

37. Student views on the use of mobile technologies in libraries: the example of Balıkesir University

Okan KOÇ¹

APA: Koç, O. (2022). Student views on the use of mobile technologies in libraries: the example of Balıkesir University. *RumeliDE Dil ve Edebiyat Arařtırmaları Dergisi*, (29), 603-616. DOI: 10.29000/rumelide.1164872.

Abstract

This study aims to emphasize the importance of mobile technologies in terms of library services, and to examine the perceptions of university students regarding their access to library and information services via mobile phones, taking into account the use of mobile phones. In the study, data were obtained through a questionnaire using the descriptive method. The data were collected from university students using the library of Balıkesir University. A sample of 410 students was selected within the scope of the study. The results demonstrated that the participants' views on accessing library services using mobile technology were mostly positive and they were particularly willing in terms of accessing remote services, electronic resources, and audio-visual materials via mobile technologies. According to the findings, it is recommended that libraries make their services compatible with mobile systems.

Keywords: Mobile technologies, Mobile phones, Libraries, Access to information, Mobile library services

Kütüphanelerde mobil teknolojilerin kullanımına ilişkin öğrenci görüşleri: Balıkesir Üniversitesi örneği

Öz

Bu araştırma mobil teknolojilerin kütüphane hizmetleri açısından önemi vurgulamayı, üniversite öğrencilerinin cep telefonu kullanımını göz önünde bulundurarak, kütüphane ve bilgi hizmetlerine cep telefonu vasıtası ile erişimlerine ilişkin algılarını incelemeyi amaçlamaktadır. Araştırmada betimsel araştırma yöntemi kullanılarak, anket yoluyla veri toplanmıştır. Araştırmanın verileri Balıkesir Üniversitesi Kütüphanesini kullanan üniversite öğrencilerinden toplanmıştır. Çalışma kapsamında 410 öğrenciden oluşan örneklem seçilmiştir. Araştırma sonucunda; katılımcıların kütüphane hizmetlerine mobil teknoloji kullanarak erişim sağlama konusundaki görüşlerinin olumlu olduğu, özellikle uzaktan erişim, elektronik kaynaklar, görsel işitsel materyallere erişimin mobil olarak yapılabilmesine karşı istekli oldukları belirlenmiştir. Elde edilen bulgular ışığında kütüphanelerin yürütmüş olduğu hizmetleri mobil sistemlere uyumlu hale getirmeleri önerilmektedir.

Anahtar kelimeler: Mobil teknolojiler, Cep telefonları, Kütüphaneler, Bilgiye erişim, Mobil kütüphane hizmetleri

¹ Dr. Öğr. Üyesi, Balıkesir Üniversitesi, Rektörlük, Kütüphane ve Dokümantasyon Daire Başkanlığı (Balıkesir, Türkiye), okankocbby@gmail.com, ORCID ID: 0000-0002-5356-5940 [Araştırma makalesi, Makale kayıt tarihi: 07.06.2022-kabul tarihi: 20.08.2022; DOI: 10.29000/rumelide.1164872]

Introduction

The rapid development of information and communication technologies offers many advantages for societies. Continuing businesses and processes faster and more productively and accepting and adopting new technologies are directly related to learning how to use them. Mobile technology is one of the most rapidly used and adopted technologies by people (Pope et al., 2010). This has brought about a change in the way of life around the world and made the individual independent of time and place in terms of accessing the desired information virtually. Nowadays, it is seen that mobile technologies have been used in many areas from administrative and financial issues to education. Laptops, netbooks, tablets, mobile phones, MP3 players, cameras, e-book readers, and other music players are seen among mobile technologies. La Counte (2013) defines smartphones as devices that allow an individual to use them on the move. Among the information and communication technologies that provide access to the Internet, smartphones are accepted as one of the most important technologies that have a substantial effect on people.

When smartphones were first produced, they were frequently used to send text messages by Europeans, Asians, and Africans, while they were mostly preferred for speech purposes by Americans. Following that, with the introduction of the internet, they were preferred for sending e-mail, the third communication method. With the development of smartphones and the emergence of social media in the last twenty years, new communication models and applications have begun to affect humanity (Lippincott, 2010, p.206). For users, mobile devices are not merely phones, but also the most important means of fast access to information. While most information centers include smartphones as a useful tool in services, many information centers are unaware of their potential for library services (Fling, 2009).

