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Enhancing Learning Through the Use of Digital Libraries in Developing Countries Universities

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Abstract: Developing countries universities are characterised by financial constraints, lack of qualified personnel, poor infrastructure and limited physical space. However, the increasing use of internet and the ubiquitous of Information Technology (IT) enhanced learning tools and applications are dramatically changing and bridging the gaps that existed between the learners of the rich developed and the poor developing countries. With IT, learners can now conduct research, access learning materials of other universities as well as collaborating with others within and outside their environment. It is evident that the availability of information in electronic media has on the other hand created opportunities for global access to information, increased the speed of service and has increased the number of learners being served regardless of the geographical boundaries. However, much as universities have colossally invested in these digital libraries, their optimal use by many learners in developing countries is still limited. The objective of this study therefore was to investigate the usage of digital libraries at universities in developing countries and how such usage could enhance learning. This study used data collected from a university in South Africa to verify digital libraries usage. Data was collected and analyzed quantitatively. The results showed that bandwidth, system complexity, lack of skills, information overload and training significantly impact on digital libraries usage. The empirical evidence of this study is expected to serve as a cornerstone for digital libraries implementation and usage in universities not only in developing countries but also in other institutions world across.

Key words: Digital libraries, universities, technology usage, bandwidth, libraries usage, skills

INTRODUCTION

Due to emerging technologies, electronic based information materials have become more relevant in education. University libraries have taken advantage of this electronic transformation through digitalization process from paper to digital material. This shift has put emphasis on print resources where total dependence on them is no longer reasonable (Shidi and Terna, 2013).

In addition to costs, delay and bulkiness, print resources have the limitation of assuming that everyone learns at the same pace and in the same manner. This assumption makes printed resources irrelevant in today's high-tech. This has then enabled digital technologies in taking a major lead of learning resources used by librarians to enhance service delivery to learners. Digital libraries as defined by studies are distinctive libraries that focus on a variety of electronical objects which include text, video, audio and visual resources that are stored as electronical media formats contained in a library collection (Turan and Bayram, 2013). Some of the advantages these digital libraries present amongst others include: round the clock availability, no physical boundaries and multiple distribution of resources to users, elimination of congested space to store material and cost saving (Shidi and Terna, 2013; Gakibayo *et al*., 2013).

Despite the presented opportunities and universitie's efforts to make digital libraries accessible to learners, the usage of these resources is still very limited. University libraries have been spending substantial amounts of their annual budgets to ensure the availability of digital libraries but much of this effort and money has helped little. Such usage has remained low despite of universitie's awareness campaigns, orientation programs and trainings (Nemati and Babalhavaeji, 2013; Kwadzo, 2015).

Usage of digital libraries in developed countries is more than those in developing ones and this could mainly be attributed to better ICT infrastructures and awareness (Dukic, 2013). Other studies have attributed this to limited computer literacy, the acceptance culture, decreasing

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student's interest in reading and perceptions in developing countries (Gakibayo *et al*., 2013; Isah *et al*., 2014).

In view that learners in developing countries are faced with numerous limitations associated with lecture-based teaching, it is imperative that they leverage digital libraries to overcome these inherent disadvantages (Chandel and Saikia, 2012; Dhanavandan and Tamizhchelvan, 2012; Makori, 2015). Therefore, this study sought to establish how learning could be enhanced by using digital libraries in developing countrie's universities. This study sought to investigate the influence of learner's self-efficacy, attitude and awareness on digital libraries usage. More still this study also investigated how digital libraries as a technological innovation is diffused among learners and the role played by the institutions as well as the environment during this diffusion.

Literature review: Digital libraries are an important part of growing knowledge amongst learners in universities. Studies affirmed that digital libraries are an integral part of an institution's libraries as they help in teaching and learning activities (Zhang *et al*., 2011; Rioux, 2017; Makori, 2015). However, studies revealed that despite the universities efforts to make digital libraries available to learners, their use in the academic spheres is still minimum (Isah *et al*., 2014). Studies of Bashorun *et al*. (2011) indicated that in order for learners to exploit digital libraries, there is a need for them to acquire the necessary skills and practices to utilize them effectively.

