Content available at: https://www.ipinnovative.com/open-access-journals

IP Indian Journal of Library Science and Information Technology

Journal homepage: https://www.ijlsit.org/

Original Research Article

Evaluating features of mobile phone technology needed to access library services in Mount Kenya University library in Kenya

Benard Omallah George [1]*

[1] *Dept. of Library Science, Mount Kenya University, Thika, Kenya*

ARTICLE INFO

Article history:
Received 14-04-2023
Accepted 30-06-2023
Available online 16-01-2024

Keywords:
Mobile phone technology
Mobile phone
Access Utilization
Library resources
Computer technology

ABSTRACT

With library automation already done in all libraries in mount Kenya university, installed library management system, provision of e-book reader (kindles) and user and library staff training all provide ample platform for use of library materials via mobile phone devices. Since the introduction of Kindles and use of MPT to access and utilize library services in MKU libraries, no study has been done to determine the effectiveness of this technology. Therefore, this study and its recommendation come handy in order to improve library service delivery using MPT. The purpose of the study is to evaluate the use of mobile phone technology in accessing library information materials at Mount Kenya University. The target population was 39452 where a sample of 395 was selected. In this study, questionnaires were used to collect data. Four campuses were purposively sampled due to their established library automation and library management system providing the platform that can support library access via Mobile Phone Technology. Data collected through questionnaires was cleaned, edited, coded before it was entered into the statistical software for analysis. Statistical Package for Social Sciences (SPSS) was used for analyzing the collected data. Based on research findings, it could be right to say that despite challenges of power outages, internet instability and other factors identified above, mobile phone devices have required features to support access to reference services, checking in/out, indexing and abstracting, conducting current awareness to users, doing selective dissemination of information, executing interlibrary loaning and providing special services to special people.

1. Introduction

The new mobile phone technology can support a lot of library services such as searching in library OPAC, current awareness, book loan/reserve, database accessing and reference services (Nazi, Ghasempour, &Asgari, 2014). Mobile devices and applications provide access to information in the comfort of people's homes and offices, using their cell phones or personal digital assistants (Elahi, 2014). (Palumbo, 2014) observed that librarians work with students as part of information literacy classes, at service desks, and in cyberspace, thus it is important to realize that for students, the mobile device will increasingly become an instrument for the creation of digital content and not just a device for accessing the content. Therefore, library services have become accessible from any point since mobile devices provide easy access to library materials and promote efficiency. (Nazi et al., 2014) noted that the use of MPT in the library provides library services beyond the location and library barriers, offer simplicity in usage, reduced cost of acquiring PCs and high influence cost coefficient. [1–4]

In order to overcome the general perception that lack of space has a detrimental effect of institutional quality making it difficult to connect researchers and students with

* *Corresponding author.*
E-mail address: omallahb@gmail.com (B. O. George).

https://doi.org/10.18231/j.ijlsit.2023.017

study space (Cocciolo, 2010), MPT has afforded ample study environment and convenience of all library users. With increasing access to the internet and mobile devices, libraries have started investigating ways to deliver their services to mobile phones and other small-screen devices so that their patrons can access them anytime and anywhere (Kumar, 2014). As such, the fabric of patrons has become interwoven with MPT in order to attain optimum access and utilization of library services. Since academic libraries serve users who own Kindles, cellphones, and tablets (Palumbo, 2014), the latter's adoption and use have promoted library resource consumption.

2. Mount Kenya University Libraries and Mobile Phone Technology

MKU library offers in one central location, all the resources necessary to support teaching, learning, and research by promoting and maintaining a wide variety of quality services that will support the Programmes of the university and encourage optimal use of the information resources (Mount Kenya University, 2015). Understanding the dynamism of a library and library services, the university library lays emphasis on acquisition of relevant, authoritative, up-to-date materials and promotes quick access and delivery of information by integrating information communication technology in its functions. For research, library users access more than 30, 000 volumes on site as well as electronic catalogs, databases, subject guides, encyclopedias, dictionaries, and ebooks collection. The E-learning, multimedia, study Villas creates a variety of learning and collaborative environments. To support individual learning with custom-designed study carrels and tables.[5–9]

The growth of technology has changed the way information is acquired, selected, stored, retrieved and disseminated (Masese, Makwae, Omallah, & Moenga, 2016) resulting to adoption and use of current mobile phone technology to quicken the process. Improved technology has prompted a change in patron information seeking behavior and left librarians and other information professionals rethinking about ways to re-engineer information resources (George, Maina, & Wanangeye, 2016b). Wamalwa & Omallah, (2016) observed that when academic libraries integrate Information Communication Technologies (ICTs) in an acquisition, selection, processing, storage, dissemination and accession to their holdings, patrons' needs are addressed quickly and on time. In this regard, Mount Kenya university library has installed a library management system and provided Kindles to support library access and utilization.

