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## A CRITICAL ANALYSIS OF THE PROSPECTS AND CHALLENGES OF ANDROID LIBRARY MANAGEMENT

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### ABSTRACTS

*Library management is seen as a sub-discipline of institutional management that focuses on specific issues faced by libraries and library management professionals. An Android library management system is seen as management software for monitoring and controlling the transactions in a library. The paper provided the concept of android library management, implying that android library management is a resource planning system for a library, used to monitor things owned, orders made, charges settled, and benefactors who might have lent. It also gave an explanation of the Android phone, the prospect of android library management, and was used as the concept of android library management was not to produce repetition. It was on this basis that the paper concluded that the Android application system is effective, usable, dependable, and working appropriately and sufficiently meets the minimum requirements that were set for it at first. As far as productivity is concerned, this is required to offer easy accessibility and better or faster information retrieval to the clients. The utilisation of the library system can be guaranteed. One of the recommendations was that the android library management system with all essential hardware requirements for implementation of the library management system should be put in place for ideal use.*

**KEYWORDS:** Android Library Management, Challenges & Prospects.

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### Introduction

A library is a place where a huge collection of books and resources are available that can be accessed by the users. It acts as a brain for the institutions. It enhances the dissemination of knowledge and spiritual civilization among the students (Sun, Jiangwei & Ling, 2011). The abundance of books and research works entices students to broaden their knowledge in all areas. It guides the students to promote their views differently. This knowledge optimizes the student to achieve a better result in academic as well as personal skill development. The advancement of technology necessitates the creation of

a method to convert the traditional library setup to a digital one. Numerous tedious processes reduce the efficiency of the library. For example, it always needs manual support to do any active ties in the traditional library. The count and details of books are scribbled on the paper for reference. Each data set is fetched in the notebook for future citations. To examine any data, they have to refer to the notebooks. At the same time, while distributing the books to the students, they have to enter them into the notebook where they need to represent the book id, distribution and renewal date, and student ID. The librarians/staff have to assign a tag to each book and provide an ID for it. They have to align and arrange the books on the shelves and mark them (Chen & Liu, 2009). Missing or stolen books cause serious problems and confusion for librarians. While collecting the book from the students, they have to verify the penalties of the book. Therefore, it causes a monotonous environment for the staff. Consequently, it builds an uninteresting environment for the students due to the slow progress of the staff.

To bring the library into the technological era, a system called the Library Management System (LMS) was introduced. It is an automatic system that reduces the work burden of the staff and librarians with a single click. The library tasks will be managed, organized, and directed by it. The LMS supports the librarian to add/view/delete/update details from the library stock. Here we integrate all the library data into the SQL server. The librarian has to add student and book details into the database. After that, he/she can view/delete/update those details through the Library Management system. On account of this, the user can access the library at any time. The librarians can assist with the data without any confusion. Each row of data is retrieved from the database. If he/she has access to any user details, then it shows username, id, book details, and penalty details. There is no need to write it on paper for any reference. By editing the data, they can change the parameters in it. In spite of working on the manual, the librarian can feel confident handling the automatic system. According to Barve & Dahibhate (2012), it has additional features such as a librarian can maintain library records and a student's history of penalties and issues. It always tracks the count of the books in the library and issues book details. This causes a flexible service for librarians and students. It has a user-friendly interface, so basic computer knowledge is enough to access the LMS. The system is a customizable and user-configurable one, which makes it suitable for use in different organizations. As aforementioned, the data is stored and secured in the database. The related data is stored together and maintained properly. It allows the user to create their own database as per their requirements (Bretthauer, 2001). The database gets manipulated by the programs that provide an interface between the databases. The database management system (DBMS) receives the command from the administrator and, based on the instruction, changes the data in the database. This instruction may load, retrieve, or modify the existing database. It is better to assign a DBMS as a centralized one, which helps multiple users access the database in a controlled manner at different locations. Based on the scheme of DBMS, the system can assign a view mode for each user, like some people can see only some data, while an authorized one can see all the data existing in the database. It offers both

logical and physical data independence. The Open Database Connectivity (ODBC) provides an application programming interface that allows the client-side program to call the DBMS on the server-side (Yang, 2015).

The Android Library Management System offers a complete solution for universities and organisations to introduce and integrate specialised functions and services to their community. Mobile library management systems are tools which help the information custodian to maintain and manage library processes through the deployment of computerised systems that are powerful and capable of documenting and tracking different library transactions such as loaning, accessioning, and registration of library users (Singh, Prabhakar, Kumar & Singh, 2014).

### Concept of Library Management

Library management is a sub-discipline of institutional management that focuses on specific issues faced by libraries and library management professionals. Library management encompasses normal managerial tasks as well as intellectual freedom and fundraising responsibilities. Issues faced in library management frequently overlap with those faced in managing non-profit organisations (Sharma, 2005). Library management is the adaptation of the principles and techniques of management to the library situation. It includes decision-making and getting the work done by others. The five fundamental management functions are: planning, organising, staffing, leading, and controlling. Libraries have an important role to play in facilitating access to information for learning, education, and training. It is a well-known fact that a well-managed library is a successful library. Library management means efficient and effective management of material (information sources), machinery, men (human resources), technology, and money to meet the objectives of the library. Thus, the librarian as manager performs all the functions of a manager/administrator.

