Problems and Prospects of Information Technology in Science and Technology Libraries in Northern India

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ABSTRACT

Information technology plays an important role in the present era as it is time saving device and helps to overcome the problem of staff shortage, but still now the majority of northern Indian libraries lag behind in the adoption and updation of Information Communication Technology (ICT). It may be due to non availability if IT trained library professionals. This constraint is found strong in Punjab as compared to other states. Lack of funds and proper coordination, poor availability of required hardware and organisation does not sending the existing staff for training, are some others hurdles in the speedy automation of libraries. The present study, empirical in nature, has carried out to know the problems and prospects of library automation in the 105 Science and technology libraries in Northern India (Haryana, Punjab, Chandigarh and Delhi). The varying means of the different elements in the studies also highlight the different severity of the various restrictions standing in the way of quick automation of libraries in Northern India. Chandigarh's science and technology libraries are more aware about potential benefits of automation.

KEYWORDS: Library Automation, Information Communication Technology (ICT), Science and technology libraries, Northern India.

INTRODUCTION

Information Technology (IT) is regarded as the most noteworthy revolution that humanity has witnessed since the industrial revolution and the development of movable-type printing techniques. The extent of use, speed of access, and skillful application of IT systems determines a country's development. The use of information technology has become a barometer of a country's development and technological advancement. The countries which do not make or update themselves in field of information technology are at risk of losing their global competitiveness.

Electronic equipment business, e-commerce, e-marketing, e-governance, telemedicine, wired money, virtual universities platforms, and digital libraries are currently in trend. The way that scientific, technical, and commercial

information is transferred and accessed has undergone a fundamental change, consequently, communication channels like the World Wide Web, Internet, and Intranet are connecting people and collecting information. There is a vast amount of recorded knowledge and information available today in print and electronic formats. McGown (2000) forecasted that many resources would soon only be accessible online. Due to the use of expert systems, virtual collections, interactive web interfaces, virtual reference services, and personal web portals, libraries around the world have undergone a important change.

Despite IT's tremendous capabilities and falling costs of hardware, software, and telecommunications, the majority of the north Indian libraries have lagged in their adoption and updation in comparison to similar institutions in the developed world. This research unveils the challenges and opportunities of information technology in science and technology libraries in Northern India. It does not discuss only the common issues, also identifies emerging challenges. It makes recommendations to address technological challenges.

REVIEW OF LITERATURE

Lynch (2000) describes a major change in the usage of ICT libraries during the time period under study in which he characterized the moving towards the modernization achieved by automation of library routines, by advancement accomplished by experimenting with new technologies (such as access to electronic information services for end-users) to the transition embodied by digitization. Moorthy (2004) highlights the advancement of library automation software in India, highlighting the activities of the Indian National Science Documentation Center (INSDOC) since 1964 as one of the leading institutions in the field of library automation.

Gopal Krishan (2005) discusses that libraries have often pursued technological aids to promote and improve basic services for users. Bavakutty, Salih & Haneefa (2006) emphasize that modern libraries have become increasingly aware of the transformative effect of advances in information and communication technology (ICT) on their main activities. ICT technology enables the delivery of correct, timely and comprehensive information to the user.

Uwaifo (2007) examined the effect of age and computer use as determinants of librarians 'attitudes toward automation in the Nigerian context. Sharma (2007) found that Technology for library automation has improved the academic libraries in Nepal over the last few decades and signals more changes. Singh (2008) emphasized that library automation is the use of automatic and semi-automatic data processing devices to carry out conventional library tasks such as collection, cataloging, circulation etc. Breeding (2009) stated that because libraries are being transformed and current ILS cannot fulfill future requirements such as e-content, Electronic Resource Management (ERM), etc. Pandey (2010) stated that academic libraries must be prepared to meet the demand of users with fast and efficient services.