With library automation already done in all libraries in mount Kenya university, installed library management system, provision of e-book reader (kindles) and user and library staff training all provide ample platform for use of library materials via mobile phone devices. Since the introduction of Kindles and use of MPT to access and utilize library services in MKU libraries, no study has been done to determine the effectiveness of this technology. Therefore, this study and its recommendation come handy in order to improve library service delivery using MPT.[10–12]

3. Literature Review

With the advent of mobile phone technology, 'ubiquitous' has become evidently more pronounced than one decade ago. Bae, Jeong, Shim, & Kwak, (2007) asserts that the term 'ubiquitous computing' conveys the possibility to compute anywhere at any time with any type of equipment enabled by networks and mobility. They add that mobile technology utilizes a transmitting microchip and wireless network to easily transmit or receive various kinds of information and to enhance the convenience of accessing and utilizing library resources. Therefore by combining mobile phone technologies including digitized contents, a wireless network, and a smart tag, libraries are able to satisfy users' needs to open their customized virtual libraries at any time and from anywhere to get information easily (Bae et al., 2007). Mobile phone industries are working to overcome key constraints which hindered hand-held device functionalities and make them better devices. In the past, the key constraint to running Java on mobile devices has been their processing, memory, and power consumption limitations. However, new mobile hardware and software developments are reducing these limitations (Lawton, 2002). This new technology has resulted to a rapid spread of mobile phones in developing countries and increasing access to an enormous range of information services that are highly valued by urban and dual populations of these countries (Mansell, 2012).[13,14]

Kenya has experienced exponential interest and use of the 4G network for mobile phone (Ishii, 2004a). (Varshney & Jain, 2001) found out that with this feature, users will have access to different services, increased coverage, the convenience of a single device, one bill with reduced total access cost, and more reliable wireless access even with the failure or loss of one or more networks. The 4G network for mobile telephony supports global roaming across multiple wireless and mobile networks. With the 4G network, smartphones have become miniature computers which provide information in the palm of your hand and librarians are encouraged to become involved with mobile phone technologies as a means of providing access to library services (Mohamed, 2014). This is evident in the extent as to which Mobile phone technology infiltrating the African physical and information environments.

Mobile internet services were success since the launch of 'i-mode' in Japan in February 1999. "i-mode", the web access protocol on NTT DoCoMo's terminals, is the most successful mobile Internet access model in the

worldwide telecom market and i-mode users number total 600,000 abroad, 500,000 in Europe and 100,000 in Taiwan (Ishii, 2004b). These mobile Internet systems allow for a short message service (non-Internet mail), email (Internet mail), and web browsing, and additional advanced services such as picture mail. Libraries around the world short message service to inform their users when borrowed library resources are due and advice the way forward. Similarly, web browsing if integrated with library catalogs will enable the users to browse through library holdings and select relevant resources to meet their immediate and future needs. Apart from fast internet connectivity afforded by smartphone to their users, they are portable and have relatively large screens that provide a friendlier interface for users to access and utilize information without straining the eyes (Gitau, Marsden, & Donner, 2010).

Mobile phone technology has come with positive changes and all aspects of life must embrace in order to remain competitive and avoid extinction. Publishers and librarians have embraced mobile phone technology to promote service delivery. Academic librarians are developing mobile content and services in the context of the wider information industry, and while librarians and university researchers are becoming more comfortable in using mobile technology for advanced research activities, library vendors and publishers are responding to that trend (Canuel & Crichton, 2011). As such, many information providers have customized their services to be disseminated through mobile phone technology such as introduction mobile library service, distance learning programmes, interlibrary lending, and library user interaction through phones. Kim et al., (2006) states that Increasing numbers of institutions of higher education offer courses using mobile phone technologies as alternative teaching and learning tools. As such, library services have to be made available through a similar platform to make teaching and learning success.

