Mobile technology for expansion of service range medan public library

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Abstract. The information society, especially library users, expects an easier and faster way to get information and share knowledge. The library also implements the best way to provide the best service and the easiest way to disseminate and share information with its users. One technology that allows libraries more closely with their users is mobile technology. This paper aims to determine the basic conditions of mobile technology services and mobile services most needed library users, as well as constraints faced by libraries and users in the application of mobile technology. This paper will help libraries to develop better M-Library services in expanding the reach of library services. Methods of data collection were conducted through surveys through questionnaires, interviews, and direct observation. The results of the use of mobile technology applications in libraries bring great advantages to provide better library services and to improve accessibility of library resources in the easiest way, but due to lack of funds, lack of skills and lack of staff, many libraries are unable to provide this service with very successful.

1. Introduction
The information culture has become the lifestyle of today's society. Every aspect of life makes use of and uses information. One technology that provides the easiest and fastest way to communicate and share information and reduce the communication gap between two individuals and two communities is mobile technology. Mobile technology offers the ease and speed in utilizing information especially for quick reference and conducting extensive research. Adopting mobile technology in the library will assist in performing better service by communicating with users openly and sharing information and knowledge in an easy way. Mobile technology becomes a means for libraries to communicate better, service and share information and knowledge with library users anytime and anywhere. In this paper we put forward and develop a mobile library application for smart phones [1][2][3].

To know the basic service condition of cellular technology, to ensure the most common mobile service offerings made by libraries to their users, to find out which mobile services most users need, the benefits derived from the use of mobile technology, to find out the problems facing the library to provide m-library services, and to know which mobile services should be added for the development of better M-Library services in expanding the reach of library services?

2. Literature Review
The application of mobile technology in the library has been thoroughly studied and studied [1]. Liu and Briggs have examined the current state of mobile services among academic libraries of the
country's top 100 accredited mobile services at the university level [4]. This paper shows that all libraries offer at least one mobile service, and the majority offers multiple services. Some of the most common mobile services offered by the library are mobile sites, text messaging services, e-books, and mobile access to databases and catalogs. Sharma and Sahoo describe mobile technology applications in libraries and information services and explain new technologies, to provide effective and efficient services to library users as well as appropriate access to the required access and quick access to relevant information so that mobile applications to provide library and information services is an important step [5]. Kumbar and Bright, discuss about mobile technology and focus on finding that mobile device implementations help generate new services and provide faster access to their collections and also create opportunities and challenges for academic libraries [6]. Malaty and Kantha, outlines the application of mobile technology and development in mobile telecommunication systems to provide up-to-date, user-friendly, personal and dynamic information services to up-to-date information to library users. This paper reveals that the implementation of mobile communication systems helps provide and improve library services to users [7][8].

Conducted research on the utilization of cellular services in the educational environment [9]. This paper explores the nature of mobile use among students, and investigates student perceptions about the use of mobile phones in libraries and information services. This paper shows that the provision of telecommunication services in the library allows the effective use and access of information services and libraries using mobile phones. Nalluri and Gaddam discussed the main strategies used by libraries to provide services through mobile devices [10]. The paper also discusses an overview of mobile device trends and their applications for libraries, including mobile internet, mobile multimedia, and SMS, etc. and describes the various activities the device supports for library use, focusing on how libraries and librarians respond with services tailored for this device and what the library can do in the future in this regard. This study further explores the utilization of cellular services in the academic environment [11][12][13][14][15][16].

2.1. Mobile Technology
Different types of mobile technology are widely used in today's society such as cell phones, multimedia phones, laptops, net books, e-book readers, cameras, and so on. This technology performs various activities including voice and sound, video calling, e-mail transfer, text messaging, clicking photos, playing videos, making videos, setting alarm clocks, searching the internet, searching school database information, accessing course management systems, reading or listening to books and articles, newspapers, shopping online, internet banking, using GPS navigation systems, games, uploading and downloading content from the internet [1].

2.2. Mobile Technology Service Application in Library
Mobile technology provides the most flexible, fastest and easiest way to communicate access and share information by anyone from anywhere and anytime. Mobile technology services that libraries can adopt include:

Table 1. Mobile Technology Services

| Mobile Technology Services | Description |
|----------------------------|-------------|
| SMS Notification Services: | To provide up-to-date information, news and event information remains current, SMS notification service to users. Moreover, users can get notifications of new book arrival, overdue, loan request, etc. |
| Access Library Website:    | To provide users with dynamic information services through mobile devices, libraries should design library sites as interactive and participatory interactive library websites. |
| Allow accessing OPAC:      | Libraries can provide access to OPAC libraries and resource varieties and databases via mobile technology. This will help to get library resource availability anytime anywhere. |
Providing Mobile Library Instruction: Implementation of library services through mobile technology will help support formal education, assist research activities in the e-learning environment.