Iyenger (2011) claimed that digital libraries will be among the most significant and powerful institutions of this century, with their flexibility, accessibility, and economy based on all-digital collections. Mathew (2011) analyzes the impact of ICT developments in libraries. Kemdarne (2012) studies on library automation and networking in Rajiv Gandhi University of Health Sciences, Bangalore affiliated Dental College Libraries.Onoriode (2012) reveals the importance of automation to the creation of acquisitions and collections in academic libraries. Vijaya Kumar (2012) claims that for libraries, the way the librarian acquires, collects, stores and offers information to users is

evolving. Prasad (2012) clarifies that a digital library is a type of information retrieval system in which collections are stored in digital formats that computers access. Khare (2013) focused on automation in the libraries of Indian Institutes of Technology.

Thus, on the basis of above-mentioned review of literature, it is possible to conclude that little work has been done in the case of Science and Technology Libraries, particularly in Northern India. Thus, the study will be useful in depicting the real picture of the said libraries in northern India discussing the problem and prospects of using IT in the reference area.

RESEARCH METHODOLOGY

The study, empirical in nature, has carried out to know the problems and prospects of library automation in the Science and technology libraries in Northern India (Haryana, Punjab, Chandigarh and Delhi). The present study has been completed through structured questionnaire and observation method. The samples of 105 Science and Technology Libraries have been categorized in five groups in Table 1.

DATA ANALYSIS

This paper is an endeavor to analyze to find out the problems and prospects of information technology of Science and Technology Libraries in Northern India (viz. Haryana, Punjab, Delhi and Chandigarh). The analysis presented in the following tables is based on the response/feedback, provided by the librarians to the questionnaire designed and distributed for the said purpose. To achieve more meaningful and realistic results, the sample data has been segregated and analyzed from different angles as presented in the following Tables.

Table1. Subject wise Distribution of Libraries

Sr. No.	Subject	No. of Libraries	Percentage
1	General Sciences	8	7.62
2	Agriculture Sciences	6	5.71
3	Medical and Allied Areas	15	14.29
4	Engineering Areas	71	67.62
5	Defence Sciences	5	4.76
	Total	105	100

The Engineering Areas Libraries Group is at the top of the tally with i.e. 71 (67.62%) libraries, followed by 15 (14.29%) libraries from Medical and Allied Areas Group covering Dental Sciences, Nursing, Physiotherapy etc. categorized in the same cluster due to their small number. The table further reveals that numbers of libraries in the General Science, Agriculture Science and Defence Science groups are comparatively less which are 8 (7.62%), 6 (5.71%) and 5 (4.76%) respectively.

Table:2 : F-Ratio for Problems and Constraints in Implementation of Information Technology (A State Wise Comparison)

Sr. No.	Pre–Automation Problems	Punjab		Haryana		Delhi		Chandigarh		*f*-test
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	
1	Paucity of funds for initiating IT	2.94	1.26	2.47	1.50	2.48	1.58	2.75	1.79	0.72
2	Lack of well accepted standard software package	2.35	1.08	2.79	1.54	2.08	1.13	1.50	0.87	2.22
3	Non availability of IT trained library professionals	2.94	1.30	2.63	1.31	2.32	1.29	1.75	1.30	2.98*
4	Lack of policy guidelines	2.65	1.23	2.45	1.25	2.40	1.23	3.25	1.79	1.00
5	Unawareness of potential benefits of IT	2.35	1.28	1.96	1.32	1.76	1.14	3.00	2.00	2.24
6	Inadequate management/administrative support	3.18	1.25	2.79	1.52	3.16	1.41	2.00	1.00	1.87
7	Non availability of consultancy services	2.53	1.14	2.16	1.41	2.12	1.42	2.50	1.12	0.69
8	Hesitation/lack of attitude of existing staff towards learning computer	2.71	1.36	2.34	1.49	2.24	1.42	2.00	1.73	0.79
9	Computer is difficult to use as many feel	1.88	0.96	2.03	1.18	1.96	1.37	1.75	1.30	0.16
10	Fear of loosing employment among staff	1.71	1.18	1.68	1.13	1.44	1.02	1.00	0.00	1.15
11	Overall environment is not compatible to adopt IT	3.18	1.50	2.45	1.48	2.36	1.41	1.50	0.87	3.63*

Note: All the figures, except in *f*-test column, are Mean Standard Deviation values

* Value is significant at 5% level of significance.

