Internet-Based Information Technologies Access and Use by Postgraduate Students for Information Provision, Kibabii University Library, Bungoma County, Kenya

Wamalwa Lucas Wanangeye
Mount Kenya University Mombasa Campus, Kenya
Corresponding Author

DR. Maina
Kenyatta University

Martha Thuo
Murang'a University of Technology Kenya

Abstract:- In order to enhance the delivery of its services, the Kibabii University (KIBU) library has incorporated information communication technologies (ICTs) into all of its functions. In order to guarantee that postgraduate students, have access to academic information and other associated services, KIBU management has made a sizable investment in offering internet-based information technology. The internet-based information technologies are underutilized, according to KIBU studies conducted in the past. The purpose of this study was to evaluate how postgraduate students use internet-based information technologies to access academic content and to propose a model for enhancing postgraduate students' access to and usage of internet-based information technologies. The objectives of the study were to: assess the internet-based information technologies available; determine perceptions and attitude of postgraduate students towards internet-based information technologies; determine the awareness of training programs; and examine postgraduate student's information needs on the internet-based information technologies. The study was guided by Davis's (1989) Theory of Technological Acceptance (TAM). Some quantitative research approaches were combined with qualitative research methodologies. The descriptive research approach was employed to help measure data trends and compare variables as it aims to accurately and systematically describe a situation, phenomenon or population. Slovin's technique was used in conjunction with basic random sampling to identify 316 postgraduate students as informants. Semi-structured questionnaires were used to gather the data, along with observation. Quantitative data was analyzed using descriptive statistics and displayed using frequency distribution tables and bar charts, while qualitative data was analyzed thematically based on the objectives and study questions. Postgraduate students used a range of internet-based information technologies (IBITs), had restricted access to computers and the internet, and when provided help, had a good attitude toward utilizing IBITs, according to the study's findings. Additionally, they had taken training courses for libraries. The study finds that, despite the presence of a sufficient ICT infrastructure and a variety of IBITs at the KIBU library, difficulties have prevented their efficient use of the IBITs. Increased marketing efforts, ongoing ICT and information skills training, and improvements to internet facilities and infrastructure are among the proposals given.

Keywords:- *Access, Information Seeking, Information Need, Internet-Based Information Technologies.*

I. INTRODUCTION

In the past, students and library personnel would interact face-to-face in a library setting to access and use information. However, the development of ICTs has greatly changed the pattern and the supporting library services. The use of internet-based information technology is one of the key support systems determining the quality of the internet-based information obtained in libraries. Compared to conventional students, who are mostly on regular mode, most postgraduate students choose to learn in the evening and online. This makes it difficult to help postgraduate students access and use the internet-based information technologies that are available.

The difficulty of assisting postgraduate students with internet-based information technologies has prompted several university libraries, like the KIBU library, to take action. The gap between library services and students has been shortened by internet-based information technology. The KIBU library is now working to better serve its postgraduate students, teachers, and research community by enhancing its resources and service offerings. Offering an electronic library (e-library) collection is one of the methods. There are many different electronic materials and services available at the library. Since the library system offers internet-based information technologies that may be accessed inside the library or remotely, every student has an opportunity to access these resources.

Today, effective learning and teaching require the ability to access and use internet-based information tools. The majority of kids today are digital smart, however they may not be information savvy (Wambilyanga, 2006). Students may struggle to choose the best websites or sources of information while conducting searches for specific pieces of information. Students need ICT and information skills to function in the information society. It comprises the capacity to use technology as a tool for information gathering, analysis, organization, and communication. Students must learn and hone the skills required to take use of the expanding array of technological resources.

Responding to the current problems brought on by the emergence of a knowledge-driven society, globalization, and the internet, where knowledge has no boundaries, is a priority action for change in the delivery of postgraduate students at KIBU. Information services and ICT management abilities would be needed for this. In order to keep up with these trends, postgraduate students employing internet-based information technologies should ideally have the skills and knowledge required to use the technologies efficiently. Postgraduate students' access to and usage of information for academic purposes may change as a result of internet-based information technology. However, if other necessities like infrastructure (electricity, tools like computers and the internet), proper content of information, and ICT expertise and abilities of users are not addressed, simply having access to a computer does not convert to its usage in the acquisition of information.