When the worldwide use of smartphones is considered, it is seen that over 6 billion smartphones are in use. By 2026, this number is estimated to reach 7.5 billion. China, India, and the USA rank first in smartphone use and it is expected that the use of smartphones will greatly increase in these countries (Statista, 2022).

According to a study conducted in 2009, nearly half of the students stated that they accessed the internet by phone or computer, and 12% stated that they were thinking about buying a phone or computer in the following year (Smith et al., 2009, p.87). In 2014, 95% of high school students in Sweden had a smartphone, in 2020, the rate of students accessing the internet through mobile phones increased to 74% in India (Statista Research Department, 2022), and the rate of those using a phone for distance education in the Philippines reached to %58. According to a study conducted in China in 2019, it was concluded that 27.1% of primary school students had their own smartphones before the fourth grade (Thomala, 2021).

The use of mobile devices to advance learning opens up new opportunities. The realization of learning by meeting with its stakeholders through new platforms facilitates the education-teaching process. By integrating new strategies for both teachers and students, the use of mobile technologies in education saves speed, time, and effort in accessing information. As of 2014, a new era has started in which mobile devices are preferred more than desktop platforms for accessing the internet (Kalinic et al., 2011; Churchill, Lu, & Chiu, 2014). As stated in the UNESCO report published in 2012, the worldwide popularity of mobile phones is transforming education systems, changing ways of teaching and learning, and supporting education (UNESCO, 2012). This shows the importance of smartphones in the life of

individuals, and that they will have profound effects on the socio-economic and cultural structure in the future. In terms of speed, time, and efficiency in accessing information, the use of smartphones should be emphasized by libraries and information centers, and the advantages they will provide should be utilized at the highest possible level.

2. Literature review

When the literature on the subject is examined, it was seen that Karim, Darus, and Hussin first evaluated university students' status of accessing information, library usage habits, and general purposes of mobile phone use in 2006. According to the research data, the majority of the participants emphasized the importance of accessing wireless services in library and information services (Karim, Darus, & Hussin, 2006). In the study carried out on Japan, it was determined that 40% of the population accessed the internet via mobile phones (Ishii, 2004, p.43).

As revealed by the research on the use of mobile technologies in libraries, it is seen that the short message service is mostly preferred (Buczynski, 2008). Reminder messages about borrowed information sources, announcements about library services, and short message services are used to convey the results of the scans to users (Odabaş, 2009, p54).

As of 2010, studies on the necessity of carrying out mobile services in libraries have increased. In one of the studies conducted on this subject, it was mentioned how new technologies transform library services and to what extent mobile phones and services are used. The results of the study emphasized that the implementation of mobile services as an additional service in libraries should be evaluated and monitored in line with user expectations (Mbambo-Thata, 2010, p.466). In the study carried out in 2010, mobile library applications in university libraries in Turkey were evaluated. The results emphasized that mobile libraries were not used enough and their innovations were not utilized (Tavluoğlu, 2010, p. 37).

According to the study carried out in the period when the studies on the importance of mobile phones for library services increased by creating samples on the basis of institutions, it was stated that the libraries could not produce mobile services due to the lack of telecommunication infrastructure, high costs, technology-related problems, and lack of personnel training and awareness (Iwhiwhu, Ruteyan, & Eghwubare, 2010, p. .6). In the study, in which mobile library services in China were evaluated and mobile information services carried out by university libraries were analyzed, it was emphasized that mobile information services for mobile phones should be generalized (Lv, 2012, p. 678).

In 2013, the mobile library services of 39 university libraries were evaluated in China. Accordingly, it was concluded that people become addicted to mobile devices day by day and they are mostly used for taking notes, sending e-mails, and accessing the internet. It was determined that university libraries should actively maintain their mobile services and there is a need for activities that will bring together the user and the information source through new information technologies (Li, 2013, p. 226). In the study carried out to investigate the existence of mobile information services in Turkey, data were collected from 30 university libraries. With the research, it was revealed that the use of mobile services by university libraries in Turkey is similar to the rest of the world (Kubat, 2014).

The results of a study on mobile phone applications in the services carried out in university libraries in Nigeria revealed that there is a significant relationship between social media networks accessed from mobile phones and using library services (Odu & Omini, 2017, p. 111).

According to the study conducted in 2020 to investigate whether mobile technology-based library services are ready to be implemented, it was concluded that libraries should educate their users on this subject and that university students especially would like to benefit from library services via mobile phones (Ocran, Underwood, & Arthur, 2020).

