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Use of Mobile Applications in Library Services

Nowsheeba Ashraf Asmi[1] and Surendar Kumar Sahu[2]

[1] Faculty, Department of Library and Information Science, University of Kashmir.

[2] Librarian Government Mahendra Karma Girls College, Dantewada, Chhattisgarh

ABSTRACT

Purpose– *The main aim of this study is to find the usage of smart phone applications by post-graduate (PG) students of University of Delhi, explore the use of services provided through library website and investigate the perception of students on extending library services through smart phone applications (apps).*

Design/Methodology/approach– *In this study, survey method was employed to find the usability of smart phone apps and library services among PG students of academic faculty of arts, University of Delhi.*

Findings– *The findings reveal that students are high-end users of smart phones and their applications. They also show a positive attitude towards adopting smart phone applications in context of library and information services. The study strongly recommends the adoption of smart phone apps in library settings keeping in view trending mobile technology.*

Limitations– *The current study focussed on PG students of academic arts faculty of University of Delhi who use various mobile applications. The study was carried between Octuber to November 2017.*

Paper type– *Research Paper*

Keywords– Mobile messaging Apps, Library Apps, Mobile technology, Library Smart-Service, Smart Apps

INTRODUCTION

The advent of mobile technology has brought society to a revolutionary phase marking the beginning of new era, that is, technologically advanced and connected. The

number of mobile phone users has grown substantively. Improved services, better connectivity, vast numbers of applications for almost every use and simple interface are some of the features of smart phones. In addition, simple and economical data connectivity through Wireless, 3G, 4G networks and likewise, have made strengthened the social connectivity through internet. With the rise of messaging apps and bots, the way many of individuals use social media to share and interact is fundamentally changing **(Ash Read, 2016)**. Many teenagers now spend more time on smart phone sending instant messages than perusing social networking sites ("Bots, the next frontier," 2016). Users around the world are logging in to messaging apps to not only chat with friends but also to connect with brands, browse merchandise, and watch content **(BI Intelligence, 2016).**

Organizations are adapting to mobile use and are developing applications to deliver their products and services. As smart phones grow in popularity, manufacturers are in a race to pack an increasingly rich set of features into these tiny devices **(Maji, Hao, Sultana, & Bagchi, 2010).** These devices have evolved into expansive systems with their own developers, apps, and APIs from simple services of exchanging messages, pictures, videos, and GIFs **(BI Intelligence, 2016).** Smart phones offer features like instant access to e-mails, chatting, cloud computing, browsing and searching through web, audio and video calls and playing games. These devices also offer access to social media applications, productivity tools and various entertainment tools. Libraries are service centres connecting people and information. They have been on fore-front to adopt new technologies in their setting **(Association of College and Research Libraries, 1967)** to stay connected, updated and provide user-oriented services according to the convenience of its patrons. Mobile technology has forced modern libraries to modify the existing ways of delivery of their service to strengthen the relationships with different users, be it novice, remote or regular **(Dinh, Lee, Niyato, & Wang, 2013).** Libraries may utilize mobile devices in circulation and self-sufficiency in transaction. They may also provide access to circulation records, book due dates, notices for overdue documents, and Inter library loan requests, access to e-books and e-databases, mobile optimized catalogues (MOPAC) and information services like reference, referral, access to mobile optimized library websites etc **(Khare, 2009)**

PURPOSE OF THE STUDY

Mobile applications may be employed to provide better services to users by organizations. They may also have other features like social communication, easy access, searchable interface, advanced features and increased security. They are quick and effective. India ranks 2nd in the use of mobile phones at global level (TRAI Press Release, 2016). The number of mobile phone users in India is expected to rise to 468 million by 2021 **("Mobile phone users in India 2013-2019 Statistic," 2016)**. Mobile applications present new opportunities for libraries too to promote access and expand reach economically and effectively bearing several limitations of libraries in mind. Given the increased use of mobile phones, this study has been taken up to

examine the usage of smart phones and messaging apps by students of University of Delhi. It also proposes the various paradigms that may be considered while designing the native mobile app for library.

