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2-3-2020

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Management Preparedness Towards the Implementation of Mobile Technology Library Services in Academic Libraries

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Abstract

Despite the growing usage of mobile devices and the availability of mobile broadband and WIFI internet almost everywhere in the academic libraries of developing countries, academic libraries in Ghana are yet to fully exploit this opportunity and provide mobile technology (m-tech) based library services. This study thus set to assess the preparedness' of library management towards the implementation of m-tech library services in academic libraries in Ghana. The study employed a descriptive survey and the mixed method in collecting data from 365 respondents. The study established that the majority of respondents were aware that mobile devices could be used to access library services, and were willing to be trained, adapt; and upgrade their skills to suit any mobile service technological change undertaken in academic libraries. The main mobile devices available and used to provide services to the patrons comprise handheld tablets, smartphones, iPod, cell phones, PDA's and e-book readers. However, the study found a lack of a culture of training for staff and requisite skills as the inhibitors towards the adoption of m-tech in libraries

Keywords: mobile technology, mobile device, academic libraries, technology

1. Background of the Study

Libraries play a major role in the development of a nation as far as information management is concerned, be it a community library or an academic library. Academic libraries are of concern to many in as much as the provision of timely scholarly information is concerned. Academic library, according to Jamil, Tariq & Jamil (2013) is one which is established with collections which are essential to support and strengthen educational quality. For many decades, academic libraries have been avenues of possession and allocating information through books, journals, maps and other resources that are used by students in their learning process. In line with its core mandate of providing a support system for teaching and learning, it also provides effective library services to support the research activities of researchers.

Today's age of technological advancement has called for reforms in the landscape of academic libraries in terms of digitization and effective service delivery. Academic libraries owe a key duty to keep pace with technological advancement in order to cope with users' continual sophisticated information requirements and getting access to their information needs regardless of their location. Having noted the technological development trend in academic libraries, the most contemporary digital reformation is the m-tech-based library services. M-tech, such as a smartphones, tablets computers, ebook readers, PDA's, iPod and gaming devices are

progressively being considered as mediating tools in information searching process, especially at the academic libraries level.

Current trends point to the fact that there is increased usage of mobile devices and internet usage among library users. To Speight (2009) as cited by Paterson and Low (2011), the growing concern for the use of m-tech in providing academic library services is obvious in a number of research studies recently conducted and the growing number of mobile-friendly websites and easy to use applications being developed and deployed for service delivery in academic libraries.

Despite the growing usage of mobile devices among students and the availability of mobile broadband and WIFI internet almost everywhere in the developing countries (Rogers, 2012), academic libraries in Ghana are yet to fully exploit this opportunity and provide m-tech-based library services.

In the Ghanaian context, m-tech-based library services are yet to receive recognition. This is largely due to the fact that development in terms of new technologies has always been a problem in developing countries. Kamba (2011) in his studies in Africa revealed that 85% of the libraries offer less than one PC for every hundred (100) library users. About 15% of them are not linked to computers and the internet at all.

This study thus set to assess the preparedness' of library management towards the implementation of m-tech based library services in academic libraries in Ghana. Specifically it seeks to assess the level of awareness and appreciation for the use of m-tech based library services; find out the preparedness of the staff to upgrade their skills and competence to use the mobile service technological changes in the library; determine the ability of the staff to use mobile devices; and find out the challenges associated with the adoption and implementation of m-tech based library services

2. Review of Literature

2.1. Awareness and Appreciation for the Use of Mobile Technology-Based Library Services

The transitions and rapid-paced developments in Information and communication technology (ICT), particularly, in the area of m-tech, have changed the manner in which the public exchange ideas and share information resources. M-tech improves how individuals to access, collect and inter-relate with information, and they present novel mediums for communiqué. These emerging m-tech developments grant quicker access to increasing quantum and diversified information. Nevertheless, the challenge for academic libraries in this perspective is to remodel and adapt to this contemporary technologies to augment their everyday services and make them relevant to meet the needs of their users (Canel & Crichton, 2011; Hamad, Farajat, & Hamarsha, 2018). Libraries are confronted with the popularity of m-tech and they are being faced with the task on how to provide m-tech based library services and make their collections accessible on mobile devices. A study performed by Bornhold (2014) with 73 universities in the United States of America revealed that 52 of the libraries representing 71.2% have implemented m-tech based services because of the immersed value the innovation brings to service delivery and their patrons.

