

Reliability of Power supply and utilization of online Library Services by Distance Learners at the University Of Nairobi, Kenya

Author's Details:

⁽¹⁾ Dr. Gor Ochieng Peter Ph.D. ⁽²⁾ Benedict Ochieng Yongo

⁽¹⁾⁽²⁾ Directorate of Open and Distance Learning, Department of Curriculum, Instruction and Media, Rongo University, Kenya.

Abstract

The purpose of this study was to investigate the influence of demographic and institutional factors on the utilisation of online library services by distance learners of the University of Nairobi. Specifically, the study aimed at achieving one objective: viz. Examine the influence of reliability of power supply on Utilisation of Online Library Services by Distance learners at the University of Nairobi. The study was anchored on the positivist research paradigm. Descriptive survey and correlation research designs were adopted for this study. Data were collected using self-administered questionnaires and interview schedules. The target population consisted of 1671 learners in the School of Open and Distance Learning and 14 librarians found in the University of Nairobi namely Kikuyu Campus, Chiromo Campus and the main library Campus (The Jomo Kenyatta Memorial Library). The sample size was 312 respondents. A pre-test study was conducted using 31 learners and 1 librarian. This constituted 10% of the study sample. The researcher tested for the inter-item reliability of the instruments using Cronbach's Alpha and results ranged from 52.5%-95.8% for learners' questionnaires while that of librarians recorded 69.8%. Data analysis were done using frequency counts, the mean and standard deviation while hypothesis was tested using multiple linear regression analysis; One Way Analysis of Variance (ANOVA) was at 0.05 level of significance. The finding indicated that there is a significant relationship between internet connectivity and Utilization of online library services at the University of Nairobi. The results showed a coefficient of correlation $r = 0.309$, which suggests a positive relationship between variables; $R^2 = 0.137$, which implies a positive linear correlation. The significance of change also referred to as the p -value is $p = 0.019$. This value is pegged on the study putting the limit of 0.5 or 95 percent degree of the confidence interval. Since p -value $0.019 < 0.05$, the investigator rejected the null hypothesis and accepted the alternative that there was a significance relationship between Internet connectivity and utilisation of online library services at the University of Nairobi. The study recommends that all distance learners irrespective of their gender and age should be enlightened to use online library services provided by the University of Nairobi. In order to create awareness, there is a need to engage distance learners in activities that give practice and require them to demonstrate their competence in evaluating the quality of information they use. The outcome of this study may act as a basis for policy formulation for both the University of Nairobi and the government of Kenya regarding Distance Learning Programmes. Further research may be carried out to ensure that these demographic and institutional factors are tested in other study samples found in other public universities in Kenya.

Keywords: Internet connectivity, Institutional Factors, Distance Students, Utilization, Online Library Services

INTRODUCTION

Distance learning has gained popularity in the recent times among universities in the world. This is due to the fact that universities are able to control the number of learners enrolling for the regular programmes (Farahani, 2003). Effective implementation of distance learning programme calls for utilisation of library resources and services, audio-visual media and application of information communication technology (Naidu, 2006). These resources and services are important because they can be used to communicate to learners in distance locations and at the same time enhancing effective coordination of sessions with groups or individual learners. Similarly, learners have the opportunity of getting information from print media and online library services while out of session (Naidu, 2006). This is to ensure that distant learners are adequately equipped with the right course

content and examination techniques. Distance learners are called upon to make maximum utilisation of study centres to enable them to read and search for information online (Sacchanand, 2002).

The library is thus the focal point of any centre of learning because it facilitates reading, inquiry and independent study by providing relevant support services and resources for teaching and learning (Candela, Athanasopoulos, Castelli, El Raheb, Innocenti, Ioannidis & Katifori, 2011). The library usually contains information services in different forms such as print media, electronic media, and the Internet hence these services are important in supporting distance learning programmes. Most researchers in distance learning point out that the digital library is an important component of distance learning programmes (Caspers, Fritts & Gover, 2001).

In a related study by Ganiyu (2013) on influence of demographic factors on use of online library resources by undergraduate students in two private universities in Nigeria, the findings indicated that University learners patronise their university libraries to search and retrieve relevant and up-to-date information in electronic or online format for effective teaching, learning and research purposes. The study further describes university library patrons as; undergraduate learners, postgraduate learners, researchers, information professionals, staff and other users from outside the university who intend to use the university library. Distance learners are expected to read further beyond class instructions to collect and retrieve information for classwork, assignments, seminars term papers, dissertations, theses and projects, and this information could be retrieved from online library resources (Ganiyu, 2013).

Online library services have emerged as an important component of the research process for distance learners (Owusu-Ansah & Bubuama, 2015). This is because once the learners have conducted basic research such as consulting lecturers or checking at references in their reading lists they turn to online literature to initiate their research process. Notably, online library resources and e-resources have become areas of interest in higher education. As a result of this development, university libraries worldwide have embraced the regular application of Internet resources, search engines and use of e-mail services as part of their normal communication process (Kindilchie & Sammarine, 2008; Owusu-Ansah & Bubuama, 2015).

The use of the online database is usually faster than searching for the information in the print format more so when looking for the information in the archives. Online library services are more direct especially when one wishes to apply combinations of words to search for several files at ago, a task that can be achieved more easily than when using printed materials (Candela, et al., 2011). Online resources can also be downloaded, printed and search outcomes saved for future reference and at the same time flexible and can be updated more often than printed tools. Distance learners have the opportunity of accessing online library services from their distant locations away from the university library through the dial-up access (Dadzie, 2005; Candela, et al., 2011; Owusu Ansah & Bubuam, 2015).

