Mobile Technology: A Platform to Enhance the Usability and Accessibility of Online Resources

* Shyambali Kumar

* Librarian, Govt. College Jaithari, Anuppur (M.P.), INDIA (Former Library Assistant, Vasanta College for Women, Rajghat Fort, Varanasi); Email: shyam.bali044@gmail.com

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Abstract

The mobile landscape has broadened significantly and now libraries are also exploring and experimenting with this technology. The present paper aims to explore online resources usability and accessibility skills of library users on Mobile Technology. It also presents an overview of trends in mobile tools and their applications for libraries, including the Internet mobile, mobile multimedia and text messaging etc. A total of 55 valid samples of faculty members and postgraduate students of Vasanta College for Women Rajghat, Varanasi were used for data analysis. Library users use various types of smartphones and also use social media to encounter their information needs. It was noticed that WhatsApp, Facebook, Youtube and Wikipedia were frequently used by the respondents.

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1. Introduction

Mobile technology became a panacea to encounter obstacles of information resources. It is a part of information technology that is used polysemous and became the lifestyle of human beings in the present era. M-learning is set to be the next big wave in education, library and information professionals. It offers enormous potential as a tool to be used in situations where learners are geographically dispersed to promote collaborative learning, accessing, sharing, and downloading online resources. It also engages the users with online and offline content. Smartphones have smoothly become an alternative to books and computers, as an alternative to attending campus lectures and for 'just-in-time delivery of information. Once limited to making and receiving calls, today's smartphones evolve into educational platforms for information access, learning, and creation. With the help of mobile technology, information professionals can "push" and "pull" information and deliver learning to anyone at any time and any place. It provides a tremendously convenient platform to connect the potential of mobile devices in enhancing relating to resources, online and offline. Smartphones have developed transparency among their users to access and reuse inflammation over the Internet. A smartphone is a cellular telephone with an integrated computer and other features not originally associated with telephones, such as an operating system, Web browsing, and running software applications. The first Smartphone was IBM's Simon, which was presented as a concept device (rather than a consumer device) at the 1992 COMDEX computer industry in a trade show. Nowadays, various types of smartphones are used by teachers, students, and professionals. Smartphones and their cellular network leverage users/learners to locate information resources over the Internet. It helps to enhance the virtual usability of reading material and its related stuff.

Various types of media

Paper discusses some most useful and famous media that are used by users via their smartphones. Facebook is a social media for sharing information as text, images, and videos. It was developed and founded in 2004 by Mark Zuckerberg, Eduardo Saverin, Dustin Moskovitz, Andrew McCollum, and Chris Hughes. Now its parent company is Meta Platforms Inc. Youtube is a most powerful platform to share education video lectures, user education, library channel. It was launched in February 2005 by Steve Chen, Chad Hurley, and Jawed Karim. Google+ was a social network owned and operated by Google. The network was launched on June 28, 2011, and created by Vic Gundotra and Bradley Horowitz. Wikipedia is a free content, the multilingual online encyclopedia written and maintained by a community of volunteers through a model of open collaboration, using a wiki-based editing system. Individual contributors, also called editors, are known as Wikipedians. Its Original author Wikimedia Foundation Written in PHP, Created by: Jimmy Wales, Larry Sanger, and it was launched on 15 January 2001. Academia.edu is an American non-profit social networking website for academics. It began as a free and open repository of academic journal articles and registered a .edu domain name when this was not limited to educational institutions. ResearchGate is a European commercial social networking website for scientists and researchers to share papers, ask and answer questions, and find collaborators.

Role of Library of Congress in promoting the use of M-Technology

Library of Congress developed some of most essential apps for various smartphone OS platforms, promoting library service, which is National Book Festival, with this Festival App, with a complete list of all events & locations, custom scheduling, maps, presentation ratings and ways to share it all via your social media. The BARD Mobile app is a National Library Service for the Blind and Physically Handicapped service that provides access to braille and talking books directly from the NLS Braille and Audio Reading Download (BARD). Read the Congressional Record's daily edition on your iPad, iPhone, or iPod touch. The Aesop for Children interactive book is designed to enjoy readers of any age.