In one of the studies to be discussed in line with the use of innovative mobile technologies in university libraries, the benefits of a mobile application based on making reservations to provide seating arrangements in libraries were emphasized. As a result of the study, the satisfaction rate with the related application was determined as 94.8% (Liu, Ye, & Sun, 2021, p. 421).

3. Use of mobile technology in libraries

Current trends point to an increase in mobile device and internet usage among library users. While there is an increase in the level of utilization of mobile technologies, especially in the production and use of academic library services, it is seen that library websites are designed by paying attention to compatibility with mobile devices. The demand for mobile technologies is increasing due to the fact that academic libraries provide significant convenience in service delivery and distribution (Paterson & Low, 2011). By producing new library services for mobile device users, many academic libraries try to keep up with the changing mobile tools to take advantage of the potential they can have, especially in the use of digital information resources.

For libraries, the capabilities of mobile technologies enable the reorganization of advisory services and support them in reading, watching, listening, and producing digital content from the user's point of view. In addition, it is thought that these technologies will pave the way for faster and more effective access to information by implementing new applications.

According to a study conducted in 2009 (Rogers, 2012), despite the increasing use of mobile devices among students and the availability of mobile broadband and WIFI internet almost everywhere in developing countries, only 55% of university students had access to the library catalog by mobile phone. This situation, combined with the increase in the frequency of use of the Internet among library users, highlights the necessity of research on mobile library services.

The lending service has an important place among the traditional services of libraries. Today, this service transforms in parallel with new technologies that provide advantages in accessing information and change the formats in which information is stored. While there is no library where smartphones are lent at the moment, it is known that many libraries lend laptops, tablets, e-book readers, cameras, MP3 players, or similar music player devices, which can be accepted as mobile devices. This is a very effective practice, especially for academic libraries (Lippincott, 2010).

While there are many studies in the literature on the use of mobile technology in academic libraries, there is not much data revealing the applications that libraries transform their services into compatible with mobile devices. According to a study conducted in Canada in 2010, 35% of university libraries reported having a mobile-friendly website. In another study in Canada, it was determined that 13.7% of libraries produce mobile services for their users (Canuel & Crichton, 2011). According to a study carried out in 2010 in the USA, it was shown that 44% of university libraries produce mobile services for their users (Thomas, 2010, p.30). On the other hand, according to a study on university libraries in China in 2013, it was concluded that only 36% of university libraries provide a mobile web service (Li, 2013).

In the study carried out in the USA in 2013, the mobile services of the academic libraries of the country's top 100 universities were evaluated. Accordingly, it was concluded that at least one mobile service was provided in all of the libraries included in the study. The most common types of mobile services were mobile websites, mobile messaging services, accessing digital resources with mobile applications, and mobile library catalog applications. In addition, it was observed that instant librarian consultation services and social media applications have been preferred intensively (Liu & Briggs, 2013, p. 133).

In general, it is seen that mobile technologies are used in libraries by providing mobile website services. Considering the rapid increase in the number of smartphones today, this service is one of the most important services. As suggested by Ashford and Zeigen in 2012, library users mostly prefer mobile websites to browse library catalogs, communicate with the librarian, access databases, and learn working hours (Ashford & Zeigen, 2012). The ability of libraries to share mobile applications for databases is directly dependent on database providers. Many providers produce user-friendly mobile interfaces for databases and librarians need to guide and encourage providers in line with user requests and expectations (Iglesias and Meesangnil 2011; Bischoff, Ruth, & Rawlins, 2013, p.118).

In the content of the mobile websites, areas that are frequently preferred by users and contain important information should be included, different from the content on the normal websites. In order to identify the most frequently used areas on the website, support that evaluates analytical data can be requested. Google Analytics, which is frequently referenced in this regard and offers free support, will help determine how often and in what parts of the day users visit the website.

Content and presentation on mobile websites are created differently. Although it is functionally possible to convert existing web content to mobile data, a mobile website will have simpler content than an average website. Users accessing the site with mobile technology are automatically directed to the mobile version of the site, and the relevant access link should be included, considering those who want to access the full version of the website.

Another issue that needs to be addressed in terms of libraries is mobile applications prepared for mobile devices. Since the introduction of the Apple Store into our lives in 2008, many businesses have produced mobile applications in accordance with their needs. There is access to the mobile applications of many public and academic libraries currently on the App Store. Compared to the mobile website, mobile applications that are coded once, that you can easily control the content and design, and that are easier to update and maintain will be easier to accept by library users (Iglesias & Meesangnil, 2011, p.21).