The other advantages of employing online library resources and services consist of; regular accessibility to online resources, the users have got the opportunity of operating from any location, availability of information in one place, numerous resources can be provided and finally, it creates room for easy access to information (Candela, et al., 2011; Owusu-Ansah & Bubuama, 2015). Learners' usage of online library services is informed by the fact that these services enhance the quality of the research work by enabling them to take less time in doing research while taking more time in the writing of their research papers. An online library service also increases learner's ability to obtain more services, a diversity of services, and more current and up-to-date services (Mwatela, 2013).

The advent of online technology has made it possible for universities to come up with different ways of restructuring their collections and information services in order to embrace the new developments. In responding to the new developments, university libraries have adopted the use of online information services, Information

and Communication Technology (ICT) to meet the various demands of library users. Distance learners in spite of their demographic characteristics such as age, gender and religion are encouraged to explore the use of online library resources and services in order to supplement their academic activities (Islam, 2011; Ganiyu, 2013; Nkamnebe, Udem, & Nkamnebe, 2014; Owusu-Ansah & Bubuama, 2015).

Globally, people are increasingly facing higher competition than ever before. Different from any other times in human history, this global competition is intensively knowledge based. CT in education has made significant progress in China over the last two decades in the higher education process and is highly applied in distance based education by the executing agencies, targeting learners and goals to be achieved. The ability of computer technologies to change university teaching and learning is becoming an acceptable norm by education technologists (Finger, 2007; Candela, et al., 2011).

The application of ICT in education is becoming a major contemplation as developing countries concentrate on improving the quality of education. In Africa, for example, Aiona (2008) conducted a study in four main institutions offering distance learning programmes namely, the Open University of Tanzania (OUT), University of Nairobi (UoN), University of South Africa (UNISA) as well as the University of Botswana (UoB). The purpose of the study was to find out the availability of library and information support services for distance learners in those institutions. The findings revealed that there were no library support services in the said universities except for UNISA, which had embraced the most current information technology in providing services to distance learners; thus, library collection could be readily accessed through the Internet (Aiona, 2008).

A little earlier, Kavulya (2004) examined library services provision for distance learning among selected universities in Kenya, including Kenyatta University (KU), Africa Virtual University (AVU) as well as the United States International University – Africa (USIU-A), all based in Nairobi, Kenya. The findings revealed that the learning, as well as information services available in the institutions' libraries, were inadequate and limited; thus, could not be accessed easily by distance learners. However, at AVU, the use of modern technology had taken root since both the catalogue and digital library were available on the Internet to all learners and other library users. Notably, AVU provided a digital library in the form of e-journals-books and above all, online archives. On its part, USIU-A had also made available its 6,000 electronic journals with full text on the Internet to its users (Kavulya, 2004).

Demographics and institutional factors usually offer important clues as to what factors promote distance learners' utilisation of online library services. For example, Islam (2011) conducted research on effects of demographic factors on e-learning effectiveness in Malaysian institutions of higher learning and found that learners' gender and level of education are key elements of e-learning programmes in education. The findings further revealed that learners with broad educational backgrounds had wider knowledge on application of technology and its merits in realising excellent academic achievement because this category of learners are equipped with the latest technological innovations and are up to date with computer usage and applications. Similarly, learners ought to be more computer literate in order to enhance the exploration of the Internet and update their level of understanding in information through e-learning (Islam, 2011).

Similarly, Okiki and Asina (2011) assessed factors influencing use of electronic information sources among postgraduate learners in six Nigerian universities, including University of Ibadan, University of Lagos, Onabisi Onabanjo University, gun State; Federal University of Technology, Akure University of Agriculture and Lagos State University, the findings showed a positive correlation between utilisation of electronic information and the key concepts, which included learners' background characteristics and institutional factors (Okiki & Asina, 2011).

Various studies have examined the influence of institutional factors on the utilisation of online library and information sources among learners in institutions of higher learning, including distance learners. For instance,

Alisona, Kiyingib, and Baziraake (2012) reported a significant correlation between utilisation of medical e-resources and poor Internet connectivity; while Owusu-Ansah&Bubuama (2015) identified slow access to Internet facilities as a key institutional factor constraining the utilisation of online library services by distance learners at the University of Ghana. Other institutional factors influencing utilisation of online library services include inadequate number of functional computers in relation to the number of learners (Alisona, et al., 2012); as well as inadequacy of ICT infrastructural facilities included shortage of computers, lack of affordable online access by learners, as well as absence of in-depth ICT skills and information searching skills among library staff (Watts &Ibegbulam, 2006). The utilisation of online information sources is also affected by frequent power outages, inadequate assistance by library staff, lack of user support systems, as well as lack of subscriptions to some databases (Molefi, 2008; Alisona, et al., 2012).

In Kenya, the ICT Sector Policy Guidelines notes that “inadequate implementation of ICT policies, regulatory intensions to support rapid development, deployment of ICT infrastructure, limited support for research and inadequate support to ICT support are some of the key challenges facing ICT in Kenya” (the Republic of Kenya, 2013).Still, in Kenya, a study conducted by Githinji(2014) on factors influencing University of Nairobi Master of Education degree learners’ access and utilisation of ICT facilities, reported a low utilisation of scholarly electronic publications among postgraduate learners, particularly due to inadequate awareness about the availability of e-resources.