Studies have shown that only a tiny part of the e-library services are really used, despite the fact that KIBU management makes a major investment in them to guarantee that students have access to academic information and other associated services (Ongori & Mburu, 2010). Low utilisation of internet-based information resources was mentioned as a concern to library management in the KIBU Library Strategic Plan report from 2010. Given the potential advantages internet-based information resources may offer to students, and the fact that KIBU has one of the strongest ICT infrastructures in the area, one may anticipate greater adoption of internet-based information resources.

Given this context, the goal of this study was to find out how postgraduate students are currently using internet-based information technology to access academic resources at the KIBU library. The need to understand how postgraduate students use internet-based information technologies to access academic information and to use this knowledge to suggest strategies for better internet-based information technology utilization in accessing academic information arises from the ongoing process of continuous development of internet-based information resources.

II. LITERATURE REVIEW

According to a study by Madhusudhan & Nagabhushanam (2012), libraries began utilizing the Machine Readable Cataloguing (MARC) format in the middle of the 1960s. Following the development of MARC, the Online Public Access Catalogue (OPAC) quickly replaced the library card catalogue, which served as the gateway to the collection, according to Maness (2006) in the middle of the 1980s. In the late 1980s, bibliographic databases were made available, and CD-ROM databases were created. At the beginning of the twenty-first century, the popularity of online databases and the internet led to the emergence of electronic books and periodicals.

Bejune (2007) examined how university academic staff use and incorporate electronic information services into their work in a study conducted at Leeds Metropolitan University. To conduct the study, a survey was issued to 200 university workers drawn at random from a stratified sample. Total responses returned were 101. There was also a qualitative study done in the research. Age, gender, and faculty demographics; perceived IT literacy of staff; frequency of use of various university-provided electronic information services by academic staff; and perception of student use by academic staff were the four main areas of the study. The study also examined a number of additional topics, including how academic staff at universities gather information for their work, what they do with it, how comfortable they are using electronic information services, any barriers to use, and how much academic staff incorporates those services into students' learning. Finally, the research revealed that, despite being the most widely used information source, a variety of factors influence people's decisions to use the internet rather than subscription-based services. Because it is simple to use and yields quick results, the internet is commonly used by university personnel, especially those with low information technology abilities. People who are comfortable with subscription-based services and are aware of them continue to favour online access.

An insightful study on information technology utilization in India's central libraries was conducted by (Kadyan & Singroha, 2014). Now accessible is the survey's insightful analysis on the state of information technology use in Indian libraries. According to the survey, university libraries now manage their book holdings using information technology. It has grown into a powerful tool for controlling typical library functions and services. The study found that libraries are increasingly adopting information technology. The study also showed that people are aware of recent developments that affect final consumers. Despite the fact that the acquisition of internet connectivity is a substantial improvement, Patel (2012) research of six university libraries found that these libraries. They concluded by arguing that, despite the negative perception of information technology use in Karnataka, library users and staff can access more up-to-date information with basic information technology literacy, enhancing academic libraries'

effectiveness and efficiency and moving the entire institution into the information age.

III. METHODOLOGY

This study used a quantitative methodology. Quantitative methods place a strong emphasis on precision measurements, statistical, mathematical, or numerical analysis of data gathered through polls, surveys, and other types of research, as well as the manipulation of statistical data that has already been generated using computational techniques.

The respondents received questionnaires via a variety of delivery mechanisms. With the assistance of library employees, a direct approach was employed to distribute the questionnaires to responders. The researcher with the help of library staffs briefly introduced the topic to the respondents as they distribute questionnaires. After filling the questionnaires, the respondents were advised to drop the completed questionnaires at the library's circulation desk.

IV. RESULTS AND DISCUSSIONS

A. Response Rate

Although all of the questionnaires that were given to graduate students were promptly returned, the response rate for the respondents was 98%. It was obvious that most graduate students 130(42%) who chose educational management as their preferred degree program were active users of internet-based information technology. Following this were students taking curriculum instructions 60(19%), guidance and counselling 45(15%), and educational planning 75(24%) respectively. The majority of postgraduate students 251(81%) using internet-based information technologies at KIBU are Postgraduate Diploma graduates, it is evident from the level of study.

