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## IMPACT OF AUTOMATION ON USERS OF TECHNICAL INSTITUTION LIBRARIES OF DELHI-NCR REGION (INDIA)

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# **IMPACT OF AUTOMATION ON USERS OF TECHNICAL INSTITUTION LIBRARIES OF DELHI-NCR REGION (INDIA)**

## **Abstract**

The purpose of this study is to investigate the user's satisfaction level and know their viewpoint towards the automated library services provided by the renowned technical institution libraries of Delhi NCR region of India. The survey methodology has been used for collecting the relevant data from the selected libraries. The data has been collected on the basis of a stratified sampling method through questionnaire and informal interviews from the randomly chosen samples for the research study. The findings reveal that automation has a positive impact in the enhancement of academic and research activities of users. The majority of users in all the libraries are aware with the current automation software implemented in their library. The majority of users in all the libraries are satisfied with the current automated services/facilities provided by their library except few users of DTU, IIT Delhi and NSUT. The research includes only select five renowned Technical Institutions of Delhi NCR region because of time and logistic constraints, despite Delhi being the educational hub of India. Although several studies have already been conducted on library automation in different regions of the world, but the current research will help the Librarians and Information Scientists to make them aware of the various challenges/barriers faced by the users in the use of Automated Library Services/Facilities which may help them to design a model/guidelines for the effective use and implementation of Automated Library Services/Facilities for the users in the libraries.

**Keywords:** Library automation, Technical Institutions, Library Services, ICT, RFID Technology and India.

## **1. Introduction**

Technology has taken place in every aspect of our life and around every citizen of India is using technology in his/her day to day life. We all are connected with the technology by some means and the availability of technological infrastructure shows the progress of a country. As we know that the technical education mainly focus on research & development activities which implies imagination, judgment and reasoning to applied science, technology, mathematics, and practical experience, which resulted in the design, production and operations, depends upon of useful objects or processes (**Vasishta, 2007**). The technical education creates skilled manpower, enhances industrial productivity and improves the quality of life of the people. Therefore, technical education plays a very crucial role in the social and economical development of a country (**MHRD, 2020**). Due to proliferation of the scientific & technical data in various forms and formats the demand of information always remains high in technical education institutions therefore the need is felt for the various data management techniques in the libraries by the library professionals.

Thus, the concept of library automation has been introduced and adopted by the libraries to manage the collection, to keep library records updated, to control the circulation of library resources and to provide varied services/facilities to the users in easy and quick manner (**Das and Chatterjee, 2015**). It has been noticed in the library that a library staff performs various

repetitive work and clerical jobs which consume lot of time of the staff as well as the users. Thus, there is need of implementing automation system in libraries to make library routine work speedy and to maximize user satisfaction.

India is one of the largest producers of engineers in the world and as per the statistics of department of higher education around 18,000 technical education institutions are functioning in the country. Although, overall scenario of higher technical education in India does not match with global standards due to lack of ICT infrastructures, quality of higher education institution in India, lack of funds for libraries, laboratories etc. (**Unnikrishnan and Das, 2014**). But in this challenging phase, libraries have a responsibility to support the technical education system and provide quality information to its researchers and contribute in the development of education system of the country.

## **2. Statement of the Problem**

Automation of libraries of technical institution has become a necessity because the libraries of technical institutions holds vast amount of collection and provide variety of services to its users which is not possible to manage with manual based library system (**Gbadamosi, 8**). But, in India, it has been observed that the many libraries are still facing various challenges in the implementation of automation based library services/facilities due to lack of ICT infrastructure, insufficient fund and lack of skilled/trained manpower in the library (**Issa, et al, 10**). In various libraries of India, there are many services which are still provided manually and need to be automated. A library exists for its users; therefore, it is equally important to know the user satisfaction level from the services delivered/provided by their library. Thus, the libraries of Technical Institutions should also take initiatives to know the user viewpoint for the automated library services through the user's feedbacks and suggestions and introduce new library services with the help of integrated library management software as per the user demand.

There are no previous studies through which the status and impact of automation on the users of technical institutions libraries located in Delhi-NCR region can be identified. Therefore, the current study will help to explore the types of automated library services being offered by the libraries of technical institutions to their users and the level of user's satisfaction with the current automated services/facilities provided by their library and their perception for the change in delivery and quality of services in their institute library.

## **3. Objectives of the Study**

The objectives of the current study are:-

1. To study the level of user awareness towards the automated services provided by their library.
2. Role of Automation in the enhancement of Academic & Research activities of users.
3. To identify the provision of orientation and training programmes for the library users for the effective utilization of automated library services.

4. To study the user's satisfaction level and their viewpoint towards the effective automated library services in the libraries of technical institutions.

#### 4. Scope and Methodology

The scope of this study have certain limitations like type of Institution/Libraries, automation software, ICT infrastructure, survey population of the study etc. The study will cover five renowned technical institutions libraries located in the Delhi-NCR region which are using library automation software for the management of its collection and delivery of its various library services/facilities. The selection of the libraries was done on the basis of certain criteria which include usage of library automation software, ICT infrastructure and facilities and the type(s) of library services provided etc. Below are the details of technical institutions selected for the study and brief details of automation software used by their library:-

S.No.	Name of the Institute	Name of Library	Software Used	Version	Nature of the Software
1.	Indian Institute of Technology Delhi	Central Library	Libsys	7	Commercial Software
2.	National Institute of Technology Delhi	Central Library,	Libsys	7	Commercial Software
3.	Delhi Technological University	Central Library	KOHA	3.22.05.000	Open Source Software
4.	Indraprastha Institute of Information Technology Delhi	Library & Information Center	KOHA	3.22.06.000	Open Source Software
5.	Netaji Subhash University of Technology, Delhi	Central Library	e-Granthalaya	eG 3.0	Open Source Software

The survey population includes 25 library users from each library who are using automation based library services and facilities provided by their library. The selected user community includes students, research scholars and faculty/staff members. The present study will help us analyze the user's satisfaction level and their viewpoint towards the current automated library services/facilities offered by their library. The study may also help to find out the user's feedback/opinion for the improvement of various library services/facilities which are still provided manually by their libraries. The study will also help us to analyze and find out the new services/facilities expected by the users from their libraries in this modern digital age.

