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Barcode Technology and its Impact on Seminar Library, Department of Library and Information Science, Aligarh Muslim University

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Abstract

Automation plays an important role in almost all walks of lives. Its impact has also been witnessed in libraries and information centres. Through the present study, authors have tried to assess impact of barcode technology in seminar library of department of library and information science of Aligarh Muslim University. Interview method was applied to seek opinions from students, research scholars and faculty members of department regarding utility of barcode in seminar library. Findings suggest that users of seminar library have been benefitted with the application of barcode technology. Notably, the department of library and information science is the first department which introduced barcode technology in its library.

Keywords: *Information Technology, Library Automation, Barcode Technology, Aligarh Muslim University*

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INTRODUCTION

The traditional methods applied in libraries and information centers for storing and disseminating of information have been changed into the modern techniques. Now information is not only stored in libraries but it is disseminated to a large population in comparatively very short span of time. However the impact of Information Technology (IT) has been started since 1960's in different fields including science, medicine, defense and telecommunication. In libraries and information centers IT helped in library automation, digitization, e-learning, creating institutional repositories, electronic database, portals etc.

This article briefly discusses information technology with the brief description about application of Barcode technology in seminar library of the department of library and information science, Aligarh Muslim University.

INFORMATION TECHNOLOGY

Information Technology includes all the activities related to computer based processing, storage and dissemination of information. Information technology is not comprised of a single technology; it is the combination of various technologies to serve the different needs of the users. It includes different equipment like computers, satellite and telecommunication devices etc. ALA [1] Glossary of Library and Information Science defines Information technology as "the application of computers and other technology to the acquisition, organization, storage, retrieval, and dissemination of information". According [2] to Harrods dictionary Information Technology is "a generic term that covers the acquisition, processing, storage and dissemination of information of all types- textual, numerical, graphical and sound- and in all application areas, e.g., banking, science, technology- not just librarianship and information science. The term is restricted to systems dependent on a micro electronics-based combination of computing and telecommunications technology and has largely been replaced by 'ICT' Information and Communications Technology [3].

LIBRARY AUTOMATION

Library Automation was first started in United States of America in early 1950's. One of the significant efforts in the USA regarding library automation was initiation of MARC project by

Library of Congress. In India initiation towards library automation was started in 1960's but achievement were made only during 1970's which includes production of National Union Catalogue of Scientific Serials by INSDOC and production of Union Catalogue of DRDO libraries of Western Region by the Institute of Armament Technology, Pune [4]. According to Collier's Encyclopedia library automation is "the processing of certain routine clerical functions in the library with the assistance of computers or other mechanized or semi-automatic equipment" [5]. According to Webster Dictionary, "The techniques of moving in apparatus, a process or a system operate automatically is called automation" [6].

BARCODE TECHNOLOGY

History

Norman Joe woodland with his student Bernie Silver first invented the barcode and patented the idea in 1952 in USA. The commercial use of barcode was started in late 1960's in Food sector and railways in the USA. Libraries [7] began to make use of barcode technology way back in 1972. Notably, Camden Public Library of Kentish town branch has been the first library which introduced barcoding system. This bar-coding system was known as Plessey Method in which a light pen was used for reading the printed barcodes. It was a very popular system developed during that time. In subsequent years, many electronic companies have invented several devices of generating as well as reading the barcodes. It is important to mention here that this bar coding system was initially used in the USA, England and other developed nations. Later on the application of bar coding has been started using by thousands of libraries even in developing nations. In India, Bhabha Atomic Research Centre (BARC) library has been one of the pioneer libraries that introduced bar coding technology for different applications.

Concept

Barcodes can be defined as self-contained and identified messages encoded in the width of black bars and white spaces in a particular printed pattern. Each of the bar as well as space has a significance as in the case of class number. In other words, it is nothing but a series of thick black lines and white spaces which signifies a series of character readable by computer, Significantly, computer makes use of only binary digit to represent data and therefore, it can only understand one(1) and zero(0) digits. Thus, the codes are made accordingly. The black lines represent 1 and white space represent 0.

Barcodes are machine-readable, simple and graphical in nature to record data. Barcodes are of different types including linear (one dimensional 1D), data matrix (two dimensional 2 D) and composite (combination of 1D and 2D symbologies) [8]. Harrods Librarians Glossary defines Barcode as "A code arranged in a series of parallel lines or bars, representing data that is transferred by a bar code scanner or light pen into digital signals for computer use" [9]. Barcode, according to Oxford dictionary is "A pattern of thick and thin lines that is printed on things you buy. It contains information that computers can read [10].

Basic Requirements

The basic requirements for implementing barcode technology in library applications are given as follows:

- Computer
- Laser Printer
- Integrated Library Management Software
- Barcode Scanners
- Selected Stationery Items

Objectives of Bar coding

According to Sarjiwan and Ajay the main objectives of bar coding documents in a library are as follows [11]:

- To save time
- Easy process of stock verification
- To reduce operational cost
- To Improve operational efficiency

Applications of Barcode Technology in Libraries

The application Barcode technology is very effective in providing different services of libraries. The various functions of libraries have become easier and faster because of barcode technology. It's impact could be seen in different section of libraries as given below:

Accession

When a new book is acquired by a library it has to be given a serial number. Other information about the book such as title, author, subject,

keywords etc. Has been recorded after assigning a unique serial number which is called 'accession number'. After assigning accession number, barcode usually matching with the accession number is generated. Subsequently, barcode labels are printed and pasted at the specified place on the books. Entered bibliographic data helps in identification of book through bar code. In almost all library automation software, two options are available viz. system generated barcode or user defined. In the former case, a consecutive number will be automatically generated by the software while in the case of later; a library may select any number for a particular document. Authors of this article, suggests that library should match the existing accession number with barcode. In this way, staff will not face any difficulty in carrying out transactions with the existing accession number.

