

Full Length Research Paper

Strengthening information technology in Pakistani libraries

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Advances in computer technology combined with communication technologies have exerted unprecedented pressures for change on libraries. This study investigated the measures to be taken for strengthening information technology in Pakistani libraries. The critical issue identified provides closer insight into the issues affecting overall implementation of IT. This study found out that condition of IT implementation in Pakistani libraries is very pathetic. It highlights the status of existing information technology facilities in Pakistani libraries. It highlights the barriers in the way of IT implementation e.g. scarcity of funds, low level of IT education in library schools, shortage of expertise, obsolete syllabi of library schools, no arrangement for continuing education, lack of planning in IT implementation projects. There seems to be a direct correlation between the IT education in library schools and level of IT implementation in libraries. There is a widening chasm between LIS education in developing countries and those in developed countries. In the light of research questions data were analyzed and elaborated. On the basis of findings, recommendations were given.

Key words: IT education, IT implementation Pakistani libraries

INFORMATION TECHNOLOGY IN PAKISTANI LIBRARIES

The library environment is currently undergoing a rapid and dynamic change. Today, library means not only a storehouse of books and documents but also a service institution. There is an increasing demand for processing of data and retrieval of information in the quickest possible time. Libraries are in a business of information with their various functions such as acquisition, processing, storage, retrieval and dissemination. This is the age of information explosion. The traditional tools and techniques are inadequate and slow to harness the flooding information. Therefore, it is inevitable to take help from science and technology for collecting, storing and disseminating information to cater to the increasingly sophisticated needs of information seekers. The modern system of information technology helps a fast flow of

information stored or generated at any place if connected through any networking system. This can speed up the decision, the research or educational activity with more factual, latest and comprehensive coverage of information available world over.

According to the Webster's new encyclopedia (1992), information technology is the collective term for the various technologies involved in the processing and transmission of information. They include computing, telecommunication and microelectronics, whereas information technology is a development of information sources handled by computers and communicated by electronic channels, databases can thus be accessed by telephone and television links, and computer output can be transmitted in an electronic format directly to a remote

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receiver.

Rowley (1998) opines that Information technology means the collection, storage, processing, dissemination and use of information. It is not confined to hardware and software, but acknowledges the importance of man and goals he sets for employed in making the choices, the assessment criterion used to decide whether he is controlling and being enriched by it.

Libraries and librarians have often adopted the major information technologies of their age in order to provide information to their patrons. The librarians of Assyria adopted the medium of the mud brick and filled their libraries with thousands of clay tablets to provide a written record of the laws, deeds, and accounts of their rulers. The Egyptians used paper made from papyrus to store their documents. Later, the library at the Ancient Greek city of Paragon adopted the use of parchment as the medium for storage. In late antiquity, the parchment scroll gave way to the codex or book. Paper made from wood gradually replaced parchment, although the form of the book remained relatively unchanged. Although the book continues to be one of the main methods of storing information, computers, beginning with large time-shared machines in the late 1950s and continuing with the small, powerful personal computers of today, have taken over many, if not most, of the information storage and other functions of the library (Morgan, 1999).

Information technology emerged after the convergence of data processing techniques and telecommunications, the former providing the capability for processing and storing information; the later serving as a vehicle for communicating it. The application of computers and communication technology has provided one of the best innovations in the history of libraries, and changed their role from 'holding to access' (Wilkins, 1995).

Abbas and Charles (2003) remarked that,

Technology is a second aspect of the external environment that affects the organization in its strategic management process. In the past two decades, technology has changed drastically. Although technology is commonly interpreted as applying to automation, it has a broader meaning and is defined as the systematic application of scientific knowledge to practical purposes, including new ideas, inventions, techniques, and/or materials. The broader concept of technology could include a new method of planting trees. Since most industries' competitive advantages are predicated upon some type of advanced technology that changes rapidly, many industries are highly dynamic, e.g., electronics.