REVIEW OF LITERATURE

There has been a dramatic growth in the use of mobile phones **(Paterson & Low, 2011). Cummings, Merrill, and Borrelli, (2010)** also observed that use of small screen devices, such as PDAs or web enabled cell phones to search a library OPAC has increased considerably in last few years.

Wilson and McCarthy, (2010) indicated in a study on students of Ryerson University Library in the fall of 2008 that smart phones were owned by approximately 20 percent of the student population but that within the next three years this figure could reach as much as 80 percent. **Lippincott, (2010)** also concluded that college students own cell phones and laptops and the capabilities of these and other devices are expanding. **Nowlan, (2013)** show that maximum respondents at University of Regina use mobile phone and access web on it. Additionally, the library catalogue was the most popular resource chosen to become mobile enabled. It is clear that the use of mobile phones has increased substantially, and users are connecting to web using these mobile devices. In one more study, participants expressed interest in various services using mobile devices like access to research databases, catalogue, and reference. Users may also use mobile Web for contacting using text messaging **(Association of College and Reference Libraries (U.S.) & Association of College and Research Libraries., 1939).**

Perceptions on the application of wireless hand services in the context of library and information services are very positive and high majority of the students indicate their willingness to become the users of such services if offered **(Karim, Darus, & Hussin, 2006). Seeholzer & Salem, (2010)** found that there has been an increased interest of users in mobile web devices to interact with library resources and services such as research databases, the library catalogue and reference services. Mobile services have amplified the use of the library in different ways and have improved the image of the library as a technological reference for users and librarians **(Vila, Gálvez, & Campos, 2010). Wang, Ke, and Lu (2012)** indicate that the students at the Oriental Institute of Technology Library (the OIT Library) in Taiwan are highly satisfied with due-day reminder and renewal-request services, respectively. Libraries may also utilize small printed codes, such as QR codes, that link to resources and information appropriate to their location that may be read by mobile phones with integrated cameras, with a small application installed **(Walsh, 2010).** Libraries are also on forefront to accept this new technology, in fact many libraries have already developed various apps that are native to libraries and offer features corresponding to various library services, OPAC service is the one widely used above all.

RESULTS AND DISCUSSION

A survey was conducted using a structured questionnaire circulated personally among 250 Post Graduate (PG) students from the faculty of arts, University of Delhi, out of which only 223 questionnaires were received back implying a response rate of 89.2%. The responses received were analysed and the results are shown in the form of tables and figures.

DEMOGRAPHIC DISTRIBUTION

Demographic distribution has been a matter of concern especially when it comes to newer technologies. Thus, related data was sought from the respondents and presented in Table 1.

Table 1. Demographic Distribution

Profile	Distribution	Respondents (n)	Percentage (%)
Gender	Male	137	61
	Female	86	39
Age	Below 20 years	38	17
	20 – 25 years	107	48
	Above 25 years	78	35

N=223

Table-1 shows that male respondents (61%) outnumber female respondents (39%). Majority of respondents fall into 20-25 age group. Thus, number of male population is more than female population, and age group of 20-25 years more prevalent.

USAGE OF MOBILE MESSAGING APPS (MMA)

The analysis of questionnaires revealed that all the respondents (100%) owned smart phones and utilized them for access to internet.

TYPE OF INTERNET CONNECTIVITY

Respondents were asked to choose between the various internet connectivity options that they use, the responses are shown in figure 1.

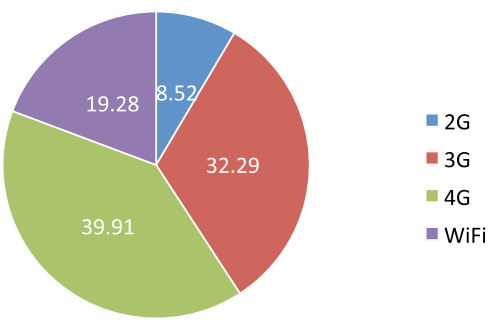


Figure 1. Type of Internet connectivity

Figure 1 shows accessibility of Internet connectivity among respondents. The results show that 39.91% of respondent access internet via 4G connectivity, followed by 3G network with 32.29% and 19.28% respondent access internet through Wi-Fi network. Only 8.52% students use 2G network connectivity.

