RFID Technology at Mahatma Gandhi University Library: A Case Study

Shaini Gopinath A

Abstract

For increasing the quality of service and efficiency of operation new technologies has always been interest for librarians. RFID (Radio Frequency Identification) technology is proven to be a promising alternative in relieving the library staff from time consuming. This paper aims to access and evaluate the use of RFID by the research scholars of the Mahatma Gandhi University. Survey method was employed for data collection using questionnaire technique. The study found that users have a positive attitude towards the implementation of RFID in the library. The study will provide new insight for other libraries to implement RFID systems.

1. Introduction

Library or Information centre as it is called today is an integral component of any high quality research and teaching institution. Therefore the various information and knowledge services that it offers constructively contribute in shaping the scientists or researchers of tomorrow. Technology is playing a central role in every walks of life. From the traditional library services till the present scenario, several technologies have been deployed in order to maintain the competitive circumference. Advancements in Information Communication and Technology (ICT) have opened up many new frontiers for librarians to work on and Radio Frequency Identification Technique (RFID) is one such technique widely being applied.

RFID stands for Radio Frequency Identifier. RFID is a combination of radio frequency and microchip. It is the latest technology for identification and data capture without the need of direct contact. More precisely it can be described as a revolutionary Application of Automatic Identification and Data Capture (AIDC) technology. It is in use since 1970s, whereas libraries began using RFID in the late 1990s, in order to replace electromagnetic and barcode technology. It uses wireless radio communication for unique identification of people or asset that provides accurate and timely information without human intervention. (Kumar and Kaur, 2010).

RFID is an innovative automated library system for identification and tracking of library materials. RFID can be used, library circulation operations and theft detection systems. RFID based systems move beyond security to become tracking systems that combine security with more efficient tracking of materials throughout the library, including easier and faster charge and discharge, inventorying, and material handling. (Boss, 2004). This technology is not new in the field of Library and Information Science but rapidly, growth of literature in different disciplines arises security problems and which in

turn change the role of practicing librarianship in the business of moving books. RFID provides a solution for security of library materials. It is emerging more effective, time saving, convenient and cost effective technology. The concept of RFID can be simplified to that of an electronic barcode and can be used to identify, track, sort or detect library holdings at the circulation desk and in daily stock maintenance The main aim for today's libraries in adopting RFID is to improve library operations by increasing the efficiency of library transactions, reducing workplace injuries and improving services for library users. It helps the librarian in providing the users with optimum utilization of available resources. (Dipti and Sharma, 2015).

Mahatma Gandhi (M G) University library is well equipped with modern facilities and resources. The library plays a crucial role in ensuring the effective flow of information and data to the academic community. The implementation of RFID technology in Mahatma Gandhi University Library has given new dimensions to the library and is helpful for the user community foolproof security, access control and proper holding management. RFID is applied to various areas in library such as automated check in/check-out (without the intervention of library staff, theft detection, stock verification, shelf rectification etc and it can be extended to many more areas in near future. The Electronic Security System is one of the fastest growing and most valuable technologies being adopted by academic library for increasing efficiency and improving the safety, security, productivity, accuracy and convenience. The present study is an attempt to analyze the use of RFID by the research scholars of Mahatma Gandhi University and to find the problems and constraints faced by the research scholars in using it.

2. Literature Review

New technologies are creating new opportunities for libraries. Radio Frequency Identification (RFID) is an upcoming technology which has recently attracted the interest of the research community because of the astonishing benefits it offers over the other existing identification and data capturing technologies. Several related studies have been carried out by the academic community which devoted to the technical improvement of RFID technologies. Dipti and Sharma (2015); Neeraj and Preeti (2014); Sunaia (2014); Shamshul and Amir (2013); Hasan (2012); Subash (2012); Sadiq and Amina (2012); Sanku and Moutusi (2011); Mamadpurapur and Rajgoli (2011); Kumar and Kaur (2010); Boss (2004); Ayre (2004); etc. have studied different aspects of RFID application, awareness use etc. The present study is an attempt to analyze the use and importance of RFID by the research scholars of Mahatma Gandhi University, Kerala.