In their study among randomly sampled library patrons and managers in academic libraries in Jordan by using the case study design, Hamad et al. (2018) found a high level of awareness among library staff about m-tech applications to complement and improve library operations and services. However, their views with regards to the availability of the needed resources to embrace m-tech, and the expertise of the library staff were moderate. The responses from the library workers revealed that the implementation of m-tech would be challenging, and some were averse to extensively adopt this innovation. The results imply that m-techs are contemporary but then it will be very difficult to be abreast with the trend, therefore the need for in-service and re-training of library staff for the effective adoption and implementation of such technological innovation. Primarily, it was discovered that librarians perceive m-tech as a beneficial catalyst that can be adopted by libraries to aid them in their interactions with users, to build better patrons feedback and provide them with right kind of services. Thus the findings of the study by Hamad et al (2018), in summary, indicated that the level of awareness of m-tech applications and concepts in libraries is very high and m-tech improves the services and operations of the library by allowing patrons accessed library's collection remotely.

In a similar study, Saravani & Haddow (2011) interviewed 42 professional library staff from the Australasian Vocational Education and Training sector using the mixed method approach to determine their level of awareness and the coaching requirements to respond to m-tech advancements. The study probed the rationale for training and support to meet new challenges and the pre-requisite for such technological amelioration. The results professed a high awareness of the impact of m-tech applications on library services and also revealed major factors contributing to m-tech acceptance at both the organizational level and individual level. The results further accentuate that libraries should integrate m-tech in their operations by providing the right framework for its adoption and by upgrading the skills of library staff to engage them in the implementation. However, the findings suggested that the participating libraries in the study pay inadequate attention to technological advancement and their potential (Saravani & Haddow, 2011). An email survey carried out by Thomas (2010) in academic libraries to ascertain the awareness and appreciation for m-tech based services, indicated that 65% of them offered some form of m-tech based services to their users. He opined that library staff sees m-tech based library services as an innovation to build a strong connection with users. The remaining academic libraries that were yet to offer m-tech services enumerated reasons such as inadequate funds, lack of skilled staff and the perceptions they have regarding m-tech innovations.

A survey conducted by Karim, Darus & Hussin (2006), among randomly sampled 206 students' in Malaysian Public University concerning their perception and awareness on m-tech based library services revealed that 193 respondents (94%) used SMS and mobile online public access catalogue (MOPAC) services provided by the library. The usage rates of other forms of services provided via m-tech were still low per the findings. It was also discovered that most of the tech based mobile library services are used by ICT students. This may be due to a lack of awareness among the respondents from other social science-based faculty, who were getting less exposure to progress in ICT development. The results also indicated that most of the respondents were aware of the information services provided by the library on mobile platforms but were not using the services (Karim, Darus, & Hussin, 2006). The investigation further depicts that most of the respondents were in favour of library renewal services to be provided using their smartphones.

2.2. Preparedness of Library Management towards the Adoption and Implementation of Mobile Technology-Based Library services

In the views of Pope, Peters, Bell and Burhans (2010) the adoption of m-tech in academia has extensively been embraced in the 21st century than any technology. The technology plays a key role in improving the quality of services of academic libraries by allowing them to connect with their users anytime and anywhere. Despite the fact that the adoption of m-tech applications in academics libraries is still in the early stage, library management is making pragmatic effort to keep pace with the innovation (Kumar, 2014). Library management is both the initial and final decision-making authority to make policies and guidelines concerning IT integration in libraries. Adekunle, Omoba & Tella (2007) opined that the successful implementation of new technologies in information centres is basically influenced by the preparedness of management and other stakeholders towards such integration.