The results imply that 4G is the most used connectivity option by users. This implies that students choose a network that has high speed. Compared to other networks 4G has higher mobility, data speed, capacity, and backward compatibility **(Firdaus, 2016).** This network allows access to several services and wider coverage with higher bandwidth and less delays in transmission **(Varshney & Jain, 2001)**. Further introduction of Jio network by Reliance in 2015 further intensified the usage of 4G networks. They gave away free data for everyone for the first six months and further demanded lower data tariffs. Thus they managed to gather more than 100 million subscribers **(Jonnalagadda, 2017).**

FREQUENCY OF USE

The number of users of mobile apps has increased substantially, in turn attracting marketers and service centered organizations to advertise their services and thus reach to a wider audience. To find the frequency of mobile apps, a question was asked to respondents, the results are shown in figure 3.

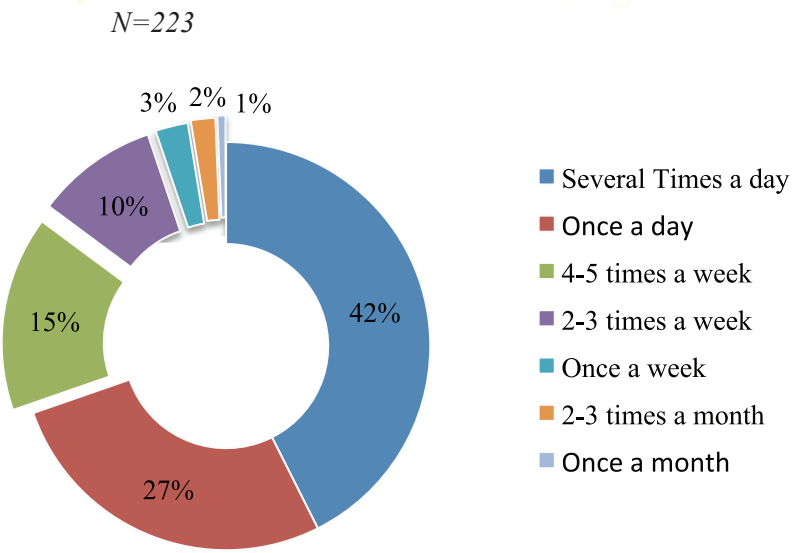


Figure 2. Frequency of Use

Figure 2 reveals that more than half of respondents (69%) use mobile apps daily, 15% visited 4-6 times in a week and 10% visited two or three times a week. Only 3% of respondents accessed once a week and 2% visited 2 or 3 times a month. Very meagre percentage of respondents (1%) used mobile apps once a month.

GENERAL USAGE OF MOBILE APPLICATIONS

The messaging apps have outnumbered the popularity of social networks due to their easy interface, networking features, improved security and compete to meet the demand for free mobile calling and texting services. The general usage of mobile apps was sought and the answers are tabulated in Table 2.

Table 2: General Usage of Mobile Applications

General Usage of mobile devices	Number of Respondents	Percentage
Internet Browsing	222	99.55
Chatting	220	98.65
Accessing Social Networks	220	98.65
Watching Videos/TV programmes	200	89.69
Music	210	94.17
Online Shopping	150	67.26
e- Reading	130	58.29
Games	110	49.33
M-Learning	100	44.84
Recording	75	33.63
Chatting	220	98.65
Accessing Social Networks	220	98.65

Table 2 clearly shows that majority of respondents use mobile apps for Internet Browsing (99.55%). 98.65% respondents use them for chatting, accessing social networks, chatting, and accessing social networks. 94.17% utilize them to listen to music. Only 33.63% use them for recording purpose.