This is further supported by Okite-Amughoro who emphasized that despite the availability of digital libraries, their usage is rather low. Their findings indicated that this is due to lack of training on how to access digital libraries which impacts on their efficient and effective usage.

It has been highlighted that computer literacy remains a challenge for most learners in developing countries (Gakibayo *et al*., 2013). Therefore, learning basic computer skills and applications is an increasing necessity to university learners. It has further been indicated that while learner's awareness of digital libraries may lead to usage, this is not the case (Kwadzo, 2015). The study reported that level of awareness in universities is higher than the actual usage due to students not knowing which resources are relevant to their subject areas.

Furthermore as noted by other studies, it is of significance that resources such as journals and articles are current and rich in content as it is one of the critical factors that stimulate learner's interest to use digital libraries (Nisha and Ali, 2012).

It has been noted that learners tend to use more the current digital libraries than those that are old in years of publication. Factors that hinder effective usage of digital libraries were examined and it was established that learner's frustrations when searching for information is a core factor leading to low usage of digital libraries (Zabed, 2013). He attributed this frustration to inadequate training in information searching skills, lack of appropriate reward for electronic scholarly communication, poor IT infrastructure, inability to access digital libraries from home, slow download speed and lack of technical support.

Based on these views it could be deduced that there are heterogeneous factors inhibiting learner's usage of digital libraries in developing countries. Furthermore, these factors could range from the individual learner's perceptions and capabilities as well as the institutional and environmental influences (Gakibayo *et al*., 2013; Makori, 2015).

Theoretical foundations and conceptual model: Every identified problem always has a solution which is embedded within the area of the problem itself (Nenty, 2009). Various studies have suggested solutions though with a caution that the institution and the environment of operation could play a big role hence the need for further studies based on relevant underpinning theories to investigate learner's digital libraries low usage.

This study therefore leveraged three theories of Diffusion of Innovation (DOI), self-efficacy theory, Technology-Organization-Environment theory (TOE) and four external variables to investigate learner's digital libraries usage. These theories and their related variables are vital in assessing learner's usage of e-Resource and help mitigate challenges encountered by learners to enable effective usage of digital libraries. Figure 1 illustrates the research model in which these theories are articulated to investigate digital libraries usage.

Hypotheses development: Based on the proposed conceptual framework, constructs from various theories were combined and categorized into external variables which may assist in determining the under-utilization of digital libraries. On this basis the following seventeen hypothesis were drawn:

- H_{1a}: compatibility when mediated by intention to use influence digital libraries usage
- H_{1b}: complexity when mediated by intention to use influence digital libraries usage
- H_{1c}: complexity directly influence digital libraries usage