Another point that should be emphasized in the direction of mobile technologies in libraries is the management of e-books and information resources in digital format. It is seen that most academic libraries provide e-books and digital content in a format to be downloaded and used on standard computers. Presenting e-book contents in a format that can be accessed by mobile platforms will not only eliminate the deficiency in this regard but will also increase the level of benefit from electronic information resources. However, it is known that some academic libraries have started to lend content-loaded e-book readers. In addition, considering that the library user, who is connected to the traditional physical book, can be in demand, functions such as taking notes and giving the feeling of turning the page are included in the process (Lippincott, 2010, p. 209).

RFID technology, which has emerged in recent years and has led to a transformation in library services, has brought a new application in which libraries direct their users at the payment stage. The user can

make the payment step with RFID technology contactless via mobile phone. In 2009, this technology was used in payments of about 10 billion dollars (Ezell, 2009). While 440 million users preferred this technology in 2018, 760 million users benefited from this technology as of 2020 (Statista Research Department, 2021b).

4. Method

In the study, data were collected through a questionnaire using the descriptive research method. The data of the research were collected from university students who used the Balıkesir University Library. A sample of 410 students was selected. Within the scope of the research, questions interrogating the demographic information, frequency of mobile phone use, library usage habits, and awareness of library services were asked to the participants.

Student opinions on the use of mobile technologies in libraries were determined using a five-point Likert scale. The frequency of participants' visits to the library was measured in categories such as "every day", "several days a week", "once a week", "once a month", "if necessary", and "not using". The measurement of usage purposes, on the other hand, was designed using frequency scales of 1 (never), 2 (rarely), 3 (sometimes), 4 (often), and 5 (always). While designing the questions about the library usage purposes, considering the situations that the students can request from the library, they were determined "to search for information, to study, to use the internet, to borrow a book, to ask a question to the librarian, and other". While taking the opinions of the participants on mobile library services, the options to be selected were determined as "extension procedures, information about library services, searching in the library catalog, searching in databases, consulting and training procedures, consulting the librarian, remote access/proxy services, and other". While creating the scale, 1 (not useful at all), 2 (not useful), 3 (uncertain), 4 (useful) and 5 (very useful) were taken as frequencies. When receiving mobile library service requests from participants, the options were determined as "mobile library promotion, mobile interlibrary loan, e-book, remote access service, access to audio-visual materials, QR codes, augmented reality, and other". While creating the scale, 1 (not necessary at all), 2 (not necessary), 3 (uncertain), 4 (necessary), and 5 (very necessary) were taken as frequencies.

5. Findings and evaluation

Table 1. Type and Gender of Participants

Education	Gender		
	Female	Male	Total
Graduate student	21	16	37
Undergraduate student	148	112	260
Associate degree	60	53	113
Total	229	181	410

Table 1 gives the distribution of participants by gender and student type. Accordingly, the majority of the participants reported that they were undergraduate students with 63%. In addition, the rate of associate degree students was 28% and the rate of graduate students was 9%. 56% of the participants were female while 44% were male.

Table 2. Mobile Phone Usage Duration of Participants

Duration		Gender		
		Female	Male	Total
	I do not use a mobile phone	-	-	-
	Less than 1 year	13	3	16
	1-5 years	128	111	239
	6-10 years	72	59	131
	>10	16	11	27
Total		229	181	410

Table 2 shows the data on the duration of mobile phone use of the students by gender. The data showed that all of the students had a mobile phone.

While the rate of females using mobile phones for less than 1 year was 6% (13), the rate of males was 2%. In total, 4% of the participants explained that they used a mobile phone for less than 1 year.

The rate of female students using mobile phones between 1 and 5 years was 56%, while the rate of males was 61%. In total, 58% of the participants stated that they used mobile phones between 1 and 5 years.

The rate of females using mobile phones between 6 and 10 years was determined as 31% while the rate of men was 32%. In total, 32% of the participants reported that they used mobile phones between 6 and 10 years.

The rate of female students who stated that they used mobile phones for more than 10 years was 7% while the rate of males was 6%. In total, 6% of the participants stated that they used mobile phones for more than 10 years.

Table 3. Mobile Phone Usage Habits of the Participants

Purpose of usage		Gender		
		Female	Male	Total
	For distance education	184	152	336
	For talking or texting	229	181	410
	For social media	212	170	382
	For playing games	169	173	342
	For reading the news	112	134	279
	For accessing the internet	229	181	410
	For research	178	126	304
	For reading a book	78	42	240
	Other	78	65	143
Total		1482	1244	2846

Table 3 gives the mobile phone usage habits of the students by gender. Accordingly, it is concluded that all students use their mobile phones to talk, text, and access the internet.