Noting the value of m-tech, it is important that managers of academic libraries become enthused and prepared towards the delivery of services through the m-tech platform. In a study using two survey instruments, that is the semi-structured questionnaire and interview, Saravani and Haddow (2011) investigated library staff preparedness towards m-tech in 14 higher institutions of Education libraries across Australia and New Zealand. The library managers selected for the study showed a keen interest in the perceived value of m-tech and exhibit preparedness in building the competencies of their subordinate to enable them to offer m-tech services to library users. Their research also indicated that librarians have direct engagement with library patrons and are focused on delivering new technology services to enhance their operations (Saravani & Haddow, 2011). The findings presuppose that the library managers and staff were prepared to embrace m-tech, however, they pondered not about the challenges m-tech switch could bring.

In another dimension, Chaputula and Mutula (2018) used the multi-case study approach to carry out in-depth semi-structured interviews with university/college librarians and information and communications technology (ICT) directors and revealed that all the libraries examined in Malawi had a large amount of the needed ICT resources to expedite the provision of library and information services through mobile devices. The available ICT infrastructural resources were specifically internet infrastructure and ICT systems such as library management system (LMS), servers, tablets computers, desktop computers and fibre-optic cables that facilitated access to both cable and Wi-Fi internet connections. Furthermore, the libraries selected for the studies had E2 Proxy Server, which could facilitate remote access to e-resources and other digitized collections. These indicate the libraries preparedness for m-tech in the 21st library space.

Besides the ICT infrastructure, the libraries examined had plans to acquire and install other ICT-related resources to mediate the provision of library services through m-tech. There were plans by one of the libraries examined to install Unstructured Supplementary Service Data SMS gateway to aid in the provision of mobile SMS reference services. Equally, the other libraries were hopeful that they will in the near future acquire the requisite e-library infrastructure to potentially enable them to offer basic routine library services on mobile phone platforms. Again the libraries selected for the study had an arrangement of probing the likelihood of using cloud infrastructure to brace ICT initiatives including the provision of library and information services through m-tech. It was noted from the study that most of the other ICT resources, which the libraries needed, were available on the local marketplace. This implies that the libraries in the

current study could easily acquire such type of infrastructure if they had financial resources (Chaputula & Mutula, 2018).

Shonhe (2019) conducted a thorough investigation in Botswana to assess how ready librarians were towards M-TECH technology adoption in Botswana public libraries using a mixed-methods approach. The study was to probe and ascertain if library managers who are the key stakeholders when it comes to ICT implementation policies were prepared to provide library services through the use of m-tech technology. The findings of the study indicated that ICTs adoption in Botswana libraries is negligible to meet the needs of 21st century virtual library users. However, the findings also indicated that 96 per cent (96%) of the librarians selected for the study showered an affirmative attitude towards technology adoption. He was of the opinion that technology adoption in libraries allows quicker access to library resources, enhances service delivery and boost users' satisfaction. As a result, library managers selected for the study were making efforts to implement vigorous technological infrastructure to assist in the delivery of services such as MOPAC, mobile reference services, SMS alert services, ILL/DD, Library Management Systems and mobile e-journal search. The researcher further states in his findings that in spite of the efforts by librarians to adopt emerging technologies in their operations in Botswana, they still face challenges ranging from low internet bandwidth, lack of ICT skills on the part of library staff and inadequate technological assistance from other library stakeholders.

In like manner, Sampath-Kumar & Birada (2010) conducted a study on an inquiry in the use of ICT in college libraries in Karnataka, India and discovered that although library management are prepared to inculcate emerging technologies innovations in their operations, ICT in college libraries has not gotten to an elevated peak. The main challenge has been a lack of financial resources, inadequate human capital, and poor training opportunities for librarians to embrace new technologies. Again in a study to understand m-tech use for library service at Capital University in South Africa, Iyamu & Mtshali (2013) found that the technology infrastructure that the library had was obsolete. In a contrast, a study by Igben & Akobo (2007) to ascertain the state of ICT in libraries in River State, Nigeria, revealed that 75% of the libraries in River State have incorporated ICT's in their library operations and thus library management is always prepared to implement new technologies. By and large, librarians are being noted as early implementers of new technologies in the area of service delivery (Singh & Mahajan, 2014; Gupta & Margam, 2017). It is however incumbent on the managers of academic libraries to make the right decisions with regards to the adoption of emerging technologies. In the view of Larson (2019), library managers must always anticipate the benefits that will accrue to their information centres when they adopt new technologies as well as the costs components associated with such technological implementations.