USAGE OF MOBILE MESSAGING APPS

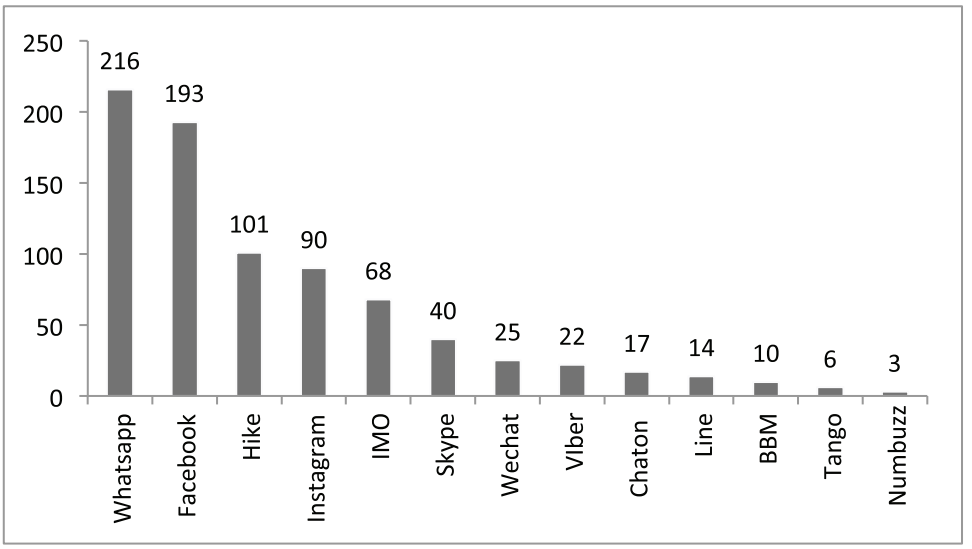


Figure 3. Usage of Mobile messaging apps (MMA) by students

Figure 3 portrays several MMA's are being used by student community. It is clear that highest number of respondents use WhatsApp (96.86%), followed by Facebook messenger (86.55%), Hike (45.29%), Instagram (40.36%), IMO (30.49%), Skype (17.93%), WeChat (11.21%) and Viber (9.86%). Only 1.34% respondents use Nimbuzz MMA.

WhatsApp usage has increased substantially as suggested by the above findings. The results are in line with the one reported by Hindu- one of the leading newspapers of India, 2016 which says at least 97 percent of smartphone users in India use communication apps every day, with WhatsApp being the app of choice for 96 percent of them **("In India, WhatsApp a chat apps chartbuster - The Hindu," 2016)**. The results coincide with the report published by an international digital measurement site, Similar Web, which also reports that WhatsApp is the world leader on Android as the top messaging app in 109 of the 187 examined countries, or 55.6 per cent of the world **(Schwartz, 2016)**.

PURPOSE OF USING MOBILE MESSAGING APPLICATIONS (MMA)

To find the purpose of accessing MMA, a multiple-choice question was asked to respondents, featuring options obtained after reviewing characteristics of famous MMA's, the responses are tabulated in Table 3.

Table 3. Purpose of using MMA

Purpose	Total	Percentage
Interacting with friends	223	100
Sharing photos, files, music or videos	215	96.41
Discussion on subject related topics	122	54.70
Sharing subject related content	109	48.87
Remaining in contact with peers or teachers	90	40.36
Clearing doubts by asking questions to teachers	73	32.74

N=223

Table 3 shows that 100% respondents use MMA for interacting with friends, followed by 96.41% respondents who use MMA for sharing photos, files, music or videos, 54.70% respondents utilize MMA for discussion on subject related topics, 48.87% respondents share subject related content on MMA and 40.36% use for staying in contact with peers or teachers. Only 32.74% respondents use MMA for clearing doubts by asking questions to teachers.

FREQUENCY OF VISITING LIBRARY WEBSITE USING SMART PHONES

Frequency determines the usage. Figure 4 shows the frequency of visits to library website using smart phones.