Despite enormous efforts made by various institutions to place information and communication as a key component of university teaching and learning, it emerges that both learners and faculty members are unable to make use of online resources and services. While this is usually attributed to the diversity of operational deficits on the part of learners, faculty, and universities, Githinji (2014) underscores the need for more research aimed at unearthing underlying factors that contribute to this kind scenario in Kenyan institutions of higher learning. It was in this context that the current study was an attempt to critically analyse the influence of demographic and institutional factors on utilisation of online library services by learners enrolled in the distance learning programme of the University of Nairobi.

Statement of the problem

Distance learners just like on-campus learners are entitled to information in all formats other than paper or print media (Nyambogo, Ongondo, and Ongus, 2004).The study further reiterates that despite this position, some distance learners lack exposure to computers while others possess poor attitude towards Information Communication Technology. The records and statistics available at the University of Nairobi library reference section at the time of conducting this study indicated that only about 22% of distance learners had visited the online library sites while the majority of them 78% relied on print based materials in the other library section (JKML,2015).This could probably explain complaints raised by lecturers, that during the presentation of their term papers and assignments, majority of distance learners do not use electronic resources to support their academic work despite the fact that the University of Nairobi library subscribes to a number of these services (Githinji,2014).

The University of Nairobi established an infrastructural ICT Centre in March 2002 which was tasked with the responsibility of offering quality and cost effective Communication Technology that meet the changing learning, teaching and research and management requirements of the University. Currently, the registration of courses and selection of degrees, journals, and books as well us abstracts from the University are all online (Lumbano, 2004, Githinji, 2014). Despite this positive move, the University is faced with serious challenges that range from ; lack of online courses, some basic facilities like computers are lacking in the Extra-Mural centres and still, some of the staff and learners who are supposed to use to use ICT and online library services have limited knowledge of accessing these facilities and services.

This implies that about the 3,406 learners who were enrolled in the School of Open and Distance Learning during the April Intake for the 2013/2014 academic year were disadvantaged in accessing ICT facilities and online library services provided by the University thus hampering their effective utilisation of these services for learning purposes (Mwatela, 2013). Demographic and Institutional factors are often critical in giving clues as to what factors constitute to learners failure to embrace the use of ICT infrastructure and online library services (Mwatela, 2013, Githinji, 2014). It is in this context that this study set out to investigate the influence of demographic and institutional factors on the utilisation of online library services at the University of Nairobi.

Consistency of Power supply and Utilization of Online Library Services

Researches done on the influence of reliability of power on the utilisation of online library services reveal a positive correlation. For instance, a study by Alison, Kiyingi, and Baziraake, (2012 (2012) on factors affecting utilisation of electronic health information services in Universities in Uganda, the results revealed that frequency power outages were a key factor influencing utilisation of medical e-resources in Ugandan universities. Notably, none of the three institutions involved in the study had alternative sources of power to fall back to in events of a power outage. Whereas the previous study was done among the medical students in Ugandan universities, the present study was carried out among the education students at the University of Nairobi in Kenya. This was the knowledge gap that the present study filled.

In a related study by Ingutia and Dick (2010) on the comparative analysis of the use of electronic resources by undergraduate students at two Kenyan universities, the findings identified incessant power outages on campus as one of the infrastructural issues affecting utilisation of e-resource at the University of Eastern Africa Baraton. Power outages affected the LAN Internet connectivity, causing the frequent system to break down and damaging computers in the library. While the previous study was done in two universities in Kenya, the present study was a case study of the University of Nairobi in Kenya thus the gap in knowledge that called for research in this area.

Chimahand Nwokocha (2013) conducted an empirical study of motivation; challenges and Strategies in the use of electronic information resources by postgraduate library user in Southeast Nigeria Federal Universities. The findings revealed frequent power outage as a key barrier to access to e-resources. Whereas the previous study was done in Nigeria, the present study was done in Kenya hence the prevailing gap that this study filled.

In a similar study by Asuni (2011) on use of electronic information sources by postgraduate students in Nigeria, the findings indicated that slow internet connectivity, incessant power outage and lack of IT skills are the problems that affect the use of electronic resources. The previous study was done in Nigeria Federal universities with postgraduate students as the main respondents. The present study was conducted at the University of Nairobi with undergraduate students as the respondents hence the gap this study filled.

Ojokoh and Asaolu (2005) carried out a study on internet usage by students of the Federal University of Technology, Akure in Nigeria. The findings indicated that insufficient training slow internet connectivity and at the same time frequent power failure are problems that affect the electronic users. While the previous research was done at the Federal University of Technology in Nigeria, the present study was focused on the University of Nairobi in Kenya filling the gap in knowledge. Similarly, Ganiyu et.al (2014) and Ahmed (2013) in their studies have revealed that erratic power failure was a major challenge to student's use of electronic resources among the Nigerian Universities. From the empirical literature review, it is evident that inadequate research has been done in Kenya and more significantly among the distance learning students hence the call for the present study.

METHODOLOGY

The research paradigm employed in this study is the positivist approach. Positivism emerged as a paradigm in the 19th Century with Auguste Comte’s rejection of metaphysics and assertion that only scientific knowledge can reveal the truth about reality. The positivist paradigm asserts that real events can be observed empirically and explained with logical analysis. The study adopted a descriptive survey design. Orodho (2003) defines a descriptive survey as a method of collecting information by interviewing or administering a questionnaire to sample of individuals.

