



Challenges Facing Academic Libraries in Utilizing Mobile Devices in Access and Use of Information in Kenyatta University and University of Nairobi in Kenya

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Abstract

Mobile devices are extremely important in informational facilities. Apart from providing convenience, mobile devices open up new avenues for academic libraries to enhance access to information. However, few studies have been carried out that directly look at the use of mobile devices in enhancing access and use of information. The study objective was to identify the challenges faced in utilization of mobile devices and suggest ways of addressing them. The study adopted descriptive research design. The target population for the research included 1620 students, 47 teaching staff from three academic departments, 91 library staff and 38 ICT staff thus the entire target population was 1796 respondents. To select users (academic staff and students), stratified random sampling was used, and purposive sampling was used to identify senior library and ICT employees. A sample size of 10% was drawn from each stratum (age, department, course experience, duration at the university) forming a total sample of 181 respondents. Primary and secondary data were gathered using a semi-structured questionnaire and photographic evidence. The collected data was evaluated using descriptive and inferential analysis. Descriptive statistics included means, percentages, and frequency ranges. In inferential statistics, chi-square analysis was used to evaluate the relationship between factors, in this case, the usage of mobile devices and the associated benefits. Data was analyzed using the Statistical Package for Social Sciences (SPSS, Version 22). Tables, maps, and graphs were used to display the data that had been analyzed. The study established that majority of the library users in universities use mobile devices. The use of mobile devices was mostly associated with the new university entrants. This age group has highly technical perceptiveness and prefer digital access of information and communication. The use of mobile devices in university libraries was mostly in accessing library e-resources, internet searching of learning materials and communicating with fellow peers. The study established significant relationships between use of mobile devices and ease of access of library resources. The use of mobile devices had challenges, notably, lack of mobile devices technical support, limited power sources to charge the devices, poor Internet connectivity, and expensive repair and replacement costs associated with the use of mobile devices. The study concluded that the use mobile devices in university libraries is greatly beneficial to the users and it reduces the stress on traditional library facilities.

Keywords: Academic Libraries, Mobile Devices, Information & Internet, informational facilities

INTRODUCTION

Mobile devices are gadgets that utilize the innovative use of mobile communication for transportable and instantaneous access to information (Coates et al., 2010). Mobile devices include, iPods, MP3 player, Personal Digital Assistants (P.D.A), Universal Serial Bus (USB) Drive, E-Book Reader, Smart Phone, Ultra-Mobile Personal Computer and Laptop / Tablet PC (Adeeb & Hussain, 2012). Smartphones and Personal Digital Assistants (PDAs) are mobile devices that enable real-time communication (Chang et al., 2014). Mobile devices are distinguished by their portability, flexibility, ease of use, and unique ability to integrate with other technology systems (Alder & Fotheringham, 2012).

The rapid development in mobile device capabilities, combined with a decrease in price, has enabled mobile devices to become ubiquitous. According to Arif et al., (2015), there are currently 3.5 billion mobile communication devices in use around the world. Globally, mobile device penetration is at 85 percent of the world's total population. This equates to 5.98 billion subscriptions to mobile devices. Mobile devices are becoming increasingly essential in students' academic lives. Smartphones, tablets, and e-book readers instantly connect users to the rest of the world, going to increase access to information and allowing them to interact with one another. These devices' applications allow users to not only consume but also discover and create content (Hashemi et al., 2011).

As a result, they continue to transform the delivery of learning resources and influence students' learning preferences, both inside and outside the classroom. For example, with the advent of emerging mobile technologies and global e-learning maturity, it has become unavoidable to integrate mobile devices into learning. Digital (m-learning) is a new innovation that is being integrated into university distance and e-learning programs to provide a full virtual education package (Ozuorcun & Tabak 2012). It refers to the distribution of educational content via mobile devices for example; PDAs, smartphones, tablets, iPods, and mobile phones, (Sivathaasan & Velnampy, 2013).