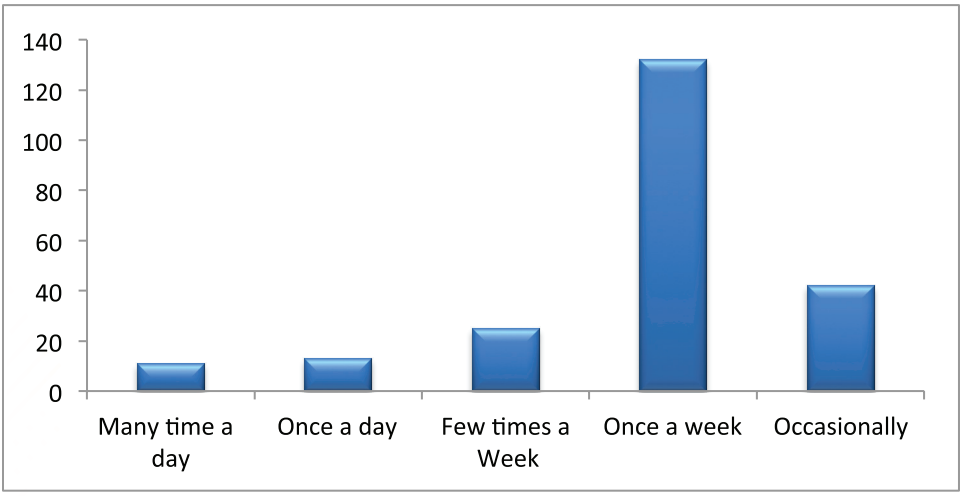


Figure 4. Frequency of visiting Library Website using Smartphone

It is clear from Figure 4 that 59.19% respondents visited library website using smart phones once a week, followed by those who visit them occasionally (18.83%) and few times a week (5.82%). Very few respondents visit library website many times a day (4.93%).

PURPOSE OF VISITING LIBRARY WEBSITE

Data related to purpose of visiting Library Website was enquired. The results are represented in Figure 5.

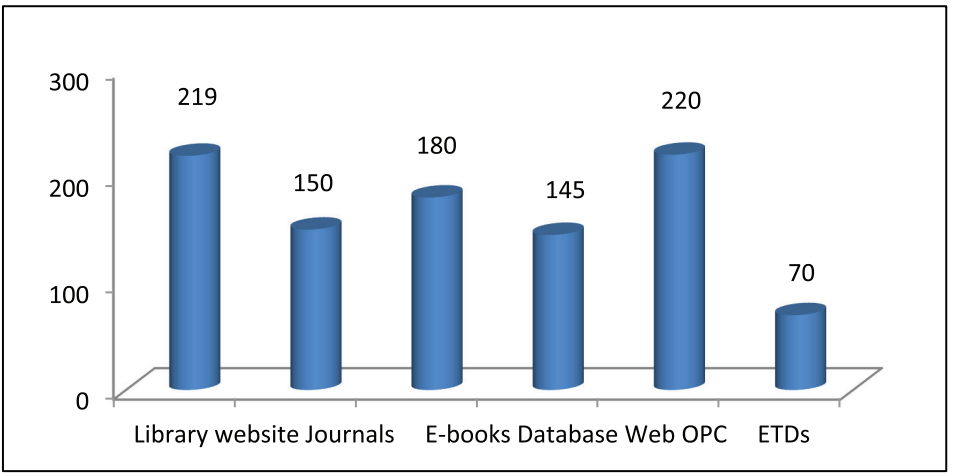


Figure 5. Purpose of visiting Library Website

Figure 5 reveals that 98.65% respondents visit library website to check in to Web OPAC, followed by those who visit to browse through library website (98.20%) and

e-books (80.72%). Thus, it is clear from the data results that respondents surf library for searching the information.

ANTICIPATED SERVICES IN MOBILE WEBSITE/APPLICATION

Table 4 lists the features that students may like to see in library website/application if offered.