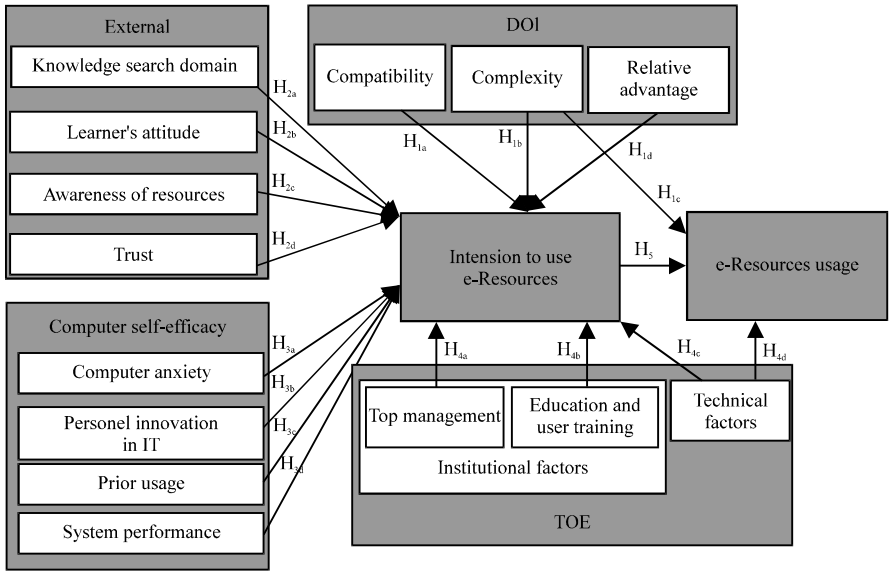

Fig. 1: Conceptual framework

- H_{1d}: relative advantage when mediated by intention to use influence digital libraries usage
- H_{2a}: knowledge search domain when mediated by intention to use will influence digital libraries usage
- H_{2b}: learner attitudes in using technology when mediated by intention to use influence digital libraries usage
- H_{2c}: learner's awareness of digital libraries when mediated by intention to use influence its usage
- H_{2d}: Learner's trust digital libraries and supportive staff when mediated by intention to use influence digital libraries usage
- H_{3a}: computer anxiety when mediated by intention to use will influence digital libraries usage
- H_{3b}: personal innovativeness in IT when mediated by intention to use influence digital libraries usage
- H_{3c}: prior usage of digital libraries when mediated by intention to use influence digital libraries usage
- H_{3d}: systems performance when mediated by intention to use influence digital libraries usage
- H_{4a}: top management support when mediated by intention to use influence digital libraries usage
- H_{4b}: education and training of users when mediated by intention to use influence digital libraries usage
- H_{4c}: technical support when mediated by intention to use influence digital libraries usage
- H_{4d}: technical support directly influences digital libraries usage
- H_5: intention to use directly influences digital libraries usage

MATERIALS AND METHODS

The study used the survey strategy where a total of 500 questionnaires were distributed to both under-graduate and post graduate learners in different faculties of Tshwane University of Technology (TUT) South Africa. The study ensured that a good representative number of students is obtained from all the faculties. This was done by ensuring that both humanities and arts based learners are sampled equally as those of the science and ICT based. The researcher depended on instructors to distribute the questionnaire to learners either before or after the lecture.

Sampling within the lecture environment was to all learners present for that particular lecture. This saw all distributed questionnaires returned however only 446 were usable as some had incomplete data especially in the learner's demographic study and for the intention to use construct and they were discarded. The usable questionnaires were screened, coded and transcribed using the statistical package for social scientists (SPSS V.22.0).

The measuring instrument's overall reliability was 0.915, a value greater than the required threshold of 0.07 (Hong and Nhung, 2012). Individual constructs were also tested for reliability using Cronbach's alpha (α) and the majority were found to have reliability values above the recommended threshold. Knowledge search domain was one of the construct that had a slightly lower value of 0.697 which was below the recommended

threshold. However, due to the value's proximity of the expected threshold of 0.7, the construct was used for further analysis.

RESULTS AND DISCUSSION

Demographics: Findings indicate that majority of respondents 335 (75%) uses internet on a daily basis. This high percentage is a positive indication that respondents are familiar with the use of technology, thus suggesting that other factors apart from technological ones should be given attention.

Although, the majority of respondents indicated that they do use internet, only 125 (28%) are use it four or more hours on a daily basis. This implies that the times spend using and accessing material-resources is very minimal.

Digital libraries usage: Participants were further asked to indicate whether they use digital libraries and their usage frequency. The results indicated that 302 (67.7%) of the respondents use digital libraries while 144 (32.3%) don't use. However, the frequency in which digital libraries are used is relatively low, 175 (39.2%) of the respondents use them on a weekly basis while 271 (60.8%) of the respondents use them only once a week or don't use them at all, thus implying the ineffective usage of digital libraries.