Circulation

As a matter of fact, application of barcode technology has made the circulation procedure in libraries very simple and speedy. However, membership, database has to be created before the start of circulation activities. Membership file will contain all relevant information regarding a particular member. To provide new membership, every member is assigned a unique identification number as per the roll number and faculty in which the member is enrolled. This unique identification number is barcode and get printed on the card of the user. Through this barcode, each member of the library can be identified.

When a library member wants to issue any book from library, all that is required by a member is to produce membership cards having barcode. Once this card is scanned with the help of barcode scanners, the circulation counter assistant will come to know about credentials of the borrower. Having satisfied with the identity of borrower, barcode pasted on the document will be scanned in order to complete the issue process. It is also worthy pointing out here that at the time of return, all that needed is to submit the issued document at the circulation counter. Once the barcode label pasted on the document is scanned, all the information about the borrower, issue date, due date etc. will be highlighted on the screen of computer. In this way, barcode technology has played an important role in elimination of long queues in libraries at the circulation counter.

Stock Verification

The manual system of stock verification is very cumbersome but with the help of barcode, the library professional can easily take the stock of the library. Library professional carrying the hand- held devices attached with barcode reader checks the available books on stack and this data can be downloaded on server. By further processing, library staff may know about books issued, books send to the bindery etc. Subsequently, software will generate the list of missing books. In this way, the precious time of library staff can be saved in the lengthy and tedious work related to stock verification [12].

Benefits of Barcode Technology

Application of barcode technology to libraries has made the various functions like accession, charging and discharging of books and stock-verification easier and fast. Vasishta and Dhanda has discussed the benefits of barcode technology in libraries as follows [13]:

- With the help of barcodes, the possibility of human error is eliminated. In manual system there are chances of charging and discharging a wrong book because of mistake in writing the accession number and member code. In barcode system this type of mistakes are eliminated because accession number and member code is scanned by the barcode reader at the time of charging and discharging of book.
- The charging and discharging of books become much faster and easier and saves the time of the user and library staffs. The library staff also does not need much time for training to use the barcode technology.
- The tedious process of stock verification becomes easier and less time consuming.
- This technology is also very cheap because it does not cost much to print and design barcodes.

APPLICATIONS OF BARCODE TECHNOLOGY IN AMU SEMINAR LIBRARY

The foundation of the department of Library Science was laid way back in 1950–51 with the

introduction of a 'Certificate Course in Library Science,' by the then University Librarian, Bashiruddin. Encouraged by the success of the certificate course, University Librarian introduced 'Bachelor of Library Science' in 1958–59 with full time lecturers for the first time in the country. The Certificate course was discontinued in 1968–69. Subsequently 'Master of Library Science' was introduced in 1970–71. Another pioneering step taken by the department in the year 1986–87 was the introduction of Library Science as a subsidiary subject at B.A. level in the Faculties of Arts and Social Sciences. Having realized need and importance of research in the subject, the department started M.Phil./Ph.D. programme since 1990–91. However, M.Phil. programme has been discontinued in subsequent years.

In line with the UGC's model curriculum (2001), the syllabi of the courses offered by the department have been thoroughly revised and introduced from the session 2003–2004. A special feature of the revised syllabi is the emphasis on Information Technology and hands-on training on a number of library automation software packages. A well-equipped computer lab supports the revised syllabi with Internet facility. The seminar library of the department is the first fully automated library of the university. It is characterized by the facilities such as Online Public Access Catalogue (OPAC), circulation through barcodes, access to online journals and a CD workstation. Teachers of the department have also received training in Information Technology within the country and also abroad [14]. Barcoding of books in the seminar library of the department was started in the year 2004. The seminar library has a total of 5,482 books out of which around 4,500 books have been bar-coded. Two barcode labels have been generated for a book, one barcode label is pasted on the title page and other on the last page with a cello tape cover to protect them. Users of the seminar library consist of Faculty members, Research scholars, M. Lib.I.Sc. B.Lib .I.Sc. students etc. During formal conversations with one of the authors, users of seminar library have revealed that barcode technology has helped them not only in circulation but also in search process.

CONCLUSION

Application of Information Technology in libraries had greatly changed the way of performing different functions and has brought efficiency, accuracy and accountability. Barcode technology has helped particularly in circulation and stock take process. Notably, technology gets advanced with the passage of time. Radio Frequency Identification (RFID) is more advanced technology which does not need the line-of-sight to read data. Significantly, information on microchip of tags attachéd to books can be read through radio frequency [15]. However, RFID is quite expensive and thus few libraries in India have been using this technology. On contrary, Barcode technology is cheaper and integrated with prominent library automation software packages. Therefore, a majority of automated libraries in India have been using this technology.

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