B. Types of Available Internet-based Information Technologies Availability

Academic libraries around the world are benefiting from an increase in the accessibility and usability of internet-based information technology. This study has demonstrated that the KIBU library has access to internet-based information technologies such internet browsers, data bases, Internet Protocol (IP), data formats, and the World Wide Web (WWW), among others. This study so shown that a variety of internet-based information technologies are easily accessible in the KIBU library for usage by students, researchers, and faculty members, much like in many other academic libraries throughout the country, region and the world.

➢ *Attitude and Perceptions Towards Internet-based Information Technologies*

The study's findings revealed that the majority of postgraduate students were aware of the IBITs' availability at the KIBU library but did not fully utilize them, despite the library's efforts to inform students of their availability. Knowledgeable postgraduate students heard about the IBITs during orientation meetings, primarily from the librarians.

All respondents thought that the information quality from internet-based information technologies was excellent. Positive sentiments of internet-based information technologies were commonly expressed by respondents, which is more optimistic. This implies that participants' overall opinions of internet-based information technologies were that they were simple to understand and use, especially when assistance was offered, were innovative and beneficial, and enhanced academic performance.

➢ *Availability of Training Programs*

This study has found that the KIBU library offers training programs designed to provide students new skills. The following is a summary of these training courses' learning goals:

- The KIBU library offers a variety of training programs, including library orientation, library orientation training, e-resources training, information literacy training, postgraduate development instructions, and project/thesis based instructions.
- While some students have not, some have received training.
- Postgraduate students' competence levels are insufficient for properly utilizing internet-based information technologies at the KIBU library.
- The majority of students attended training sessions, but research from postgraduate students found that the KIBU library's training programs are ineffective.
- User training is crucial because it increases the accessibility and usage of electronic resources, ensures accurate referencing, boosts the quality of students' projects, and decreases individual user inquiries.

➢ *Information Needs and Seeking Behaviour*

The study's fifth objective was to identify the information needs of postgraduate students in accessing and using internet-based information technologies. The results showed that the majority of postgraduate students' information demands and information-seeking behavior was driven by academic needs, while a smaller percentage was driven by personal needs and social needs. This study's findings are comparable to those of Odero & Mutula, (2007)'s internet access in Kenyan university libraries study on students' information-seeking behavior, which found that 264 (63%) of their respondents needed information for academic purposes. The conclusions show that the majority of respondents' major information needs are primarily for academic purposes. The study found that instruction and direction were needed to help students access the internet based information technologies more effectively from a variety of devices.

➢ *Factors Influencing Access and Use of Internet-based Information Technologies*

The study's findings revealed that postgraduate students' main concerns related to technological infrastructure and access limitations, such as restricted access to PCs and the internet and slow internet connections due to insufficient capacity. When students try to download articles or conduct information searches but the Internet is slow, some of them give up, which has an impact on usage.

The difficulties brought on by power interruptions annoy students who are trying to download articles. Additional obstacles to their utilization include a lack of awareness of the presence of electronic resources, the limited accessibility of internet-based information technology, a lack of essential materials, and a lack of free time. Further investigation revealed that the university administration did not adequately encourage postgraduate students to take part in library orientation or training programs.

➢ *Issues and Solutions Experienced While Accessing and Using Internet-based Information Technologies*

According to the study's findings, insufficient computers, a lack of available space in the training facilities improper timing of the training sessions were some of the issues that contributed to the ineffectiveness of training programs in the KIBU library., a perceived lack of relevance of the training material, insufficient online training resources.

The research showed that students knew little about the internet-based information tools that are available in the library. The key reason why many of them weren't employing the IBITS was discovered to be this. By emphasizing its offerings on the university website, student mailing lists, and in booklets provided to students, it was suggested that the library may improve its awareness efforts. It was also recommended that the library keep promoting its services to academic workers.