Challenges when accessing and using digital libraries: More still, participants were asked to indicate challenges they encounter when accessing and using digital libraries. A large number of respondents 249 (55.5%) indicated that they never struggle finding a number of titles when accessing digital libraries, whilst 232 (52%) of participants indicated that they do not find it difficult to find relevant information when they use digital libraries. Additionally, 273 (61.2%) of the respondents indicated that they never have limited access to digital libraries as they could access and use the services at home and 206 (46.2%) indicated that they have never been affected by download time. These average levels of accessibility of digital libraries indicates that accessibility does not seem to be a huge barrier to using digital libraries, thus suggesting that, there is a need for other factors apart from e-Resource accessibility that still need to be explored.

The results further indicated that the most accessed type of digital libraries by learners are e-Books with a total number of 154 (34.5%) of respondents confirm that they have ever used them. This is followed by e-Journals with a total of 83 (18.7%) whereas the least accessed digital libraries were bibliographic databases and library catalogues with a total of 53 (11.8%) and 83 (18.7%), respectively while 52 (11.7%) respondents indicated others. These findings suggest that, although many learners do use digital libraries, only a limited number were being utilized.

Upon completion and conclusion of demographics, frequencies and reliability tests both correlation and regression analysis were carried out to give the strength and direction of the linear relationship between variables and to determine how each construct contribute to digital libraries usage. Results indicated that computer anxiety has no significant correlation with relative advantage and compatibility, whilst learner's attitude showed a significant relationship with relative advantage, compatibility, complexity, computer anxiety and personal innovativeness at 0.01 levels.

Furthermore, overall usage of digital libraries was also found to be significantly correlated with all other constructs at a 0.01 level of significance. Similarly, intension to use digital libraries was also found to have a significant correlation with all other constructs at 0.01 level of significance.

Regression: Obuh noted that for the independent construct's influence to the dependent one to be significant, its critical ratio (t-value) should be equal or greater to ±1.96. Regression analysis was carried out and the results indicated an overall model prediction of 64.6% (R^2 = 0.646). Table 1 shows the results of regression analysis.

Table 1 demonstrated that out of the 14 constructs, 9 were found to significantly contribute to the overall digital libraries usage prediction whilst 6 were rejected. The contributing constructs are complexity, systems performance, relative advantage, intension to use, learner's attitudes, educational training users, e-Resource awareness, technical support and students trust on digital libraries in their highest value of contribution, respectively. Those that were insignificantly contributing were compatibility, computer anxiety, e-Resource prior usage personal innovativeness, top management support and knowledge search.

Hypotheses testing: About 17 hypothesis were tested based on the results. Table 2 shows the results of the tested hypothesis with their significant value of p = 0.05. of the 17, 11 hypothesis were accepted.

The study examined the factors that could influence effective usage of e-Resource at universities in developing countries. From this study, it was established that of the fourteen constructs that were used to measure usage, 9 were found to be significant to the overall prediction of the model. These include complexity, relative advantage, learner's attitudes, learner's awareness, learner's trust, system performance, education and

Table 1: Multiple regression and collinearity

Model 1	Unstandardized coefficients (B)	SD	Standardized coefficients (β)	t-values	Sig.	Collinearity statistics	
						Tolerance	VIF
Constant	1.042	0.285	-	3.657	0.000	-	-
Relative advantage	0.334	0.123	0.309	2.715	0.008	0.311	3.211
Compatibility	-0.220	0.065	-0.180	-0.342	0.732	0.614	1.629
Complexity	0.573	0.186	0.493	3.081	0.003	0.423	2.364
Computer aniety	-0.480	0.045	-0.490	-1.069	0.285	0.831	1.203
Personal innovatiness	-0.340	0.060	-0.300	-0.558	0.557	0.597	1.675
E-resource prior usage	-0.340	0.067	-0.330	-0.517	0.606	0.439	2.277
System performance	0.642	0.324	0.371	1.983	0.048	0.243	4.112
Knowledge search	0.069	0.057	0.067	1.222	0.222	0.584	1.711
Student attitude	0.272	0.122	0.206	0.229	0.027	0.373	2.683
e_Resource_awareness	0.152	0.055	0.157	2.743	0.006	0.536	1.864
Student trust_e_Resource	0.128	0.061	-0.106	-2.098	0.044	0.979	1.021
Technical_factors	0.131	0.058	0.115	2.259	0.023	0.691	1.447
Top_management_support	0.027	0.072	0.021	0.367	0.714	0.538	1.860
Educational_training_users	0.182	0.052	0.195	3.500	0.000	0.622	1.608
Intension_to_use	0.311	0.072	0.288	4.319	0.000	0.640	1.562