The study targeted learners enrolled for Bachelor of Education Arts (B.Ed. Arts) and Bachelor of Education Science (B.Ed. Science), in the School of Open and Distance Learning (ODL) of the University of Nairobi. Learners who were in their third year of study during the April intake of 2013/2014 academic year were selected for the study. This group level was chosen owing to the length of time they had taken at the University thus would provide the relevant and necessary information required by the researcher. Records from the two programmes indicated that B.Ed. Arts had a total of 1,578 learners out of which 848 were males and 730 were females. The programme of B.Ed. Science had 93 learners, which included 58 males and 35 females.

Table. 1: Population of third year learners (April intake 2013/2014) and librarians

Category	Male	Female	Total
B.Ed. (Arts)	848	730	1578
B.Ed. (Science)	58	35	93
Librarians	09	05	14
Total	915	770	1685

The sample size for this study was determined by using the formula, which was developed and advanced by Krejcie and Morgan (1970), as cited in Isaac and Michael (1981).

$$S = \frac{\chi^2 NP (1 - P)}{d^2 (N - 1) + \chi^2 P (1 - P)}$$

In which,

S = required sample size

N = population

P = population proportion that for table construction has been assumed to be 0.50, as this magnitude yields the maximum possible sample size required.

d = the degree of accuracy as reflected by the amount of error that can be tolerated in the fluctuation of a sample proportion about the population proportion. ρ-the value of d being 0.05 in the calculation for entries in the table, a quantity equal to $\pm 1.96\sigma$

χ^2 = table value of chi square for one degree of freedom relative to the desired level of confidence, which was 3.841 for the 0.95 confidence level represented by entries in the table in Appendix III

Inserting the required information into the formula gives: -

The sample size for learners

N = 1685

P = 0.50

D = 0.05

χ^2 = 3.841

Substituting the above values

$$= \frac{3.841 \times 1685 \times 0.50 (1 - 0.50)}{0.05^2 (1685 - 1) + 3.841 \times 0.50 (1 - 0.50)}$$

$$\begin{aligned}
 & 0.50^2 (1685 - 1) + 3.841 \times 0.50 (1 - 0.50) \\
 = & \frac{6472.085 \times 0.50 (0.5)}{0.05^2 (1684) + 3.841 \times 0.5 (0.5)} \\
 = & \frac{1618.0212}{0.0025 (1684) + 3.841 \times 0.25} \\
 = & \frac{1618.0212}{4.21 + 0.96025} \\
 = & \frac{1618.0212}{5.17025} \\
 = & 312.94834 \\
 = & \mathbf{312 \text{ Learners}}
 \end{aligned}$$

To confirm the above results formula by Mugenda and Mugenda (2003) was used.

$$nf = \frac{n}{1 + \frac{(n)}{N}}$$

Where:-

nf = Desired sample size when the population is less than 10,000

n = Desired sample size when the population is more than 10,000 and the recommended sample size then is 384

N = Population

Therefore, the sample size for the population of 1000 learners needed for this study is denoted by nf and was calculated as follows;

$$\begin{aligned}
 nf &= \frac{n}{1 + \frac{(n)}{N}} \\
 &= \frac{384}{1 + \frac{(384)}{1685}} \\
 &= \frac{384}{1 + 0.2278931} \\
 &= \frac{384}{1.2278931} \\
 &= \underline{\underline{312.73083}} \\
 &= \mathbf{312 \text{ learners}}
 \end{aligned}$$

Table.2: A sample size of third year learners (April intake 2013/2014) and librarians

Category	Male	Female	Total
B.Ed. Arts	121	103	224
B.Ed. Science	47	27	74
Librarians	09	05	14
Total	177	135	312

Source: ODL (2014)

The researcher used two sets of questionnaires to collect data from the respondents. One set of questionnaire was developed for learners while another set of questionnaire was developed for librarians. The researcher gave preference to use of questionnaire because it eliminates bias on the side of the researcher and the respondents while the interview schedule was used to corroborate responses received from questionnaires (Kombo& Tromp, 2006).

Face validity, according to Kalai (2009) refers to the subjective judgment that the test appears to cover the relevant content. It also refers to the subjective judgment of assessors about what the instrument appears to be measured on the face value. The researcher applied expert judgment to arrive at the face value of the instruments. Finally, in order to determine the validity of the whole document, a Kaiser Meyer Olkin (KMO) formula test of validity was applied. A KMO test of validity provided a figure of 0.806. This implied that the sampled data was highly valid since the threshold is normally 0.5. The researcher applied expert knowledge in selecting essential questions to be included in the interview schedule.

The reliability of the full instrument was obtained using Cronbach's Alpha coefficient. This refers to a measure of internal consistency of set items in a group. It is thus considered to be a measure of skilled reliability of an instrument. Cronbach's Alpha Coefficient was used to measure the inter-item reliability of the questionnaires. Each item of the questionnaire, measuring the same characteristics was treated as a mini instrument on its own. The questionnaire for learners was divided into seven sections and inter-item reliability was done for each section of the questionnaire. The result is shown in Table 3.