ICT competency among postgraduate students lags behind the quick development of technology. Even those who asserted to have intermediate or advanced computer and internet skills need assistance in order to access and successfully use information from the internet and libraries. So that many graduate students could attend, graduate students requested that the library spend money on ongoing training sessions that allow for some degree of flexibility. The library was also asked to help with the development of online lectures and instructions on how to use internet-based information technology.

V. CONCLUSIONS

According to the study's findings on the various IBITs, postgraduate students were not making the best use of the internet-based information technologies at the KIBU library. The disconcerting discovery was that there was little access and use of the IBITs available, despite their being evidence of their use at the library.

The study's findings on awareness and perception of internet-based information technologies revealed that there was generally low awareness of their availability in the university library and low consumption, as well as an overall favorable view of these tools. Better awareness campaigns are required, it was determined, to reach many postgraduate students. Postgraduate students had a variety of options for learning about IBIT's accessibility, use, and availability in the university library. It is concluded that postgraduate students access and use the IBITs offered in the KIBU library differently. Reaching all postgraduate students with one way is no longer sufficient. By offering accessible and effective channels of communication, the KIBU library must lead campaigns aimed at increasing IBIT's access and use awareness in order to maximize IBIT's utilization. This partnership with tutors, supervisors, and lecturers is essential.

The findings further confirmed that training programs at the KIBU library exist to teach postgraduate students new skills. It is determined that the two main training programs offered in the KIBU library are orientation to the library and instruction in information literacy skills. A significant portion of the postgraduate students who participated in the survey admitted that the KIBU library's training programs are inefficient in helping students gain the skills necessary to efficiently access and streamline their usage of internet-based information technology.

Although internet-based information technologies (IBITs) are used to provide information to postgraduate students, the study found that these IBITs were not optimally utilized to obtain and utilize pertinent information for a variety of reasons. Access is only as good as the information that is available, the usability of internet-based information tools, and the network architecture that permits quick and simple connections (such as the number of computers and the availability of network systems). The study's findings indicated that insufficient supporting conditions prevented postgraduate students from using internet-based information technologies to access and utilize information from the KIBU library. To increase postgraduate students' acceptance and use of IBITs when obtaining academic information from the KIBU library, it is imperative that computer access, internet connectivity, and dependable electricity be improved. These factors must also be combined with ICT training and search skill development.

RECOMMENDATIONS

The adoption of internet-based information technology by postgraduate students to obtain academic content was hampered by a number of problems. These elements included the amount of student computers, the poor connectivity of the computers, and some broken machines. Based on the aforementioned considerations, the following recommendations were made to librarians, university administration, lecturers, decision-makers in government policy, and postgraduate students for promoting increased access and usage of IBITs for information provision for postgraduate students in Kenya:

A. *Recommendations to University Librarians*

➢ *Awareness and Publicity*

It is advised that internet-based information technology resources and services be extensively advertised and promoted in order to ensure that all university students and instructors are aware of what is available in the library and how to access relevant internet-based information

technologies. Developing cutting-edge public relations strategies that combine high- and low-tech methods.

Additionally, it is advised that the library make announcements about the availability of internet-based information technology for library users via the university website/library homepage, e-mails sent to students and employees, and notice boards in the library. To advance internet-based information technology, the library ought to consider the idea of giving Web 2.0 tools to students, such as blogs, Facebook, and RSS feeds.

➢ *User Education Programs*

In order to assist students in strengthening their capacity to get information, the significance of orientation trainings and library instruction should be raised. Efforts should be taken to ensure that the training has appropriate support from the faculties and university administration in order for students to participate.

More awareness efforts are needed to educate the university community on the importance of end-user ICT and information searching skills. The library staff should instruct and train the faculty, staff, and students on matters such as utilizing the library's online public access catalog, social media platforms, live video streams, video conferencing, group wikis, database searching, utilizing internet-based information technologies, and spreading awareness of library procedures.

It is crucial to provide postgraduate students with training since it allows them to learn about the library's resources and how to use them. Further education should be available in a variety of formats at the library. The library should plan special training sessions at crucial times so that many postgraduate students can attend with flexibility. Also, comments from students suggested that they desired teaching "on demand" so they could learn when and where it is most convenient for them. The location and styles of tutorial materials and handouts should be freely accessible to students.