An important aspect of library management is planning and maintaining library facilities. Successful planning is defined as "active planning that ensures an organisation will have the right people in the right place at the right time for the right job" by Hawthorne (2011). The Library Management System maintains the record of books in the library and controls the issue, purchase, and return processes of the books in the library.

According to Henry, (2006) some managerial activities, in the library include;

1. **Planning:** Planning includes formulation of goals, objectives, decision making for future, strategies, policies, and effective planning.
2. **Organizing:** Organizing includes departmentation, line and staff functions, decentralization, committees and group decisions, and effective organizing.
3. **Staffing/Commanding:** It includes selection, job description, appointing personnel, appraisal, developing library managers and organizational development.

4. **Leading (Coordinating):** It deals with human factor, motivation, leadership, and communication.
5. **Controlling:** It includes system and process of controlling, control techniques, control of overall performance, and effective managing.

### Concept of Android Phone

According to Moon-Koo (2016), Android phones in today's world have become so popular that they have captured a large economic market along with a large number of users, each using different types of Android (smart) phones with varying features. The most prominent thing that distinguishes the smart phone industry and their user base is the operating system being used, among which popular are Android, iOS, and Windows Phone. With the statistical figures from International Data Corporation (IDC), the smart phone industry grew by 1.1% last year, and by the third quarter of the year, more than 350 million units were shipped worldwide. Android has maintained its position on the scoreboard with a market share of 86.8% (Smartphone OS Market Share, 2016). With this increase in the demand for Android phones, customers' concern is to select and buy the phone that meets their requirements at an affordable price. In the present era of competition, different vendors are trying to make a profit by using the Android OS because of its acceptance among the users. With each day that the struggle and efforts are put into to give an operating system that is compatible with most hardware and provides all the necessary features to the users in an efficient way, Android production is growing. Every corporation wants to provide the best quality in their android phones while also improving features. The immense usage of Android leads in the direction of advanced methods in usability, multitasking, accessibility, protection of end-user-private data, and many more. In which each release is expected to cater to the mentioned issues and provide something new to the user (Parmjit & Sharma, 2014).

According to Xueliang & Tian (2012), the architecture of the Android phones was first developed by Android Inc., now owned by Google, and launched through AOSP (Android Open Source Project) in 2007. That statement was taken by the foundation of the OHA (Open Handset Alliance). The software used in it was launched under the Apache licence as an open source. The Open Handset Alliance is a collaboration of numerous hardware, software, and telecommunications companies. Firms may also include Intel, Google, NVIDIA, Qualcomm, Motorola, HTC, and T-Mobile, in which Android is the adapted-able OS. Its core objective is to build advanced equipment according to its technology that may considerably reduce the time and cost as well as enhance the services and provide the best features to customers. At present, the android versions in use are Kit Kat, Marshmallow, and Gingerbread. The table below shows the history of the Android operating system from its initial release to the present. The same is with Android OS, an operating system that acts as a bridge between the user and the hardware. We are talking about the Android operating system. The latest version is Nougat. This version has been upgraded up to 7.0-7.12, which is based on the Linux 4.4.1 kernel that consists of

layers. The application layer in an Android operating system is the top layer that includes utilities like SMS, contacts, phone, browser, camera, media player, cleaner, etc. All of which are developed in the Java programming language. The utilities or applications require an application framework as a base to set up and work. An application framework is a large set of analysis tools used for developing an app with an attractive GUI that may consist of check lists, navigation menus, text boxes, but-tons, check boxes, and more likely an embedded and responsive web browser. A Resource Manager also grants access to resources but not to source code such as restricted strings, GUI, and design (Pieterse, Heloise, & Olivier, 2012).

### **Concept of Android Library Management**

Android technology in general can be seen as any technology with the readiness to move. Examples of such technologies may include automobile industries, notebooks, personal digital assistants, and mobile phones. Hardware, operating systems, networking, and software are all combined in Android technology gadgets (Nalluri & Gaddam, 2016). The Library Management System (LMS) is seen as management software for monitoring and controlling the transactions in a library. The LMS is used for library resource planning, accessing held records, user requests, charges, or loans. The LMS can be said to be a resource planning tool. It's an Android-based project, and we have developed this project in the Android Studio. We can manage books, members, issues, addresses, students, and librarians from this project. The main objective of developing an android project on a library management system is to provide an android app on a library management system to consumers, from where users can use it from their mobile devices (Uzomba, Oluwatofunmi & Anthony, 2015). The Android project on library management is compatible with all Android mobiles. so users can install and configure it on their mobile devices. If you have any specific requirements, then we can develop major android projects on a library management system according to your requirements. There are various types of modules available to manage books, members, and students. We can also generate reports for members, books, addresses, and librarians. The book module handles all book operations, member modules handle member management, the issue module handles issue management, the address module handles address operations, and the student module handles student management.