Table 3: Inter-item reliability test

Questionnaire section	Cronbach's Alpha	Percentage	F	No. of items
B	0.523	52.3	35.609	7
C	0.749	74.9	15.809	7
D	0.865	86.5	1.080	7
E	0.958	95.8	2.960	7
F	0.923	92.3	17.923	7
G	0.938	93.8	8.836	7
H	0.830	83.0	16.568	7

The results from Table 3 shows that Cronbach's Alpha for section B of the instrument was 0.523 (52.3 %) with an F-value of 35.609 out of the seven (7) items. In section C of the instrument, Cronbach's Alpha was 0.749 (74.9%) while the F value was 15.809 out of the seven (7) items. Section D of the instrument recorded a Cronbach's Alpha of 0.865 (86.5 %) while the F value was 1.080 out of the seven (7) items. Section E of the instruments registered a Cronbach's Alpha of 0.958 (95.8 %) and an F value of 2.960 for the seven (7) items. Section F of the instrument indicated that the Cronbach's Alpha was 0.923 (92.3%) while the F value was 17.923 for the seven (7) items. Section G of the instruments recorded a Cronbach's Alpha of 0.938 (93.8%) while the F value was 8.836 out of the seven items. Finally, section H of the instruments recorded Cronbach's Alpha of 0.830 (83.0%) and F value of 16.568 out of the seven (7) items.

The general impression of the above results is that the inter-item reliability was over 50 percent for all the sections for the entire learners' questionnaire instrument. Similarly, the inter-item reliability test was inducted

for the questionnaire for the librarians. The result indicated a Cronbach’s Alpha of 0.698(69.8%) while the F-value was 16.915 out of the (7) items.

Authority to conduct research was obtained from the National Commission for Science, Technology, and Innovation (NACOSTI) before setting out for data collection. The researcher also reported to the Director of Open, Distance, and eLearning (ODEL) Campus for clearance. The researcher obtained permission from the Dean, ODL to conduct research. Simple random sampling was used to gather information from respondents. In this regard, the researcher used pieces of papers written “Yes” for the number of learners required for the study sample and “No” for the remaining portion. These papers were thoroughly mixed and shuffled in a container for learners to pick to ensure that each learner had an equal chance of being selected.

First, questionnaires were personally administered to learners and librarians. Direct contacts with respondents provided the researcher with an opportunity to interact and instruct the respondents on how to complete the questionnaires and assure them of the confidentiality of their responses. Personal involvement was an important factor in motivating the participants to respond more readily than if the questionnaires had been mailed to them. An opening note was addressed to all the respondents to confirm this commitment.

RESULTS AND DISCUSSIONS

Reliability of Power Supply and Utilization of Online Library Services

The objective of this study was to determine the influence of perceived reliability of power supply on the utilisation of online library services by distance learners at the University of Nairobi. To achieve this, respondents were requested to indicate their perceptions regarding the extent to which the perceived reliability of power supply influenced utilisation of online library services at the institution. In this regard, 7 test statements, which are contained in the data collection instrument, were scored on a five-point rating scale. Each statement in the attitude scale was followed by five responses including: not at all, less extent, not sure, a great extent and a very great extent. Respondents were expected to express their perceptions regarding each of the items by choosing only one response, the best suited their views. The scores ranged from a possible minimum of 7 to a possible maximum of 35 indicating the lowest and highest usage of online library services.

Reliability of Power Supply and Utilisation of Online digital repository

The study sought to investigate the influence of the reliability of power supply on the utilisation of an online digital repository. This was achieved by requesting respondents to indicate their views regarding the extent to which the perceived reliability of power supply influenced utilisation of online digital repository. The results are presented in Table 4

Table 4. Reliability of Power Supply and Utilisation of Online digital repository

Reliability of power supply determines the use of the online digital repository	Frequency (f)	Percentage %	Cumulative percent
Not at all	173	66.8	66.8
Less extent	29	11.2	78.0
Not sure	18	6.9	84.9
Great extent	33	12.7	97.7
Very great extent	6	2.3	100.0
Total	259	100.0	
Mean	1.64		

The results which are summarised in Table 4 show that 173 (66.8%) and 29 (11.2%) respondents did not agree with the test statement saying that reliability of power supply influenced utilisation of online digital repository.

Contrastingly, 33 (12.7%) respondents and another 6 (2.3%) respondents affirmed the test statement; while 18 (6.9%) indicated they were not sure. The results suggest that reliability of power supply had less influence on utilisation of online digital repository, which implies that distance learners were greatly disadvantaged by the unreliable power supply, as far as utilisation of online digital repository was concerned. The analysis obtained a computed mean of 1.64.

Reliability of Power Supply and Utilisation of Online Newspapers

The study sought to establish the influence of perceived reliability of power supply on the utilisation of online newspapers. In order to accomplish this investigation, respondents were requested to indicate the extent to which the reliability of power supply influenced utilisation of online newspapers; the results of which are presented in Table 5.

Table 5: Reliability of power supply and utilisation of online newspapers

Reliability of power supply determines the use of online newspapers	Frequency (f)	Percentage %	Cumulative percent
Not at all	231	89.2	89.2
Less extent	12	4.6	93.8
Not sure	8	3.1	96.9
Great extent	4	1.5	98.5
Very great extent	4	1.5	100.0
Total	259	100.0	
Mean	1.11		

The results from Table 5 show that most respondents, 231 (89.2%) scored not at all, 12 (4.6%) scored to a less extent; while 8 (3.1%) said they were not sure. On the other side of the scale, 4 (1.5%) respondents and another 4 (1.5%) affirmed that reliability of power supply influenced utilisation of online newspapers. The impression one can derive from this finding is that the reliability of power supply had less influence on the utilisation of online newspapers. Based on this, the analysis yielded a computed mean of 1.11.

