

## Automated Circulation Systems in Indian Institutes of Higher Learning

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*Purpose:* To evaluate the status of automated Circulation Systems in Central Universities of Northern India with a view to explore the benefits of technological transformation along with feedbacks from the users. *Scope:* The analysis made in this study regarding staff and user's opinion will be helpful for the librarians of developing countries. It will also provide guidelines for the libraries which are planning to automate their services. *Objectives:* This paper seeks to reveal the current status of automated Circulation Systems in most prominent Indian Universities. *Methodology:* The paper report a survey of automated libraries in Central Universities located in the Northern part of India. The data collected through questionnaire was analyzed qualitatively and quantitatively. Discussion is made and conclusions were drawn. *Approach:* Investigators have also interviewed the library staff and user to elicit their opinion regarding library automation.

**Keywords:** Library Automation; Library Management Software; Libsys; IT Applications; Central Universities; India.

### Library Automation

According to Webster Dictionary, "The techniques of moving in apparatus, a process or a system operate automatically is called automation". Encyclopedia Britannica defines automation as "The name given to an automatic system of working. The difference between automation and mechanization, a related term, is being mainly one of degree". Automation is a technique to make a system or a process self active. The main base of automation is the computer. We may say in simple terms that automation is the application of computers and utilization of computer based products and services. When we talk of library automation, we mean the application of computers to perform the several routines, repetitive and clerical work involved in different library functions and

services. Before the birth of computers, other types of machines, e.g. punched cards, unit record, were used to automate library functions. Significantly, the application of computers in libraries first appeared, in 1950s in the United States of America. Notably, pioneering work in the application of computers to libraries was done in the USA followed by UK and other countries of Europe due to the availability of best infrastructure in telecommunications and other technologies. However, in India Library automation had started around 1970s.

### Methodology

The present study is based on primary as well as secondary sources. Primary data for the present study have been collected through questionnaire. The information from the survey has been updated through interviews with library professionals of individual university libraries. For the purpose of presentation, tabulation and analysis of the data, MS-Excel was used. The population of the present study consists of Central University Libraries in Northern India. There are eight Central Universities in the

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Northern India *viz.* Allahabad University (AU), Allahabad; Aligarh Muslim University (AMU), Aligarh; Banaras Hindu University (BHU), Varanasi; Baba Bhim Rao Ambedkar University (BBAU), Lucknow; Delhi University (DU), Delhi; Indira Gandhi National Open University (IGNOU), New Delhi; Jamia Millia Islamia (JMI), New Delhi and Jawahar Lal Nehru University (JNU), New Delhi.

#### *Data Collection Techniques*

The present study has been carried out using a questionnaire designed for university librarians and other library staff actively involved in the automation process. This questionnaire was pilot-tested. The purpose of this pilot study was to test the validity of the questionnaire both as a data collection tool and as a statistical measurement device. This pilot-testing proved helpful in refinement of the questionnaire. The questionnaire has been divided into two parts. Part A contained general questions regarding factual information about hardware and software used by the library. Part B of the questionnaire covered questions related to the application of circulation module of the Library Management software. One of the investigators personally visited the above-mentioned libraries and after gathering data tabulation and analysis has been done using MS-Excel.

#### *Interview Technique*

Interview technique has also been used for the present study. This was done to remove the doubts regarding the terminology used in the questionnaires. Interview was conducted to the personnel of the surveyed libraries along with the Chief Librarian. It was found that interview technique helped staff of the library to understand some questions. Thus, interview technique brought objectivity in the study.

#### *Observation Technique*

One of the researchers had visited circulation sections of these libraries and observed that there is some gap in the information provided and application of the circulation module of library management software. Therefore, necessary rectification has been made in order to bring more objectivity in the present study.

### **Review of Related Literature**

An enormous amount of literature is available with regard to library automation. Pre-dominant available literature cover the studies related to developed

nations. This owe to the fact that the concept of library automation has been originated in the developed nations notably in the USA and later on in England. Nevertheless, in the last decade of the last century and particularly in the first decade of the present century, authors in the developing world have also started writing on the theme, 'Library Automation'. Significantly, the works of Indian authors have also appeared in the form of books and articles. Central Universities of Northern India includes the best universities in the country. Hence; there was a need to conduct an in-depth study related to the status of automation. Therefore, an attempt has been made to explore the latest scenario vis-à-vis automation process in these universities. In the following paragraphs, few studies have been reviewed:

