

Use of RFID System and Improvement in Library Services

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ABSTRACT

Use of RFID (Radio Frequency Identification) technology in libraries is having a major impact on library services and service providers in a range of aspects, such self-checkout, material theft control, and reading material divide, and many others. RFID has become more and more frequently in use in Indian libraries, and increasing understanding of the technology is increasing. RFID does have an effect on the essential aspects in libraries, mainly users and library professionals, through saving manual labour and providing quick access to resources. The impact of RFID, its advantages, components, or use in Indian institutions are also all discussed in this paper. The RFID affects the main component in libraries especially the users and the library professionals to reduce labor work and enable quick access of resources. This paper discusses the impact of RFID, merits, components and its use in Indian institutions. RFID is a lengthy system that offers software innovations in libraries and increases the credibility of organizations around the country.

KEYWORDS: RFID technology, libraries, library resources, computers software.

INTRODUCTION

By integrating efficient chips for just an individual's identification, Frequency Identity (RFID) technology has changed an idea for safety throughout the globe. RFID is increasingly being used in libraries in order to maintain facilities effective or relevant in a changing environment. In today's libraries, technology is used for a variety of tasks such as totally automated check-in/check-out (even without assistance of library workers), security in general, stocking checking, etc. RFID tags/labels, library professionals workstation, safety door, self-service devices, bookshelf management, and other components are included, and it could be developed to more areas in the future. Because this is a new technology, its potential has to be explored further. RFID tags have an electrical chip and are flexible and journal article. These stickers could be read and written to utilizing radio waves sans touch or visibility if inserted in books or other media. It has EAS principle components in to detect thefts and is built to last the life of the item it detects. This college's personnel workstation makes it easier to handle materials with Radio frequency identification. Various functions are performed on the unit using a contemporary graphical interface. The identification of labels, such as the accession total count position, is recorded in the chip of the tag once it has been

put inside the book. Such data can be extracted from of the academic databases or straight from the item simply checking just on cover. As a result, the ID cards are used to check in and out. The documents to be checked out are placed on the network's stack that after authenticity of the membership has been established using the smart card. The library database is automatically updated when the book is added to the debtor's profile, as well as the record label theft detection feature is turned off. Because when user returns documents, it must be placed on the deck, where it will be verified in but the fraud system will be engaged. Particles, if some, would just be computed at about this point, and a slip might be produced. If a part reflects to be updated, these should be placed on the deck and renewed after validating the legitimacy of the renewal and confirming a new due date.

According to Daniel Mc Pherson (2003) "Personal privacy and use of RFID technology in libraries his paper talked about RFID in libraries as a means privacy control while generating information off tagged objects within the libraries. The main shortcoming of the research work is the fact that upon theft, there was no interface that observes or keeps track of the tagged materials; only an alarm system was present.

Brief History

"Many things are hidden in the shrouds of time. The task of tracing history and genealogy is arduous and challenging, but, ultimately, rewarding. Our past can open doors to our future. Whether we realize it or not, RFID is an integral part of our life" It boosts efficiency or convenience. RFID may be traced all the way back to the dawn of time, when individuals interacted with others even by blinking of light, i.e. (Mirror-Sunlight-Reflection theory). Basic concept behind RFID is same, but only difference; it reflects "radio-wave" instead of light. The roots of this technology and development can be traced year-wise as follow briefly.

Radar was invented in the early twentieth century (1922), and it was deployed in World War II. RFID was conceived in 1948 based on the radar principle, but commercial activity began in the 1960. RFID was actively worked on by developers, innovators, companies, academic institutions, or governmental agencies in the 1970 and substantial breakthroughs were made from the 1980s onwards.

Tracked people and things, recognized items in the supply chain, reusable containers, high-value tools, security, and managing access to buildings, networks, payment services, and other assets were the most popular applications. In twenty-first century: Exciting days await us as we reap the benefits of RFID. Its impact is frequently commended in the national media, and its use is expected to become even more widespread inside the near future.

What is RFID (Radio Frequency Identification?)