About Vasanta College for Women

Vasnta College for Women was established in year 1913 by Dr. Annie Besant is affiliated to Banaras Hindu University, Varanasi. At the present college has ten departments of teaching and research. Teaching, research, and Knowledge extension are the mandate of the Departments. They focus on undergraduate programs, postgraduate programs, and Doctoral research. The total number of students is around 2200, including research students and the absolute no of faculties is approximately 55. College also runs two diploma courses, i.e., Travel and Tourism and Mass Com. The library is well equipped with textbooks, reference books, Journals, Periodicals and also has taken membership to provide the accessibility of e-books and e-journals through N-LIST. The college library is automated by using SLIM automation software developed by Algorithms.

2. Literature review

Mobile technology holds great promise for enabling libraries to provide enhanced services in a form users increasingly are demanding. If this promise is to be fully realized, however, libraries will need to conduct analyses and make smart decisions to address the issues outlined above, support staff education and explore partnerships and new funding models,

and be prepared to compromise concerning their traditional information delivery models. Teddy Woodhouse (2021) study on the IFLA blogs, with the title of "Five Ways That Libraries Offer Meaningful Connectivity" emphasize to development of library networks, connectivity, broadband, low cost, optimum use of ICT and access to the ICT ecosystem. Provide online resources as much as possible.

It has been suggested that m-learning can tackle issues of democratic participation and social inclusion (Tétard, Patokorpi & Carlsson, 2008). Mobile devices are less costly than a personal computer and used by many because the devices are more affordable and are almost a necessity to have in the case of mobile phones. Hence, e-inclusion is made more possible by using mobile phones for information downloads or learning purposes. Zahra Taleb and Amir Sohrabi (2012) concluded the study under the title "Learning on the move: the use of mobile technology to support learning for university students". To examine the viewpoint of Islamic Azad University of South Tehran students, factors such as: having a mobile phone with various capabilities, having a long-life battery charging and access to the internet, and ability to pay for high technology mobile and different services, have significantly affected the mobile phone use in students' academic affairs.

Mansori et al. (2010) showed that students have a positive view and interest regarding M-learning. They were familiar with the barriers of M-learning and believe that it could be advantageous for their learning processes. Schepman, Rodway, Beattie & Lambert, (2012) showed the use of these technologies for learning is equally capable of providing a more interactive and effective type of learning to meet individuals' learners' needs. Mobile technology can be beneficial for higher education due to its ubiquitous nature and ability to shape information processes.

Another interesting option that Facebook provides is the possibility to create a smaller, closed group of users. This option is helpful for specific groups of interest like a "Harry Potter" or "Star Wars" society. These groups can organize their events, parties, offer events to the rest of the teens like presenting the best volumes in the form of a poetry slam, or exchange opinions about the books they read. In this way, teens stay inspired for reading and keep the contact with the library (Tifanny McClary, 2013).

Tifanny McClary (2013) described that evolution of visual information through social media, Pinterest, Instagram, and Snapchat provide the opportunity to transfer a big amount of information in an easy and fast way. These social media are suitable to present new media or collections of media. Pinterest social media offers collaborative boards so users can for instance add their favourite titles of books.

According to Cummings (2010), advances in transfer speeds and device design have significantly improved mobile internet surfing. New products like, such as smartphones, PDAs, tablets, phablets, and other portable devices, integrate easy download, save, and view of PDF documents and Microsoft Office files for processing Word and spread-sheet formats. These recent improvements will allow a large number of university library users to easily access many of these library services from portable mobile computing devices due to the future developments mentioned above and the demographic patterns.

Mobile technology holds great hope that the library will provide extended services in the form that users increasingly demand. However, for this pledge to be fully fulfilled, the library must analyze and make wise decisions to address the issues described in this article.

Traditional information distribution model with the explosive growth of advanced mobile technology and robust digital capture capabilities, the library needs to carefully consider the impact of user privacy without imposing the hassle of security measures or annoying interruptions. For example, the library does not need to display a privacy notice or a security warning every time it tries to access information on a mobile device. A single login and agreement to the Terms of Service, following similar procedures used by other mobile applications and services, will suffice. At the same time, the Library can take this opportunity to train Users on best practices regarding privacy issues related to mobile devices (Dheeraj Singh Negi, 2014).