Table 3 gives f-ratio for different mean evaluation scores of pre-automation problems in the sample libraries. It can be inferred on the basis of the results of f-ratio 2.98, which is considered significant at 5% level of significance that 'Non-Availability of IT trained library professionals' emerge as a potent constraint in the implementation of IT. The further comparative analysis of the table, shows that this constraint is found stronger in Punjab due to its higher mean value of 2.94 than other states covered in the study. Another significant constraint is the 'Overall environment not compatible for adopting IT'. Its further analysis brings out that Punjab is more strongly handicapped by this problem than other states due to its higher mean value 3.18. The staff in Punjab libraries needs to be imparted technical training to surmount this problem and facilitate the implementation of IT expeditiously. Considering the higher mean value of the two other constraints i.e. 'Inadequate management Support' in Punjab (3.18) and in Delhi (3.16) and 'Paucity of funds for the initiating IT' in Punjab 2.94 and in Chandigarh 2.75, the impediments caused by these constraints can't be dismissed lightly, though the criterion of f-ratio may not be treated as significant.

Table: 4: F-Ratio for Problems and Constraints in Implementation of Information Technology (A State Wise Comparison)

Sr. No.	Post-Automation Problems	Punjab		Haryana		Delhi		Chandigarh		ƒ-test
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	
1	Your clientele fail to accept automation activities in the library	2.94	1.35	2.82	1.35	2.76	1.36	2.00	1.73	0.97
2	Lack of funds does not allow to continue or improve the IT activities	3.29	1.02	2.21	1.20	2.52	1.36	2.50	1.66	4.71*
3	Lack of proper coordination and the library networking to avail full benefit of IT	2.94	1.30	2.11	1.35	2.72	1.22	2.25	0.83	2.80*
4	The hardware available is not compatible in consonance with the requirement of the library	2.88	1.02	2.61	1.48	2.28	1.48	1.50	0.87	2.71*
5	The software options are not user friendly	2.65	1.41	2.32	1.43	2.24	1.30	2.25	1.64	0.51
6	Lack of awareness among the users about IT	2.47	1.04	2.16	1.42	2.20	1.47	2.00	1.73	0.45
7	Computerization was not up to expectation of users	2.18	1.15	2.24	1.44	2.44	1.33	1.00	0.00	2.59
8	Organization does not send the existing staff for training	2.12	1.08	1.50	0.88	2.36	1.52	2.50	1.50	3.53*
9	Lack of attitude of authority	2.94	1.47	2.47	1.48	2.64	1.32	2.00	0.71	1.21
10	Library staff not willing to go for training	2.71	1.56	2.42	1.50	2.08	1.23	1.50	0.87	1.92

Note: All the figures, except in ƒ-test column, are mean Standard Deviation values.

* Value is significant at 5% level of significance.

Table 5 shows the f-ratio for different means evaluation scores of Post – Automation problems faced by the libraries of different states. It can be inferred from the table that F – ratio 3.53, 4.71, 2.80 and 2.71 are found significant in relation to 'Organization does not send the existing staff for training', 'lack of funds do not allow continuing or improving the IT activities', 'Lack of proper coordination' and 'the library networking to avail full benefit of IT' and 'The hardware available not compatible in consonance with the requirement of the library'. On the other hand, 'the poor appreciation and response of the clientele', 'paucity of fund', 'lack of proper co-ordination in library networking' and 'the poor quality of available hardware' are creating major snags and hurdles in the speedy automation of libraries to the desired and required extent.

The varying mean values of different elements in the studies also point out to the diverse intensity of various constraints in the way of the rapid automation of libraries in different states.