RFID devices are classified as part of the broader Vehicle Tracking category. Contactless payments or barcode are examples of this innovation. Because of its clear improvements over barcodes, RFID is frequently referred to as "next technology bar code technology." It's a technique for wirelessly extracting data using RFID tags. A label is a small object, such as an adhesive label, which can be applied to a product and used as a marketing tool. Transmitters are built into RFID tags to allow devices can accept or reply to radio-frequency inquiries out of an RFID receiver.

OBJECTIVES OF THE STUDY

- To understand the working methodology of RFID Technology
- To demonstrate the role of RFID Technology for library management perspective
- To examine the competitive advantages of RFID Technology
- To comprehend the implications while using RFID Technology
- To find out role of librarians while adopting RFID Technology in libraries

The Development of RFID Technology Usage in Libraries

The way people work in the corporate world has changed as a result of technology advancements. Radio Frequency Identification (RFID) is an emerging technology that is being used by businesses like manufacturers, retailers, logistics providers, hospitals, and libraries. (Lee and Lee) RFID (Radio-Frequency Identification) bluetooth is a promising relevant content that is based on the identification of electrical radiation. (Domdouzis 2007) Despite the fact that RFID theory was mid-1950s so the first field tests using RFID occurred there in 1960s, research in to technique was limited to lab tests. Since that day, RFID technology has exploded in popularity. According to Hossain and Prybutok (2008) RFID's practical uses began in the 1980s. In the 1980s, RFID tags were used to tag cattle so tracking or check their health. The first commercial application of RFID occurred when General Motors began using RFID tags in car chassis. Slettemeas (2009). RFID technology was introduced into the supply network in the 1990s to manage generation and delivery networks. According to Ngai (2008) Its explosive development of RFID System by American-based corporations like Wal-Mart or European-based firms including such Metro and Tesco has prompted many businesses the explore how RFID could accomplish to themselves, or not if companies should seek additional adoption.

Institutes in India Who are using RFID Technology in Library

1. Indian Institute of Management, Shillong (IIM, Shillong)
2. Anna Unuversity,Chennai
3. British Council, Delhi (BCL,Delhi)
4. Indira Gandhi Center for Atomic Research Govt.of India (IGCAR, Kalapakkam)
5. Bank of Baroda
6. Institute of Mathematical Science, Chennai (IMSC, Chennai)
7. Indian Institute of Management, Indor (IIM, Indore)
8. Indian Institute of Technology, Delhi (IIT, Delhi)
9. IIT,Roorkee (Indian Institute of Technology, Roorkee)
10. IIT,Chennai (Indian Institute of Technology, Chennai)
11. IIT,Kharagpur (Indian Institute of Technology, Kharagpur)
12. National Social Science Documentation Centre, Delhi (NASSDOC,New Delhi)
13. National Chemical Laboratory, Pune (NCL,Pune)
14. Sardar Vallabhbhai National Institute of Technology (SVNIT & NIT, Surat)
15. Parliament Library,New Delhi
16. Punjab University,Chandigarh
17. University of Pune,Pune

18. Indiana Institute of Management, Lucknow (IIM, Lucknow)
19. National Center for Biological science, Bangalore (NCBC Bangalore)
20. IIT, Madras Tata memorial library, Indian Institute of Science, Bangalore
21. Biju Patnaik Central Library
22. National Institute of Technology, Rourkela (N.I.T.,Rourkela)
23. Dayanand Sagar College of Engineering, Bangalore

RFID (Radio Frequency Identification) Usage in Libraries

Its deploying process can be broken down into many stages, depending just on money available, all sorts' digital documents held, including amount in volume, and price of items intended to dispersion, or the type and quantity or users an organization serves. While the particular proposal definition is being created, precautions are needed properly connect any digital library module. Because the system was new to the Indian digital library, a thorough display of a technology could be organized, and a visit to an university at which technology has been operational.

RFID Issues, Strategies, or Structures in Libraries: Privacy and Confidentiality The previous experience of a company offering its hardware, labels, scanners, or application must be studied in depth when assessing a proposal. Sometimes affixing of labels on papers could be farmed at first, or later performed in-house following good knowledge. A reader is able to scan Tags from the other vendors.