The short history of computer IT development can be divided into three eras: the mainframe era from the 1950s to the 1970s, the microcomputer era from the 1980s to the early 1990s, and the Internet era from the 1990s to the present. The mainframe era is characterized by centralized computing, where all computing needs were serviced by powerful computers at the computer center.

The proliferation of microcomputers led to decentralized computing. Computing resources become readily accessible to more users. This is a period that witnessed improved user performance and decision-making quality. When computer networks became pervasive in the Internet era, decentralized computing evolved to distributed computing, where computing resources are located in multiple sites, as in decentralized systems; but all of the computing resources are connected through computer networks. People in the Internet era are far more empowered than in previous eras, because they have access to not only technology tools as before, but also to shared knowledge from others.

In 1968, computers were first used in Pakistan Scientific and Technological Information Center (PASTIC). PASTIC helped to produce the country's first Union Catalogue of Scientific Periodicals, and profiles of 100 scientists. In 1990s, Netherlands Library Development Project (NLDP) for Pakistan was started which influenced the library scenario significantly. Ramzan (2002) said that establishment of libraries in institutions like Ghulam Ishaq Khan Institute (GIK) of Engineering Sciences and Technology, Dr. A.Q. Khan Research Laboratories, The Aga Khan University, Lahore University of Management Sciences, Hamdard university, FAST-National University of Computer and Emerging Sciences, National University of Sciences and Technology, and other institutes have accelerated the pace of IT application in their libraries. The reasons for this advancement could be their user levels, highly qualified faculty, students, and competent library staff.

The Netherlands Library Development Project (NLDP) for Pakistan, which was started during the 1990s, influenced the library scenario significantly, a fact which is well acknowledged by library professionals. They worked very closely with Pakistan Library Association and contributed in introducing information technology, in the development of human resource management, hardware provision, software development, information networking, and curriculum development. They helped in accelerating the overall IT environment and created awareness amongst librarians, and removed their hesitation. In addition, they provided a platform for further activities (Mahmood, 1998a, b). Shafique and Mahmood (2010) described the present scenario of information technology development in libraries and said that "The basic hurdle in the proper use of available information systems and networks is that existing information systems are not robust and well planned, as a result unable to facilitate the actual users in realistic planning and decision making" (p.15).

Haq and Ahmed (2012) said that,

No doubt, Pakistan is advancing but the present scenario manifests gloomy picture in this regard and Pakistan ranked 98th out of 134 countries. This is indicative of a weak information and communication technology base. In order to improve its network connectedness, Pakistan

Table 1. Types of libraries participated in the survey.

Rank	Type	Frequency	Percent
1	University	24	31.20
2	College	6	7.80
3	Public	7	9.10
4	Special	35	45.40
5	Others	5	6.50
Total		77	100.00

should invest more in ICT infrastructure, related services and more broadly, innovation. ICT has encouraged transparency in government processes and improved countries' efficiency and services to citizens (<http://unllib.unl.edu/LPP/haq-ahmad.htm>).

Statement of the problem

Keeping in view the previous discussion, it seems desirable that information technology facilities in Pakistani libraries should be surveyed, problems of libraries in using information technology should be found out and measures to be taken to strengthen the information technology facilities in Pakistani libraries should be suggested.

Objectives of the study

The objectives of this study are to:

1. Assess the existing information technology facilities provided in Pakistani libraries;
2. Search out the barriers in the way of modernization of IT facilities existing in Pakistani libraries;
3. Find out the measures to be taken and give recommendations for strengthening IT facilities in Pakistani libraries.