3. Methodology

The study employed a descriptive survey which depends on direct contact with those persons or a sample of those whose characteristics, behaviours or attitudes are relevant to a specific investigation (Cooper & Schinder, 2011). The choice for the descriptive survey was influenced by the fact that the researchers were dealing with a large population who were remotely dispersed across the academic libraries in Ghana. Thus, using the descriptive survey enabled the researchers to collect data from the large population at a relatively cheaper cost.

The approach for this study was the mixed method in collecting quantitative data (using questionnaires) and qualitative data (using interviews) from the respondents. The researchers used the mixed method approach because using this approach helps in building the strengths of using both quantitative and qualitative data for the study (Cresswell, 2015).

The general population for this study comprised all the categories of academic libraries in Ghana. Out of these, the researchers purposively selected 400 respondents (library staff) across the academic libraries. Since the library staff are the service renders and providers, it is prudent for the researchers to select them to serve as respondents for the study. The purposive sampling technique was adopted due to the unique characteristic of the respondents and enabled the respondents to answer the questions. It enabled the researchers to reach the targeted sample quickly and since proportionality is not the main concern.

The questionnaire was used to collect data for this study. The data that was collected was first edited to correct errors. It was then collated, coded and analyzed descriptively using the MS spreadsheet into frequencies and percentages. The data that were generated through the questionnaire were assigned with appropriate codes and analyzed. The results were presented in the form of tables, pie charts and bar charts showing frequencies and percentages of responses given by the respondents.

4. Presentation of findings

Out of the 400 questionnaires distributed, the researchers were able to retrieve 356 fully completed questionnaires. This represents an 87% response rate.

4.1. Awareness and Appreciation of Mobile Technology Library Services

The researcher firstly sought to find out whether respondents were aware that mobile devices could be used to access library services as a way to assess the level of awareness and appreciation for the use of m-tech based library services. The study shows that 157(44.1%) out of the 356 respondents strongly agreed that they were aware that mobile devices could be used to access library services, 140 (39.3%) agreed that they were aware that mobile devices can be used to access library services. Twenty 22 (6.2%) disagreed and 17(4.8%) strongly disagreed. Twenty (5.6%) were neutral that they were aware that mobile devices could be used to access library services. This implies that the majority of respondents were aware that mobile devices could be used to access library services. Further analyses made to probe deeper into the level of awareness and appreciation for m-tech based library for such services by students. These results resonate with studies by Lippincott (2009); Goh (2011), and Smith, Jacobs, Pearce, Collard and Whatley (2010) who opined that mobile reference inquiry services were extensively in the known to most of the users and they preferred to use the services to get reference assistance from the librarians. Similarly, Shonhe (2019) in a study of selected Botswana's public libraries found that 96% of the librarians selected for the study had a positive attitude towards technology adoption, particularly with m-tech.

4.2. Skills and training needed to use Mobile Service Technological Changes.

The researcher sets out to investigate if respondents would like to adopt and upgrade their skills to suit and appreciate any m-tech changes. The responses shows that with regards to respondents' level of awareness and appreciation for the use of m-tech based library services,