The survey methodology has been used for collecting the relevant data from the selected libraries. The data has been collected through various formal and informal sources of data collection like questionnaire, observation and interview method etc. to determine type of ICT infrastructure and services, automation software and services, various information needs and requirements of the users, type of collection, services and user viewpoints for their automated facilities available in their libraries. The total two sets of questionnaire (one for the user community and the other questionnaire for the libraries serving the users) was prepared and distributed for collecting the relevant data related to the study. The user community covered in the study includes students, research scholars and faculty/staff members from the each institute.

The data is collected with the help of questionnaire method along with the personal interviews and interactions with the users and library staff. Total five renowned technical institution libraries located in Delhi-NCR region are covered under study. The survey study covers only those libraries that are using automation based library management system.

## 5. Review of Related Literature

In order to better understand the current situation of automated library services in India and its impact on the users some papers have been reviewed in this study:-

The earlier study conducted by **Yogendra Singh (2004)** shows the development of library automation in India and various factors affecting the development of library automation. The study concluded that the automation has impacted library services and facilities in a better way and the libraries are doing efforts to make themselves updated with latest trends and technologies. Also, staff are taking challenges and coming forward to learn new technologies of the new millennium. **Margam & Singh (2010)** in their study 'implementation of RFID technology and its impact on library services in the Indian Law Institute library and National Social Science Documentation Centre library, New Delhi' highlighted that the circulation timing has been reduced 20 sec. per item after the implementation of RFID technology and the use of library have increased. The study also discussed about the high cost challenges faced by the libraries after implementation of RFID technology. The **Neelakandan, B. et al (2010)** has highlighted some major issues like lack of infrastructures; funds and environment support are faced while implementing automated library system in the School of Chemistry in his study 'automated library Management System using Koha open source software by covering the library of School of Chemistry, Bharathidasan University'. **Ugbah (2010)** through his study found that library automation has a positive impact in the academic performance of the students as the study states that meritorious students are using automated library services as an information source for retrieval of academic and professional information. The author **Anas, Iqbal and Ahmad (2011)** have studied the impact of automation on library services in which four Management Institute libraries of Aligarh concluded that 75% librarians believes that automation has improved the services of the library and 85% of users believe that automated library services are better than manual library services and maximum users are satisfied with the automated library services only few users have showed dissatisfaction.

**Upadhyay (2012)** identified the status, problems and prospects of Library automation in Engineering College libraries and information centers of Jabalpur city in Madhya Pradesh. The major reasons, due to which Engineering College libraries were not automated includes Lack of computer facilities, Inadequate funding, Lack of skilled manpower; lack of interest to adopt new technologies and various library software related problems. **Raval (2013)** in his study focused on the library automation problems with main focus on major three problems which includes technological, economical and attitudinal problems. Technological problems include both the hardware and software issues of library automation. The economical problems include mainly the high cost involved in the initial establishment and maintenance of the ICT infrastructure and facilities and lastly, the attitudinal problem includes the lack of basic ICT skills and knowledge which are required for the implementation of automation in libraries.

The study conducted by **Mutula (2013)** based on the practical experience of automation of libraries in University of Botswana shows the impact of automation on various library services and concluded that automation have enhanced quality of services, user satisfaction with the library services, and how the automation have re-skilled librarians and improved images of librarian. **Aremu & Saka (2014)** states that technology management is very essential for the competitive advantage and efficiency in library operations which further help users to cope up with the technological changes. The study also reveals that the technology management requires a high degree of integration within the areas of user-oriented services (marketing) and personnel competence. **Pandya and Darbar (2016)** through their research study has found that automation have positive impact on library users. Also, the users are aware about the automated library services and facilities (like WebOPAC, due books reminders etc.) and they are satisfied with quick library services available after implementation of library automation. The study further

suggested that library staff must be trained for handling automated library services and internet facility and power supply required to be improved.

**Veeranjaneyulu (2017)** through his study highlights the present status of library automation and digitization of Agricultural University libraries in India. The study mainly focus on the status of the automation, status of the digitization, membership in KrishiKosh institutional repository and AgriCat Union Catalogue and lastly on the implementation of RFID technology in the agricultural libraries.

**Nayana (2019)** focus on the status and problems of library automation in aided degree colleges affiliated to Bangalore University, Bengaluru. The study was clearly states that major constraints for not being automated includes inadequate staff, lack of Infrastructure facilities, insufficient funding and lack of training to the library staff. This study also gives a status view of the software packages used by libraries and modules used library automation software. The study mainly focuses on the availability, applicability and problems faced during the process of implementation and utilization of Library automation software.