An Android library management system is seen as a management software for monitoring and controlling the transactions in a library. It is used for library resource planning and accessing the held records, requests, charges, or loans, all made by users. The ALMS can be said to be a resource planning system for a library, used to monitor things owned, orders made, charges settled, and benefactors who might have lent. It uses current awareness service and resource organisation for selective sharing of information to ease the librarians' work. MLMS can be defined as a system for information resource cataloguing, utilised in accessing the documents held, orders, payment, or lending conducted by the users (Enache, 2012).

## Features of an Android Library Management System

1. Android library Management system (app) allows both user and admin to operate this app.
2. It allows the admin to add books and their details.
3. The users can look for the books they wish to collect and send a request to the admin.
4. The admin can accept or reject book collection requests from users.
5. Users need to provide complete information along with their phone number to borrow a book.
6. Users need not search every shelf to find a book. The admin can keep a record of the book's location, which helps the user quickly locate it.

## Functions of Android Library Management System

In libraries, different departments and units work together to execute pre-assigned duties. Therefore, an Android Library Management System (ALMS) consists of various utilities that work together to make an efficient system. The ALMS is broken into modules to ensure effective management of library tasks. They include:

- (i). *Online public access catalogue (OPAC)*: This describes a list of the books stored on a database online and is made available to users in the library.
- (ii). *Maintenance*: Details about users and materials are maintained
- (iii). *Records management*: Records management handles the management of information of registered users.
- (iv). *Storage*: It allows the storing of bibliographic information of books such as author, title and subject and also acts as a database for students, lecturers and books
- (v). *Bibliographic search*: Here the library may define parameters on search forms. That is; search by subject, author, keywords, titles etc.
- (vi). *Full acquisitions*: Acquisitions includes obtaining vendors orders', valuing and expense projections.
- (vii). *Security*: Provides security measures to deter unpermitted people from accessing the system. For example, users must sign in to their registered accounts with a password to carry out certain tasks on the database.

## **The Prospect of Android Library Management**

In this Library Management System these are the services rendered:

The additional feature in this Android application is to book your core (or interesting) books in your library. If the books are not available at that particular time, then the user can visit the details of students who have already taken the particular books. They can directly send a request for the book required by them to the students who had it through the App. Also, students can transfer the books on their own without the interference of a librarian. The librarian can act as admin and can find the students who have the book out of their limited time and can send him a copy of the penalty amount to the student (Uwaifo, 2010). The App will also remind students of the due date for returning the book. This makes it easy for students to find their required books even if they are not available at the library. This brings efficient usage of books in the library by the students. The availability of books can be predicted by the users since they need not visit the library daily for their required books. A user can directly approach the library only when the required book is available. This system leads to saving the time of users from unnecessary trips to the library. For some security reasons, we are not allowing users to take books from the library. Issuing of books can be done only by the librarian. Users can only transfer their books to other users' accounts within their limit. While transferring the book between users, if a user has reached the limit of their capacity, the transfer of the book will be failed.

## **The Challenges of Android Library Management**

1. The initial cost of digitization and preservation files is prohibitive. This comes about due to the relatively high cost of purchasing the required hardware and software for setting up the library;
2. Special training is required and thus special skills to set up and maintain the digital library;
3. The user has to accept the media, thereby making user sensitization a crucial factor to be considered. This is because the authenticity and credibility, hence acceptance of the digitized information resources may have a lot to be desired;
4. Bandwidth problem in accessing multimedia resources and full-text journals is a major communication barrier (particularly in a large majority of the third world countries);
5. Scanning and electronically storing the original documents of the entire paper based collection is time consuming and labour intensive;
6. Intellectual Property Rights (IPR) issues may not be clearly interpreted or correctly applied and enforced in different parts of the world;

7. Some librarians are wary of the new technology and hence may be reluctant to adopt changes.

### **Conclusion**

From legitimate examination and assessment of the designed system, it can be securely inferred that the android application system is effective, usable, and dependable. The Mobile Library Management System is working appropriately and sufficiently meets the minimum requirements that were set for it at first. The new system is required to offer easy accessibility, better or faster information retrieval to the clients, as far as productivity is concerned. The utilisation of the library system can be guaranteed.

### **Recommendations**

Having an Android Library Management System in a library is good. This makes the tasks of the library staff easier, stress-free for the users. We therefore recommend the following;

1. The android library management system with all essential hardware requirements for implementation of the library management system should be put in place for ideal use.
2. For further research on android library management system, a platform for chatting with the reference librarian at any point or anywhere should be considered.
3. Librarians should be trained as administrators of the system.
4. Librarians should be able to maintain and update the system continually.
5. A means should be provided for awareness and enlightenment of the application for effective and efficient use.

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