3. Significance of the Study

This research study was undertaken to comprehensively assess the role being played by the University Library in addressing the various information requirements of researchers as well as identify the critical gaps with a view to improve the services of library. Specifically, the findings from this study would provide the authorities on how their users perceived their circulation services especially with regards the RFID system. It is also hoped that the findings of the study would lead to improvement of the provision of better efficient circulation system in Mahatma Gandhi University Library and also ensure the satisfaction of the user's use of the RFID.

4. Scope and Limitations

Mahatma Gandhi University is a reputed institution conducting research programmes. The university

library has an important role in providing modern facilities. University library is using RFID for their regular activities like circulation, shelf management, stock verification, shelf rectification theft detection etc. The present study is conducted to know the use of RFID system and the problems faced by research scholars in the library during the charging and discharging of the books.

Scope of the study is limited to the research scholars of Mahatma Gandhi University. The present study admits two limitations. Though there are full-time/ part time/FDP (Faculty Development Program) research scholars, the present study is confined on to the full time research scholars which forms as first limitation of the study. Secondly little effort had been taken in the analysis of subject wise distribution of responses.

5. Objectives of the study

1. To assess the awareness about RFID technology by the research scholars.

2. To identify the benefits of RFID technology in comparative to the previous system.

3. To evaluate the usage of RFID technology in M G University Library.

4. To know the satisfaction level and problems faced by the research scholars at the time of charging and discharging

5. To know the user awareness programs provided by the library.

6. To find out impact of RFID technologies on libraries

6. Research Design

A well-structured questionnaire was designed covering the relevant aspects of the study to collect the raw data and were administered directly to the research scholars to know the usage of Radio Frequency Identifier System (RFID). The study was confined to fulltime science research scholars of Mahatma Gandhi University. 85 questionnaires were personally handed over to the research scholars of various departments of Mahatma Gandhi University and 80 were received back with a response rate of 94 percent. The collected data were tabulated, analyzed and presented in the form of tables. Suitable statistical techniques were also applied on relevant areas.

7. Results and Discussion

The major purpose of any piece of work is not more collection of facts and Figures, but the drawing of some valuable and useful inferences. The data collected from the research scholars are analysed and presented in the below section.

7.1 Awareness about RFID among Students

The awareness about any system plays a great role in determining the status of library among the users. Analysis of data regarding awareness of research scholars about RFID is shown in Figure 1.
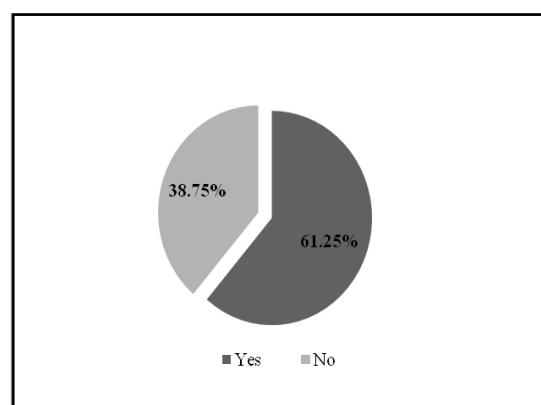

Figure 1: Awarness about RFID

The foresaid Figure 1 show that 61.25 per cent of the research scholars are aware about the new system of Library and 38.75per cent among them are not aware about the Radio Frequency Identifier system of Library. As a result it is obvious that research scholars are aware and there is an urgent need to provide necessary programs to explore the use of RFID in the library, so majority of the users should be benefited.