Table 4. Anticipated Services in Mobile Website/Application

Anticipated Services in Mobile Website/Application	Number of Respondents	Percentage
MOPAC	220	98.65
Circulation	219	98.21
Library hours	200	89.69
Links to mobile enabled e-resources (Databases, Journals, e-books etc	221	99.10
Floor maps	210	94.17
Library events	150	67.26
Information Literacy Programmes	205	91.93
Advanced Search Option	212	95.07
Library personal account information	202	90.58
e- tutorials	218	97.76

Table 4 reveals the services that students will like to be incorporated in library website/application. Maximum percentage of respondents (99.10%) will like to have links to mobile enabled e-resources (Databases, Journals, e-books etc.), followed by MOPAC (98.65%), Circulation (98.20%), e- tutorials (97.76%) and Advanced Search Option (95.06%). Minimum number of respondents will like to add feature of access to Library events (67.26%). **Rennick and Wang, (2015smartphones can access all website features instead of a subset. This study examined smartphone use of a new academic RWD library website to find out which features are used on small devices. An intriguing finding was that five of the top smartphone features (search bar, library hours, my account, room reservation, and floor maps)** also found that users were interested in using mobile devices such as smart phones for accessing a variety of website features that related to library services. Features like catalogue, library hours, users' accounts, study room reservations, and floor maps were also found of interest to users. Since decades libraries have been at the forefront to adopt new technologies. Libraries are service centered organizations indulged in providing information products and services. Dwindling budgets, lack of technological skills, internet connectivity, infrastructure etc are various problems that libraries face. Mobile apps show a way out due to their easy interactivity, cheaper devices, least need of technological know-how, economic feasibility and

improved features.

CONCLUSION

Smart phone applications are a recent trend among the students and have a great potential in library services. Users show interest in using library services through smart phone applications. They highlighted several features that they would like to incorporate in such a setting like links to mobile enabled e-resources (databases, e-journals, e-books etc.) Additionally, mobile messaging applications like WhatsApp are also popular among students that are being utilized mostly for interacting with friends.

The study emphasizes the necessity of developing mobile applications in view of increased popularity of mobile devices and expectations of users. Through such services, libraries may update their collections- for example any databases added, journals, e-resources etc.-, assist in reference or referral queries and likewise. For developing a native app for university of Delhi, some important features that app developers should consider to inculcate include: Access to OPAC, Renewal/ Reserve requests, Reminders, databases, journals and e-book collection, Thesis and Dissertation, News and Events, Real-Time chat with Reference librarian, Library Tour, Social tools, Calendar, Online tutorials, Library Locator. Such an app is the need of an hour and a step towards adoption of new technologically advanced library 2.0.

Mobile technology may be utilized in a number of library services like reference service, information services, extension services, information literacy programs, e- learning, remote access, issuing notifications regarding library services, mobile access to collection through MOPAC, database browsing, access to e- resources, circulation through QR (Quick Response) codes, etc. to name a few. Although many international libraries have already started providing library services through mobile devices, but Indian libraries are still lagging behind in this context. Given the increased adoption of mobile devices by Indian youth, it is the need of the hour that more research keeping in view Indian educational settings may be done so that libraries may anticipate needs of users and design services in the most apt way.

REFERENCES

Ash Read. (2016). How Messaging Apps Are Changing Social Media.

Association of College and Reference Libraries (U.S.), J., & Association of College and Research Libraries., J. A. (1939). *College and research libraries. College & Research Libraries* (Vol. 72). American Library Association.

Association of College and Research Libraries., H. (1967). *College & research libraries news. College & Research Libraries News* (Vol. 75). Association of College and Research Libraries.

BI Intelligence. (2016). The Messaging App Report - Business Insider.

Bots, the next frontier | The Economist. (n.d.).