155 (43.6%); 171 (48.0%) strongly agreed and agreed respectively that they would like to adapt and upgrade their skills to suit any mobile service technological change that would be undertaken by their library. In contrast, 3 (0.8%) and 8 (2.3%) strongly disagreed and disagreed respectively that they would like to adapt and upgrade their skills to suit any mobile service technological change undertaken by their library. Nineteen (5.3%), out of the 356 respondents decided to stay neutral. The analysis shows that more than half of the respondents would like to adapt and upgrade their skills to suit any mobile service technological change undertaken by their library. In addition, the respondents were asked if they were willing to be trained on how to use m-tech application to search for library resources and access library services. From the responses, a total of 306 (85.9%) of the respondents “strongly agreed” and “agreed” that they are willing to be trained on how to use m-tech based library services, as against 27 (7.6%) who “strongly disagreed” and “disagreed”. Twenty- three (6.5%) were neutral. The results indicate that the respondents from the tertiary institutions were willing to be trained on how to use m-tech based library services. This opposes the views of Bamidele, Omezulor, Imam, & Amadi (2013) and Hamad et al (2018) that the training and development is not a priority for the workers in the library and seem not to be given the needed attention.

The respondents were again asked if they are willing to access m-tech based library services because it has the capability to reach remote library users. It was revealed that 158 (44.4%) of the respondents agreed that they were willing to access m-tech based library services because it has the capability to reach remote library users, 166 (46.6%) respondents strongly agreed whilst 7 (2.0%) and 4 (1.1%) took a divergent view and indicated that they disagree and strongly disagree that they were willing to access m-tech based library services because it has the capability to reach their clients. These findings are similar to the results of the studies of Karim, Darus, & Hussin (2006); Washburn (2011), and Dresselhaus & Shrode (2012). These authors argued that library staff are will to acquire the relevant skills and be trained to use, access, and encourage the subscription of m-tech based library services and they appreciate the use of it. They stated that library patrons have the conviction that the m-tech provides them with boundary-less access to library services, afford them the opportunity to have interactive services and be able to access a single library resource/service with varied mobile devices.

4.3. Type of mobile device owned by respondents

Mobile devices comprise handheld tablets, smartphones, iPod, cell phones, PDA’s and e-book readers. The researchers, therefore, sought from the respondents, the type of mobile devices owned by them and whether they had internet access on their mobile devices. The findings on the type of mobile devices owned by respondents and whether they had internet access on them.

Table 2: Type of mobile device owned by respondents with internet access

Mobile device	N	Frequency	Percent
Smart phones	356	335	94
Tablet	356	102	29
Regular cell phone	356	100	28
Personal Digital Assistant (PDA's)	356	58	16
E-Book Reader	356	52	15
iPod	356	33	9

Respondents with internet access on their mobile device	N	Frequency	Percent
YES	356	351	98.6
NO	356	4	1.4

Source: Field data, 2019

The results as can be seen from the table show the type of mobile device owned by respondents and the availability of internet access on them. It is interesting to note that from multiple responses, 335 (94.0%) of the respondents own smartphones, 102 (29%) have tablet, those with regular cell phone were 100 (28%), personal digital assistant ownership rate stood at 58 (16%) and the number of respondents with e-book readers and iPods was 52 (15%) and 33 (9%) respectively. It is evident from the findings that the majority of the respondents own more than one mobile device. Again, an inquiry was made to ascertain whether respondents had internet access on their mobile devices. The analysis revealed that out of the total number of 356 respondents who were used for the study, 351 (98.6%) had internet access on their mobile devices with only 5 (1.4%) of them indicating that they did not have internet access on their mobile devices. This indicates that the use of mobile devices to access the internet was very common. The findings corroborate with literature which noted that major academic libraries in China had designed a mobile interface that allows library users to use mobile devices to access their digitized institutional repository and browse through the library's academic databases and e-journals (Li, 2013).

4.4. Ability to use mobile devices

In order to find out if respondents could use mobile devices to search and download academic-related information for studies, the researcher sought data from the respondents in that regard. The study established that 224 (60.9%) out of 356 respondents strongly agreed that they could use their mobile devices to search for and download academic-related information online for their studies. Again, 109 (30.6%) of the respondents agreed that they could use their mobile devices to search for and download academic-related information for their studies whilst 7 (2.0%) respondents took neutral positions. Six (1.7%) respondents from the institutions strongly disagreed that they used their mobile devices to search for and download academic-related information whilst 10 (2.8%) respondents disagreed that they could use their mobile devices to search for and download academic information.