**Chitra and Kumbar (2020)** in their study focus on the availability of the ICT infrastructure facilities for automation and constraints faced by the librarians for automation of college libraries affiliated to University of Mysore. The findings reveal that computers and internet connectivity have entered in the academic library setup slowly and steadily to handle various routine activities of the libraries. The major constraint in implementation of automation for library services and facilities includes inadequate budget, lack of skilled/trained staff to automate and maintain up-to-date various services of the libraries.

## 6. Analysis and Interpretation of Data

The data analysis represents the impact of automation on the users of technical institutions libraries. The following data will also try to identify the user perspective towards the automation based library services & facilities provided to them by their library and the users satisfaction level with the current automated services/facilities.

### 6.1 User's Awareness about the Automation System used by the Institute Library.

The user's awareness about automation system used in their institute library is very much essential then only the various library resources & services/facilities can be effectively and efficiently utilized by the users. Thus, it can be clearly seen in the Table 1 that 96% of users in IIT Delhi are aware of automation system used in their library and the main source for awareness for maximum users (52%) is institutional website/workshop. In NIT Delhi 80% users are aware of automation system used in their library and 'library staff' is the source of awareness for maximum (56%) number of users. In DTU, 76% users are aware of library automation system and the source of awareness for maximum user is their friends (48%) and library staff (40%). The 24% population of DTU library is still not aware of automation system used by their library. In IIIT Delhi, 60% users are aware of library automation system used in their library while 40% user said they are not aware of library automation system. The 24% respondent in IIIT Delhi said they are not aware of library automation system because they have never attended any orientation/training programme organized by the library. In NSUT only 48% of population is aware of library Automation system while 52% population said that they are not aware of automation system used in their library. From the above results, it has been found that library staff, friends and Institution website/workshops are main source of awareness among the users.

User's Awareness about Library Automation System	Name of Library				
	IIT Delhi	NIT Delhi	DTU	IIIT Delhi	NSUT
Aware	24 (96%)	20 (80%)	19 (76%)	15 (60%)	12 (48%)
Unaware	1 (4%)	5 (20%)	6 (24%)	10 (40%)	13 (52%)

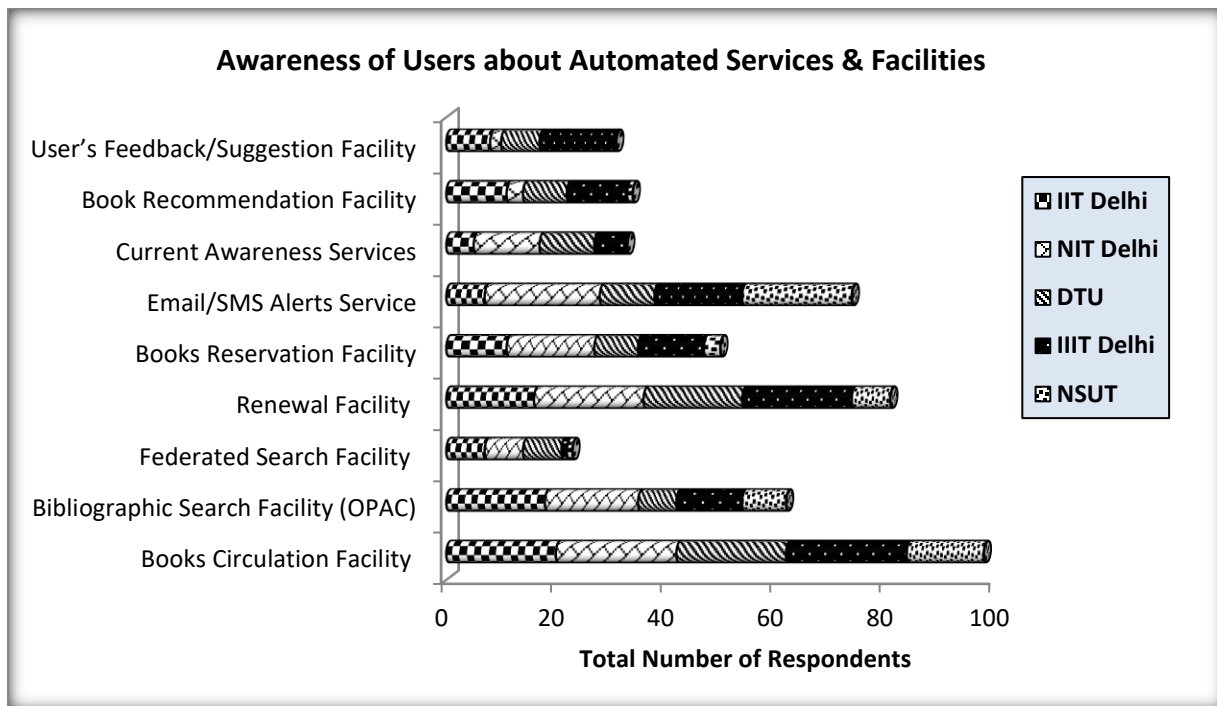
<b>Source of Awareness (If Yes)</b>					
Library Staff	3 (12%)	14 (56%)	10 (40%)	6 (24%)	5 (20%)
Teachers	2 (8%)	--	2 (8%)	2 (8%)	--
Friends	8 (32%)	6 (24%)	12 (48%)	6 (24%)	6 (24%)
Institutional website/workshop	13 (52%)	3 (12%)	3 (12%)	5 (20%)	1 (4%)
Orientation/Training Programme	--	2 (8%)	5 (2%)	2 (8%)	--
<b>Reason(s) of Unawareness (If No)</b>					
Never visited the Library	--	1 (4%)	--	--	--
Do not received any information by the Library	--	2 (8%)	5 (2%)	2 (8%)	7 (28%)
Never attended any orientation/training programme organized by the Library	1 (4%)	3 (12%)	3 (12%)	6 (24%)	2 (8%)
Never interested to know about the software	--	2 (8%)	--	5 (20%)	4 (16%)

**Table 1: User's Awareness about Automation System used by the Institute Library.**

[Note: n=25, where the percentage exceeds 100% as user were allowed for multiple responses.]