7.2. Awareness about RFID working

The researches were asked to indicate their awareness about the working of the RFID system and the data received is illustrated in the Figure 2.
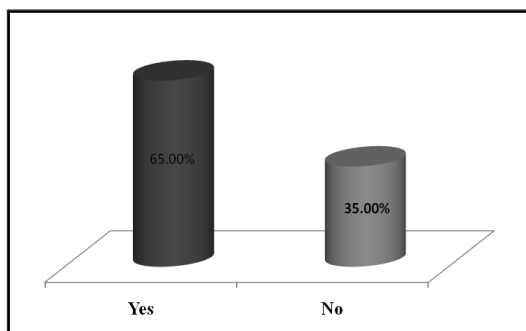

Figure 2: Awareness about RFID working

Data presented in the Figure 2 indicates the awareness of RFID implementation. It is found that 35 per cent of the research scholars are unaware about its working and 65 per cent are aware about its working.

7.3. User Orientation about RFID

To study the importance of RFID, respondents were asked whether they have given orientation about its working and the responses are shown in the following Figure 3.
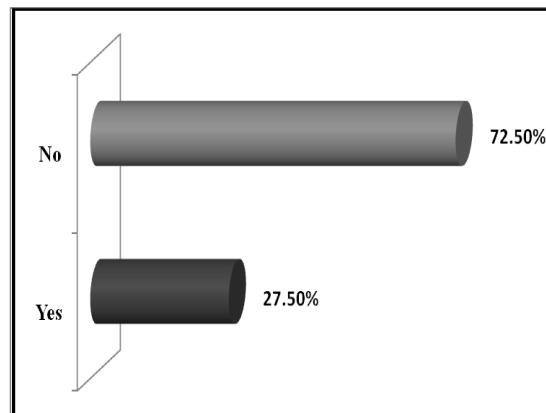

Figure 3: Orientation about RFID

From the Figure 3 it is evident that a vast majority of the respondents (72.50%) haven't given the orientation and only 27.50 per cent among them have given the orientation. It is also observed that users were not getting the proper guidance and orientation about its usage. The new techniques for the transformation of RFID uses are given to the students time to time

7.4. Usage of RFID Issue/Return

Regarding the check in/check out process of RFID by the research scholars, their views are summarised here. The analysis of data in Figure 4 shows the response of the research scholars with regard to RFID issue/return of books.
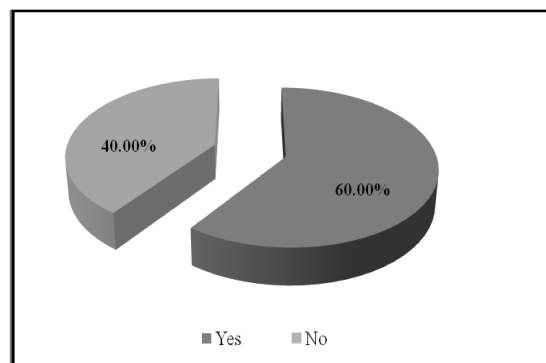

Figure 4: RFID issue/return

Figure 4 shows the usage of the RFID system for issue and return of the books. The study reveals that 60 per cent of the research scholars' use the system and 40 per cent are not using the system for charging and discharging of books. Hence from the study it is clearly understood that the library staff should guide the research scholars, how to use the RFID system.

7.5. Comparison with earlier System

Respondents were asked to compare the use and benefit of the new system implemented in the library with the previous mode of system and the responses received is summarised here.
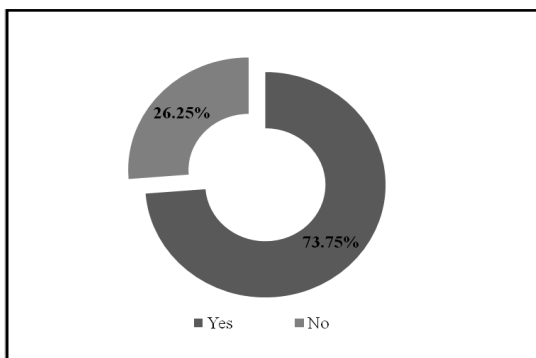

Figure 5: RFID comparison

From the analysis of data shown in Figure 5 it is understood that RFID system is useful to a certain extent than the previous one. The Figure 5 portrays that a fair majority of the research scholars (73.75%) are in their views that it is more favourable system and only 26.25per cent are not satisfied.