➢ *Library Evaluation*

It is advised that the library conduct periodic evaluations and assessments related to access and use of internet-based information technology in order to closely monitor, improve understanding of, and evaluate the quality of library services and patron satisfaction. Regular review is necessary to understand how student demands and technical requirements are always changing.

➢ *Recommendation to University Administration*

The institution should supply the necessary ICT infrastructure by expanding the number of networked computers in the library and making sure that ICT facilities are routinely maintained. It is not possible to purchase enough computers for students due to conflicting demands that must be satisfied by the university budget. Hence, it is advisable to advise pupils to purchase their own laptops.

The connectivity and bandwidth of the internet must be improved. Students and educators should be able to access it anytime, anyplace, and with confidence.

The institution should ensure that there is assistance and technology. The institution should ensure that there is ongoing teaching for students utilizing ICTs, especially for setting up wireless networks on their laptops and dealing with other technical challenges.

➢ *Recommendations to Supervisors/Instructors*

Students should be encouraged by supervisors or professors to use the internet-based information tools offered in the KIBU library. They can suggest librarians to students who need help with search tactics or choosing databases to provide information.

➢ *Recommendations to Government Policy Makers*

Government agencies and educational institutions should improve the technological foundation for ICT use and acceptance. According to the report, the biggest obstacles blocking access to internet-based information technology are the absence of suitable bandwidth infrastructure, the high cost of internet access, and the shortage of computers. The relevant authorities should allocate enough money for the improvement of IT services.

➢ *Recommendations to Postgraduate Students*

Students should attend and participate in library orientation and skills training to increase their ability to access and use internet-based information technology. Students should practice the necessary skills so they can access ICTs to meet their academic information needs. To stay informed about new electronic resources or training announcements, they should routinely check the physical library or the university website.

In order to reduce inconveniences associated with accessing university computers, students should purchase their own laptops. Students with laptops should go to the ICT section of the library and use a modem from home or the university's wireless LAN to connect to the Internet there. They will improve internet-based information technology access and usage.

➢ *Proposed Framework for Improving Access and Use of Internet-based Information Technologies*

The primary goal of this study was to offer suggestions for ways to increase KIBU library patrons' access to and use of internet-based information technology. A framework has been provided in this study to solve the problems found, particularly those that affect how students access and use internet-based information technology.

Figure 1, which incorporates the theoretical perspectives of earlier studies that were mentioned in the literature review, represents the research framework for this study. The first set of variables considers both organizational context and individual characteristics. Previous studies have shown that a person's perceptions and attitudes toward access to, use of, and the effects of using

internet-based information technologies are significantly influenced by organizational support, information technology (IT) support, IT skills, and perceived complexity of using IT (Igbaria & Tan, 1997; Igbaria, Zinatelli, Gragg & Cavaye, 1997). The second group of variables, which is derived from the TAM and Theory of Reasoned Action (TRA), shows an individual's attitudes and beliefs that have an impact on behaviors (such the use of IBIT). You can think of the first and second sets of variables as IBIT's antecedents. The final set of variables details the frequency and intensity of IBIT use among university students, among other things. The influence of using IBIT is investigated in the final set of variables.

- *Organizational Factors and support*

Only two organizational factors—organizational support and IT support—are thought to be pertinent to this study, despite the fact that there are many organizational variables that may affect a person's perceptions and attitudes. Organizational support evaluates overall assistance from the instructor and the university. Sponsorship from the institution is crucial because it guarantees that the funds be set aside for accessing and using Internet-based information technology. Support from the instructor might encourage students to use Internet-based information technology more actively for discussions and assignments in the classroom.

- *Personal Perceptions and Attitude*

They consist of three components that were directly derived from the TAM and TRA: perceived usefulness (PU), perceived enjoyment/fun, and social pressure. PU assesses the benefits of using and having access to Internet-based information technology for academic objectives in this article.

- *Internet-based information technologies usage*

Frequency, intensity, use of diverse search tools and applications, and use for a variety of tasks are the usual four criteria used to assess this.