## **6.2 User's Awareness about the Available Automated Services & Facilities.**

The awareness of library users about various automated services and facilities offered by their library is very much essential to maximize the usage of various library services and facilities. The libraries can work towards the efficient and effective use of library services and facilities. Thus, it can be clearly noticed in the figure 1 that majority of users are aware of automated Book Circulation Facility (Check-in/Check-Out), Bibliographic search facility, Renewal Facility and Email/SMS Alert service. The 80% of users in IIT Delhi, 88% in NIT Delhi, 80% in DTU, 88% in IIIT Delhi and 56% users in NSUT are aware of automated circulation facility. The majority of users (i.e. 72% users in IIT Delhi, 68% in NIT Delhi and 48% in IIIT Delhi) are aware of automated bibliographic search facility while very few users (i.e. 28% in DTU and 32% in NSUT) are aware of bibliographic search/OPAC facility. The above data also shows that the very few number of users are aware of federated search facility, current awareness service, book recommendation facility and user's feedback and suggestion facility.



**Figure 1: User's Awareness About the Automated Services & Facilities Available at the Institute Library.**

[Note: n=25, where the percentage exceeds 100% as user were allowed for multiple responses.]

### 6.3 User's Awareness about the Recent Automated Library Services/Facilities.

It can be clearly seen in the figure 2 that 76% users in IIT Delhi are unaware of any recent automated service(s) and facility(s) while 24% population showed awareness towards recent automated services/facilities introduced in their library. In NIT Delhi maximum no. of users i.e. 68% showed awareness towards automated service/facility implemented in their library in recent past years. In IIIT Delhi and NSUT majority of users (i.e. 80% in IIIT Delhi and 96% in NSUT) are unaware of any new automated service/facility introduced in their library in recent past years. The above figure clearly reflects that users have lack of awareness towards the automated services and facilities. Thus, the libraries should adopt new trends and technologies in libraries and introduce some new and innovative automation based library services and facilities to maximize the user's satisfaction. Also, some orientation and user awareness programme should be organized on a regular basis by the libraries to maximize the user satisfaction.



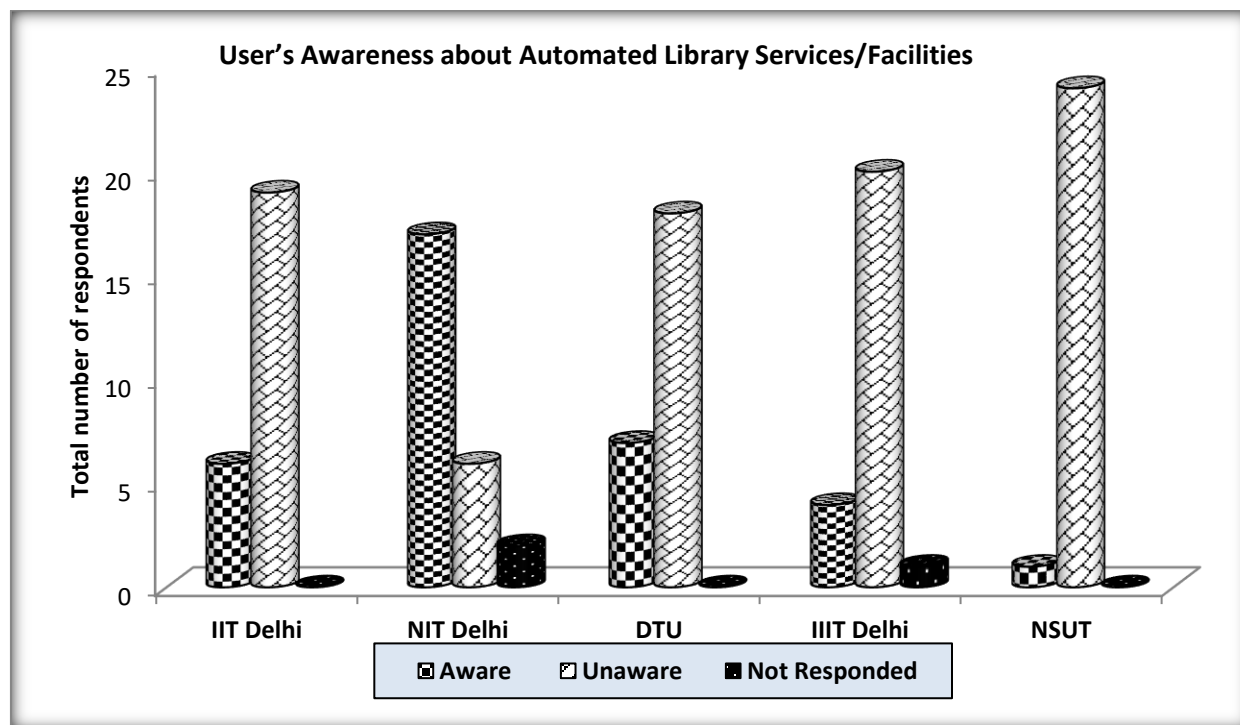
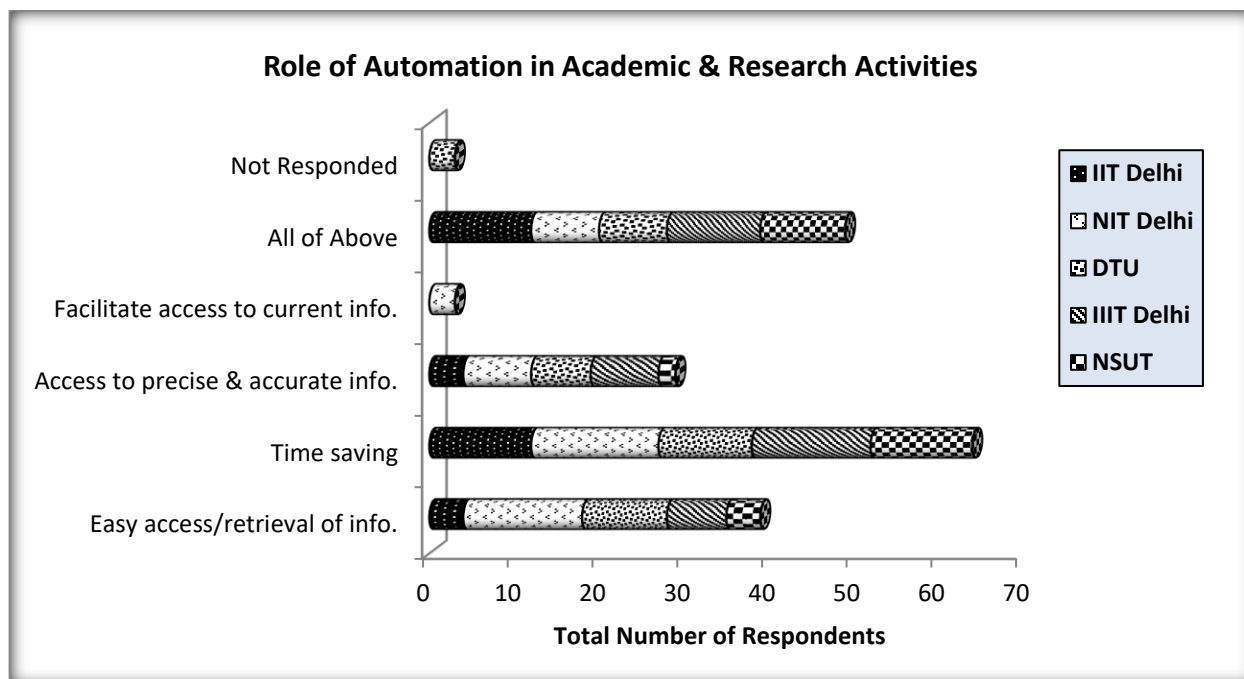