Library Automation assured a great deal of importance in libraries in the mid-1960s. Since then it has become a household word in librarianship. Library automation may be defined as the application of automatic and semi-automatic data processing machines to perform library functions like acquisition, cataloguing, circulation, serials control, etc.(Daniels,1980). Methodology and technology related to library automation has been discussed in some early works. (Salmon, 1968) edited the papers presented at the Preconference Institute on Library Automation. The different papers deal various topics such as the future of library automation and information networks, library systems analysis and design, etc.( Heiliger and Henderson ,1973) also discussed the prospects for library automation along with the several issues related to automation in different sections of library. However, these works are too old and since then many changes have been taken place in the field of library automation. In the mid 1980s, Adams produced a thought-provoking analysis of the issues surrounding the training and skills requirements of future information workers. (Adams, 1986) argues that the future librarian will need skills which are close to those of the information scientist. These might be designing and developing systems; retrieving and integrating data to provide usable information, and the education of users. He also argues that "certain personality traits" should be sought by recruiters, and suggests that there may be a mismatch between those who are attracted to the library environment and the personal qualities which are actually required. Marsterson examined the role of the librarian, with particular reference to the impact of information technology. He (Marsterson, 1986) refers to IT as "an ever-growing cuckoo in the nest", replacing the traditional techniques of librarianship- such as classification and cataloguing. IT is perceived as an all pervading influence which reinforces the

role of the reference librarian as communicator or interpreter of on-line information. Reynolds discussed historical perspective of library automation. He analyzed the impact of IT on libraries (Dennis, (1985). The work is relevant for the present study as it covered many important aspects of library automation. In a keynote address at the XXth IASLIC Conference Neelameghan mentioned the potential of information and communication technologies for the developing countries particularly in India. (Neelameghan,1996). Gopinath examined the functional aspects, social aspects and system dynamics of library automation (Gopinath,1995). Ravichandra assessed the challenges in the field of library automation in India (Ravichandra,1995). Dhaka and Arora discussed the factors involved in transforming the traditional libraries into electronic libraries and the future role of librarians (Dhaka and Arora,1995). Significant developments in library automation have also been reported by Abdul Rashid (Abdur Rashid,1996). Paper by Chowdhury and Chowdhury covered features and facilities provided by ten library automation software packages including Libsys (Chowdhury and Chowdhury,1996). Gowri gave a detailed account of the software to automate the Indian Institute of Science Library's Circulation System. This study again an old one and many changes, since then, have been occurred in this prestigious institute of India. Among the other Indian authors, the work of Sharma is an attempt towards bringing computer awareness among librarians (Sharma Pandey, 1993). However, the large portion of the book covered topics related to CDS/ISIS and dBASE and hence not much useful for the present study. Ramana argued that IT is a driving force for change and transformation in libraries (Ramana, 2004). This work is relevant for the present study. The impact of technology on Library Collection in different continents has been analyzed in an edited work of Sharma. This book has a chapter entitled, 'The impact of information technology on university libraries in India' (Sharma.2006) . One more recent work of Hilal and Mehtab (2016) too is also relevant for the present study as it had covered some prominent institutes in India with regard to library automation. Apart from these books, many articles have also appeared in different journals covering the theme, 'Library Automation'.

#### *Aligarh Muslim University*

Sir Syed founded the Madrasatul Uloom in a small city named Aligarh in India. Establishment of this institute which was later known as Mohammedan Anglo-Oriental College marks one of the most important events in the educational and social

history of modern Indian Muslims. In 1920, Aligarh muslim University (AMU) had gained the status of a Central University through an Act of Indian Legislative Council. Maulana Azad Library (central library of AMU), is one of the oldest libraries of the Indian sub-continent. The library was established in 1877 and named earlier after Lord Lytton, the Viceroy and Governor General of India, who laid the foundation stone of the college on 8 January 1877. (Ishrat,1989). It was renamed, in 1960, as Maulana Azad Library in the memory of Maulana Azad, a great scholar and the first Education Minister of India. Maulana Azad Library has introduced state of the art information technology and it is fully automated with LibSys software which connects almost all 9,500 computers within the University. The Library provides access to about 18,00,000 volumes of books. In addition, over 60 subject gateways drawn from the public domain of Internet may also be accessed by the users. The Library has developed its Institutional Repository containing more than 9,000 Ph.D. Theses & Dissertations and plans to upload more of its rare and invaluable holdings in digital format (Maulana Azad Library, 2016).