- *Internet-based information technologies impact*

The two main elements being examined are the impact on various learning components and the impact on possible job possibilities. The usage of learning resources, acquired abilities, motivation to study, and interaction with lecturers all have an impact on learning. Effect on future employment evaluates opinions about how the usage of Internet-based information technology in academic settings may affect prospects for work in the future.
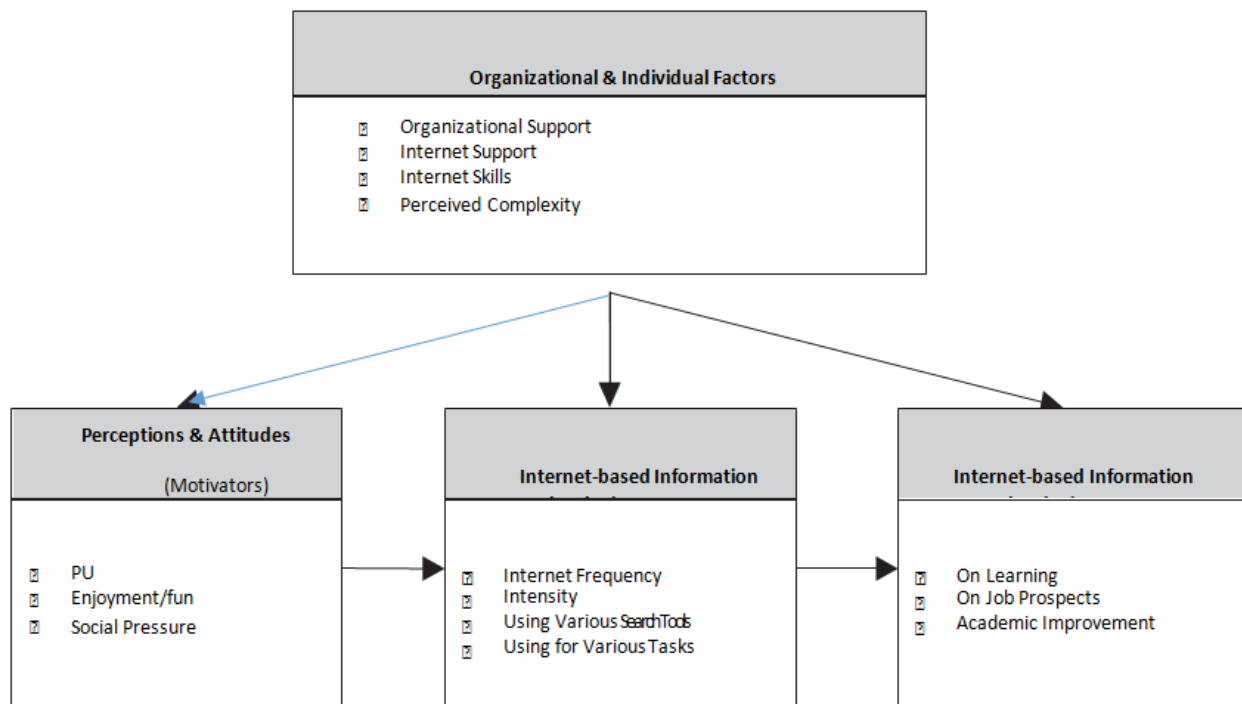

Fig 1: Proposed Framework for Improving Access and Use of Internet-based Information Technologies.

REFERENCES

[1]. Ajzen, I. 1991. "The theory of planned behavior". Organizational behavior and human decision processes, vol. 50, pp. 179-211.

[2]. Akande, S. O. (2011). Computer and Internet Facilities Use in Distance Education: A Survey of Sandwich Students of University of Ado-Ekiti, Nigeria. *Library Philosophy and Practice* (e-journal). Paper 452. Retrieved March 14, 2013 from http://digitalcommons.unl.edu/libphilprac/452

[3]. Al-Saleh, Y.N. (2004). Graduate Students' Information Needs from Electronic Information Resources in Saudi Arabia. *Electronic Theses, Treatises and Dissertations.* Paper 24. *Retrieved Nov.12, 2013 from* http://diginole.lib.fsu.edu/etd

[4]. Bejune, M. (2007). Wikis in Libraries. Information Technology and Libraries, 26(3), 26-38. doi:doi: 10.6017/ital.v26i3.3273

[5]. Butcher, N. (2001). *New Information and Learning Technologies in South Africa: Pitfalls and possibilities.* In Stilwell, C., Leach, A. & Burton, S. (eds). Knowledge, Information and Development: An African Perspective. School of Human and Social Studies, University of Natal, Pietermaritzburg.