Figure 2: User's Awareness about the Recent Automated Library Services & Facilities.

#### 6.4 Role of Automation in the Enhancement of Academic & Research Activities of Users.

The implementation of automation in libraries plays a very crucial role in the enhancement of academic and research activities of the users. The automation in libraries makes access of information speedy, provide accurate information without wasting time of the users and facilitate users with current information and keep them up-to-date with latest information. Thus, in this reference the figure 3 represents the user's perspective about the role of automation in the enhancement of their academic and research activities. The figure 3 clearly represents that the majority of users in IIT Delhi (48%), NIT Delhi (60%), DTU (44%), IIIT Delhi (56%) and NSUT (48%) has agreed that the library automation has contributed for saving their time. The maximum no. of users in IIT Delhi (48%), NIT Delhi (32%), DTU (32%), IIIT Delhi (44%) and NSUT (40%) has responded for all activities i.e. easy & quick access/retrieval of information, time saving, and access to precise and accurate information and facilitate access to current information.



**Figure 3: Role of Automation in the Enhancement of Academic & Research Activities of User's.**  
 [Note: n=25, where the percentage exceeds 100% as user were allowed for multiple responses.]

### 6.5 User's Rating to the Available Automated Library Services & Facilities.

It can be clearly noticed in the Table 2 that Automated Book Renewal facility is a common facility which is highest rated by the library user's (i.e. 12% in IIT Delhi, 20% in NIT Delhi, 24% in DTU, 32% in IIIT Delhi and 16% in NSUT) from all automated services and facilities provided by the respective Institution libraries. The library users also showed likeness towards the automated book circulation facility, book reservation facility, bibliographic search/OPAC facility and email/SMS alert services. In IIT Delhi book reservation facility is a highest rated facility (i.e. 28%) while in NIT Delhi the Email/SMS alert facility was highly rated (i.e. 44%) by the users. In DTU maximum no of (users i.e. 24%) like renewal facility & email/SMS alert service. In IIIT Delhi and NSUT the 32% users like Renewal facility and email/SMS facility respectively. The federated search, book recommendation and user feedback and suggestion facility are lowest rated facilities as very few number of users in libraries are aware about these services/facilities.