METHODOLOGY

This study was designed to unveil the existing information technology facilities in Pakistani libraries. Attempts made by librarians to implement information technology facilities in Pakistani libraries were analyzed. Barriers in the way of IT implementations were found out. A combination of quantitative and qualitative methodology was used to increase the validity rate. This study was conducted in three phases. In the first phase of research, a comprehensive review of literature was carried out. That helped to understand previous studies and formulate new questions. In the second phase, on the basis of literature review's findings, instrument for data collection were developed. The researcher collected the primary data through library survey and interviews of library science experts. A random sample of 100 libraries was selected for questionnaire survey. Having at least one computer in the library was included in the sample. To apprehend the real situation,

questionnaires were filled up by the professional librarians. Likert scale is "a summative scale based on responses to a set of statements for which respondents are asked to their degree of agreement or disagreement" (Portney and Watkins, 1993, p.686). Likert scale of five options was used for taking the concern of respondents:

1. Strongly disagree (SDA)
2. Disagree (DA)
3. Undecided (UD)
4. Agree (A)
5. Strongly Agree (SA)

Seventy seven questionnaires were analyzed. Response rate was given in the following Table 1.

Qualitative data regarding strengthening of existing information technology facilities in Pakistan's libraries were collected by interviewing library experts. With the consultancy of senior professional colleagues, a list of library leaders/experts was prepared. Interview time was taken from the interviewees resided in the cities of Pakistan (Lahore, Islamabad/Rawalpindi and Faisalabad) through phone calls. On the basis of literature review and with the help of some senior professionals, an unstructured questionnaire for interviews was developed. It was sent to the interviewees on their request. An interview schedule was prepared. The researcher visited respondents at their offices or homes according to the schedule of visit, and interviewed them with the help of an audio tape recorder. Eighteen Interviewees were interviewed. Eight research questions were developed.

1. What is the status of information technology in Pakistani libraries?
2. Are funds available for the development of information technology in libraries?
3. Do library schools impart proper education to their students?
4. Are library school's syllabi updated to cope with the frequent changes in technology?
5. Is there any regular arrangement for the continuing education of professionals?
6. What methods and measures should be taken for successful development of information technology in libraries?

FINDINGS RELATING TO THE RESEARCH QUESTIONS

Efforts were made to answer eight research questions set out for this study. Major findings regarding these questions are summarized below.

What is the status of information technology in Pakistani libraries?

The condition of IT implementation in Pakistani libraries is very pathetic. This study revealed that 39% did not have internet access, while 59% did not have intranet and 25% of the libraries were using purchased software. In purchased software, 9% were using LAMP which is outdated now. Others were working manually or using donated or in house developed software which does not keep standards. This reflects a rather discouraging position with regard to the availability and usage of even the most common IT tool.