3. Objectives of the study

The core objective of this study is to examine the usability and accessibility skills of online educational resources through smartphones among faculty members and Postgraduate students of Vasanta College for Women. The other objectives of the study are:

- To examine the use of smartphones for educational purposes.
- To compare which group is more techno-friendly as a smartphone platform in terms of resource sharing.
- To find out which type of media is most beneficial to access educational resources via Smartphone.
- To know the future expectation of users to start new services of the library on M-platform.
- To know that which group (Faculty Member & PG students) is more efficient to access M-platform for educational purpose.

4. Scope

The scope of the present study is limited to the postgraduate students and faculties from various disciplines of Art, Social, Education, and Commerce of Vasanta College for Women, Rajghat, Varanasi, Uttar Pradesh.

5. Methodology

A questionnaire was used as the research tool for data collection for present study. The structural questionnaire covers several aspects of resource accessibility and usability skill using smartphones. A cluster of 15 questions was designed to gather information accessibility, usability skills on the smartphone platform using various media. This questionnaire was circulated amongst 60 college library users belonging to 4 departments in the college both faculty members and students. A sample of 30 teachers and 30 postgraduate students were selected for distributing 60 questionnaires. Out of which 58 (96.67%) filled questionnaires were received from 30 (50%) faculty members and 28 (46.66%) postgraduate students. 03 questionnaires were rejected because, they were not adequately filled. Therefore, a total of 55 samples were used for data analysis. Interpretation and analysis of data have been done by using Excel software.

6. Data analysis

The users' responses collected through the questionnaire have been analyzed and presented along with a discussion of the relevant issue under different facets.

Table - 1: Use of smartphone for locating educational resources

Use of smartphone in a day	Faculty Member	PG Students	Total
1 Hour - 2 Hour	23 (79.31)	21 (80.77)	44 (80.0)
3 Hour - 5 Hour	5 (17.24)	4 (15.38)	9 (16.36)
More than 5 Hour	1 (3.45)	1 (3.85)	2 (3.64)
Total	**29 (100.0)**	**26 (100.0)**	**55 (100.0)**

Note: Number given in brackets represents percentage.

Regarding the use of smartphone for locating educational resources in a day, table 1 shows that 44 (80.0%) users in both categories are using their smartphones more than 1 to 2 hours, 9 (16.36%) respondents are using their smartphones from 3 to 5 hours; whereas only 2 (3.64%) respondents are using their smartphone more than 5 hours. This shows the importance and use of smartphones for the access of education resources.

Table - 2: Access of various information resources on Smartphone

Resources	Faculty Member (n=29)	PG Students (n=26)	Total (n=55)
Audio clips	15 (51.72)	11 (42.31)	26 (47.27)
E-books or print content	19 (65.52)	17 (65.38)	36 (65.45)
PPT share	10 (34.48)	8 (30.77)	18 (32.73)
Internet surfing	27 (93.1)	23 (88.46)	50 (90.91)
Library online resources	14 (48.28)	9 (34.62)	23 (41.81)
Online Maps	9 (31.03)	17 (65.38)	26 (47.27)
Weather	14 (48.28)	9 (34.62)	23 (41.81)

Note: Number given in brackets represents percentage.

Table 2 reveals that most of the users in both categories access information resources in various types, but the percentage of surfing over the Internet is more significant than the others. The data shows 27 (93.1%) faculty members and 23 (88.46%) PG students like to surfing Internet on their Smartphone. E-books or print content are the second most choice of both faculty members and PG students.

Table - 3: Offline use of Smartphone some specific purpose

Specific Purpose	Teachers (n=29)	PG students (n=26)	Total (n=55)
Lecture PPT slides	22 (75.86)	18 (69.23)	40 (72.73)
Audio recordings (e.g., recordings of lectures, college information)	11 (37.93)	18 (69.23)	29 (52.73)
Videos (e.g., course related, recordings of lectures, college information)	21 (72.41)	16 (61.54)	37 (67.27)
English speaking/personality development course	7 (24.14)	19 (73.08)	26 (47.27)
Save Hyperlinks to course-related reference material	15 (51.72)	11 (42.31)	26 (47.27)

Note: 1. Number given in brackets represents percentage.
2. Due to the multiple choices percentage exceeds more than 100.