Name of Automated Services/Facilities	Name of Library				
	IIT Delhi	NIT Delhi	DTU	IIIT Delhi	NSUT
Books Circulation Facility (Check-In/Check-Out)	4 (16%)	4 (16%)	2 (8%)	3 (12%)	--
OPAC Facility	3 (12%)	7 (28%)	--	2 (8%)	2 (8%)
Federated Search Facility	--	2 (8%)	--	--	--
Renewal Facility	3 (12%)	5 (20%)	6 (24%)	8 (32%)	4 (16%)
Books Reservation Facility	7 (28%)	4 (16%)	1 (4%)	2 (8%)	2 (8%)
Email/SMS Alerts Service	--	11 (44%)	6 (24%)	2 (8%)	8 (32%)
Current Awareness Services	--	2 (8%)	--	1 (4%)	--
Book Recommendation Facility	--	2 (8%)	--	--	--
User's Feedback/Suggestion Facility	--	2 (8%)	--	1 (4%)	--

**Table 2: User's Rating to the Available Automated Library Services/Facilities.**

[Note: n=25, where the percentage exceeds 100% as user were allowed for multiple responses.]

### 6.6 User's Awareness about Orientation/Training Programme Organized by their Library.

The orientation/training programmes are very essential to be organized on time to time basis to increase the user's awareness about available automated library services and facilities. The user's awareness is very much essential to maximize the usage of various library services and facilities. Therefore, the below table explores the awareness of the user's about the orientation/training programme organized by their libraries to use automated library services & facilities:

Status of Users Awareness	Name of Library				
	IIT Delhi	NIT Delhi	DTU	IIIT Delhi	NSUT
Aware	12 (48%)	13 (52%)	10 (40%)	11 (44%)	2 (8%)
Unaware	11 (44%)	9 (36%)	13(52%)	11 (44%)	22 (88%)
Don't Know	2 (8%)	3 (12%)	2 (8%)	3 (12%)	1 (4%)
No. of Users Attended/Not Attended Orientation/Training Programme					
User's Attended	9 (36%)	10 (40%)	7 (28%)	9 (36%)	--
User's Not Attended	16 (64%)	15 (60%)	18 (72%)	16 (64%)	25 (100%)

**Table 3: User's Awareness about Orientation/Training Programme.**

[Note: n=25, where the percentage exceeds 100% as user were allowed for multiple responses.]

The table 3 shows that in only 48% users in IIT Delhi, 52% in NIT Delhi, 40% in DTU, 44% in IIIT Delhi and 8% in NSUT are aware about orientation/training programme organized by the library for the use of automated services/facilities. The above data also represents that very few number of user's (i.e. 36% in NIT Delhi, 40% in IIT Delhi, 28% in DTU, 36% in IIIT Delhi and 0% in NSUT) have attended the orientation/training programme.

Thus, the above data reflects that maximum number of user's are unaware of orientation/training programme organized by their libraries and very few numbers of users has attended the programme. The NSUT does not organize any orientation/training programmes for its users for using automation based library services/facilities. The libraries should focus on organizing the orientation/training programme for using automated library services & facilities to maximize the usage of library services as well as library resources. The NSUT should actively take initiatives for the user awareness.

### 6.7 User's Perspective Regarding Need of Orientation/Training Programme.

The orientation/training programmes organized by the libraries for usage and handling of library automation can improve the user's awareness and utilization of various library services and facilities. In this context, the following data represents the user's perspective regarding need of orientation/training programme for the usage and handling of library automation Software in libraries:

The figure 4 represents that in IIT Delhi, 36% users responded orientation/training programmes are essential, 44% in NIT Delhi responded very important, 32% in DTU and 28% in IIIT Delhi have equally voted for essential and very important respectively. In NSUT 36% users said the orientation/training programmes are very essential. Thus, it is found from the above data that orientation/training programmes are very essential for the use and handling of library automation software in libraries.

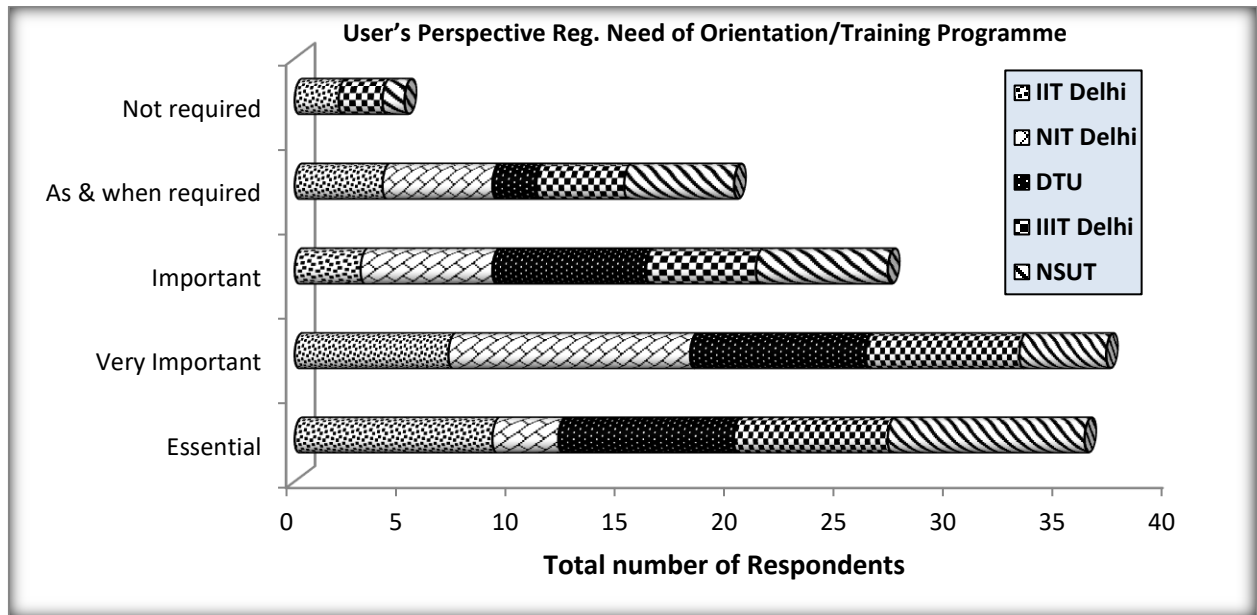


Figure 4: User's Perspective Regarding Need of Orientation/Training Programme.