All relevant information has been captured simply connecting to all database server or put to a label via making available of scanning a current barcodes inside the paper. In further durability, these labels could be overlaid with an identity label bearing a libraries and faculty's emblem. Till it technology has established firm belief, any old method could be used in reality.

RFID's Aspects with Its Applications in Libraries

- A) Smart Card
- B) RFID Tags
- C) Library Programming Station
- D) Library Circulation Station
- E) Antenna
- F) Server
- G) Library Inventory Reader
- H) Library Security Gate

These four parts of an alternative RFID system include the following

- A) RFID Label Printer
- B) Handheld Reader
- C) External Book Return
- D) RFID label Printer

How RFID Works

RFID technology was put over all papers in an RFID context. A phase 2 entailed paper program and tag, with papers on whose RFID were placed being maintained mostly on scanner enabling tags verification. Its programming is done via inputting all paper access codes, which retrieve the data from data base, or the tagged verification was performed through confirming every one of the information of relevant paper. Check-in and check-out operations is conducted in the Reading Machine; during check-out, a scanner analyzes the information of RFID chips or papers to also be given while also de-activating any RFID placed upon this papers due security purposes As a result, once Library users go past a Protection Door, it door will no sound a warning since the Tags have been disabled. Its reader read the info just on RFID cards as concurrently engage any Tag printed here on papers during product verification.

Libraries are affected of RFID System

1. Resource control in the libraries

Libraries may maintain its content the shelf using RFID system, so it aids with in identification of lost volumes or shelving documents. Internet of things is not at all beneficial for resources given, but it allows libraries can verify its collection on just a regular basis.

2. Users were offered extra facilities.

Libraries provide readers self-issue and return services, saving both personnel or consumers work.

3. Safety

This the biggest impact of RFID technology on libraries and information centers that they can secure the library material as well and also avoid the theft of the document.

4. Flexibility

The RFID have ability to add newer product ad per the customer needs.

5. Time and efforts

The benefit using Rfid system in library has been that it saves effort and time in both academic libraries users, allowing them access deliver better complete solutions.

Impact on Library Staff

1. Increasing the efficiency of libraries

A fundamental goal of RFID implementation in libraries would be to save time for both staff and users. As a result, library employees spend significant amounts of time charging volumes, as well as arranging volumes. It's indeed possible to perform so very simply with RFID.

2. it's practical for handling library activities for day basis.

We can manage the library's day-to-day activities quicker with the RFID system as with existing equipment since it is more exact or accurate that other alternative device.

3. Reduce repetitive work

RFID saves libraries workers work by eliminating routine tasks including as recharging materials, inspecting provided books, or putting away texts as per organization.

Impact on Users

1. So reader may conserve space or work by not having to wait in line or textbooks to be issued or returned.
2. Using the folder system, users may exchange any textbooks at every period.
3. Notify users of the need to return obtained textbooks by a due date.
4. RFID-enabled self-service gives users more safety.
5. The user can simply or swiftly identify whatever they are looking for.

Disadvantages of RFID Systems

1. RFID system has a high cost, which was one of the key drawbacks. Its necessary technology was expensive, making it challenging to a tiny library to perform.
2. Vulnerability to Compromise: It is also possible to compromise an RFID system by placing two items against one another so that one tag overlays another. These communications can be cancelled as a result. It necessitates a thorough understanding on relevant technologies as well as proper matching.
3. Labels that have been revealed should be removed. A staff members has an issue since labels placed just on papers are simply deleted.
4. Issues with Entrance Sensors Its reliability of leave detectors is much more troublesome, but its relatively brief devices in use for circulate charge / discharge for inventorying appears successfully detect their tags 100% of a time. It can identify labels from a range of up to double that for all others reader.

CONCLUSION

It is quite clear from the above discussion that an RFID system may be a comprehensive system that addresses book security needs of a library. If proper procedures or norms be carefully adhered, RFID as in libraries are never a concern. That is, it allows employees to focus on additional client care activities. Because RFID network equipment or gadgets are expensive, such method may only been used for safeguard essential books from the library. As the cost of RFID devices falls in the near, a broad application in the library may become possible.

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