82% of the students stated that they use mobile phones for distance education. This rate was found to be 80% for female students and 83% for male students.

93% of the students expressed that they use their mobile phones to access social media. While this rate was 92% for females, it was 94% for males.

Gaming had an important place among the mobile phone usage habits of 83% of the participants. It is seen that the rate of playing games with mobile phones in female students (73%) was lower than in males (95%). Similarly, the rate of the following news by mobile phones (49%) among female participants was lower than that of males (74%).

Researching through mobile phones had an important place in the usage habits of 74% of the participants. Different from the aforementioned results, mobile phone usage for research purposes was higher in female students (77%) than in male students (69%).

It was determined that the least-engaged activity by the participants using mobile phones was reading a book (29%). However, while this rate was 34% for females, it was 23% for males. The total rate of those who stated that they use mobile phones for other purposes was determined as 35%.

Table 4. Frequency of Mobile Library Use by Student Type

		Student Type			
		Associate	Undergraduate	Postgraduate	Total
Usage Frequency	Every day	-	-	-	-
	Few days a week	8	18	2	28
	Once a week	13	31	3	47
	Once a month	18	56	7	81
	If needed	52	113	17	182
	Not using	22	42	8	72
Total		113	260	37	410

Table 4 gives the frequency of using the mobile library according to the education status of the participants. Accordingly, it is concluded that the majority of the students (82%) use the library through mobile phones. While there was no one who use the library on mobile every day, the rate of those who said they use it a few days a week was 7%, the rate of those who said they use it once a week was 11%, the rate of those who said they use it once a month was 20%, and the rate of those who use it when needed was 44%.

According to the type of student, there was no significant difference between those who said that they use the library through mobile phones when necessary. While this rate was 43% for undergraduate students, it was 46% for associate and graduate students.

It was determined that the rate of those who said they use the library "once a week" and "several times a week" was higher in undergraduate and associate degree students, than those of graduate students. While the rate of those who said they use it a few times a week was 7% for undergraduate and associate degree students, it was 5% for graduate students. While the rate of those who said they use it once a

week was 11% and 12% for undergraduate and associate degree students, it was determined as 8% for graduate students.

It was found that the number of those who said they use the library "once a month" was higher in undergraduate and graduate students than in associate degree students. The rate of those who said they use it once a month was 21% and 19% for undergraduate and graduate students, while it was 16% for associate degree students.

It was observed that the rate of those who stated that they do not use the library through mobile phones was 21% in postgraduate students, 19% in associate degree students, and 16% in undergraduate students.

Table 5. Purpose of Library Use by Participants according to the Student Type

Purpose of Library Use	N	Min.	Max.	Mean	S. Dev.
To search for any information	410	1	5	3,83	1,39
For loan-return services	410	1	5	4,35	0,87
To study	410	1	5	3,94	1,19
To use the internet	410	1	5	3,03	1,38
To use audiovisual materials	410	1	5	2,36	0,90
To consult the librarian	410	1	5	1,89	1,13
Other	410	1	5	0,20	0,90

Measurement scale: 1=Never; 2 = Rarely; 3 = Sometimes; 4 = Often; 5 = Always

Table 5 gives the students' library visit purposes. Data were obtained on a frequency scale from 1 (never) to 5 (always). The result was displayed in terms of mean and standard deviation. In the data collected using a 5-point Likert-type scale, the closer the average of the total score is to 5, the higher the tendency of the participants to visit the library. In terms of library visits, it was determined that the most important purpose was to benefit from loan-return services, study, and search for information on any subject.

Table 6. Opinions of Participants on Mobile Library Services

Mobile Library Services	N	Min.	Max.	Mean	S. Dev.
Extensions	410	1	5	3,56	1,34
Information about library services	410	1	5	3,86	1,12
Scanning the library catalog	410	1	5	4,02	0,98
Scanning in databases	410	1	5	2,94	1,21
Consulting and training procedures	410	1	5	3,93	1,14
Consulting the librarian	410	1	5	3,96	1,13
Remote access/ proxy services	410	1	5	2,06	1,15
Other	410	1	5	1,92	0,91

Measurement scale: 1 = Not useful at all; 2 = Not useful; 3 = Uncertain; 4 = Useful; 5 = Very useful

Table 6 gives the opinions of the participants about mobile library services. Data were obtained on a frequency scale from 1 (not at all useful) to 5 (very useful). The result is displayed in terms of mean and standard deviation. When collecting data using a 5-point Likert type scale, the closer the average of the total score is to 5, the higher the satisfaction of the participants from the mobile library service. Accordingly, scores above 3.40, which was determined as the cut-off point, showed that the participants are in favor of the relevant services. When looking at mobile library services in terms of use cases, it was seen that the most useful mobile library services were scanning the catalog, counseling and education services, getting information about the library, and extensions.