### 6.8 Barrier(s) Faced in the Use of Automated Library Services/Facilities.

The figure 5 shows that majority of users in all libraries do not face any barrier while using the automated library services & facilities. While 20% users in IIT Delhi, 12% in NIT Delhi, 24% in DTU, 16% in IIIT Delhi and 20% in NSUT said that they have lack of awareness about the ICT facilities available at the Institute library. The poor internet connectivity, lack of sufficient ICT infrastructure & facility and lack of sufficient ICT skills and staff support are some other barriers that are faced by few users. For the improvement in the delivery of library services/facilities and to maximize the use of library resources among the users, the libraries should focus on various barriers faced by their users.

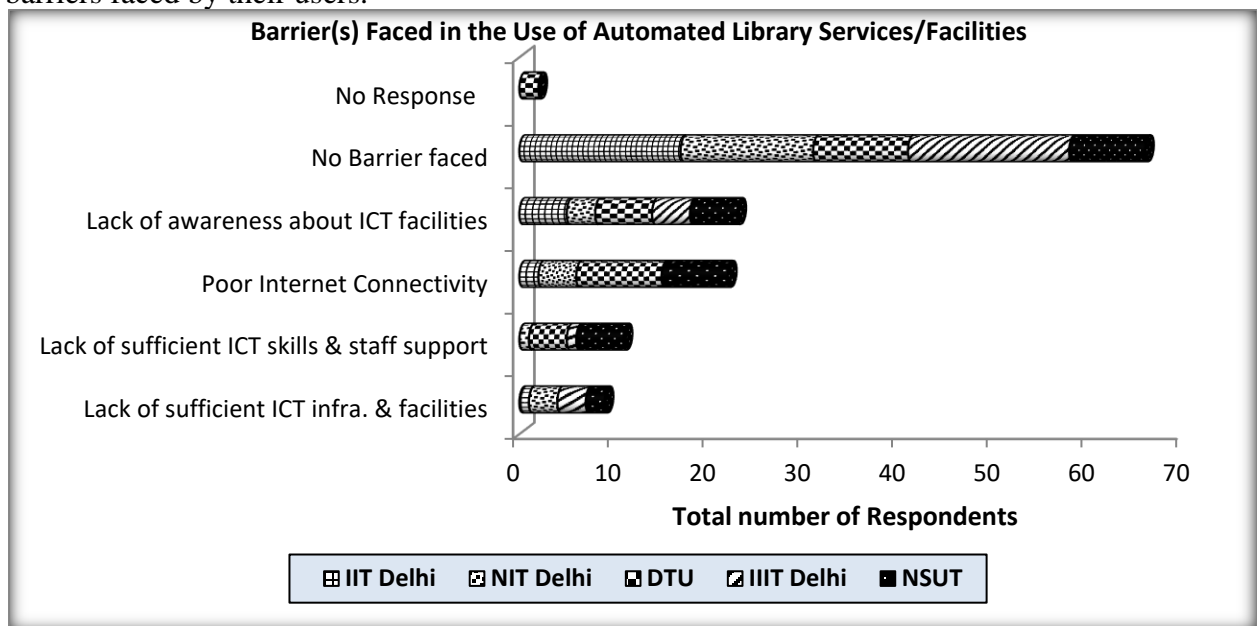


Figure 5: Barrier(s) Faced in the Use of Automated Library Services/Facilities.

[Note: n=25, where the percentage exceeds 100% as user were allowed for multiple responses.]

### 6.9 User's Satisfaction Level with the Current Automated Library Services & Facilities.

The figure 6 shows that majority of users in all the libraries are either 'strongly satisfied' or 'satisfied' with the current automation services/facilities provided by their library. The 84% respondents in IIT Delhi 48% in NIT Delhi, 32% in DTU, 48% in IIIT Delhi and 44% in NSUT are satisfied with the current automated library services & facilities. In DTU, IIIT Delhi and NSUT few users have showed dissatisfaction towards the current automation services/facilities provided by their library. Hence, with the results of the table 5.3.9 the '**Hypothesis 1: The users are more satisfied with the automated library services than the manual Library services**' is proved.