Table 2: Hypothesis testing

Suggested hypothesis	Sig. p-values	Action
H_{1a}: compatibility when mediated by intention to use will influence digital libraries usage	0732>0.05	Rejected
H_{1b}: complexity when mediated by intention to use will influence digital libraries usage	0003<0.05	Accepted
H_{1c}: complexity directly influence digital libraries usage	0000<0.05	Accepted
H_{1d}: relative advantage when mediated by intention to use will influence digital libraries usage	0008<0.05	Accepted
H_{2a}: knowledge search domain when mediated by intention to use influence digital libraries usage	0222>0.05	Rejected
H_{2b}: learners attitudes in using computers when mediated by intention to use will influence digital libraries usage	0027<0.05	Accepted
H_{2c}: learner's awareness of digital libraries when mediated by intention to use influence its usage	0006<0.05	Accepted
H_{2d}: learner's trust digital libraries and supportive staff when mediated by intention to use will influence digital libraries usage	0044<0.05	Accepted
H_{3a}: computer anxiety when mediated by intention to use will influence digital libraries usage	0285>0.05	Rejected
H_{3b}: personal innovativeness in IT when mediated by intention to use will influence digital libraries usage	0577>0.05	Rejected
H_{3c}: prior usage of digital libraries when mediated by intention to use will influence digital libraries usage	0606>0.05	Rejected
H_{3d}: systems performance when mediated by intention to use will influence digital libraries usage	0048<0.05	Accepted
H_{4a}: top management support when mediated by intention to use will influence digital libraries usage	0714>0.05	Rejected
H_{4b}: education and training of users when mediated by intention to use will influence digital libraries usage	0000<0.05	Accepted
H_{4c}: technical support when mediated by intention to use will influence digital libraries usage	0023<0.05	Accepted
H_{4d}: technical support will directly influences digital libraries usage	0000<0.05	Accepted
H_5: intention to use directly influences digital libraries usage	0039<0.05	Accepted

training of users, technical support and intension to use. These findings are in agreement with those of Rosa and Lamas (2013) which iterated that much as awareness levels of digital libraries are generally greater, learners need to know more of databases especially those that are very relevant to their subject areas.

Furthermore, when learners know which digital libraries are relevant to their field of studies, they are more likely to use them. The findings are further in agreement (Adeniyi and Ajiboye, 2013) who postulated that for digital libraries to be used effectively, the universities should ensure that technical support is made available. That is, ensuring that there is enough network computers available to learners and also improves on low internet bandwidth issues. This is in consistence with findings by Adeniyi and Ajiboye (2013) and Adegbore (2011) which indicated that there is a need for back-up generators and also that libraries should have their own autonomous broadband internet server to enable users to have uninterrupted internet access.

The results further indicated that complexity and system performance of digital libraries site has an influence to effective usage of digital libraries. This findings concurred with previous studies by Nasreen and Alawi (2011), Hong and Nhung (2012) assertion that user-friendliness of a system can influence users in users it. Another study by Al-Muaythir *et al*. (2014) is further in support of ensuring that digital libraries system is of high performance for learners to have trust in the services it provides and eventually influence its use. Their study show that special attention should be given to the evaluation of e-Learning and other digital education systems and appropriate guidelines and effective methodologies must be applied by evaluators to ensure high quality systems performance.

Various studies have been conducted on learner's usage of digital libraries in universities to date there hasn't be clear indications as to which factors significantly influence their effective usage. The vigorousness in designing the composite model implied

that most of the influential factors were incorporated. Hence, the empirical findings of study will be of significant theoretical and practical contribution.