Free access of Library E-resources: Some publishers have already sent e-books (both text and audio), e-Journals, Web databases, dissertations, etc. that can be accessed via mobile users.

Mobile Library Databases: Provides access to various library and database resources via mobile technology. The library should also provide a Download link to the user's mobile technology.

SMS Reference Service: Through this library the service can provide instant answers, and links to articles and references in real time, to user communities, and more.

3. Method
Research location is the Medan Public Library. Data collection was conducted from April 1st to May 10th 2017, using questionnaires and interviews with librarians and library users. For supporting data direct observation is made to find out the services provided by the library.

4. Results and Discussions

4.1. Current Condition of Mobile Technology Service Provided by Medan Public Library
The purpose of implementing mobile technology services in libraries is to provide better library services in an easy way and to increase the use of library resources wherever and whenever. In this case the Medan Public Library still provides mobile technology services for certain services for users, such as ordering books, and storing detailed information on catalog search. For the library itself, this technology can be one of the new and more innovative ways to promote owned collections. Implementation of mobile technology services is still the development stage and still trying to give the best to library users according to their needs [11][12].

4.2. Mobile Basic Services Offered
The Mobile Library Basic Service adopts new technologies and services to provide and improve accessibility to library resources. In this case the mobile technology services offered are E-book / E-articles, E-news, E-journals, downloadable, OPAC, book reservations, mobile reference service, personal service through mobile technology, chat / instant messaging, social media, and others.

| Library Services |
|------------------|
| E-book / E-articles |
| Downloadable e-resources |
| Mobile OPAC |
| Book reservation |
| Mobile Reference Service |
| SMS notification Services |
| Chat/IM |
| Social Media |
| Personal services |

4.3. Benefits of Mobile Technology Services for users and librarians Medan Public Library
From the results of questionnaires to users and interviews to librarians is known that the benefits of mobile services are perceived, among others:

- Help improve access to library resources and services
• Help improve the use of information resources available in the library
• Facilitate the use of library resources
• Improve the quality and efficiency of the library
• Improve the quality of library resources
• Reduce the communication gap between the library and its users
• Giving easy communication with library users anytime
• Stay connected between libraries and users, and more.

4.4. Constraints and Challenges in Mobile Technology Implementation in Medan Public Library
Evaluation of the application of mobile technology in the Medan Public Library shows many problems in handling new devices, namely maintenance and updating of content. In this case, the challenges facing libraries are lack of human resources, lack of skills; lack of funding, lack of support from government and institutions, communication problems and lack of content, and content management.

4.5. The Future Service of Mobile Technology
Library has done its best to improve library services and increase the use of library resources by adopting new technologies and adding many services. So to improve the accessibility of library resources and to provide better service to users, based on survey results will add the following mobile technology services [1][3]:
M-library instruction to support learning process, research activity, formal education, and others
• Text messaging services to provide information, news and events, keep up with library and institutional information
• E-book access: providing electronic access through their mobile technology, anywhere
• Augmented reality
• M-OPAC: provides online catalog access via their mobile on or off campus, accessing databases, etc.
• Book renewal: online book extension from off-campus via their mobile phone
• Mobile interlibrary loans: book loans and reservation services
• Applications for accessing e-resources / databases: providing e-resources access from e-resources applications such as My Library, Pub Med, Springer, Science Direct, E-Library, etc.

5. Conclusions and Suggestions
The need for library user information is increasing every day following their expectation of technology, ease and speed and accuracy. So, adopting new technology in libraries is the only way to meet the needs of users precisely and on time. In this context, the use of mobile technology applications in libraries brings great advantages to providing better library services and to improve accessibility of library resources in the easiest way, but due to lack of funds, lack of skills and lack of staff, many libraries are unable to provide services this is very successful [12][13]. Therefore, providing sufficient funds and training staff on new technologies is essential to understanding the progress of these technologies and providing library services with the simplest for library users. Moreover, the provision of such services is not only a major requirement but also a big challenge [13][14][15][16][17]. Once accomplished, library users will be able to easily use library resources and services via their mobile phones. Libraries will be able to communicate better and easily share information and knowledge with their library users wherever they fit their demands [18][19][20].

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