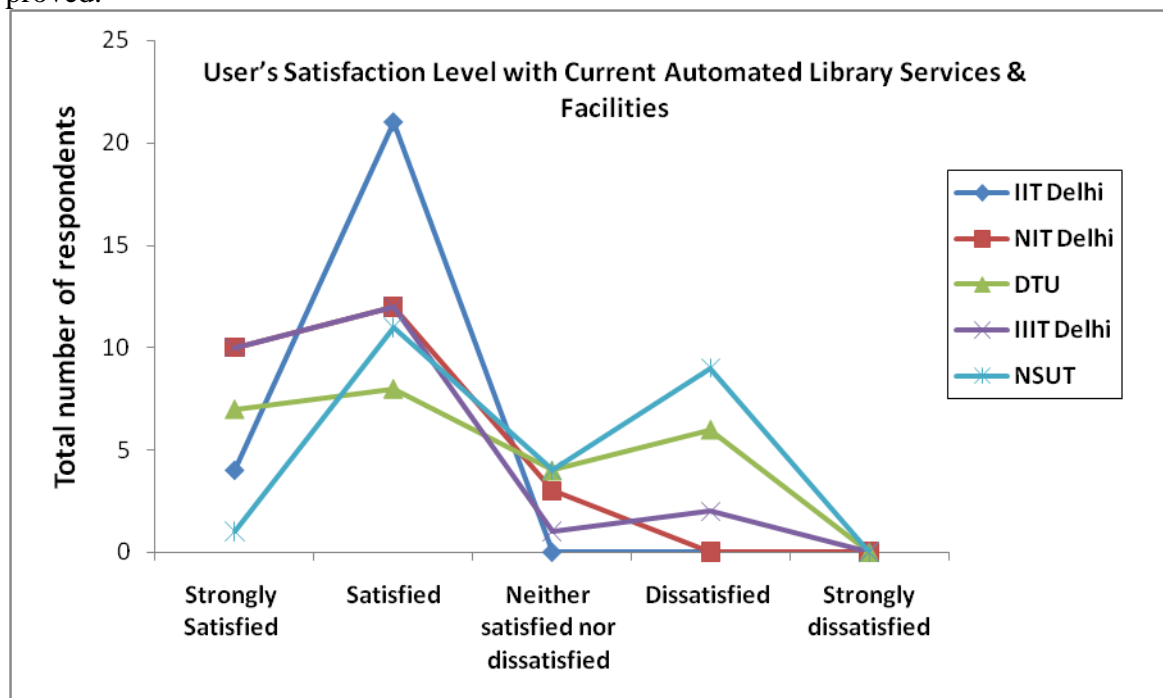


Figure 6: User's Satisfaction Level with the Current Automated Library Services & Facilities.

### 7. Findings

The results of the study reveal that majority of library users are aware with current automation system used by their library (except NSUT). The study shows that maximum numbers of users in all the libraries are aware with books circulation, OPAC, renewal, email/SMS alert services/facilities provided by their library while very few numbers of users are aware of federated search facility, current awareness service, book recommendation facility and user's feedback/suggestion facility. The results of the study also highlights that automation have a positive impact in the enhancement of academic and research activities of users as it provide quick access to information, save time of the users, facilitated precise and accurate information and provide access to current information. It has been observed through the above study that there is a lack of awareness among users in the areas like recently implemented automation based services/facilities and orientation/training programmes organized by their library for using automation based services/facilities. While orientation/training programmes are rated very important activity for a library by the library users. However the final results of the study reveals that maximum number of users in all the libraries do not face any barrier while using automation based library services/facilities while few users sometimes face problems like poor internet connectivity, lack of sufficient ICT infrastructure/facility and lack of sufficient ICT skills and staff support. In the end, the majority of users in all the libraries are satisfied with the current automation based services/facilities provided by their library.

## 8. Suggestions of Users

The below are some valuable suggestions/feedback given by the users of technical institution libraries covered under study for the improvement of services/facilities provided through library automation software:

1. It has been suggested by some users during the survey that library software should update the library users through email alerts about the recently added collection/resources in the library.
2. Few library users has suggested that there should be an online system for recommending the books through the library software.
3. Some users suggested that there should be proper indexing in the library software for its easy access and retrieval of library resources by the users.
4. Many users from different libraries showed unawareness about various automation based services/facilities available in their library and have suggested that the library should organize orientation/training programmes for the users on a regular basis to maximize the usage of library services/facilities and resources.
5. Lastly, few users has suggested that there should be provision in the library automation software to display the semester wise list of books under a particular course curriculum so that users may easily view/choose the books as per their course curriculum without wasting their time.

## 9. Hypothesis

**The users are more satisfied with the Automated Library services than the manual Library Services.**

The effectiveness of any automation software can be determined with the overall satisfaction of the users of the library. The data on Figure 6 reveals that the majority of users in all the libraries are either 'strongly satisfied' or 'satisfied' with the current automated library services/facilities provided by their library. Hence, the hypothesis "**The users are more satisfied with the automated library services than the manual library services**" has been proved.

## 10. Conclusion

The findings of users study concludes that among all the libraries the users of NSUT are less aware with automation system used in their library. In all the Libraries, the users are commonly aware with automated book circulation, bibliographic search, book renewal, book reservation and email/SMS alert services/facilities while very few no. of users are aware with other automated services like current awareness, federated search, book recommendation etc. The results of the study reveals that automation has played a very crucial role in the enhancement of academic and research activities by providing easy and quick access of information, by saving their time and providing access to precise and accurate information. Among all the Libraries, in NIT Delhi the maximum no. of users is aware with recent automated service/facilities introduced in the library. The orientation/training programmes are very essential to be organized on time to time basis for the awareness of library users and to improve the usage of library resources, services and facilities. Although, the findings of the study highlights that in all the libraries, very less no. of users have attended orientation/training programmes organized by their library for using automated library services/facilities. The NSUT does not organize any orientation/training programme for its users for using automated library services/facilities. Finally, the majority of respondent population is either 'strongly satisfied' or 'satisfied' with the automated services/facilities provided by their library.

## 11. Suggestions for Further Research

As we know that the end users are the actual consumers of various library resources, services & facilities thus a details study is required where the actual needs of the users can be identified and keeping in mind those need a library automation software should be customized and developed. Also, a detailed study of various challenges/constraints faced by the libraries in the implementation of automation must be done so that necessary steps may be taken for the improvement of the same.

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