2004). A study of Web search trends. *Webology*. 1(2). Available at: <http://www.webology.org/2004/v1n2/a4.html>

Spink, A., Wolfram, D., Jansen, B.J., & Saracevic, T. (2001). Searching the web: The public and their queries. *Journal of the American Society for Information Science and Technology*. 52(3): 226–234.

Swain, D. K.& Panda, K. C. (2009). Use of electronic resources in business school libraries of an Indian state: A study of Librarians' opinion. *The Electronic Library*. 27 (1):74-85.

Towner, T. & Muñoz, C. (2011). Facebook and education: A classroom connection? In: Muñoz, C. Towner, T. (2011). Back to the “wall”: Facebook in the college classroom. *First Monday*.16 (12). Available from: <http://firstmonday.org/article/view/3513/3116>