The researcher "sought to find" out from the respondents their ability to use their mobile devices to access social networking sites such as facebook, blogs, Twitter, Instagram, youtube etc. The findings are that a significant proportion of 217 (60.9%) respondents from both institution strongly agreed that they used their mobile devices to access social networking sites, 113 (31.7%) of the respondents agreed that they can access social networking sites with their mobile devices. Eight (2.3%) respondents strongly disagreed that they could use their mobile devices to access social network sites, 5 (1.4%) respondents disagreed. These findings are similar to the results of the studies of Karim, Darus & Hussin (2006), Washburn (2011), and Dresselhaus & Shrode (2012).

4.5. Challenges associated with the adoption of m-tech based library services

The study again sought to identify potential challenges that may impede the adoption and implementation of m-tech based library services in Ghanaian academic libraries. On total average, a large percentage of the respondents agreed to the following as challenges that may obstruct the adoption and implementation of m-tech based library services. The study found a lack of a culture of training for staff. Hence, though most of the staff have awareness of m-tech based library services, they lack the necessary skills to effectively use to deliver these services if introduced. This corresponds with the views of Bamidele, Omezolor, Imam, and Amadi (2013) and Hamad et al (2018) that the training and development of workers in the library system seem not to be given the needed attention. According to Sharma and Sahoo (2014), librarians should acquire the following skills if they wish to provide mobile- technology-based services:

1. Create and tailor mobile-optimized contents
2. Familiarity with internet/intranet services like email, SMS, spams prevention.
3. Develop expertise in protecting privacy and security levels
4. Skills for interacting with users via smartphone applications, mobile-friendly webpages, third-party intermediary clients
5. Skills relating to training and user orientation to market these services to users

Other challenges identified include: lack of policy framework for the adoption of the technology; clearing the hurdle of university management accepting to adopt the technology since this requires huge capital outlays; bureaucratic process dragging or derailing implementation after a decision to adopt; lack of requisite skills on the part of library staff; financial constraints; poor or inadequate internet bandwidth; issue of sustainability; lack of IT infrastructure; unreliable power supply and intermittent power outages; and lack of appreciation for the technology among library staff. These challenges corroborate the findings identified by studies in other academic libraries such as Amekuedee (2005), Saxena & Dubey (2014), Haneefa (2007), Aina, Okunnu, & Dapo-Asaju (2014), Chisenga (2015), Ghuloum and Ahmed (2011), and Chaputula & Mutula (2018). For example, Amekuedee (2005); Saxena and Dubey (2014) identified the lack of support from University management as a major constraint for the integration of ICT and m-techs in academic libraries. Haneefa (2007); Iwhiwhu, Ruteyan & Eghwubare (2010); Aina, Okunnu, and Dapo-Asaju (2014), and Chisenga (2015) found out that, lack of finances have constrained the adoption of m-tech based library services in academic libraries. Studies by Mulimila (2000); Suku and Pillai (2005); Haneefa (2007); Ghuloum and Ahmed (2011), and Hamad et al (2018) found that staff of academic libraries often do not possess the right kind of ICT skills needed for the smooth deployment of emerging technologies.

5. Conclusion

This study thus set to assess the preparedness' of library management towards the implementation of m-tech based library services in academic libraries in Ghana. The study established that the majority of respondents were aware that mobile devices could be used to access library services, and were willing to be trained, adapt; and upgrade their skills to suit any mobile service technological change undertaken in academic libraries. The main mobile devices available and used to provide services to the patrons comprise handheld tablets, smartphones, iPod, cell phones, PDA's and e-book readers. This study has also led to the uncovering of the potential challenges (lack of a culture of training for staff and requisite skills) that can obstruct the successful implementation of m-tech based library services in Ghanaian academic libraries.

When the challenges identified in the findings are properly addressed, they may be used as the foundation for the successful implementation of m-tech in academic libraries in Ghana.