This further means that there exists significant difference between the mean evaluation score for different elements. The mean score of Chandigarh is greater (M.S 2.50) for 'Organization does not send the existing staff for training' and 'Lack of funds' does not allow continuing or improving the IT activities. The mean score of Delhi (M.S. 2.52) is higher for the element 'Lack of funds does not allow continuing or improving the IT activities'.

Table 6 F-Ratio for Prospects of Automation of Libraries of Different States

Sr. No.	Prospects of Automation	Punjab		Haryana		Delhi		Chandigarh		*f*-test
		Mean	SD	Mean	SD	Mean	SD	Mean	SD	
1	Helps in optimum use of library materials	4.41	0.77	4.16	1.18	4.68	0.73	4.75	0.43	1.97
2	Helps in extending the library activities / services.	4.00	0.59	4.05	1.19	4.44	0.75	4.75	0.43	2.48
3	Helps in effective sharing of library resources at the right time.	4.00	1.08	3.76	1.27	4.36	0.79	4.50	0.87	1.98
4	Helps to manage economy / cost effectiveness in expenditure.	3.88	0.83	3.74	1.19	4.40	0.89	4.00	1.22	2.15
5	Helps in saving the valuable space in library.	4.18	0.78	4.24	0.93	4.48	0.64	3.50	1.12	2.69
6	Helps in increasing the work efficiency of the Library staff.	4.18	0.78	4.08	1.31	4.56	0.70	4.50	0.50	1.41
7	Helps to face the staff shortage problem.	3.88	0.96	3.50	1.43	4.24	0.81	4.75	0.43	3.91*
8	Helps in minimizing the retrieval time.	3.94	0.80	4.39	1.14	4.60	0.75	4.75	0.43	3.32*
9	Helps in increasing the inflow of the users in the library.	3.82	0.92	3.68	1.30	4.36	0.84	5.00	0.00	4.88*
10	Helps in enhancing the prestige and status of library.	3.71	1.13	4.00	1.24	3.84	1.29	5.00	0.00	2.66

Note: All the figures, except in *f*-test column, are mean Standard Deviation values.

* Value is significant at 5% level of significance.

Automation of libraries helps to overcome the acute problem of staff shortage; it has been considerably proven a very effective time saving device for staff and users. A number of library users will escalate and over all image and prestige of the libraries will receive a tremendous improvement. These benefits considered significant by the respondents could be cognitively viewed as powerful reasons to go in for automation of libraries. The higher mean value in Chandigarh in relation to "helps in increasing the inflow of users in the libraries" and "helps in enhancing

the prestige and status of library" suggests that people of Chandigarh realize the value of these two major benefits of automation more intensity.

The table reveals that f-ratios 3.91, 3,32, 4.88 and 2.66 are significant for elements "help to face the staff shortage problem", "helps in minimizing the retrieval time", "helps in increasing the inflow of the users in the library" and "helps in enhancing the prestige and status of library" respectively. The mean score of libraries of Chandigarh is higher than other states i.e 5.00 for each "helps in increasing the inflow of the users in the library" and "helps in enhancing the prestige and status of library", whereas means for Delhi, Haryana, Punjab states libraries are 4.36 and 3.84, 3.68 and 4.00, 3.82 and 3.71 respectively. It means that Science and Technology libraries in Chandigarh are better familiar with the prospects of automation and thus trying to achieve full automation at the earliest.

CONCLUSION

Automation of libraries helps in overcoming the acute problem of staff shortage and significantly proves to be a very effective time saving device for staff and users. It increases the number of library users and the overall image and prestige of the libraries improves. According to the study's findings, the majority of libraries are associated with engineering colleges in Punjab faces more constraints than other states during the pre-automation phase. Staff in Punjab libraries must obtain technical training in order to overcome this issue and expedite IT implementation. To resolve this issue and accelerate the adoption of IT, it is essential to impart technical training to the library staff in Punjab. The varying means of the different elements in the studies also highlight the different severity of the various restrictions standing in the way of the quick automation of libraries in the said states in Northern India. Chandigarh's science and technology libraries are more aware of the potential benefits of automation which are working toward complete automation as soon as possible.

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