Smartphones are steadily gaining popularity, creating new application areas as their capabilities increase in terms of computational power, information dissemination and communication(Bläsing, Batyuk, Schmidt, CaMountepe, &Albayrak, 2010). Mobile phone functionalities are improved and developed each day due to technological advancement. As academic institutions are establishing virtue varsities and distance learning programmes coupled with increased enrollment of working class people to the same, libraries must embrace mobile phones in their service delivery. Following the above literature review, it is confirmed that the gadgets can support service delivery.

Many emerging smartphone applications require position information to provide location-based or context-aware services and GPS is often preferred over its alternatives such as GSM/Wi-Fi-based positioning systems because it is known to be more accurate (Paek, Kim, &Govindan, 2010). The in-built device is helping in finding location-based information which is imperative for day-to-day human activities. Portokalidis, Homburg, Anagnostakis, & Bos, (2010) found out that they are also quite different from PCs, so that PC-oriented solutions are not always applicable, or do not offer comprehensive security and proposed an alternative solution, where security checks are applied on remote security servers that host exact replicas of the phones in virtual environments. Hence, the measures will improve the security of the mobile phone user, unlike PC users.

4. Research Methodology

Adequate procedures were put in place to achieve validity, objectivity, and accuracy of the data that was collected. These procedures involved identifying the study population, sampling, seeking permission from relevant authorities to collect data using a questionnaire and how the respondents returned the questionnaires.

In this study, the target population constituted library users who access and utilize library services at MKU main libraries. Student respondents were drawn from Thika campus (25,701), Nakuru campus (6,228), Eldoret campus (4,837) and Kisii campus (2,686) giving a total of 39,452 students (as presented inTable 1).

Table 1: Distribution of respondents per campus library user

Campus	Student population	% of population	County
Thika	25701	65.14	Kiambu
Nakuru	6228	15.78	Nakuru
Eldoret	4837	12.26	Uasin Gishu
Kisii	2686	6.81	Kisii
Total population	39452	100%	

Source: Researcher 2022

Students were used as respondents since they constitute the largest percentage of users served by academic libraries. With the advent of mobile phone technology, a big percentage of university students have embraced the use of phone both in communication, reading and learning (Lenhart, 2009). Students use smartphones to gain access to library services (Maranto et al., 2010). Thus, system librarians will be better placed to understand library services that have been accessed and utilized through mobile phones.

Table 1 shows the total student population and the distribution per campus. The sample size was determined as shown in table 3.2 using Yamane & Israel, (1997) formula. According to Yamane & Israel, (1997) formula for computing sample size;

$n = \frac{N}{1+N\ x\ (e)^2}$; Where;

n= sample size,

N= the population size, and

e= sampling error or margin of error (-+5%)

Therefore; using Yamane Formula, 395 students were selected for the study. as shown in Table 2.

Four campuses were purposively sampled due to their established library automation and library management system providing a platform that can support library access via Mobile Phone Technology.

Table 2: University campuses

	University Campuses	Frequency	Percent	Valid Percent	Cumulative Percent
		1	.3	.3	.3
Valid	Thika Main	257	65.1	65.1	65.3
	Nakuru	63	15.9	15.9	81.3
	Eldoret	47	11.9	11.9	93.2
	Kisii	27	6.8	6.8	100.0
	Total	395	100.0	100.0	

Source: Researcher 2022

In this study, questionnaires were used to collect data. Questionnaires were administered to the students in the four campuses in order to obtain their attitude/perceptions, opinion, comment and viewpoint about the use of mobile phone technology in access and utilization of library services. Data was collected on the use of mobile phone, capabilities, challenges and possible solutions to mitigate them as pertains to access and utilization of library services.

Data collected through questionnaires was cleaned, edited, coded before it was entered into the statistical software for analysis. Statistical Package for Social Sciences (SPSS) was used for analyzing the collected data. SPSS was preferred because of its ability to model latent variables under both normal and non-normal conditions (Odongo, 2011). Frequency distribution tables were used in analyzing the variables

5. Results and Discussion

5.1. Services retrieved via mobile phone technology

Library users who preferred using mobile phone technology especially retrieving academic documents listed their choice as illustrated in Table 4. In this research, all library users who used mobile phone technology were able to retrieve all the services they required via mobile phone technology. This fact is illustrated by the percentages of access or retrieval above 84% of all library services. For example, all users, 100% retrieved books using mobile phone technology while 84.2% were able to retrieve other library services such as accessing library over-dues, renewing borrowed resources and perusing library accounts.