Mobile devices now play an important role in informational facilities, including libraries. Libraries are public systems that connect people with people and people with information. They are evolving into more than just physical spaces. As several academic libraries own a mobile phone, and also increasing availability of mobile phones, libraries must embrace mobile technology. Mobile devices, according to Power and Shohel (2010), are assisting both novice and experienced librarians in remaining relevant in an increasingly mobile society. The concept of mobile access to academic library resources is not new. Looi and Wong (2012) established that interest in PDA applications for libraries began to increase around the beginning of the millennium. Medical librarians were among the first to recognize the potential impact of mobile technologies on the profession. Outside of medicine, the use of mobile technology in academic libraries has recently increased as more universities have adopted mobile devices in their information repositories (Roberts and Vanska, 2011).

Aside from providing accessibility, mobile devices open up new avenues for academic libraries to enhance access and broaden their reach. The capability to utilize mobile devices to pay for goods and services is one area where mobile devices have had an impact on libraries. In particular, wireless mobile payment applications are emerging that use radio frequency identification technology (RFID) to enable phone users to make payments by waving their smart device next to a node or computerised gadget

(Coulby et al., 2011). Payment via mobile phone technology is quite common in Kenya, thanks to services such as Safaricom's "*Lipa na MPESA*."

Another area is use of quick response (QR) () codes on mobiles. Any QR generator can convert library data into a QR code. Just insert the data to be interpreted, and the generator will produce the code, that can then be displayed or printed electronically (Blake et al., 2012). Mobile technologies also facilitate cloud computing in academic libraries. According to Carillo et al., (2011) cloud computing is useful to academic libraries for security, virtualization of resources and centralized networking. Another paramount feature that mobile technologies present to academic libraries is Web 3.0. According to Callaghan and Lea (2014), Web 3.0 makes it easier to create, organize, and share user-generated web content by allowing users, experts, and librarians to work together in real time.

Kenya is currently ranked the 5th in Africa of mobile phone internet use, with over 31 million mobile users, and 12 of the 19 million Kenyans who have internet access use a mobile service subscription (CAK, 2015). The use of electronic devices to access and share information is changing the face of education and instruction in Kenyan universities. More and more universities in Kenya are integrating these devices into their curriculum delivery (Macharia, 2013). Mobile devices have been found to increase participation, group work and productivity. Furthermore, according to Aker and Mbiti (2015), The use of mobile channels in Kenyan higher education is an important assessment mechanism for students and helps students who communicate less in class to express themselves and their thoughts in a more comfortable means. Enables learners to use their own electronic devices in class to access library resources is becoming more convenient and cost-effective than purchasing textbooks, desktop or laptop computers (Johnston & Salaz, 2019).

According to the Abata-Ebire et al (2019) study, some of the constraints to mobile information service delivery include: power outages; providing too many mobile devices to learn; a lack of knowledge; sluggish internet speeds; and a lack of support, infrastructure, and training opportunities for using mobile devices to sell libraries and information services and goods. Saxena and Yadav (2013), in their study noted that there is a shortage of sufficient mobile-friendly academic material to satisfy the needs of learners, as well as difficulties in providing content to an evolving digital student body, as well as difficulties in identifying and accessing the content available for mobile learners from the Library's perspective. Setting up text reminders is one of the problems due to a lack of staff knowledge and knowledge. Luo et al. (2014) conducted a study at San Jose State University and noted that some of the study's respondents did not use the SMS digital library because their cell phone contracts did not have a texting schedule. According to Otando (2011), one of the obstacles that universities libraries encounter when implementing mobile devices is a shortage of technical expertise/inadequate staffing issues due to staff shortages.

This study was motivated by the fact that the educational challenge is growing as students in the digital and mobile age approach learning from a very unique viewpoint than their successors. The impact of mobile devices on higher education, especially in academic libraries, is not sufficiently quantifiable in Kenya. Principally, this is because not much has been done locally in terms of research to evaluate how mobile devices have impacted academic libraries. As such, little is known on how mobile devices will transform in the next decade with respect to the Kenyan academic front. The debate centers on whether their effect will be rapid and exponential or sudden and transformative. Both points of view have a valid case to be made. Since Kenyan

students have been using applications like laptops and cell phones for many decades, it is possible to demonstrate that the impact of mobile technology usage on student general activity, and universities in particular, has been revolutionary. But in the other side, as promising new smart phone features emerge and wireless networking becomes virtually universal in the region, Kenya could be entering a pioneering period of mobile device effect on higher education and libraries. This study sought to assessing challenges facing academic libraries in utilizing mobile devices in access and use of information in Kenya and highlight possible solutions to these challenges with particular reference to the University of Nairobi and Kenyatta University.