Table 7. Mobile Library Service Requests of Participants

Mobile Library Services	N	Min.	Max.	Mean	S. Dev.
Mobile library promotion	410	1	5	3,93	1,03
Mobile interlibrary loan	410	1	5	3,29	1,06
E-book	410	1	5	4,38	0,80
Remote access service	410	1	5	4,40	0,78
Access to audiovisual materials	410	1	5	4,26	0,99
QR codes	410	1	5	3,55	1,20
Augmented reality	410	1	5	3,37	1,25
Other	410	1	5	0,22	0,92

Measurement scale: 1 = Not necessary at all; 2 = Not necessary; 3 = Uncertain; 4 Necessary; 5 = Very necessary

Table 7 gives the views of the participants regarding their expectations from the mobile library. Data were obtained on a frequency scale from 1 (not necessary at all) to 5 (very necessary). The result is displayed in terms of mean and standard deviation. When collecting data using a 5-point Likert, the closer the average of the total score is to 5, the higher the satisfaction of the participants from the mobile library service. According to the results obtained, the scores above 3.40, which was determined as the cut-off point, indicated that the participants would like to access the relevant services via mobile devices. Considering the opinions of the participants regarding their expectations from the mobile library, they stated that remote access to databases, use of e-books, access to audio-visual materials, and QR code sharing should be included in the mobile library.

6. Discussion

According to the findings, all of the participants use mobile phones. Similar results were obtained from the study of Karim, Darus, and Hussin (). The majority of the respondents stated that they use their mobile phones for accessing the internet and messaging. The findings show that messaging is the most preferred method, as demonstrated by Buczynski and Odabaş. In addition, it was determined that mobile technologies are used extensively for internet access and research. This situation shows parallelism with the data revealed by LI in 2013 that university students actively use mobile devices to access information. In addition, as mentioned by Odu and Omini in 2017, the intense use of social media by the participants necessitates libraries to take an active part in these channels.

Based on the findings obtained at the end of the research, it is emphasized that mobile services should be carried out in libraries, the services should be created in line with user expectations, and it is important to provide technological infrastructure, personnel training and awareness in order to carry

out mobile services in libraries more effectively. The results obtained are similar to the finding by Iwhiwhu, Ruteyan, and Eghwubare (2010) that the inadequacy of mobile services in libraries is caused by infrastructure and staff training. On the other hand, library users become addicted to mobile devices and that they use mobile devices intensively for messaging and accessing the Internet, as revealed by Li in the case of China in 2013, which has also been confirmed by our research.

Based on the research findings, it is seen that the participants demand to benefit from mobile technologies while accessing electronic resources remotely. Accordingly, it can be said that similar results were obtained with the studies of Liu and Briggs (2013), who argue that the most common mobile services are access to the library catalog and digital resources. As suggested by Ashford and Zeigen (2012), library users prefer mobile technologies to browse catalogs and access databases.

7. Conclusion and recommendations

Mobile technologies have enormously affected libraries as in all areas of life. Accordingly, they are thought to be used by many libraries because of their convenient nature in terms of speed, time, and cost to access information. Today, while most libraries benefit from SMS service and social media channels to communicate with their users, the competence of mobile library platforms in this regard is not at the desired level. When looking at the general course of mobile library services, it is seen that library working hours and basic library information are mostly included. By making use of mobile technologies, which bring advantages in terms of speed, time, and cost in accessing information, it will be possible to use the library catalog, electronic resources, and audio-visual materials effectively and to provide remote access to databases. It has become possible to use new applications related to QR codes and augmented reality in mobile phone technology in terms of library mobile services. Real-time experience of virtual objects in the library catalog by users will become available with augmented reality applications. In addition, it becomes possible to use the same technology in order to easily find the information source sought in the library.