5.2. Sections of the library where mobile phone technology is used

All sections of the library: Circulation, e-resources/multimedia, online public access catalog (OPAC), stack area, periodical section, and others were reported to facilitate mobile phone technology where electronic resources/multimedia was leading with 98.2%.

When users were asked to identify other ways library resources were accessed via mobile phone technology, the library users could not identify other ways in which library resources were to be accessed by use of mobile phone technology.

5.3. Opinion on mobile devices to access library resources

Library users expressed their opinion on the use of mobile devices as demonstrated in table 4.9. 77.9% of respondents recommended that the use of mobile phone technology is highly useful while 17.6% reported moderately useful. Since the majority of respondents appreciated the usefulness of mobile phone technology, the library management should ensure that library users who consider the technology not useful are retrained to grasp mobile phone technology as well as seek clarification as to why 17.6% don't fully appreciate this technology.

6. Conclusion

In order to embrace mobile phone and mobile computing, libraries and publishers have resorted into holding and producing e-resources respectively in order to facilitate their consumption. First, libraries have installed library management system (library automation), stocked e-resources, trained their staff and done internet connection in an attempt to make libraries accessible through modern technologies including mobile phone technology. Secondly, publishers are producing both printed and soft copy resources. Research shows that aggregators are vigorously marketing e-resources to all libraries since they require limited space, allow more-than-one person access, accessible through current technologies, relative cheaper, portable, and accessible off-library premises and are not prone to physical depreciation.

Research shows that all e-resources can be accessed through mobile phone technology, for example, e-journal, e-books, e-newspapers, and OPAC are accessible though MPT. However, if we look at how this technology has been approved and used to access library content, for example with regard to internet and off-campus usage, it worrying how little this technology has been utilized.

Considering tremendous and untenable influence mobile technology has impacted on all aspects of our life, it can be concluded that although the technology has been embraced in some library operations, its potential has not been fully

Table 3: Services retrieved via mobile phone technology

Services retrieved via mobile phone technology	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
Academic journals	268	98.2%	5	1.8%	273	100.0%
Books	273	100.0%	0	.0%	273	100.0%
Conference and workshop	269	98.5%	4	1.5%	273	100.0%
Projects and business plans	242	88.6%	31	11.4%	273	100.0%
Research papers	232	85.0%	41	15.0%	273	100.0%
Speeches	234	85.7%	39	14.3%	273	100.0%
Thesis and dissertations	231	84.6%	42	15.4%	273	100.0%
University publications	231	84.6%	42	15.4%	273	100.0%
Others	230	84.2%	43	15.8%	273	100.0%

Sources: Researcher 2022

Table 4: Sections of the library where mobile phone technology is used

Sections of library	Cases					
	Included		Excluded		Total	
	N	Percent	N	Percent	N	Percent
Circulation	265	97.1%	8	2.9%	273	100.0%
E-resources/Multi-media	268	98.2%	5	1.8%	273	100.0%
Online Public Access Catalogue (OPAC)	263	96.3%	10	3.7%	273	100.0%
Stack area	267	97.8%	6	2.2%	273	100.0%
Periodical section	267	97.8%	6	2.2%	273	100.0%
Others	265	97.1%	8	2.9%	273	100.0%

Table 5: Opinion on mobile devices to access library resources

Opinion on Mobile Use		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Highly useful	208	76.2	77.9	77.9
	Moderately useful	47	17.2	17.6	95.5
	Slightly useful	1	.4	.4	95.9
	Not at all useful	9	3.3	3.4	99.3
	999	2	.7	.7	100.0
	Total	267	97.8	100.0	
Missing	System	6	2.2		
Total		273	100.0		

Source: Researcher 2022

utilized.

Features of mobile phone technology needed to access library services were evaluated against library services that the latter was capable to execute. These included: reference, lending, indexing and abstracting, current awareness, selective dissemination of information, interlibrary loaning ICT and special services. Respondents listed the following: Power outages, since these devices and internet are power dependent, Weak bandwidth or lack of internet at all, Viruses which hinder proper functioning of device and performance, Server outages following maintenance, power and incompatibility with newer versions, Limited access to mobile devices, Incompatible software and Data insecurity where user is exposed to data theft.

Based on research findings, it could be right to say that despite challenges of power outages, internet instability and other factors identified above, mobile phone devices are capable and have require features to support

access to reference services, checking in/out, indexing and abstracting, conducting current awareness to users, doing selective dissemination of information, executing interlibrary loaning and providing special services to special people.