#### *University of Allahabad*

Allahabad University was restored to the status of a Central University by the University of Allahabad Act, 2005 passed by the Parliament in the year 2005. Allahabad University is the oldest university amongst all the existing Universities of U.P. and is also the oldest university of Northern India barring the Calcutta University. The central library has a large collection of Books & other materials. Library has approximately 7 lac books, 15000 Ph.D. Theses, and more than 400 Journals are being subscribed. Library has installed Libsys, library automation software. Creation of database is in progress in Libsys. Records of more than 3 lacs books have already been created as on 8-8-2016 while creation of theses database has already been completed. Significantly, digitization of old documents is in progress and approximately 25,000 books have already been digitized.

#### *Banaras Hindu University*

Banaras Hindu University (BHU) is an internationally reputed temple of learning, situated in the city of Varanasi. BHU was founded by the great nationalist leader, Pandit Madan Mohan Malviya, in 1916 with cooperation of great personalities like Dr Annie Besant, who viewed it as the University of India. Banaras Hindu University was created under the Parliamentary

legislation BHU Act 1915. Presently the Banaras Hindu University Library System consists of Central Library at apex and 3 Institute Libraries, 8 Faculty Libraries, 25 Departmental Libraries, with a total collection of over 13 lakh volumes to serve the students, faculty members, researchers, and technical staff of fourteen faculties consisting of 126 subject departments of the university. Central library which is named as Sayaji Rao Gaekwad library is having around six lac books, more than one lac bound volumes of journal in addition to over 14 thousands theses and seven thousands manuscripts. (Central Library, Banaras Hindu University). Central library started the process of automation with New GenLib software. However, it switched over to Libsys but at present, library is using SOUL2 software.

#### *Babasaheb Bhimrao Ambedkar University*

The Babasaheb Bhimrao Ambedkar University, (BBAU) Lucknow is one of the premier central Universities in the country. The jurisdiction of this residential University is over the entire state of Uttar Pradesh. Babasaheb Bhimrao Ambedkar University is a Central University, established on 10th January 1996. ([www.bbau.ac.in](http://www.bbau.ac.in) accessed on 06-8-2016). Central Library of BBAU is known as Gautam Budhha Library and has more than forty five thousands (45,000) books. Notably, the library had started the process of automation selecting KOHA software. However, the staff of library has revealed that they, at present, are not using this software as decision has already been taken to select another software. And soon necessary formalities such as calling different vendors for the demonstration of their products will be completed. Though, around forty thousands records have been entered using KOHA.

#### *Delhi University*

The University of Delhi is the premier university of the country which was established in 1922 as a unitary, teaching and residential university by an Act of the then Central Legislative Assembly. The President of India is the Visitor, the Vice President is the Chancellor and the Chief Justice of the Supreme Court of India is the Pro-Chancellor of the University. Total Collection of the Delhi University Library System is more than 15 lacs.

#### *Indira Gandhi National Open University*

Indira Gandhi National Open University (IGNOU) was established in 1985 to democratize higher education. IGNOU has around six lacs students with

extremely varied profiles, spread throughout the length and breadth of the country.

The IGNOU library is the most resourceful information centre in the country in the field of Distance Education. The library has the largest collection of books, journals and other related materials in the field of Distance Education, throughout the country. It was established in 1986 in tune with the objectives of IGNOU. The Central Library is the main library which co-ordinates the effective functioning and development of RCLs and SCLs. The Central Library has been using the Libsys, an integrated Library Management software package with all the modules for the library housekeeping operations. The IGNOU library is having more than one lac books and over 15 thousands journals. (Library and Document Division, IGNOU The People's University, 2016).

#### *Jamia Millia Islamia*

Jamia Millia Islamia (JMI), an institution originally established at Aligarh in 1920. It became a Central University by an act of the Indian Parliament in 1988. Dr Zakir Husain Library named after the former President of India, Late Dr. Zakir Husain, is the Central Library of the Jamia Library System. The Library has a collection of 3.70 lakh books comprising various subjects taught in the university. Library's book collections are arranged subject wise on respective floors. The Library has a valuable collection of 2230 manuscripts in Arabic, Persian, Urdu, Pushtoo, Punjabi and Hindi languages- Brij-Bhasha. Apart from these categories of document library is also having bound volumes of journals, Current journals in print form, Theses, Reports, Conference Proceedings etc. (Zakir Husain Library, Central library, 2016).