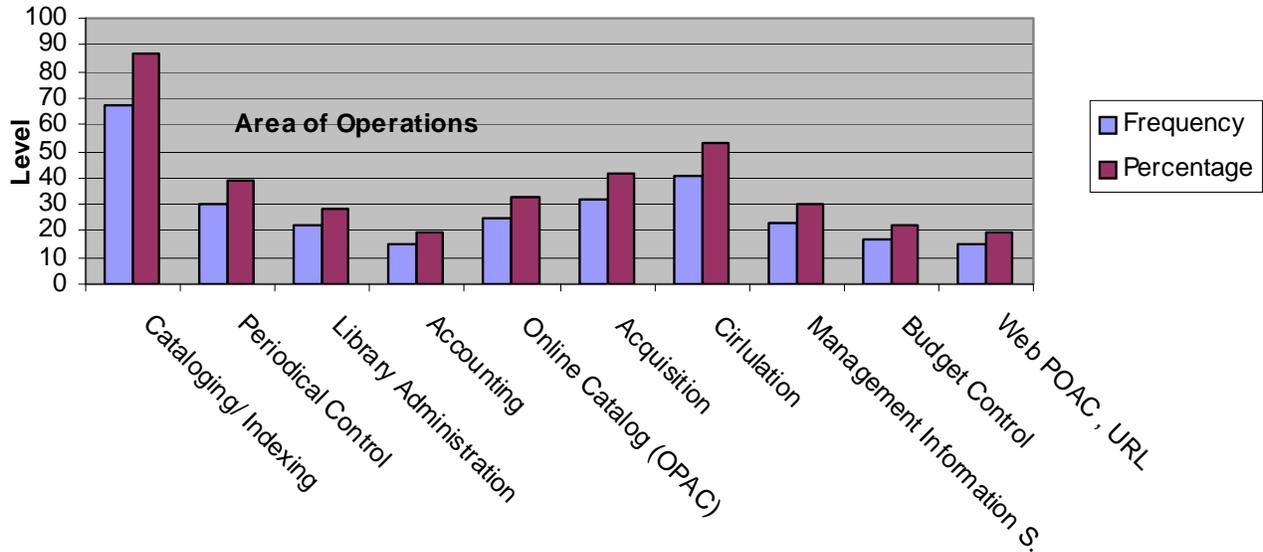


Figure 1. View of computerisation of libraries operation

The position with relatively more sophisticated IT application was even more discouraging. With respect to hardware, key tools such as CD Writers, projector and printer etc. were available only in a very small number of cases. For example, 77% of the respondent did not have microfilm reader, 79% did not have microfiche reader, 75% did not have barcode reader, 64% did not have Multimedia projector, 43% did not have CD Writer, 85% did not have DVD drive, 64% did not have fax machine. Even a sizeable number of respondents, 35% were without photocopying facility.

In case of software, only 25% of the libraries purchased library software. Among them, a very small number were according to the international standards. 38% were using donated softwares which have their own draw backs and limitation. 19.50% used in house developed software. Standards were not maintained in their development.

A glance at computerization of libraries operations shows that 87% of cataloguing/indexing of libraries is computerized (Mahmood, 1999), while 39% periodical control, 29% of library administration, 15% accounting, 33% online catalogue, 42% acquisition, 53% circulation, 30% management information system and 22% budget control were computerized which is not very hopeful (Figure 1).

As library services were analyzed, by using internet only 8% provide reference services through voice chat, 21% has web OPAC, 38% provide SDI (Figure 2) (selective dissemination of information) through internet, 58% provide CAS (current awareness services).

A large majority of the interviewees perceived the poor status of information technology implementation in Pakistani libraries. In the eyes of the interviewees, IT implementation in Pakistani libraries has been started but

it has no comparison with developed countries. We are much behind. One of the respondents mentioned that we are at least one hundred years behind the developed countries in every field of life. Some of the respondents disclosed that standards are not maintained in information technology projects' implementation. Some of the interviewees professed that the minimum level of information technology is being used in libraries of Government sector. Most of them were of the opinion that condition is very pathetic. Some confessed that condition in private sector is comparatively better than government. Respondents divided the IT implementation case into two sections: private and government sector. In the opinion of the experts of librarianship, updating of libraries with the frequent changes of technology is the marketing requirement of private sector. They want to market their products, their departments and even their strategy. They give IT base education; therefore they are well aware of the importance of information technology and want its implementation. There is hardly such a library in private sector which is using card catalog. Most of them are using OPAC. Government universities are improving in this regard. With the help of HEC some universities are taking individual initiatives.

Are funds available for the development of information technology in libraries?

A majority (66.30%) of respondents agreed that expenditure for IT maintenance and supplies is very high as compared to printed resources, fifty three (68.90%) of the respondents mentioned that special staff training budget is not provided, fifty six (72.80%) of the respondents agreed with the statement that cost of IT tools is very