Theoretical Framework

Davis' Technology Acceptance Principle (1986) served as the basis for this research. An individual's attitude toward actions is influenced by his or her opinion, according to the Technology Acceptance Theory. Importantly, the model discusses an information system's/applicability, tool's how it can be used to forecast system/acceptability, tools and improvements that can be made to boost acceptability. The model assumes that two factors heavily influence acceptability:

- a) Perceived Usefulness (PU); and
- b) Perceived Ease of Use (PEU)

The degree to which a person believes that using a device will boost his or her efficiency is known as PU, while the degree to which a person believes that using a device will be effortless or take no effort is known as PEU. According to the model, the use of a system/tool is dictated by behavioral purpose, an individual's attitude toward its use, and an understanding of its meaning. Davis (1986) asserts that an individual's behaviour is not the only influence affecting his/her use; the effects of the process or system on his/her accomplishment are also important. The review of the Technology Adoption Theory revealed that the principle is most often applied in the construction of a paradigm of a real consumer acceptance of new technology. The primary goal of this study was to sought to assessing challenges facing academic libraries in utilizing mobile devices in access and use of information in Kenya and highlight possible solutions to these challenges with particular reference to the University of Nairobi and Kenyatta University.

METHODOLOGY

The study adopted a positivist paradigm. The positivist model originated from the philosophy of logical positivism and is focused on strict logic and calculation laws, truth, absolute values, and prediction (Halcomb and Andrew, 2005). The adoption of this paradigm is necessary because it will ensure the detailed description of the issues by the stakeholders in utilization of mobile devices in academic libraries. This study used a descriptive research design, which is used to investigate or study a sample population in order to gain insight into larger cases. This study was conducted at the University of Nairobi (U.O.N) and Kenyatta University (K.U). The Universities were selected because they are ranked highly, locally and internationally in terms of infrastructural and instructional quality. Therefore, respondents from this universities provided reliable information regarding utilization of mobile devices in academic library. The University of Nairobi and the Kenyatta Repository gather, preserve, and disseminate scholarly outputs. Among the documents are academic journals, full-texts of scientific articles and working papers, and abstracts of dissertations and theses submitted to the University (UoN website, 2016). The target population for the research included 1620 students, 47 teaching staff from three academic departments, 91 library staff and 38 ICT staff thus the entire target population was 1796 respondents as indicated in Table 1.

Table 1: Sample Size

Group	Target Population	Sample Size
Users (Students)	1620	162
Users (Academic/teaching staff)	47	6
Library Staff Members	91	9
ICT staff	38	4
Total	1796	181

The researcher sampled the students and teaching staff from three departments namely; English (Arts), Biology (Science) and Engineering (Technology). The researcher sampled randomly to select 162 students and 9 teaching staff as respondents. This is according to Gall, (2003) which states that 10% of the target population is sufficient for a sample size. The researcher purposively sampled nine senior library staff and four Senior ICT staff who by virtue of their position and experience in mobile devices. This provided valuable and reliable information to for the research. Primary data was collected using questionnaires and secondary data was retrieved from textbooks, journals and newspapers that had relevant information. The collected data was organized and prepared for analysis by coding and entry in the Statistical Package for Social Sciences (SPSS, Ver.22). The study used both descriptive statistics and inference statistics. The findings were presented by use of tables.

RESULTS AND DISCUSSION

Reliability and Validity

The study checked the reliability and content validity of questionnaires issued to senior library staff members, lecturers and ICT staff members. Expertise of lecturers specialized in library science provided means of checking content validity. Their opinions and critique ensured that the items were in line with the objective of the study. Reliability of the questionnaires targeting senior library staff members, lecturers and ICT staff members was tested using test - retest method. This method was appropriate because most of the questions were qualitative with written sentences as responses.

For the questionnaires targeting users (students using library facilities), the study tested reliability using Cronbach's alpha because most of the responses were coded quantitatively. Content validity was also tested using the expert opinion of lecturers specialized in library science who checked the appropriateness of the questions asked in regards to the specific objective. The pilot sample for this study was 30 respondents.