Firstly, this implies that universities could use the designed model as a cornerstone that will inform the use of digital libraries and assist in making relevant decisions relating to use of technology. Furthermore, researchers can adopt the model to be used as a reference, not only to extend studies of digital libraries but also in technology usage in general.

Secondly, universities in developing countries can adopt the model to enhance the use of digital libraries. This will also help libraries and management to do proper planning and strategy development to maximize use of technology in universities.

CONCLUSION

The study looked at the usage of digital libraries and the factors that play a role in the usage process. To achieve that, the study explored factors influencing the effective usage of digital libraries. It was found that awareness of digital libraries is greater than usage; therefore learners need to be equipped with the required skills to effectively use them. This concurs with numerous studies by Bashorun *et al*. (2011), Adeniyi and Ajiboye (2013), Emwanta and Nwalo (2013).

Findings of the study also indicated the learner's ability to use the internet which implied their familiarity with using technology. However, this is negatively influenced by bandwidth issues such speed and network interruptions. To combat the problem libraries should own autonomous broadband internet servers to eliminate interrupted internet access and ensure continuous maintenance on them.

Furthermore, out of the fourteen reliable factors that may influence the effective use of digital libraries, the study found eight to be significant, which implies that they positively influence the user of digital libraries. The results further highlight that education and training of users and complexity were the most critical factors, followed by awareness of digital libraries, technical support, relative advantage, learner's attitude, learners trust in resources and systems performance. Based on the findings, the proposed model was then validated with its related hypothesis.

Universities offer courses that support relevant and sustainable technologies which are transferable and applicable to different spheres of curriculums. These technologies enable learners to access high quality digitalized resources that are in support of achieving their performance and academic goals. When these technologies are not utilised optimally, it results in universities losing on their investments. In order for universities to maximize and gain profit on investments they should provide sustainable and adequate resources to users.

LIMITATIONS

Participant's demographics were only analyzed for frequency reporting and were not included in the final analysis. This might have impacted on the prediction of the framework as moderating effects of the demographics were not included. More so, individual's perceptions change with time hence moderating effects could have shown the trends of change if they had been included in the final analysis.

Management needs to increase of ICT network and bandwidths to ensure high access speed of digital libraries. Provide adequate training, awareness programs and increase marketing strategies of digital libraries that goes beyond just library orientation.

There should be collaboration between instructors and librarians to encourage usability of digital libraries. This could be accomplished through assigning learners with projects, assignments and group work that's more research-based to encourage and motivate them to use digital libraries. Continuous learning programs for librarians are required to ensure upgrade of knowledge and skills in order to provide assistance to learners to encourage digital library usage. Developed digital libraries systems should be of high quality, easy to use and very flexible to adjust to technology changing demands.

RECOMMENDATIONS

This study was conducted in a developed country South Africa where ICT infrastructure and level of awareness of digital libraries is minimum as compared to that of developed countries. Findings of the study further indicated other factors such as complexity, relative advantage, learner's attitudes and trust of learners on digital libraries, systems performance, education and training of users to be impediments of effective usage of digital libraries. However, this does not limit other factors that might influence usage. As a result recommendations were made for future research.

The study recommends that future studies sought to incorporate demographics in the analysis of factors influencing effective use of digital libraries in developing countries universities.

This study focused on learners of one university in South Africa. Although, participants represented the majority of digital library users, future research can generalise these findings to other samples such as both academic and support staff members and also a comparative study could be carried out on the same subject between universities to include more participants.

REFERENCES

Adegbore, A.M., 2011. University faculty use of electronic resources: A review of the recent literature. PNLA. Q., 75: 1-7.

Adeniyi, A.N. and B.A. Ajiboye, 2013. User education program as determinant of electronic information resources usage in Nimbe Adedipe University Library, Nigeria. Electron. Lib., 31: 244-255.