#### *Jawahar Lal Nehru University*

JNU was established in 1969 and since then considered one of the premier universities of India. The central library of JNU has a collection of about 5 lacs, which includes books, periodicals, serials and non-book material. The collection is housed subject-wise under three major streams, viz. Social Sciences, Sciences and Humanities. Library is subscribing around 800 journals and few online databases. The library is a depository of all Govt. publications and publications of some very important International agencies like World Health Organization, UNESCO etc. Significantly, within the premises of the library a *Cyber library* has been established in which huge database of online journals can be accessed via 150

terminals. Significantly, library subscribe material worth five crore rupees for the *Cyber library* useful for research scholars and faculty members.

*Background Information about Automation*

S.N.	Name of University	Library Software Used	Year of Installation	Server Used
1	AMU	Libsys	2001	Linux
2	AU	Libsys	2002	Windows
3	BHU	SOUL	2013	Linux
4	BBAU	KOHA	2012	Windows 7
5	DU	Troodan	2006	Windows 2003
6	IGNOU	Libsys	1996	Linux
7	JMI	Libsys	2002	Linux
8	JNU	Virtua	2006	SUN SOLARIS

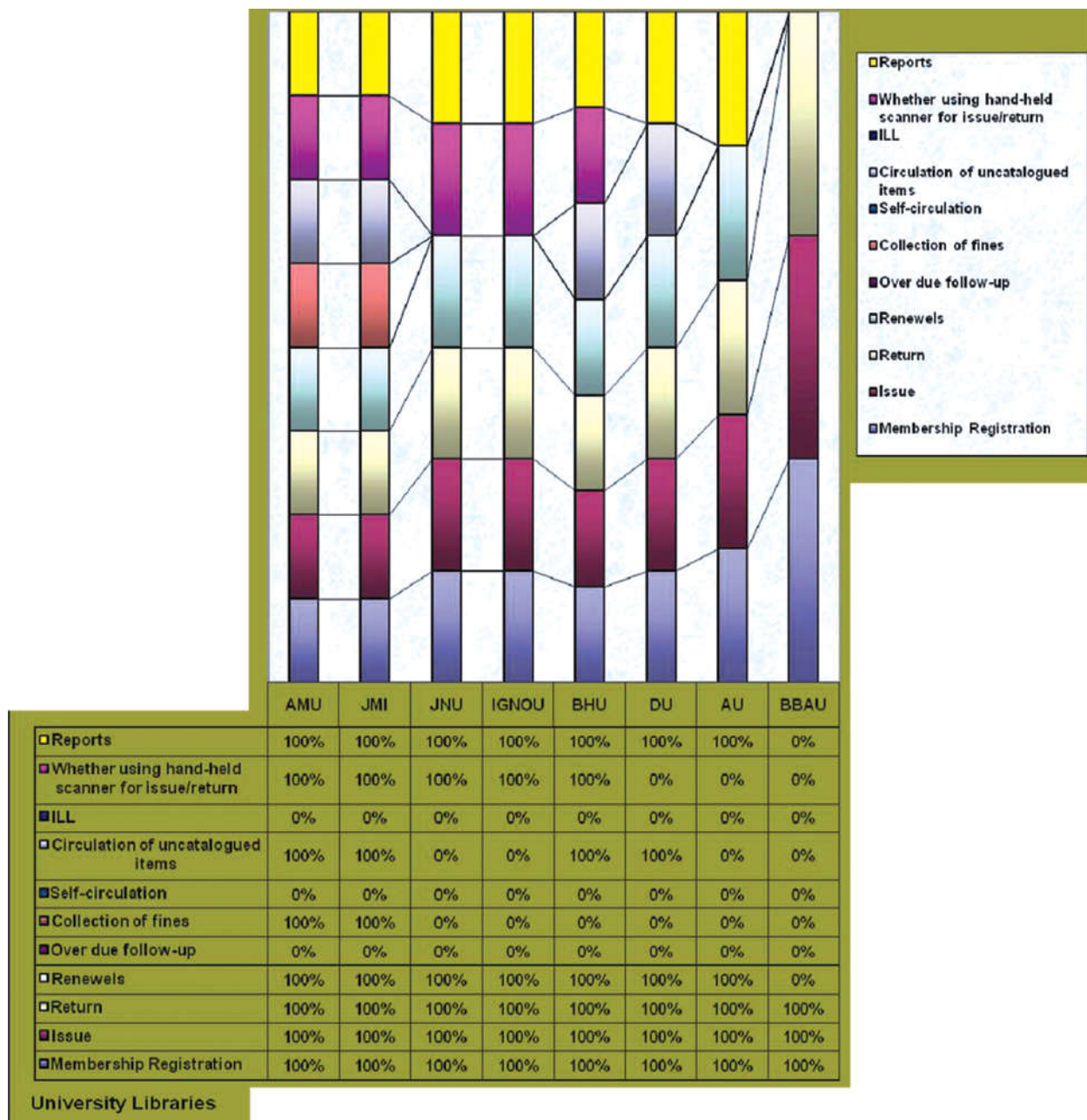


Fig. 1: Application of circulation module

Note: Among these Libraries, there are three libraries *viz.* JMI and JNU which have switched over from one software to another. JMI initially started computerization with Libsys software in 1991 and opted for Virtua in the year 2001 and again went back to Libsys in the next year i.e. 2002. On contrary, JNU started using Virtua in 2006 after initial use of Libsys. While BHU library has opted for Libsys after using New Gen Lib. Subsequently, the library has installed SOUL.

### *Impact of Circulation*

As mentioned elsewhere in the paper, Circulation control was one of the first applications to be automated in many libraries in the west during the 1960. There are several aspects to handling circulation transactions, and an automated system should be able to allow for all of the following functions:-

One of the first online circulation systems had been introduced in Illinois State library in 1966. Another early online circulation system was implemented in late 1967 at Midwestern University in Texas (Dennis, 1985). However; the outstanding example during the early 1970s of an online circulation system was demonstrated by Ohio State University's Library Control System. The entire philosophy behind the design and application of the system for the Ohio State University Libraries was, as described by Hugh Atkinson, "that the system should be one which would speak to the problems of its users rather than simply the problems of the library". The impact of this online system on library service was probably best exemplified by the fact that, during the first 18 months it was in operation, circulation at the Ohio State University libraries increased by more than 40 percent (Hugh, 1972).