Table 3 show that 22 (75.86%) faculty members use their smartphones for PPT lecture, 21 (72.41%) were used for video lecture, 19 (73.03%) PG students were used for personality development, and 18 (69.23%) were used for recording the educational course. In this table, students are more familiar than the faculty member in the case of using a Smartphone for educational purposes.

Table - 4: Use of various social media and websites to access, share, create and download online/offline resources via Smartphone

Social Media	Always		Very often		Occasionally		Rarely		Never	
	T n=29	PGS n=26	T n=29	PGS n=26	T n=29	PGS n=26	T n=29	PGS n=26	T n=29	PGS n=26
WhatsApp	17 (58.62)	23 (88.46)	1 (3.45)	1 (3.85)	3 (10.34)	0 (0.0)	2 (6.9)	0 (0.0)	6 (20.69)	2 (7.69)
Viber	0 (0.0)	0 (0.0)	1 (3.45)	0 (0.0)	0 (0.0)	0 (0.0)	3 (10.34)	0 (0.0)	25 (86.21)	26 (100)
Hike	4 (13.79)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (6.89)	22 (84.62)	23 (79.31)	24 (92.31)
Facebook	13 (44.83)	5 (19.23)	3 (10.34)	1 (3.85)	4 (13.79)	2 (7.69)	4 (13.79)	1 (3.85)	5 (17.24)	8 (30.77)
Google Plus	5 (17.24)	5 (19.23)	1 (3.45)	1 (3.85)	2 (6.9)	0 (0.0)	2 (6.9)	1 (3.85)	19 (65.52)	19 (73.08)
LinkedIn	2 (6.89)	0 (0.0)	3 (10.34)	0 (0.0)	4 (13.79)	0 (0.0)	3 (10.34)	1 (3.85)	17 (58.62)	25 (96.15)
Shareit	5 (17.24)	20 (76.92)	5 (17.24)	1 (3.85)	3 (10.34)	0 (0.0)	3 (10.34)	0 (0.0)	13 (44.83)	5 (19.23)
YouTube	9 (31.03)	13 (50.0)	6 (20.69)	1 (3.85)	4 (13.79)	0 (0.0)	3 (10.34)	1 (3.85)	7 (24.14)	11 (42.31)
e-PG Phathshala	0 (0.0)	0 (0.0)	3 (10.34)	0 (0.0)	1 (3.45)	0 (0.0)	2 (6.9)	0 (0.0)	23 (79.31)	23 (88.46)
Wikipedia	8 (27.59)	21 (80.77)	4 (13.79)	2 (7.69)	7 (24.14)	0 (0.0)	4 (13.79)	2 (7.69)	6 (20.69)	1 (3.85)
Google Scholar	6 (20.69)	4 (15.38)	3 (10.34)	1 (3.85)	3 (10.34)	1 (3.85)	1 (3.44)	0 (0.0)	16 (55.17)	20 (76.92)
Academia	6 (20.69)	1 (3.85)	2 (6.9)	1 (3.85)	4 (13.79)	1 (3.85)	1 (3.44)	0 (0.0)	19 (65.52)	23 (88.46)
Researchgate	1 (3.45)	0 (0.00	2 (6.9)	0 (0.0)	3 (10.34)	1 (3.85)	3 (10.34)	1 (3.85)	20 (68.97)	24 (92.31)
WorldCat	2 (6.9)	2 (7.69)	2 (6.9)	1 (3.85)	2 (6.9)	0 (0.0)	3 (10.34)	0 (0.0)	20 (68.97)	23 (88.46)
IndCat	2 (6.9)	1 (3.85)	2 (6.9)	0 (0.0)	0 (0.0)	0 (0.0)	1 (3.45)	0 (0.0)	24 (82.76)	25 (96.15)
Others	2 (6.9)	0 (0.0)	2 (6.9)	0 (0.0)	2 (6.9)	0 (0.0)	0 (0.0)	1 (3.85)	21 (72.41)	25 (96.15)

Note: 1. Number given in brackets represents percentage. (T = Teachers and PGS = PG Students)

Social media is the most powerful tool to connect users with the library in the online environment. After developing the internet and www, the information and education world take a demon's feet to change their services. The extension and evolution of web 1.0 to web 4.0 is a fast, read-write to the semantic web and develop the perpetual type of social media like Facebook, Whatsapp, Youtube, Wikipedia, and some academic platforms like Resarchgate, Academia, Google Scholar, Google plus etc.