Codina Vila, M., Pérez Gálvez, A., & Clavero Campos, J. (2010). Mobile services in the Rector Gabriel Ferraté Library, Technical University of Catalonia. *Reference Services Review*, *38*(2), 321–334. https://doi.org/10.1108/00907321011045070

Cummings, J., Merrill, A., & Borrelli, S. (2010). The use of handheld mobile devices: their impact and implications for library services. *Library Hi Tech*, *28*(1), 22–40. https://doi.org/10.1108/07378831011026670

Dinh, H. T., Lee, C., Niyato, D., & Wang, P. (2013). A survey of mobile cloud computing: architecture, applications, and approaches. *Wireless Communications and Mobile Computing*, *13*(18), 1587–1611. https://doi.org/10.1002/wcm.1203

Firdaus, H. (2016). 4G LTE Network Growth in India and Security Issue in Network. *International Journal of Computer Science and Network Security*, *16*(11).

In India, WhatsApp a chat apps chartbuster - The Hindu. (2016, March).

Jonnalagadda, H. (2017). 4G in India: Everything you need to know | Android Central.

Khare, N. (n.d.). Libraries on Move: Library Mobile Applications.

Kumar Maji, A., Kangli Hao, Sultana, S., & Bagchi, S. (2010). Characterizing Failures in Mobile OSes: A Case Study with Android and Symbian. In *2010 IEEE 21st International Symposium on Software Reliability Engineering* (pp. 249–258). IEEE. https://doi.org/10.1109/ISSRE.2010.45

Lippincott, J. K. (2010). A mobile future for academic libraries. *Reference Services Review*, *38*(2), 205–213. https://doi.org/10.1108/00907321011044981

Mobile phone users in India 2013-2019 | Statistic. (2016).

Nowlan, G. (2013). Going mobile: creating a mobile presence for your library. *New Library World*, *114*(3/4), 142–150. https://doi.org/10.1108/03074801311304050

Paterson, L., & Low, B. (2011). Student attitudes towards mobile library services for smartphones. *Library Hi Tech*, *29*(3), 412–423. https://doi.org/10.1108/07378831111174387

Rennick, B., & Wang, X. (2015). Smartphone Use on an Academic Library Website Featuring Responsive Web Design.

Schwartz, J. (2016). The Most Popular Messaging App in Every Country.

Seeholzer, J., & Salem, J. A. (2010). Library on the Go: A Focus Group Study of the Mobile Web and the Academic Library. *College & Research Libraries*, crl-65r1.

Shahriza Abdul Karim, N., Hawa Darus, S., & Hussin, R. (2006). Mobile phone applications in academic library services: a students' feedback survey. *Campus-Wide Information Systems*, *23*(1), 35–51. https://doi.org/10.1108/10650740610639723

Varshney, U., & Jain, R. (2001). Issues in emerging 4G wireless networks. *Computer*, *34*(6), 94–96. https://doi.org/10.1109/2.953469

Walsh, A. (2010). QR Codes – using mobile phones to deliver library instruction and help at the point of need. *Journal of Information Literacy*, *4*(1). https://doi.org/10.11645/4.1.1458

Wang, C., Ke, H., & Lu, W. (2012). Design and performance evaluation of mobile web services in libraries. *The Electronic Library*, *30*(1), 33–50. https://doi.org/10.1108/02640471211204051

Wilson, S., & McCarthy, G. (2010). The mobile university: from the library to the campus. *Reference Services Review*, *38*(2), 214–232. https://doi.org/10.1108/00907321011044990

AUTHOR BIOGRAPHIES

Nowsheeba Asmi

Dr. Nowsheeba Asmi is a faculty in the department of Library and Information Science, University of Kashmir, India. She is a Doctorate in Library and Information Science from University of Delhi. Her research interests include Social Networking, Digital libraries, Social Media Tools, Open Source Technology and Web Information Retrieval. She has presented papers at various National as well as International conferences and has authored many research papers in peer reviewed journals.

Dr Nowsheeba Asmi is the ***corresponding author*** *and can be reached at* ***asmi.saba@gmail.com***

Surendra Kumar

Mr Surendra Kumar Sahu has qualified JRF. He is currently working as librarian, Government Mahendra Karma Girls College, Dantewada, Chhattisgarh.