Table 2: Reliability Analysis

Respondent Category	Cronbach's Alpha	N of Items (excluding age and gender)
Users	0.704	9

Results in Table 2 shows the Cronbach's Alpha of the pilot questionnaires for users. The reported alpha value of 0.704 is within the recommended range between 0.7 and 1.0 (Bryman, 2014; Kumar, 2011). Therefore, the questionnaires provided reliable results for making statistical inferences.

Utilization of Mobile Devices in University Libraries

This subsection discusses descriptively on the utilization of mobile devices in university libraries. The findings for users, lecturers, ICT staff and senior library staff were presented in form of pie charts and frequency tables. The research findings are as tabulated below.

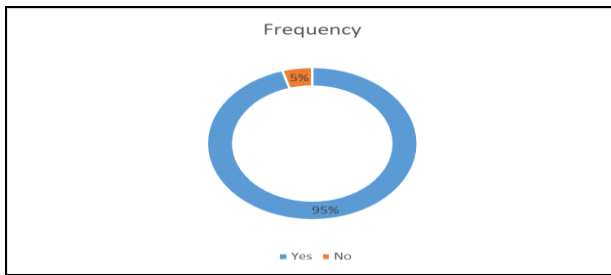


Figure 1: Utilization of Mobile Devices in Libraries (Users)

Figure 1 shows the utilization of mobile devices by users in university libraries. Majority of the users acknowledged the use of mobile devices in university libraries and they formed 95 percent of the respondents. Only 5 percent of the respondents did not utilize mobile devices in the libraries. This is probably the population of users with high probability of using mobile devices in university libraries. The remaining 5 percent of the user population were older students who have high probability of using physical books rather digital books and aids. The following researches reported similar findings like those of this study, Sharma & Madhusudhan, (2017) while assessing the use of mobile devices by library reported that smartphone is the most used mobile device (92.15%). Farley et al., (2015) reported that less than 5% students either don't have access to smartphones or don't use them and smartphone is the most used mobile device. According to Chaputula and Mutula (2018), cell phone usage among students is very high, with 99.7 percent of respondents having one or more mobile phones. A research undertaken at Hunter College in New York (USA) by Greenberg et al, (2013) dd that 98.7 percent of the students owned cell phones. Studies by Ojino & Mich, (2018) in Kenya recorded (95.6%) of the students who participated in the study possessed a mobile device. This study attributed this high percentage to affordability of mobile phones in Kenya.

Table 3: Users Response on Ways of Utilizing Mobile Devices in Libraries

Ways of Utilizing Mobile Devices	Frequency	Percent
Accessing library resources	106	80.7
Mobile payments	9	6.7
Using QR codes to search publications	9	6.7
Facilitation of cloud computing	3	2.5
Sharing of user-generated web content	4	3.4
Total	131	100.0

Table 3 shows the ways in which users use mobile devices in university libraries. The most use was in accessing library resources 106(80.7%). Other users included making mobile payments ((9(6.7%) and using QR codes for searching publications (9(6.7%) The least use of mobile devices in university libraries included sharing of user-generated web content (3.4 percent, F=4) and cloud computing (2.5 percent, F=3). Therefore, the use of mobile devices is phasing away the use to textbooks located in university shelves.

According to Academic/teaching staff and ICT staff, mobile devices are used in accessing online public catalogue, accessing online materials, listening to audio books and digital reminders for users on materials needed to access or returned. Other users indicated include easy communication among the users (e.g., WhatsApp, twitter, Facebook, etc.), entertainment, provides multiple access to Internet materials, sharing common internet source (WIFI) without having to queue for university libraries' computers and saves space compared to using personal computers,

According to Omallah et al. (2016), access to e-learning had 36.25 percent of respondents who felt their phone enabled them to use these services, whereas 40.00 percent claimed they had previously used their phones to read and store e-books at the MKU Online Public Access Catalogue, while 12.50 percent used it regularly. Mobile phone technology specifically enables access to and utilization of library services, according to the vast majority of respondents. This study was similar to the current study.