According to the data collected from the participant students using the scale, it is seen that they are willing to access library services using mobile technology. It is thought that the high use of mobile phones among students may have led to a positive view and perception of accessing library services in this way. Being able to use the library remotely and access the services carried out remotely is perceived as a great advantage for users who do not wish to visit the library physically. For libraries, this should not be seen as a threat, but as an opportunity to be closer to users. With the use of mobile technologies in libraries, it will be possible to reach a wider user base and promote library services more effectively.

In order to increase the use of mobile libraries by students, mobile library services should be improved and the personnel in charge should be trained. It would be right to pave the way for mobile access to loan-return and information access services, which are determined to have a very important place among the purposes of library use. In addition, innovations in the direction of remote access, which is thought to provide convenience in accessing electronic resources, will turn mobile technologies into opportunities for libraries.

References

- Ashford ve Zeigen, State of the Mobile Landscape: Mobile Literacy and What It Means for Libraries. <https://pdxscholar.library.pdx.edu/onlinenorthwest/2012/Presentations/14/>
- Bischoff, H., Ruth, M ve Rawlins, B. (2013). "Making the Library Mobile on a Shoestring Budget," in *Mobile Library Services: Best Practices*, ed. Charles Harmon and Michael Messina. Maryland: Scarecrow Press.
- Buczynski, J. A. (2008). Libraries begin to engage their menacing mobile phone hordes without shhhhh!. *Internet Reference Services Quarterly*, 13(2-3), 261-269. <https://doi.org/10.1080/10875300802103916>
- Canuel, R., ve Crichton, C. (2011). Canadian academic libraries and the mobile web. *New Library World*, 112, 107-120. DOI:10.1108/03074801111117014
- Churchill, D., Lu, J. ve Chiu, T.K.F. (Lecturer) (2014) Integrating mobile technologies, social media and learning design, *Educational Media International*, 51:3, 163-165, DOI: 10.1080/09523987.2014.969895
- Ezell, S. (2009), "Contactless mobile payments", Information Technology & Innovation Foundation, Retrieved February 16, 2022, from www.itif.org/files/2009-mobile-payments.pdf.
- Fling, B. (2009), *Mobile Design and Development*, O'Reilly, Sebastopol, CA.
- Iglesias, E., & Meesangnil, W. (2011). Mobile website development: From site to app. *Bulletin of the American Society for Information Science and Technology*, 38(1), 18-23. <https://doi.org/10.1002/bult.2011.1720380108>
- Ishii, K. (2004). Internet use via mobile phone in Japan. *Telecommunications policy*, 28(1), 43-58. <https://doi.org/10.1016/j.telpol.2003.07.001>
- Iwhiwhu, B. E., Ruteyan, J. O., & Eghwubare, A. (2010). Mobile phones for library services: prospects for Delta State University Library, Abraka. *Library philosophy and practice*, 346, 1-8.
- Kalinić, Z., Arsovski, S., Stefanović, M., Arsovski, Z., ve Rankovic, V. (2011). The development of a mobile learning application as support for a blended eLearning environment. *Technics technologies education management*.
- Karim, N. S. A., Darus, S. H., & Hussin, R. (2006). Mobile phone applications in academic library services: a students' feedback survey. *Campus-Wide Information Systems*. Retrieved February 16, 2020, from <https://www.emerald.com/insight/content/doi/10.1108/10650740610639723/full/html>
- Kubat, G. (2014). The mobile future of university libraries in Turkey (Unpublished master's thesis). Kadir Has University, Istanbul, Turkey.
- La Counte, S. (2013). "Introduction," in *Mobile Library Services: Best Practices*, ed. Charles Harmon and Michael Messina. Maryland: Scarecrow Press, v-vii.
- Li, A. (2013). "Mobile Library Services in Key Chinese Academic Libraries," *Journal of Academic Librarianship* 39 : 223-226. <https://doi.org/10.1016/j.acalib.2013.01.009>
- Lippincott, J.K. (2010), "A mobile future for academic libraries", *Reference Services Review*, Vol. 38 No. 2, pp. 205-213. <https://doi.org/10.1108/00907321011044981>
- Liu, Y. Q., ve Briggs, S. (2015). A library in the palm of your hand: mobile services in top 100 university libraries. *Information technology and libraries*, 34(2), 133-146. Retrieved from February 15, 2022, from <https://ejournals.bc.edu/index.php/ital/article/view/5650/pdf>
- Liu, Y., Ye, H., ve Sun, H. (2021). Mobile phone library service: seat management system based on WeChat. *Library Management*. Retrieved February 17, 2022, from <https://www.emerald.com/insight/0143-5124>.
- Lv, Y. H. (2012, September). Research of mobile library information service. In *International Conference on Information Computing and Applications* (pp. 678-685). Springer, Berlin,