Reliability of Power Supply and Utilisation of Online Public Access Catalogue

The study further examined the influence of perceived reliability of power supply on the utilisation of OPAC. This was accomplished by asking respondents to indicate their views regarding the extent to which the reliability of power supply influenced utilisation of OPAC. The results are summarised in Table 6.

Table 6: Reliability of Power Supply and Utilisation of Online Public Access Catalogue

Reliability of power supply determines the use of the online public access catalogue	Frequency (f)	Percentage %	Cumulative percent
Not at all	176	68.0	68.0
Less extent	27	10.4	78.4
Not sure	34	13.1	91.5
Great extent	8	3.1	94.6
Very great extent	14	5.4	100.0
Total	259	100.0	
Mean	1.58		

The results presented in Table 6 show that most respondents, 176 (68.0%), scored not at all, 27 (10.4%) indicated less extent, while 34 (13.1%) were not sure. Those who affirmed that reliability of power supply

influenced utilisation of OPAC were 22 (8.5%), including 8 (3.1%) who scored great extent and 14 (5.4%) who indicated very great extent. The results suggest the reliability of power supply had less influence on utilisation of OPAC. The mean score was calculated to be 1.58.

Reliability of Power Supply and Utilisation of Online Electronic books

The study investigated the influence of perceived reliability of power supply on the utilisation of online electronic books. In this regard, respondents were requested to indicate their views regarding the extent to which the perceived reliability of power supply influenced utilisation of online electronic books; which yielded the results presented in Table 7.

Table 7: Reliability of Power Supply and Utilisation of Online Electronic Books

Reliability of power supply determines to use online electronic books	Frequency (f)	Percentage %	Cumulative percent
Not at all	187	72.2	72.2
Less extent	14	5.4	77.6
Not sure	38	14.7	92.3
Great extent	12	4.6	96.9
Very great extent	8	3.1	100.0
Total	259	100.0	
Mean	1.47		

Table 7 shows that the cumulative majority of respondents, 201 (77.6%), denied the assertion that reliability of power supply influenced utilisation of online electronic books; while another 38 (14.7%) said they were not sure. Contrastingly, 20 (7.7%) respondents supported the view that the reliability of power supply influenced utilisation of online electronic books. The implication of this result is that the reliability of power supply had less influence on the utilisation of online electronic books. The analysis obtained a computed mean of 1.47.

Reliability of Power Supply and Utilisation of Online Electronic Journal

This study examined the influence of perceived reliability of power supply on the utilisation of online electronic journals. In this regard, respondents were requested to indicate their thoughts regarding the extent to which the reliability of power supply influenced utilisation of online electronic journals. Table 8 presents the results.

Table 8: Reliability of Power Supply and Utilization of Online Electronic Journals

Reliability of power supply determines the use of online electronic journals	Frequency (f)	Percentage %	Cumulative percent
Not at all	225	86.9	86.9
Less extent	11	4.2	91.1
Not sure	6	2.3	93.4
Great extent	7	2.7	96.1
Very great extent	10	3.9	100.0
Total	259	100.0	
Mean	1.09		

The results presented in Table 8 show that the cumulative majority of respondents, 236 (91.1%) negated the test statement saying that reliability of power supply influenced utilisation of online electronic journals; while 6 (2.3%) were not sure. On the other side of the scale, a cumulative minority, 17 (6.6%) affirmed that reliability of power supply influenced utilisation of online electronic journals. The implication of these results is that the

reliability of power supply had less influence on the utilisation of online electronic journals. The analysis yielded a mean score of 1.09.

Reliability of Power Supply & Utilisation of Online Electronic Database

The study sought to establish the influence of perceived reliability of power supply on the utilisation of an online electronic database. To achieve this, respondents were asked to indicate their perceptions regarding the extent to which reliability of power supply influenced utilisation of online electronic database. The results are presented in Table 9.

Table 9: Reliability of Power Supply and Utilisation of Online Electronic Database

Reliability of power supply determines the use of the online database	Frequency (f)	Percentage %	Cumulative percent
Not at all	194	74.9	74.9
Less extent	12	4.6	79.5
Not sure	28	10.8	90.3
Great extent	17	6.6	96.9
Very great extent	8	3.1	100.0
Total	259	100.0	
Mean	1.61		

The results presented in Table 9 show that a cumulative majority of respondents, 206 (79.5%) indicated disagreement with the assertion linking reliability of power supply and utilisation of online electronic database. However, 32 (12.4%) respondents indicated they were not sure. Contrastingly, an accumulative minority of respondents, 25 (9.7%), supported the test statement saying that reliability of power supply influenced utilisation of online electronic database. The results imply that the reliability of power supply had less influence on the utilisation of an online electronic database. Based on this, the analysis obtained a calculated mean of 1.61

Reliability of Power Supply and Utilisation of Online Research Papers

The study investigated the influence of perceived reliability of power supply on the utilisation of online research papers. In order to accomplish this task, the investigator requested respondents to indicate their views regarding the extent to which the reliability of power supply influenced utilisation of online research papers. Table 10 presents the results.