It could be concluded that mobile phone technology together with the entirety of its features, is a method through which Mount Kenya University as a university could enhance its image and notoriety. Good customer care and correspondence in libraries are imperative for the information to be utilized by the library users and this technology gives a way to accomplish this.

7. Recommendation

This study analyzed the extent to which the MKU libraries had used mobile phone technology in accessing and utilization library information services. Several factors were considered and this brought about many different responses from the respondents as seen above. It is recommended by the researcher that the use this mobile phone technology to their advantage. This is a technology that is increasingly pervasive and is being used in many university libraries overseas and has already been adopted by university libraries in Kenya. It is recommended to be improved because, as outlined above, mobile phone technology will not only improve communication between users and librarians but may also increase the usage of the library. There is also the possibility of such technology playing a role in increasing the research output of the University by providing quick, reliable and easy access to information**.**

Following the finding recorded above such as regular technological change, new user and staff on board and emerging trends, both users and staff need to undergo regular training in order to keep them abreast. The idea that users are trained once a semester is insufficient considering the intensity of use MPT will be put into accessing the library holdings. Once the two parties are trained specifically on the use of mobile phone technology in libraries, it will facilitate this technology being used never like before. However, as this recommendation is made, the researcher acknowledges the challenges identified above and their financial implications.

8. Source of Funding

None.

9. Conflict of Interest

None.

References

1. Bläsing T, Batyuk L, Schmidt AD, Camountepe SA, Albayrak S. An android application sandbox system for suspicious software detection. *Malicious and unwanted software (MALWARE), 2010 5th international conference on*. 2010;p. 55–62.
2. Bae KJ, Jeong YS, Shim WS, Kwak SJ. The Ubiquitous Library for the Blind and Physically Handicapped a case study of the LG Sangnam Library. *Korea IFLA J*. 2007;33(3):210–9.
3. Cocciolo A. Alleviating physical space constraints using virtual space? A study from an urban academic library. *Libr Hi Tech*. 2010;28(4):523–35.
4. Elahi MH. Go Fast, Go with Mobile: Students perception on implementing mobile-based library services at Dhaka University Library. *Library Philosophy Pract*. 2014;1:1.
5. George BO, Maina J, Wanangeye LW. Analyzing the Use of Mobile Phone Technology in Access and Utilization of Library Resources in Mount Kenya University. *World J Comp Appl Technol*. 2016;4(1):15–21.
6. George BO, Maina J, Wanangeye LW. Analyzing the Use of Mobile Phone Technology in Access and Utilization of Library Resources in Mount Kenya University. *World J Computer Appl Technol*. 2016;4(1):15–21.
7. Kim SH, Mims C, Holmes KP. An introduction to current trends and benefits of mobile wireless technology use in higher education. *AACE J*. 2006;14(1):77–100.
8. Lawton G. Moving Java into mobile phones. *Computer*. 2002;35(6):17–20.
9. Masese JM, Makwae EN, Omallah BG, Moenga EN. Strategies to Enhance Access and Use of E-Resources by Postgraduate Students in Selected University Libraries in Kisii County. Kenya; 2016. Available from: https://erepository.mku.ac.ke/handle/11915/5405.
10. Nazi A, Ghasempour S, Asgari L. A Feasibility Study of Mobile Services Implementation in National Library and Archives of Iran: user 's trends; 2014. Available from: https://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=2867&context=libphilprac.
11. Portokalidis G, Homburg P, Anagnostakis K, Bos H. Paranoid Android: versatile protection for smartphones. *Proceedings of the 26th Annual Computer Security Applications Conference*. 2010;p. 347–56.
12. Paek J, Kim J, Govindan R. Energy-efficient rate-adaptive GPS-based positioning for smartphones. *Proceedings of the 8th international conference on Mobile systems, applications, and services*. 2010;p. 299–314.
13. Varshney U, Jain R. Issues in emerging 4G wireless networks. *Computer*. 2001;34(6):94–6.
14. Wamalwa LW, Omallah BG. Analyzing application of Information communication technologies and use for information provision by library Staff of Mount Kenya University Library, Kisii Campus; 2016. Available from: https://erepository.mku.ac.ke/handle/123456789/4105.

Author biography

Benard Omallah George, Campus Librarian https://orcid.org/0000-0003-4130-8696

Cite this article: George BO. Evaluating features of mobile phone technology needed to access library services in Mount Kenya University library in Kenya. *IP Indian J Libr Sci Inf Technol* 2023;8(2):99-104.