Also, similar studies done by Lo et al. (2016) in Hong Kong and Vassilakaki et al. (2016) in Greece also reported that learners used their cell phones for library-related uses. Ojino and Mich (2018), the most popular instructional uses of smartphone applications were: downloading a dictionary (63.4 percent), accessing learning resources (61.9 percent), and applying for courses (61.2 percent); about half of students use apps to import written articles (53.7 percent) and assignments (51.5 percent).

Challenges Faced in Utilization of Mobile Devices in University Libraries

The study aimed at establishing the challenges associated with the use of mobile devices in university libraries. Results are presented in table 4 and table 5.

Table 4: Do you encounter challenges while utilizing mobile devices in the Library? (Users)

Response	Frequency	Percent
Yes	103	78.6
No	28	21.4
Total	131	100.0

Table 4 shows that 103(78.6%) of the respondents encountered challenges in utilizing mobile devices in university libraries. Table 5 shows the nature of challenges encountered by users in the use of mobile devices in university libraries.

Table 5: Main challenges in using mobile devices in university libraries (Users)

Challenges	Frequency	Percent
Insufficient mobile-library information	49	37.5
Inadequate technical support for mobile access	50	38.5
Limited capacity of mobile devices	20	15.6
Incompatible library resources	10	7.3
Negative educator perceptions	1	1.0
Total	131	100.0

The main challenges noted in Table 5 are insufficient mobile - accessible resources 49 (37.5%) and inadequate technical support for mobile access 50(38.5%). The other challenges noted by the users included: limited capacity of mobile devices 20(15.6%), incompatible library resources (7.3%) and negative educator perception (1.0%). The other challenges observed by the users in university libraries were poor Internet connection and few electrical sockets to charge mobile phones.

Academic/teaching staff observed the following challenges: need for training on how to use the mobile phones in accessing university library resources, inadequate power points to charge phone batteries, misuse of mobile devices in university libraries such as for entertainment and inadequate technical support in regards to the users of mobile devices in university libraries.

ICT staff and senior library staff observed that the format of digital library resources is suitable for personal computers rather than mobile devices. They also noted that the use of mobile devices causes distraction to other students and could potentially lead to time wastage to the users themselves. The users are bombarded with a lot of information hence they lack concentration because they do not focus on one material at a time. This shortens the level of understanding of concepts.

The mobile phones are expensive to acquire especially in considering a good quality mobile phone for study purposes. The mobile phone devices are portable hence easy to misplace or easy to be stolen. Furthermore, they are prone to technical malfunction, which leads to costly repairs or replacement. Mobile devices also have limited storage capacity and cannot store infinite resources. Finally, some of the materials downloaded have to be compatible with the mobile device for the users to view.

The findings of the study strengthen the findings of other studies. For instance, Omallah et al. (2016) found that, although training had previously been offered, it was inadequate to develop library users' skills in regards to information and use of library resources through mobile phone technology. Sharma and Madhusudhan (2017), also noted that teaching personnel were not trained or eligible to use mobile devices in class, and there are no rules for evaluating classroom mobile phone use. There is a scarcity of digital repositories for educational materials, as well as digital material in libraries designed for use on mobile platforms. On the other hand, Ocran, (2017) also reported that librarians mentioned some of the imminent challenges to be connectivity and disruption of bandwidth, commitment of personnel from the library and the need for education. Furthermore, Amollo (2011), enumerated some of the general or significant obstacles taking a stand against library digitization that have been gleaned from the research and literature review include a lack of sufficient resources, appropriate facilities, trained personnel or staff turnover, and the right incentives. Another similar finding to the current results was stated by Kanyengo (2009), that digital library education has not been completely integrated into librarians and information systems in African library colleges. The few existing training programmes are insufficient to meet the needs of African repositories. Those library and information science schools that do provide preservation courses do so just technically.

Solutions to Challenges Facing Utilization of Mobile Devices in University Libraries

This section gives the solutions to challenges described in section 6 as pointed out by the users, lecturers, ICT staff and senior library staff.