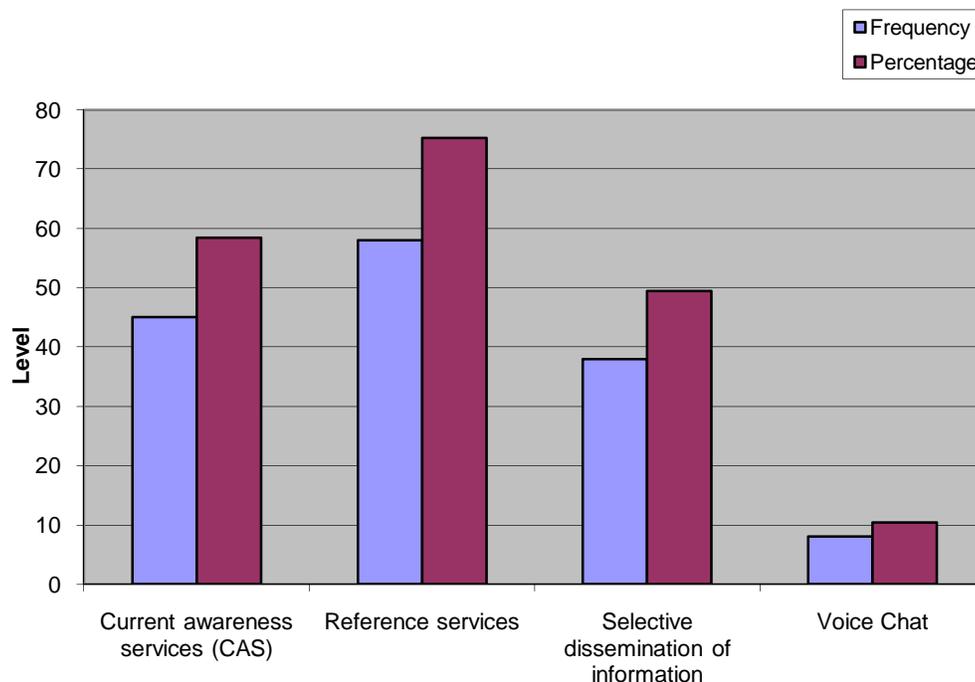


Figure 2. Provision of certain facilities through internet.

high. The majority, (66.30%) of the respondents gave their opinion in favor of the absence of special IT maintenance budget (Table 2).

Eleven interviewees said that fund is not a problem. Most of them mentioned that if librarian is competent and he is fully aware of the changes in information technology and can present his requirement in the effective ways, he can get funds. Some of the respondents stated that IT implementation is the priority of this government but not the IT implementation in libraries. Some of them were of the opinion that libraries have not been on the priority of the government. Policy makers in this country do not know the importance of libraries in social and economic development. Some of them stated that education is the last priority of the Government and in education libraries stands on the last which is the most common reason for poor funding. Some of them informed that government is not aware of IT benefits in libraries; they consider it a luxury. The respondents gave reason that our professional associations and our parent department are weak: 'We don't have forums to convey our problems or requirements. If we get such forums, funds will be no more problem for us'.

Some of the interviewees explained that funds in public universities are not a problem. Some suggested that librarian should first improve his services and generate the requirement. Librarian must first create will and then should strive for the way. Some of the respondents expressed with sorrow that Government sector is suffering with the scarcity of funds. Some professed that funds are available but are not used for library purposes.

They said that mostly the budget allocated for library is used in some other areas. One of the respondents expressed with sorrow that donor agencies who work for the development of developing countries do not work for the development of libraries, neglecting this fact that libraries can play an important role in indirect education.

Do library schools impart proper education to their students?

A large majority of interviewees perceived that library schools are not providing proper information technology education to their students. One of the contestants scholarly said, 'Information technology is the marriage of information and technology'. There will be no progress until information and technology remains separate. Library schools have to take a policy decision. Presently they are trying to make librarians computer literate. The education which they are imparting is basically user end awareness. They can be aware and intelligent user of the computer but they cannot exploit the features of the computer.

Another respondent expressed his views that library schools gave very cold response toward IT. They can play a key role in the promotion of IT education. However, it is a paradigm shift and they did not change themselves with changing trends. This paradigm has been shifted from information management to knowledge management but still does not understand information management.

Table 2. Insufficient funds.