7.6. Whether Time Consuming

Research scholars were asked to provide their opinion whether the new system implemented in the university library reduced queues and waiting times that reduced the amount of time required for circulation.
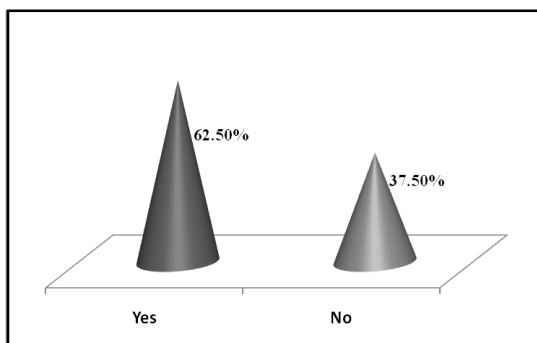

Figure 6: Time consuming

Analysis of data presented the Figure 6 shows the general satisfaction derived from using the RFID system. For the statement whether ease of use, analysis reveals, it is a time overwhelming system. Majority 62.5per cent of the users are more satisfied as it helps in saving their time whereas 37.5per cent does not found it time saving device. The use of RFID reduces the amount of time required to perform circulation operation.

7.7. Awareness about Self check in/checkout

How far the research scholars are aware about self check in/checkout were ascertained and the result of the analysis is given below.
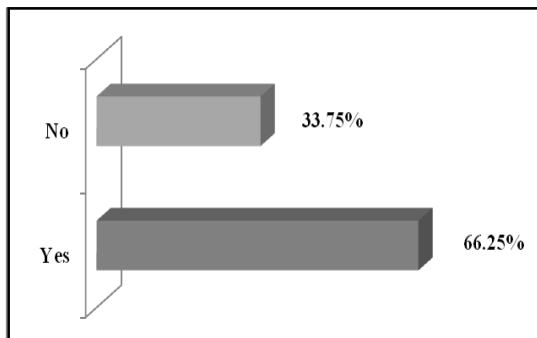

Figure 7: Awareness about checkin/checkout

Figure 7 indicates the self checkout and self check in of books. Majority of the research scholars (66.25%) are aware about the shelf checkout and

check in of books whereas 33.75per cent are still not aware about how to use the system. It is found that a lot of expansion has been occurred in self checkout and check in of books. However heavy rush of users has been reduced at the circulation counter with the implementation of RFID.

7.8. Reduce Book Theft

Research scholars were asked to provide their opinion whether the system is good in finding the theft inside the library. Figure 8 indicates the general opinion received from the research scholars.
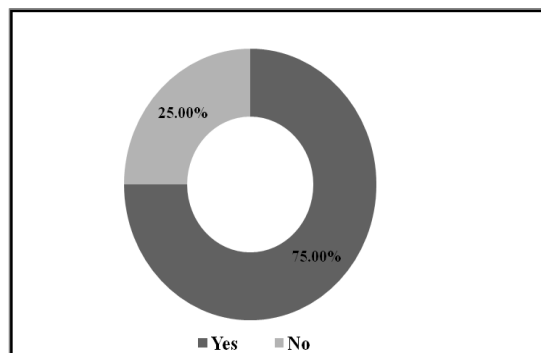

Figure 8: Booktheft

RFID system controls the security system for the library. The data illustrated in Figure 8 reveals that 71.25 per cent students found it more helpful in reducing book thefts while 28.75 per cent responded negatively in this regard. This shows that it solves the problem of the libraries.