[6]. Dang, H. T. & Nguyen, N. H. T. 2014. "An exploratory study of ICT use in English language learning among EFL university students". Teaching English with Technology, vol. 14, no. 4, pp. 32-46.

[7]. Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13(3),* 319-339.

[8]. Dolowitz, D. P. (2007). The big E: How electronic information can be fitted into the academic process. *Journal of Political Science Education, 3*(2), 177-190. Retrieved January 4, 2014 from doi:10.1080/15512160701338338

[9]. Haney, J. J., Lumpe, A. T., Czerniak, C. M., & Egan, V. 2002. "From beliefs to actions: The beliefs and actions of teachers implementing change." Journal of Science Teacher Education, vol. 13, no. 3, pp. 171–187. doi:10.1023/A:1016565016116

[10]. Harwell, M. R. (2011). Research Design in Qualitative/Quantitative/ Mixed Methods. In *The SAGE Handbook for Research in Education: Pursuing Ideas as the Keystone of Exemplary Inquiry* (pp. 147–182). https://doi.org/10.4135/9781412961288.n380

[11]. Igbaria, M., Zinatelli, N., Gragg, P. & Cavaye, A. L. M. (1997). Personal computing acceptance factors in small firms: a structural equation model. *MIS Quarterly*, 279–305.

[12]. Jaggen, K. E., Tallman, E. M. & Waddell, W. D. (1991). Library Services to Off-campus Sites: An Assessment Survey. In C. J. Jacob (Ed.), *The Fifth Off-Campus Library Services Conference Proceedings* (pp. 131-135). Mount Pleasant, MI: Central Michigan University.

[13]. Johnson, B., & Christensen, L. (2008). Educational Research: Quantitative, Qualitative, and Mixed Approaches. In *The Journal of Educational Research* (Vol. 102, Issue page 362). http://sfx.usask.ca/usask?url_ver=Z39.882004&rft_val_fmt=info:ofi/fmt:kev:mtx:journal&genre=unknown&sid=ProQ:ProQ:abiglobal&atitle=Educational+Research:+Quantitative,+Qualitative,+and+Mixed+Approaches&title=The+Journal+of+Educational+Research&issn=002206

[14]. Kadyan, S., & Singroha, R. (2014). Web 3.0 in Library services: An Utilitarian effect. Journal of Information Management, 1(2), 159-166.

[15]. Kasalu, S., & Bernard Ojiambo, J. (2012). Application of ICTs in collection development in private university libraries in Kenya. *Collection Building*, *31*(1), 23–31. https://doi.org/10.1108/01604951211199155

[16]. Keegan, D. (2008). The impact of new technologies on distance learning students. E-*learning and education*, issue 4. Retrieved July19, 2012 from http://eleed.campussource.de/archive/4/1422/

[17]. Kent, M. L., Carr, B. J., Husted, R. A., & Pop, R. A. (2011). Learning web analytics: A tool for strategic communication. *Public Relations Review*, *37*(5), 536–543. https://doi.org/10.1016/j.pubrev.2011.09.011

[18]. Kiondo, E. (2005). Monitoring and evaluating e-resource usage at the University of Dar es Salaam Library'. *INASP Newsletter,* 30: 5.

[19]. Kothari, C. (2004). Research methodology: methods and techniques. In *Vasa*. https://doi.org/http://196.29.172.66:8080/jspui/bitstream/123456789/2574/1/Research%20Methodology.pdf

[20]. Kothari, C. R. (2014). Research Methodology: Methods & Techniques. In *New Age International (P) Ltd*. https://doi.org/10.1017/CBO9781107415324.004

[21]. Liu, J. 2009. "A survey of EFL learners' attitudes toward information and communication technologies." English Language Teaching, vol. 2, no. 4, pp. 101-106.