### **Discussion**

Automation has affected many aspects of Indian life. However, influence of automation is less seen in libraries than that of Bank Sector, Airways, Railways, industries etc. Present study that covered Central Universities in Northern India has come up with not so appreciable findings. Central Universities are given larger funds in comparison to State and Deemed Universities in India. As a result, they are better in terms of infrastructural facilities. Moreover, teaching standard is better while being compared with State and Deemed Universities. Incidentally, the Central Universities that are located in Northern part of the countries such as AMU, BHU, BHU and AMU are

best universities in India. It is worthy pointing out here that these universities have been pioneer with respect to library automation. Circulation is very important activity particularly in academic libraries where students and faculty members borrow books for home reading against the public library tradition of reading the books in reading-halls. Against the findings shown in the above it may be concluded that all the features related to Circulation have not yet applied. We have watched that as integrated library management software have developed libraries in countries such as America, Australia and England have moved to automate circulation section. In Australia, data conversion in most universities was done in the decade from 1975 to 1985 to automate their circulation procedure ( Hans, 2004). While in America, automation of circulation section was done almost a decade before Australia. If we take a look at the other parts of the world, libraries in South Africa have also started automating their activities prior to India (Olatunde, 1999). Even in Nigerian Universities, automation process had started earlier than India (Abdulrahim, 2005). In the following paragraphs, we will now discuss certain other issues.

### *Switching Over Problems*

Selection of the software should be given serious thoughts. Out of eight surveyed libraries, four have changed the application software. And one has changed it twice. This is problematic not only for staff of the libraries but also for the users. Staff of these libraries confirmed that circulation activities hamper most because of this scenario. In-charge of circulation section in one of these libraries have disclosed that migration of membership data was not done properly and therefore library staff had to enter all the records manually in the software chosen later.

### *Difference*

Obviously, all the libraries would go for membership registration in order to start Check-out and Check-in activities. One library was not using reports which provide very useful information to take a policy decision or change the existing policies. Surprisingly, not all libraries are using hand-held scanner. On being asked, staff of these libraries admitted that certainly cost is not hindrance but they have not given a proper demonstration regarding its uses. However; no library is using Inter Library Loan (ILL) facility. Staff of majority of libraries revealed that staff deployed at circulation counters is averse introducing any new service due to heavy workload. Surprisingly, demand from the user side has also

never came in any of these libraries.