Insufficient funds	Mean	SA	A	UD	DA	SDA
		F/%	F/%	F/%	F/%	F/%
Cost of IT tools is very high	3.70	18 (23.40%)	38 (49.40%)	04 (05.20%)	14 (18.20%)	03 (03.90%)
Expenditure for IT maintenance and supplies is very high as compared to printed resources.	4.01	15 (19.50%)	36 (46.80%)	03 (03.90%)	18 (23.40%)	05 (06.50%)
IT has bad effects on regular budgeting provision	2.64	06 (07.80%)	14 (18.20%)	09 (11.70%)	42 (54.50%)	06 (07.80%)
Special IT maintenance budget is not provided.	3.69	20 (26.00%)	31 (40.30%)	08 (10.40%)	18 (23.40%)	---
Special staff training budget is not provided.	3.79	25 (32.50%)	28 (36.40%)	09 (11.70%)	13 (16.90%)	02 (02.60%)

Table 3. Library school's syllabi.

Library school's syllabi	Mean	SA	A	UD	DA	SDA
		F/%	F/%	F/%	F/%	F/%
Syllabi of Pakistani library schools are obsolete and not updated with the frequent changes in Technology.	4.27	37 (48.10%)	30 (39.00%)	04 (05.20%)	06 (07.80%)	

Table 4. Faculty in library schools.

Faculty in library schools	Mean	SA	A	UD	DA	SDA
		F/%	F/%	F/%	F/%	F/%
There is shortage of basic computer competency in library staff.	3.68	19 (24.70%)	36 (46.80%)	03 (03.90%)	16 (20.80%)	03 (03.90%)
Library schools in Pakistan lack expertise and facilities needed to teach students the latest technological developments.	4.47	43 (55.80%)	28 (36.40%)	05 (06.50%)	01 (01.30%)	

The majority (92.20%) of the interviewees agreed with the statement that Pakistani library schools lack expertise and facilities needed to teach students the latest technological developments (Table 4). A significant number (71.50%) of the respondents agreed that there is shortage of computer competency in library staff. The library leadership in Pakistan is of the opinion that lack of

expertise is the main reason of poor IT education in Pakistani library schools.

Is there any regular arrangement for the continuing education of professionals?

In response to the statement that there are no

training centers to facilitate continuing education for staff, thirty three (42.90%) respondents agreed with the statement, thirty (39.00%) strongly agreed, ten (13.00%) disagreed. Only one of the respondents strongly disagreed, while three (3.90%) remained undecided. The mean score, 4.05 indicates the high level of respondents' agreement with this problem.

Table 5. Continuing education.

Continuing education	Mean	SA	A	UD	DA	SDA
		F/%	F/%	F/%	F/%	F/%
There are no training centers to facilitate Continuing education for staff.	4.05	30 (39.00%)	33 (42.90%)	03 (03.90%)	10 (13.00%)	01 (01.30%)
Refresher courses for library staff are not Conducted on regular basis.	4.42	41 (53.00%)	31 (40.30%)	01 (01.30%)	04 (05.20%)	
No research literature is available on the use of IT in Pakistani libraries.	3.68	23 (29.90%)	29 (37.70%)	03 (03.90%)	21 (27.30%)	01 (01.30%)

Majority of the respondents agreed that there is shortage of computer competency in library staff, nineteen (24.70%) strongly agreed, thirty six (46.80%) agreed, sixteen (28.08%) disagreed, three (3.90%) strongly disagreed, while three (3.90%) remained undecided. The mean score shows overall agreement at 3.68 level.

Twenty three (29.90%) strongly agreed with the statement that no research literature is available on the use of IT in Pakistani libraries, twenty nine (37.70%) agreed, twenty one (27.30%) disagreed and three (3.90%) remained undecided. There is only one respondent who strongly disagreed with the statement. The mean score, 3.68 indicates the overall respondents' agreement with this problem.

A large majority of the interviewees stated that there is no arrangement for the continuing educating of librarians (Table 5). One of the respondents mentioned that libraries in educational institutions are set up only to get affiliation with the university. A professional librarian and fix number of books are the requirement of UGC. It is not bothered either the services are provided or not. Our minister of science and technology purchased the databases and distributed in the universities free of cost. But the community who will provide the services was not prepared for it. No training programs have been arranged researchers can get maximum benefits from these resources. One of the respondents criticized the librarians and said that you may blame the government but you never present any concrete proposal to her. It needs a team work, and sincere efforts and sincere leadership is scanting in this community.