Al-Muaythir, A., K. Alnafjan and L. Al-Kwai, 2014. Interactive engagement capabilities as an indicator of E-learning systems' usability. Proceedings of the 7th International Conference on Advances in Computer-Human Interactions (ACHI'14), March 23-27, 2014, IARIA, Barcelona, Spain, pp: 121-126.

Bashorun, M.T., A. Isah and M.Y. Adisa, 2011. User perception of electronic resources in the University of Ilorin, Nigeria (UNILORIN). J. Emerging Trends Comput. Inf. Sci., 2: 554-562.

Chandel, A.S. and M. Saikia, 2012. Challenges and opportunities of E-resources. Ann. Lib. Inf. Stud., 59: 148-154.

Dhanavandan, S. and M. Tamizhchelvan, 2012. An evaluation of E-resources in academic libraries in Tamil Nadu. J. Emerging Trends Comput. Inf. Sci., 3: 421-426.

Dukic, D., 2013. Online databases as research support and the role of librarians in their promotion: The case of Croatia. Lib. Collect. Acquisitions Tech. Serv., 37: 56-65.

Emwanta, M.G. and K.I.N. Nwalo, 2013. Influence of computer literacy and subject background on use of electronic resources by undergraduate students in universities in South-Western Nigeria. Intl. J. Lib. Inf. Sci., 5: 29-42.

Gakibayo, A., J.R. Ikoja-Odongo and C. Okello-Obura, 2013. Electronic information resources utilization by students in Mbarara university library. Lib. Philosophy Pract., 1: 1-26.

Hong, S.N. and H.T.H. Nhung, 2012. Users' searching behaviour in using online databases at Vietnam National University-Ho Chi Minh City. Lib. Manage., 33: 458-468.

Isah, A., A. Mutshewa, B.C. Serema and K.J. Bwalya, 2014. The adoption and usage of Digital Library resources by academic staff in Nigerian universities: A case study of University of Ilorin. J. Lib. Inf. Sci., 1: 1-5.

Kwadzo, G., 2015. Awareness and usage of electronic databases by geography and resource development information studies graduate students in the University of Ghana. Lib. Philosophy Pract., 1: 1-28.

Makori, E.O., 2015. Micro factors influencing use of electronic information resources among postgraduate students in institutions of higher learning in Kenya. Lib. Hi Tech News, 32: 18-21.

Nasreen, N. and G.A.A.A. Alawi, 2011. Impact of digital library and internet Technology on learner's usability and satisfaction. Proceedings of the 2011 IEEE International Conference on Technology for Education (T4E'11), July 14-16, 2011, IEEE, Chennai, India, ISBN:978-1-4577-1521-1, pp: 128-135.

Nemati, A.L. and F. Babalhavaeji, 2013. Investigating the awareness and ability of medical students in using electronic resources of the integrated digital library portal of Iran: A comparative study. Electron. Lib., 31: 70-83.

Nenty, H.J., 2009. Writing a quantitative research thesis. Intl. J. Educ. Sci., 1: 19-32.

Nisha, F. and N. Ali, 2012. Awareness and use of E-journals by IIT Delhi and Delhi University library users. Collect. Build., 32: 57-64.

Rioux, K., 2017. Teaching social justice in an information literacy course: An action research case study. Qual. Quant. Methods Lib., 1: 23-30.

Rosa, I.B.D. and D.R. Lamas, 2013. Building and using digital libraries in the developing world. Educ. J., 2: 192-202.

Shidi, H. and R. Terna, 2013. The significance of electronic resources and digital library theories for skills development of library staff in Nigeria. Lib. Philosophy Pract., 1: 1-14.

Turan, F. and O. Bayram, 2013. Information access and digital library use in University student's education: The case of Ankara University. Procedia Soc. Behav. Sci., 73: 736-743.

Zabed, A.S.M., 2013. A survey of students' use of and satisfaction with university subscribed online resources in two specialized universities in a developing country. Lib. Hi Tech News, 30: 6-8.

Zhang, L., P. Ye and Q. Liu, 2011. A survey of the use of electronic resources at seven universities in Wuhan, China. Program, 45: 67-77.