Table 4 reveals which media type is most beneficial to the accessibility and usability of information resources on smartphone platforms. The analysis shows that 17 (58.62%) faculty members and 23 (88.46%) PG students always used WhatsApp for sharing various types of documents, while 13 (44.83%) faculty members and 5 (19.23%) PG students access Facebook for educational purposes. On the other hand 8 (27.59%) faculty members and 21 (80.77%) PG students always used Wikipedia. In the context of other social media YouTube was 9 (31.03%) used by faculty members and 13 (50%) used by PG students, Shareit was used by 5 (17.24%) faculty member and 20 (76.92%) PG students, and Academia was never used by 19 (65.52%) faculty member and 23 (88.46%) PG students.

Table - 5: Problems encountered while accessing online resources via Smartphone

Various problems	Teachers (n=29)	PG students (n=26)	Total (n=55)
Very small view of content	19 (65.52)	5 (19.23)	24 (43.64)
Internet connectivity	15 (51.72)	6 (23.08)	21 (38.18)
Graphical user interface	13 (44.83)	1 (3.85)	14 (25.45)
Power/Battery backup Problem	13 (44.83)	11 (42.31)	24 (43.64)
Inadequate knowledge about smart phone	4 (13.79)	0 (0.0)	4 (7.27)
Storage limitation	12 (41.38)	11 (42.31)	23 (41.82)
Internet speed	15 (51.72)	15 (57.69)	30 (54.55)
Ever changing technology	9 (31.03)	7 (26.92)	16 (29.09)

Note: 1. Number given in brackets represents percentage.

Table 5 explores the type of problems faced while accessing online resources. 19 (65.52%) faculty members and 5 (19.23%) PG students face a small view of content, 15 (51.72%) faculty members and 6 (23.08%) PG students face Internet connectivity as the main obstacle. On the other hand 4 (13.79%) faculty members have inadequate knowledge about smartphones. It was noticed from table 5 that Internet speed as the main hurdle to access the information resources and various types of library services. After the use of library services and access the different types of databases, they download and save the educational content. Still, smartphone storage shows one of the primary barriers to keeping their content.

7. Findings of the Study

- After the analysis of table 4, it was noticed that students have more potency to use online resources in respect of teachers.
- A new generation of students and teachers are smoothly moving from print to digital and digital to virtual platform.
- The college scholar becomes techno-savvy from time to time.
- The study shows that M- Technology is the future of education and digital and virtual library use.
- Social media will play a key role in sharing information and educational resources.

8. Recommendation

Library and library professionals should start smartphones based library services like Reference Service, RSS Feed, OPAC, Digital Library, Virtual Library, Online Library Orientation Service, Online book fare, Recommender Service, etc. because Library users spend their most of time using a smartphone. LIS professionals should tackle their users according to his/her habit, then we fulfil the Ranganathan rule to save the time of user and library is growing organism. Library in smartphones is the new dimension to grow the library.

Library professionals can generate various QR codes to promote Library services like Website URL, YouTube Video, Image File, PDF File, Google Maps Location, Twitter, Facebook, LinkedIn, Instagram, App Store Download, iTunes Link, Dropbox, Plain Text, Telephone Number, Skype Call, SMS Message, Email Address, Email Message, Contact Details, Digital Business Card, Attendance Tracking, Event (VCALENDAR), Wi-Fi Login, Paypal Buy Now Link etc.

9. Conclusion

Many of the studies have investigated the mobile/Smartphone learning platform on faculty members and students, few of them are explained the application of mobile technology in various library services. Librarians need to figure out how to serve the users their best services using this new mode of communication. The results of this study have provided the necessary information on what is actual users needs after the invention of smartphones. In this era user and their needs dramatically changed, and they are very used too of smartphones. They are using various android platforms to search, share and reuse information. In the techno-savvy time, users are shifting their skills, as information resources accessibility and usability on Smartphone environment, and the new generation of the user is more techno-friendly than previous. This paper also tries to know the future expectation of their institution. In this research, some important facts are revealed that users will be interested to access, share, create, save, download and reuse of online information resources via mobile technology and services.

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