- Heidelberg. Retrieved February 16, 2022, from https://link.springer.com/chapter/10.1007/978-3-642-34038-3_94.
- Mbambo-Thata, B. (2010). Assessing the impact of new technology on internal operations: With special reference to the introduction of mobile phone services at UNISA library. *Library management*. <https://doi.org/10.1080/10875300802103916>
- Mills, K. (2009), "M-libraries: information use on the move", Arcadia Programme, Retrieved February 11, 2020, from http://arcadiaproject.lib.cam.ac.uk/docs/M-Libraries_report.pdf
- Ocran, T. K., Underwood, P. G., ve Arthur, P. A. (2020). Strategies for successful implementation of mobile phone library services. *The Journal of Academic Librarianship*, 46(5), 102174. <https://doi.org/10.1016/j.acalib.2020.102174>
- Odabaş, H. (2009). From Mobile Learning to Mobile Library. Paper presented at ÜNAK 09, Existence in the Information Age: Opportunities and Threats Conference. Retrieved August 15, 2022 from <http://acikarsiv.atauni.edu.tr/browse/556/693.pdf>.
- Odu, J. O., ve Omini, E. U. (2017). Mobile phone applications and the utilization of library services in the University of Calabar Library, Calabar, Nigeria. *Global Journal of Educational Research*, 16(2), 111-119. Retrieved February 16, 2022, from https://scholar.googleusercontent.com/scholar?q=cache:IGtsyjnmiJ:scholar.google.com/+%22mobile+phone+library%22&hl=tr&as_sdt=0,5.
- Paterson, L., ve Low, B. (2011). Student attitudes towards mobile library services for smartphones. *Library Hi Tech*, 29(3), 412-423. <https://doi.org/10.1108/07378831111174387>
- Pope, K., Peters, T., Bell, L. ve Burhans, S. (2010), " Twenty-first century library must-haves: mobile library services ", *Searcher - The Magazine for Database Professionals*, Vol. 18 No. 3, pp. 44 – 48. Retrieved February 11, 2022, from <https://search.ebscohost.com/login.aspx?direct=true&db=bsu&AN=105168845&lang=tr&site=eds-live>.
- Smith, S.D., Salaway, G. and Caruso, J. (2009), "The ECAR study of undergraduate students and information technology", EDUCAUSE Center for Applied Research, Boulder, CO. Retrieved February 14, 2022, from www.educause.edu/ecar.
- Statista Research Department. (2021a). Use of electronic devices among distance learning students Philippines 2020. Retrieved February 11, 2022, from <https://www.statista.com/statistics/1261591/philippines-electronic-device-use-among-distance-learning-students/>
- Statista Research Department. (2021b). Use of electronic devices among distance learning students Philippines 2020. Retrieved February 16, 2022, from <https://www.statista.com/statistics/983737/number-mobile-contactless-payment-users-worldwide/>
- Statista Research Department. (2022). Share of students who have access to smartphone at home India 2018-2020. Retrieved February 11, 2022, from <https://www.statista.com/statistics/1276401/india-share-of-students-who-have-access-to-smartphone-at-home/>.
- Statista. (2022). Smartphone users worldwide 2016-2021. Retrieved February 11, 2022, from <https://www.statista.com/statistics/330695/number-of-smartphone-users-worldwide/>
- Tavluoglu, C. (2010). Mobile applications in university libraries. A. Yıldızeli, T. Çakmak and N. Özel (Pub. Jun.), "Knowledge Management 2.0: Information Services in Social Networks": ÜNAK 2010 Conference proceedings: In 7-9 October (pp. 37-44). Ankara: Association of University and Research Librarians.
- Thomala, L. L. (2021). Usage of electronic devices and mobile phones among students in China 2018-2019. Retrieved February 11, 2022, from <https://www.statista.com/statistics/1184093/china-electronic-device-and-smartphone-usage-among-students-by-education-level/>.

Thomas, L. C. (2010). "Gone Mobile? (Mobile Libraries Survey 2010)," *Library Journal* 135 (2010): 30-34.

UNESCO. (2012). *Mobile learning for teachers in Africa and the Middle East: Exploring the potentials of mobile technologies to support teachers and improve practices*. Retrieved February 16, 2022, from <http://unesdoc.unesco.org/images/0021/002163/216358e.pdf>