[22]. Lwoga, E. (2012). Making learning and Web 2.0 technologies work for higher learning institutions in Africa. *Campus-Wide Information Systems,* Vol. 29 Iss: 2 pp. 90 – 107. Retrieved July 7, 2012 from http://dx.doi.org/10.1108/10650741211212359

[23]. Madhusudhan, M., & Nagabhushanam, V. (2012). Web-based library services in university libraries in india: An analysis of librarians' perspective. Electronic Library, 30(5), 569-588. doi:http://dx.doi.org/10.1108/02640471211275657

[24]. Maness, J. (2006). Library 2.0: The next generation of Web-based library services. LOGOS: The Journal of the World Book Community, 17(3), 139-145.

[25]. Maxwell, P. (2009). Web-based Information Systems (WBIS). Lecture notes. Pietermaritzburg: University of KwaZulu-Natal: Information Studies Programme. McBride, P. 2002. The school's guide to the internet. Bath: Bath Press. *Web-Based Information Systems (WBIS). Lecture Notes. Pietermaritzburg: University of KwaZulu-Natal: Information Studies Programme. McBride, P. 2002. The School's Guide to the Internet. Bath: Bath Press.*

[26]. Moyo. L. M. (2004). Electronic libraries and the emergence of new service paradigms. *The Electronic Library*, *22*(3), 220-230.

[27]. Mugwisi, T., Mostert, J., & Ocholla, D. N. (2015). Access to and Utilization of Information and Communication Technologies by Agricultural Researchers and Extension Workers in Zimbabwe. *Information Technology for Development*, *21*(1), 67–84. https://doi.org/10.1080/02681102.2013.874317

[28]. Muthoni, D. N. (2000). *Underutilisation of Internet Facilities at Universities A Case Study of Jomo Kenyatta Memorial Library (JKML) University of Nairobi and United States International University Africa (USIU A) Library. Compressed* (Doctoral dissertation, Makerere University).

[29]. Njuguna, P. K., Ritho, C., Olweny, T., & Wanderi, M. P. (2012). Internet Banking Adoption in Kenya: The Case of Nairobi County. *International Journal of Business and Social Science*, *3*(18), n/a. http://search.proquest.com/docview/1127690254?acco untid=27292

[30]. Odero, D., & Mutula, S. M. (2007). Internet Access in Kenyan University Libraries. *Malaysian Journal of Library and Information Science*, *12*(1), 65–81. https://doi.org/10.1108/00242530710760364

[31]. Ongori, H. & Mburu, P. T. (2010). Usage of information Communication Technologies (ICTs) in information seeking amongst University students in Botswana. Journal of Business Management and Economics Vol. 1(1). pp. 018-025.Retrieved February 16,2013 from http://www.e3journals.org/JBME

[32]. Patel, U. (may, 2012). Libraries: An Essential Tool for the Advancement of Knowledge Resources & Research in Recent Era. Indian Journal of Research,1(5), 2013-215.

[33]. Pearce, K. E., & Rice, R. E. (2013). Digital Divides From Access to Activities: Comparing Mobile and Personal Computer Internet Users. *Journal of Communication*, *63*(4), 721–744. https://doi.org/10.1111/jcom.12045

[34]. Rogers, E. 2010. The diffusion of innovations. 5th edn. New York: Free Press.

[35]. Sahin, I. 2006. Detailed review of Rogers' Diffusion of Innovations Theory and educational technology-related studies based on Rogers' theory. The Turkish Online Journal of Educational Technology, vol. 5, no. 2, pp. 14-23.

[36]. Singh, KP, Kumar, M, Khanchandani, V. (2015). Information needs and information seeking behaviour of foreign students in University of Delhi: A survey. *International Journal of Knowledge Content Development & Technology 5(2).25–43*

[37]. Tahir, M., Mahmood, K., & Shafique, F. (2008). Information needs and information- seeking behavior of arts and humanities teachers: a survey of the University of the Punjab, Lahore, Pakistan. *Library Philosophy and Practice (e-journal)*, 227.

[38]. Zarei, H., & Abazari, Z. (2011). A study of web-based services offered by asian national libraries. The Electronic Library, 29(6), 841-850. doi:http://dx.doi.org/10.1108/02640471111188051