Table 10: Reliability of Power Supply and Utilisation of Online Research Papers

Reliability of power supply determines the use of online research papers	Frequency (f)	Percentage %	Cumulative percent
Not at all	206	79.5	79.5
Less extent	9	3.5	83.0
Not sure	18	6.9	90.0
Great extent	11	4.2	94.2
Very great extent	15	5.8	100.0
Total	259	100.0	
Mean	1.59		

As indicated in Table 10, a cumulative majority of respondents, 215 (83.0%) failed to affirm the assertion stating that the reliability of power supply influenced utilisation of online research papers. Notably, though, 18 (6.9%) respondents said they were not sure. On the other side of the scale, cumulative minority respondents, 26 (10.0%), affirmed that reliability of power supply influenced utilisation of online research papers. The results suggest that there was less influence of reliability of power supply on the utilisation of online research papers. The mean score was 1.59.

Mean scores on reliability of Power Supply and Utilisation of Online Library Services

The analysis involved establishing mean scores associated with the influence of the perceived reliability of power supply on the utilisation of online library services at the institution. This was achieved by computing and comparing mean scores for each of the 7 online library services. The analysis also involved computing the mean of means, which was designated the benchmark for making a decision on whether the mean scores were high or low. It was assumed that any online library service that scored a mean above the mean of means was rated high while any online service that scored a mean below the mean of means was equally rated low. The results are summarised in Table 11.

Table 11: Reliability of Power Supply and Utilisation of Online Library Services

Online library services	Mean	Std Dev.
Online digital repository	1.64	0.183
Online newspapers	1.11	
Catalogue (OPAC)	1.58	0.322
Online electronic books	1.47	
Online electronic journals	1.09	0.117
Online electronic database	1.61	0.081
Online research papers	1.59	
		0.300
		0.105
		0.214
Total Mean	10.09	
Base Mean	1.44	

The results in Table 11 show that online digital respiratory scored the highest mean of 1.64, followed by an online electronic database at 1.61, online research papers at 1.59, and OPAC at 1.58. At the bottom of the ranking list are online electronic books at 1.47, followed by online newspapers at 1.11 and online electronic journals at 1.09. Based on the mean of means, which average at 1.44, online library services that scored means above the mean of means included online digital repository, online electronic database, online research papers, OPAC, and online electronic books. However, online newspapers and online electronic journals registered means below the mean of means; hence, were rated as low.

These results imply that the reliability of power supply highly influenced utilisation of online digital repository among distance learners of the University of Nairobi. This confirms the findings reported by Ingutia-Oyieke and Dick (2010) also identified incessant power outages on campus as one of the infrastructural issues affecting utilisation of e-resource at the University of Eastern Africa Baraton. Power outages affected the LAN Internet connectivity, causing the frequent system to break down and damaging computers in the library. The challenge of the frequent power outage was also singled out by Chimah and Nwokocha (2013) as a key barrier to access to e-resources.

The relationship between the reliability of power supply and utilisation of online library (as measured by mean score on online library services) was analysed using multiple linear regression analysis. The null hypothesis was formulated as follows:

H₀ There was no significant relationship between perceived reliability of power supply and utilisation on online library services at the University of Nairobi.

The results are shown in the preceding tables.

Table 12: Model summary of regression analysis

Model	r	R ²	Adjusted R ²	Std. Err. of estimate	Change Statistics				
					R ² Change	F change	df1	df2	Sig. of change
1	0.348	0.122	0.593	0.422	0.122	2.001	10	100	0.040

The results presented in Table 12 show that the coefficient of correlation is $r = 0.348$ indicating a positive relationship between variables. Similarly, R^2 which is the coefficient of the determination $R^2 = 0.122$ implying a positive linear correlation. The significance of change also referred to as the p -value is 0.040. This value is pegged on the study putting the limit at 0.5 or 95% degree of the confidence interval. Since p -value 0.040 is less than 0.05 ($p > 0.05$), reject the null hypothesis for being untrue and accept the alternative hypothesis that there was a significant relationship between the reliability of power supply and utilisation of online library services. The analysis also involved the computation of variance using ANOVA in order to test how the regression model statistically significantly predicted the outcome variable (the significance of the relationship between the dependent and independent variable). The results are shown in Table 13.

Table 13: Analysis of Variance

Model	Sum of square	df	Mean square	F	sig
Regression	3.504	10	0.353	2.001	0.040
Residual	25.936	151	0.178		
Total	29.437	259			

As indicated in Table 13, the analysis obtained a computed F statistic of 2.001 which means that 20.01 percent of the model fits the linear line and therefore, has been explained by the independent variable. This implies that this model fits interpretation

CONCLUSION

The study concludes that utilisation of online library services significantly related to the reliability of power supply at the library. As a matter of logic, providing internet of sufficient bandwidth and availing adequate computers, may not necessarily improve utilisation of online library services unless the power supply is improved.

RECOMMENDATION

The universities management are encouraged to ensure a reliable power supply for the library, which should entail procuring necessary power back-up equipment, including standby generators for satellite campuses.