Table 6: ways in which challenges of using mobile devices in university libraries can be countered (Users)

Solutions	Frequency	Percent
Improving mobile accessibility to library	44	33.6
Sufficient training of library technical staff on m-resources	21	16.4
Creation of numerous mobile devices access points.	33	25.0
Investment by the library on development of mobile support infrastructure	18	13.8
Mobile utilization campaigns to improve educator perceptions	9	6.9
All	6	4.3
Total	131	100.0

According to Table 6, the users highly recommended improving mobile device accessibility to library (33.6%) and creation of numerous mobile devices access points

(25.0%). They also recommended sufficient training of library technical staff on m-resources (16.4%), development of mobile support infrastructure (13.8%) and carrying out campaigns for utilization of mobile devices to improve educator perception (6.9%). Other recommendations by the users included provision of adequate technical support and reliable wi-fi Internet connection. Increment in the number of electrical sockets in the university libraries to enable students to be able to charge their phones. Lecturers also advocated for the need to have a center for mobile phone maintenance and sufficient power charging sockets. Lecturers further called for the need to carry out training sessions on the importance of using mobile devices in accessing e-resources to decongest libraries and for users to have a full experience of the resources the libraries can offer.

Senior library staff and ICT staff recommended the following solutions to curb the problems faced in using mobile devices in libraries in universities. They recommended adequate power supply and fast Internet connectivity. They also recommended that users of mobile devices to complement with use of personal computers and flash disks in order to be able to save large files that could not be stored in mobile devices. They recommended that the universities to enact regulations that promote the use of mobile devices and at the same time, the said regulations, should reduce inconveniences caused to other non-mobile phone users. There was another recommendation to subsidize the cost of mobile devices and to provide adequate power back up. Omallah et al. (2016), tried to find out if the issues mentioned could be solved. Almost a half of the respondents (40%) proposed quarterly training for all staff and customers, 20% suggested growing internet connectivity in both repositories, and the remainder suggested regular sensitization for all students to ensure understanding of the need for this development in the library environment. This study relates to our study as it stated that sufficient training of library technical staff on m-resources is needed as one of the possible solutions.

Similar findings for the study were by Namenya (2014) who also noted that interviewees were requested to propose potential solutions to the numerous threats and obstacles that hinder the optimum use of these library facilities. Their recommendations were as follows: add additional services to the library, with the majority of students recommending inclusion of resource distribution. Many approaches include increasing internet connection speed and having WIFI in range on a regular basis, providing free internet access to students, having enough information staff to assist in accessing and using ICT facilities, having a strong network signal, and finally, increasing awareness and sensitization seminars on available ICT facilities and methods of accessing them for research purposes. The findings of this study were similar to the current study where proposed solutions to the challenges were creation of numerous mobile devices access points and mobile utilization campaigns to improve educator perceptions among others. Saxena and Yadav's (2013) study made the following recommendations to address the problems associated with the use of mobile devices in university libraries: By holding training sessions and career learning opportunities, university library employees training, create local knowledge, and encourage dialogue. These findings were similar to the current study on the issue of training of library employees on how to utilize mobile devices in the library.

Easy access of mobile devices and utilization of mobile devices in university libraries

This subsection shows the cross-tabulation results for easy access of mobile devices against utilization of mobile devices in university libraries. The results include expected counts, Chi-Square test, Fisher's test and Phi values. Chi-Square test and Fisher's test are the inferential tests to infer significance of association while Phi value indicates the amount of association identical to Pearson's R (Obilor & Amadi, 2018). The expected counts guide in selection of the most accurate inferential test. If there is an expected count less than five, then Fisher's Exact test will be suitable compared to Chi-Square test.

Table 7: Expected Count for Easy Access of Mobile Devices against Utilization of Mobile Devices in University Libraries

			Easy Access of Mobile Devices			Total
			To a great extent	To some extent	Not at all	
Utilization of Mobile Device	Yes	Count	63	57	3	123
		Expected Count	62.9	55.3	4.8	123.0
Utilization of Mobile Device	No	Count	3	1	2	6
		Expected Count	3.1	2.7	0.23	6.0
Total		Count	66	58	5	129
		Expected Count	66.0	58.0	5.0	129.0

a. 4 cells (66.7%) have expected count less than 5. The minimum expected count is .23

Table 7 shows that the results for the expected count on cross tabulation of Easy Access of Mobile Devices against Utilization of Mobile Devices in University Libraries. The least expected count is less than five (0.23^a), hence, the most accurate inferential statistic is Fishers exact test rather than chi square statistic (Table 9).