#### *Backup Problem*

Respondents in all libraries have reported that they are feeling worried in absence of any printed proof regarding who has issued what. Nevertheless, no library has faced any problem from any user in this respect. That is why, it seems more a psychological problem on the part of library staff.

However, benefits of automation have also been seen as below:

#### *Improved Accuracy and Efficiency*

Staff deployed on circulation counter of all the surveyed libraries have reported that automation of circulation section brought a high degree of efficiency and accuracy. The manual method was prone to errors and inefficiency. The staff of all these libraries was facing difficulty in filing and arrangement of thousands of borrower cards as well as book cards.

#### *Increased Usage of Library Collection*

Regarding the increase of library collection, staff of each library has been asked to reveal the approximate percentage. AU, AMU, BBAU, BHU and JMI, have reported that around 35 percent circulation has been increased in an automated environment. On the other hand, DU and JNU library has reported an increase of approximately 15 percent circulation while in case of IGNOU the corresponding figure is only 5 percent. On being examined, it was found that under graduate students of AMU and JMI are fascinated with the automatic transaction as it reduced their waiting time in ling queries. Now with the automated circulation counters, they come and issue the books even if their one period is leisure. Noteworthy to mention, prior to automation, these students were not interested to come in the libraries while having one leisured period. Another interesting point of view related to the staff of both the libraries is that they still enjoy more leisure time on their desks as automation resulted in elimination of long queries even during rush hours. In comparison to AMU and JMI, the increase in circulation in JNU is less than half. The primary factor for this difference is that the community of borrowers belongs to DU and JNU is considered active users of library collection even before circulation system was automated. Reported increase of 15 percent, owe to under graduate students of these universities due to the reasons cited-above, in case of five libraries. In case of IGNOU, no substantial

increase has been reported in circulation as the nature of borrower community of the university. Since IGNOU imparts education through distance mode and having no residential halls. Therefore, only staff residing in the campus is bona- fide members. Among the staff category, only faculty members actively use the resources of the library which they also used to do during manual operations.

#### *Greater Control over Loaned Item*

Staff of all the surveyed libraries have reported that due to automation, greater control over the items that are checked-out has been obtained. Staff of these libraries has revealed that sending reminder for overdue items was tedious job in manual section. With the facility of e-mail sending reminders became easier and less time consuming.

#### *Helpful in Building Acquisition Policy*

Staff of all the libraries reported that automation helps in the analysis of the circulation transaction date. This feature helps in examining the acquisition policies in the library. For instance, if a book is issued or reserved ten times or more during the last three months, the staff of these libraries advises acquisition section to procure some more copies of the same item.

#### *Feedbacks from Users*

Users were approached in order to know their feedbacks. Almost all the respondents from all the libraries have acknowledged that their precious time could be saved not only searching the documents but also at the automated issue and return counter. In the manual environment, lots of time was required in searching the documents through card catalogue. However, in an automated environment, it takes less than a minute to search the documents. Nevertheless, user have made a complain that due to improper shelving of the books, in few libraries, lots of time has gone wasted. Moreover, staff deployed in the stack area is not efficient in locating the material. Ironically, in some libraries, user have complained that staff in the stack area is busy with mobile and they are not sincere in locating the book even after Call Number and other bibliographic information is produced. This is very serious matter, and hence, libraries should orient the staff matter towards giving better services. Some faculty members have also revealed that senior staff is more sincere in comparison to junior lot with respect to service.

## Conclusion

Library Automation has brought noticeable changes in libraries. But in the fast changing environment, expectations of people have been increased with the passage of time. Country such as India with more than 1.25 billion population that is still a low-middle income country, according to the World Bank estimate, on per capita income and GDP will definitely need to provide more benefits for the users to justify the huge involvement of funds in the process of automation. Undoubtedly, it has changed the very complexion of traditional libraries, but in order to satisfy the user community, these libraries have to deliver more. Retrieval part has been made quite simple in the automated environment. However, reading habits, in general, are declining among various strata of Indian society, notably among young generations who are more occupied with the use of smart phone. Millions of books are gathering dust containing the tentative solutions of the various problems faced by the society. Unfortunately, libraries are not making serious efforts for the utilization of these valuable resources. And, if this is not done, the benefits of automation will soon be wiped away from the minds of the users and also policy makers of the nation.

## Note

Some of the university libraries are in the process of designing the new websites. Hence, as and where required, the information was collected from the competent authorities using personal contacts.

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