REFERENCES

- Aiona L.O. (2008). Library and information services support for distance education programme in Africa universities. *Proposals for the Future Development, Ilorin, and University of Ilorin*, 41, 1-11.
- Alison, K.A., Kiyingi, G.W., & Baziraake, B.B. (2012). Factors affecting utilization of electronic health information resources in universities in Uganda. *Annals of Library and Information Studies*, 59, 90-96.
- Candela, L., Athanasopoulos, G., Castelli, D., El Raheb, K., Innocenti, P., Ioannidis, Y., Katifori, A., Nika, A., Vullo, G., & Ross, S. (2011). *Coordination action on digital library interoperability, best practices and modelling foundation*. Brussels: European Union.
- Dadzie, P. S. (2005). *Electronic Resources: access and usage at Ashensi University College, campus-wide information Systems 22.5*. Available at <http://www.emeraldinsight.com>

- Dilek-Kayaoglu, H. (2008). Use of electronic journals by faculty at Istanbul University, Turkey: The results of a survey. *The Journal of Academic Librarianship*, 34(3), 239-247.
- Farahani, G.O. (2003). Existence and Importance of Online Interaction. A PhD Dissertation submitted to the Faculty of the Virginia Polytechnic Institute and State University, Virginia, USA.
- Finger, D.T. (2007). Engagement with electronic portfolios: Challenges from the students' perspectives, *Canadian Journal of Learning and Technology*, 31(3)
- Ganiyu, O. Q. (2013). Influence of demographic factors on use of online library resources by Undergraduate students in two private Nigerian University Libraries. *Library Philosophy and Practice (e-journal)*. Paper 976.
- Githinji, R. M. (2014). Factors influencing University of Nairobi degree students' access and utilisation of information communication and technology facilities. Unpublished M.Ed Thesis submitted to the University of Nairobi.
- Ingutia
- Islam, M.A. (2011). Effects of demographics factors on e-learning effectiveness in a higher learning institution in Malaysia. *International Educational Studies*, 4 (1), 4-7.
- Jomo Kenyatta Memorial Library (2015). Details of Request for online Library Services by Distance learners at the University of Nairobi Library: Nairobi Kenya: University of Nairobi.
- Kavulya, J.M. (2004). Challenges in the provision of library services for distance Education: A case study of selected universities in Kenya. *African Journal of Library Archive and Information Science* 14(1), 15-28.
- Kindilchie, A.I. & Sammarine, I.F. (2008). Interaction and impact of electronic resource on Qatar University Faculty. *Libri*, 58, 281-293.
- Kombo, D.K. & Tromp, A. (2006). Proposal and thesis writing. Makuyu: DonBosco Printing Press.
- Krejcie, R.V. & Morgan, D.W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30, 607-610.
- Madhusudhan, M. (2010). RFID technology implementation in two libraries in New Delhi. *Program*, 44(2), 149-157.
- Molefi, F. (2008). Context: A paper presented at the Distance Education Workshop for Setswana Part Time Writers, DNFE.
- Mwatela, (2013). Factors influencing utilisation of library services and resources. The case study of the University of Nairobi. Unpublished Master's Thesis.
- Naidu, S. (2006). *E-Learning: a guidebook of principles, procedures and practices*. New Delhi: Commonwealth Educational Media Center for Asia.

- Nkamnebe, E.C., Udem, O.K. & Nkamnebe, C.B. (2014). Evaluation of the use of university library resources and services by the students of Paul University, Awka, Anambra State, Nigeria. *Library Philosophy and Practice* (e-journal). 1147. Retrieved from <http://digitalcommons.unl.edu/libphilprac/1147> in November 2017.
- Nyamboga.M.Ongondo.M. & Ongus.R. (2014). Experiences in the use of internet at Egerton University Library: Njoro Kenya: Egerton University
- Obuh A.O. (2009). Use of electronic resources by postgraduate students of the Department of Library and Information Science of Delta State University, Abraka, Nigeria *Library Philosophy and Practice*. Retrieved from <http://webpages.uldato.edu/~mbolin/obuh-alex.htm> in June 2014.
- Okiki, O.C. & Asina, S.M. (2011). Use of Electronic information sources by postgraduate students in Nigeria: Influencing factors. *Library Philosophy and Practice*. 4-6..
- Okongo, A.N. (2014). Access and utilization of digital information services in academic Libraries: the case of University of Nairobi. Unpublished Master's Thesis submitted to Department of Library and Information Science, University of Nairobi.
- Ondari-Okemwa, E. (2004). Impediments to promoting access to global knowledge in Sub-Saharan Africa. *Library Management*, 25 (8/9), 361-375.
- Orodho, A.J. (2003), *Essentials of educational and social sciences research methods*. Nairobi: Masola Publishers.
- Owusu-Ansah, S. & Bubuama, C.K.A. (2015). Accessing academic library services by distance learners. *Library Philosophy and Practice* (e-journal). 1347. Retrieved from <http://digitalcommons.unl.edu/libphilprac/1347> in November 2017
- Sacchanand, C. (2002). Information literacy instruction to distance students in higher education: Librarians' key role. 68th IFLA Council and General Conference August 18-24, 2002. Available at: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.105.537&rep=rep1&type=pdf>.
- Shukla, P. & Mishra, R. (2011). Use of e-resources by research scholars of institute of Technology. Banaras Hindu University, India. *International Referred Research Journal*, 2(2) 184-194.
- Watts, C. & Ibegbulam, I. (2006). Access to electronic healthcare information resources in developing countries: Experiences from the medical library, College of Medicine University of Nigeria. *IFLA Journal* 32 (54): Retrieved May 15, 2013 from <http://ifl.sagepub.com/content/32/1/54.full.pdf+html>