7.9. Satisfaction with RFID

Research scholars were asked to provide their opinion regarding the level of satisfaction in using the RFID technology in the university library in meeting their information needs. The result of

analysis as presented in Figure 6 indicated the general satisfaction derived from using the system.

Figure 9: Satisfaction with RFID
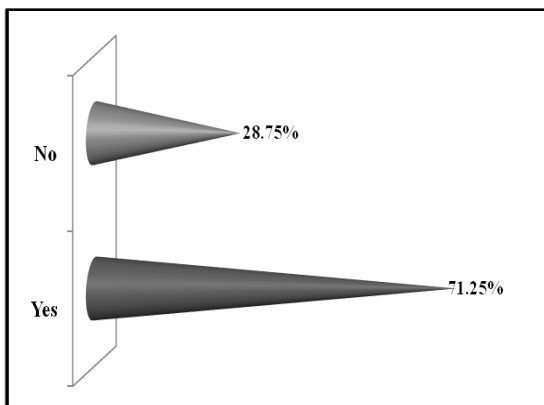
The data given in Figure 9 furnishes details about the satisfaction of research scholars with the RFID system. It is observed that 75per cent of research scholars are satisfied with this new system as they found it more convenient, less time consuming and the work can be done speedily and at ease. But still 25 per cent research scholars who are not yet satisfied. Library management should be given orientation to students and make them aware about it.

7.10. Problems in using RFID

There are various problems associated with the use of RFID. To study these respondents were asked whether they come across any problem while using RFID for self check in and checks out of the book in the library.
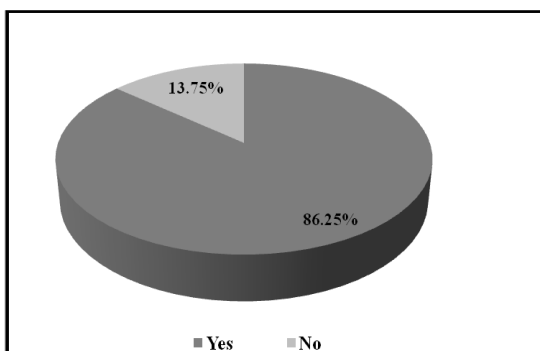
Figure 10: Awareness about checkin/checkout

It can be observed from Figure 10 that large majority (86.25%) of the research scholars found the system more useful and do not face any problem while using the system. Very few face the problem while using the RFID system

8. Conclusion

Librarians are always known as early adopters of technology and they have started using RFID to provide more effective and efficient circulation services as well as for security of library collections. Although the use of RFID by libraries over the last few years has grown considerably, yet the major barriers of RFID technology adoption by more libraries is its cost factor, non availability of standards and user privacy. RFID (Radio Frequency Identification) technology is proven to be a promising alternative in relieving the library staff from time consuming routines. Mahatma Gandhi University Library is the first university library in Kerala to implement the RFID system. All the research scholars who participated in the survey are aware about RFID technology and majority of them are making use of RFID system. Overall the study also found that users are highly satisfied with the self check system. Based on the findings, it is suggested that at regular intervals, the university library should organize orientation/training programmes and make it obligatory for all the research scholars to attend the same, so that maximum number of them can learn how to use RFID system. The study also found that RFID provides benefit to users at a certain cost rather their previous system, by implementing the self check system to borrow or return books that definitely reduced queues and waiting times for users that reduced the amount of time required for circulation. Based on the findings it is suggested that even though the location of the system is console that provides independent operation book drops needed outside the library since users can drop books even if the library is closed which make much more convenient for users. Hence the study can be concluded that research scholars of Mahatma Gandhi University not only make out the RFID system as a beneficial system but also gain positive experience in using it and have a positive attitude towards the implementation of the system in the University Library.

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About Author

Dr. Shaini Gopinath A, Librarian, School of Biosciences, Mahatma Gandhi University, Kerala Email-shainigopinath@gmail.com