Bibliography

- Aina, A. J., Okunnu, H. O., & Dapo-Asaju, H. S. (2014). ICT integration for sustainable development of Nigerian academic libraries: Issues and challenges. *International Journal of Information Research*, 3(4), 334–345.
- Amekuedee, J.-O. (2005). An evaluation of library automation in some Ghanaian university libraries. *The Electronic Library*, 23(4), 442–452.
- Armah, A. L. (2009). Use of Internet Services in Ghanaian University Libraries. *African Journal of Library, Archives & Information Science*, 19(1).
- Bamidele, I. A., Omeluzor, S. U., Imam, A., & Amadi, H. U. (2013). Training of library assistants in academic library: A study of Babcock University Library, Nigeria. *Sage Open*, 3(3),
- Chaputula, A. H., & Mutula, S. (2018). Provision of library and information services through mobile phones in public university libraries in Malawi. *Global Knowledge, Memory and Communication*, 67(1/2), 52–69.
- Chisenga F. (2015). *Challenges : library systems integration by some Academic Libraries in Anglophone sub-Saharan Africa: a Perspective on West Africa* (PhD Thesis). University of Pretoria.
- Cooper, D. R., & Schindler, P. S. (2011). Qualitative research. *Business Research Methods*, 4(1), 160–182.
- Cresswell, J. W. (2013). *Qualitative inquiry and research design: Choosing among five traditions*. Thousand Oaks, CA: Sage.
- Ghuloum, H., & Ahmed, V. (2011). The implementation of new ICT services in Kuwaiti academic libraries. *The Built & Human Environment Review*, 4(1), 74–86.
- Goh, T.-T. (2011). Exploring gender differences in SMS-based mobile library search system adoption. *Journal of Educational Technology & Society*, 14(4), 192–206.
- Gupta, P., & Margam, M. (2017). RFID technology in libraries: a review of literature of Indian perspective. *DESIDOC Journal of Library & Information Technology*, 37(1), 58–63.
- Igben, M. J., & Akobo, D. I. (2007). State of information and communication technology (ICT) in libraries in Rivers State, Nigeria. *African Journal of Library, Archives & Information Science*, 17(2).
- Iyamu, T., & Mtshali, E. (2013). Understanding mobile technology for service delivery in academic library. *Issues in Information Systems*, 14(2).
- Jamil, M., & Jamil, T. S. (2013). Library Resources: Utilization by Teachers and Students. *Bulletin of Education and Research*, 35(2).
- Kamba, M. A. (2011). Implication of ICT in Libraries of Higher Education Institutes: A Panacea Catapulting Library Development in Africa. *DESIDOC Journal of Library & Information Technology*, 31(1).
- Kumar, A. (2014). Students' opinion about the success of mobile technology in libraries: a case study of Jawaharlal Nehru University (JNU), New Delhi. *New Library World*, 115(9/10), 471–481.
- Larson, R. (2019a). Library stakeholder attitudes and new technology. *Library Management*, 40(1/2), 128–140.
- Li, A. (2013). Mobile library service in key Chinese academic libraries. *The Journal of Academic*

- Librarianship*, 39(3), 223–226.
- Paterson, L., & Low, B. (2011). Student attitudes towards mobile library services for smartphones. *Library Hi Tech*, 29(3), 412–423.
- Saravani, S.-J., & Haddow, G. (2017). A theory of mobile library service delivery. *Journal of Librarianship and Information Science*, 49(2), 131–143.
- Saxena, A., & Dubey, D. T. (2014). Impact of Digital Technology on Academic Libraries of India: Problems and Prospects. *International Journal of Application or Innovation in Engineering & Management (IJAIEEM)*, 3(3), 308–325.
- Shonhe, L. (2019). An assessment of the technology readiness of public librarians in Botswana. *Global Knowledge, Memory and Communication*.
- Singh, N. K., & Mahajan, P. (2014). Application of RFID technology in libraries. *International Journal of Library and Information Studies*, 4(2), 1–9.
- Washburn, B. (2011a). Library mobile applications: what counts as success? *Information Outlook*, 15(1), 13–15.