Table 9: Chi – Square and Fisher's Test result for Easy Access of Mobile Devices against Utilization of Mobile Devices in University Libraries

Statistic	Value	df	Asymp. P-value	Exact p-value
Pearson Chi-Square	15.210 ^a	2	0.000	0.011
Likelihood Ratio	7.292	2	0.026	0.046
Fisher's Exact Test	8.291			0.015

The Fisher's Exact test in Table 9 is 8.291 with an observed p-value of 0.015, which is less than 0.05, the cut off significance value of the study. Therefore, there is a significant degree of association between easy access of mobile devices and utilization of mobile devices in university libraries.

Table 10: Symmetric Measures of Easy Access of Mobile Devices against Utilization of Mobile Devices in University Libraries

		Value	Approx. p-value	Exact p-value
Nominal by Nominal	Phi	0.343	0.000	0.011
	Cramer's V	0.343	0.000	0.011

Table 10 indicates the Phi value similar to the Pearson's R, which in this case was 0.343 (34.3 percent). This indicates a moderately strong relationship between easy access of mobile devices and utilization of mobile devices in university libraries. Phi defines perfect association as predictive monotonous, and defines null relationship as statistical independence (Njehia, 2017). In this case, the percent difference with easy access of mobile devices as independent (column) is 34.3%, and with utilization of mobile devices in university libraries as independent is 34.3%. Phi is the mean percent

difference between easy access of mobile devices and utilization of mobile devices in university libraries with either considered as causing the other (Njehia, 2017).

CONCLUSION AND RECOMMENDATIONS

The study established that 95 percent of the library users use mobile devices to accessing library materials. The various ways in which mobile devices are used in university libraries include accessing library resources, mobile payments, using QR codes to search publications, cloud computing and sharing of information with accessing library resources to be mostly used. This means that students and other users found it easier to search for library resources from the convenience of a mobile phone rather than the traditional way of looking for books in the library shelves. It was also established that mobile phones were extensively used in communication through instant messaging applications among the library users. This enabled the users easily share knowledge among themselves while utilizing the university's internet (WIFI).

The use of mobile phones in university libraries has not been without challenges. From the study 78.6 % of the users acknowledged that the experienced challenges in the use of mobile devices in the libraries. The challenges experienced by the users include insufficient mobile-accessible resources, inadequate technical support mobile devices, limited capacity of mobile devices, incompatible library resources and negative educator perception. The main two challenges were insufficient mobile-accessible resources and inadequate technical support mobile devices.

? further noted that users lacked training on how to make the most use of mobile devices in accessing library materials. Some users used the mobile devices in the libraries for entertainment, which caused distraction for other library users. The other challenges noted by ICT staff and senior library members was inadequate power supply sockets to charge mobile phones. There was no support section for mobile phone users hence if the experienced technical hitches, they could not get help within the university. Senior library staff also noted that users were bombarded with a lot of information hence they lack concentration limiting their understanding of concepts.

ICT officers noted that mobile phones had insufficient storage capacity hence the users could not store infinite library materials. Furthermore, mobile phones were also expensive to acquire especially if the users required more storage capacity. Most of the users are university students sponsored either by government or by their guardians. Therefore, affording an expensive mobile phone is not easy for the students. The phones they use are also prone to technical hitches and since they are hand-held portable devices, the users easily lose their phones either by misplacing or being stolen.

The use of mobile devices had challenges, notably, lack of mobile phone technical support, limited power sources to charge the phones, poor Internet connectivity, and expensive repair and replacement costs associated with the use of mobile phones. Nevertheless, the study has concluded that the use mobile phones in university libraries is greatly beneficial to the users and it reduces the stress on traditional library facilities.

The study recommends that universities should put up mobile phone resource centers such that mobile phone users can get technical assistance. The universities should invest in good Internet connectivity covering the whole university area including student residencies. This will enable access to library materials even from outside the libraries hence decongesting the libraries. The university should also install adequate

power sockets in and outside the libraries to enable mobile phone users to be able to use the library resources without power limitation.

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