One of the respondents professed that library courses and visits are offered. What happens? Non professionals are sent instead of librarians. Some of the respondents stated that refresher courses for library staff are not conducted on regular bases.

What methods and measures should be taken for successful development of information technology in libraries?

A large majority (98.00%) of the respondents strongly recommended that libraries budget should be increased

in order to acquire hardware, software and IT based collections. Majority (98.00%) of the respondents suggested that special IT maintenance budget should be provided for libraries. A significant number 70(90.90%) recommended that charging for IT facilities should be planned carefully as users are not used to pay for printed sources.

One of the respondents suggested that government should give funds or should make education a full fledged industry. He alleged that education is one of third largest industry in Germany. In this way the institutions in Government sector will manage every thing on their own. They will have to compete in the market and have to improve them with the latest technologies.

Some suggested that library should market its services. Subject of marketing must be introduced in Library Science syllabus. A term Philanthropy is used in NGOs nowadays. You gather the people and arrange seminars. You get some contribution from it, and then request some persons and institutions to renovate your library. You may give them marketing incentives and improve library services. However you have to strive for betterment. They recommended that library foundations like Punjab Library Foundation should be established in all provinces. Some of the interviewees appreciated the efforts of HEC and especially of Dr. Ata-Ur-Rehman and expressed their hopes for betterment. Now there is a ray of light which will lead us towards our destination. Majority (96.10%) of the respondents recommended that Government should support the research on IT facilities in Pakistani libraries.

Majority (96.10%) of the respondents suggested that librarians should be trained in marketing techniques to offer IT based services effectively. Seventy two (93.50%) respondents suggested that library schools should invite bright students by giving them incentives. Seventy five (97.40%) respondents strongly agreed with the statement that library schools should have the expertise and facilities to teach students the latest technological development. Most of the respondents recommended that practical aspect of the training should be given more importance. Computer labs should be opened for students' practice.

Seventy four (96.10%) respondents and eleven of the interviewees strongly recommended that syllabus should

be updated to cope with the frequent changes in technology. Few of the Library experts suggested that as library schools have started self finance, they must keep up the minimum standards of private sector, e.g. what are the trends and needs of the market, how we can improve our IT education which will practically be beneficial for students in the field. Some of them said that a blend of library and computer science is needed for creating expertise in this field. One of the interviewees suggested that 50% subject of library science and 50% subjects of information technology must be taught in library science departments.

Some interviewees recommended that library schools should have expertise to teach students latest technological developments. Teacher of library schools should be sent for fellowship and Government should support them for improving IT skills. Some of the interviewees recommended the provision of needed equipment to teach students about the latest technological developments. Some of the respondents stressed on the need to recruit bright students in library science departments. They suggested that aptitude test must be taken at the time of admission. Some of them showed their hopes about the IT implementation policy of HEC.

Data collected through survey and interviews revealed that majority of respondents strongly suggested that seminars/ workshops should be conducted at least once a year for discussing the latest technological developments in the field. Seventy three (94.80%) respondents strongly recommended that IT training programs should be arranged for new recruitment. A significant number i.e. Seventy four (96.10%) respondents agreed with the statement that IT training centres should be established to facilitate continuing education. Most of the interviewees suggested that library schools should play basic role in the training of librarians. Need oriented courses should be introduced. Some of the respondents expressed their views about the role of PLA (Pakistan Library Association). They said that PLA should play an active role and directory of librarians must be compiled.

One of the respondents said that HEC should make it compulsory for the institution to arrange for the continuing education of the librarians. Some of them recommended that government should arrange for it. While another said that the system of continuing education must be imbedded in the promotion setup.

Few of the respondents strongly stressed the need to separate and fully authorize national library and department of library science for the implementation of rules. Their heads must be dedicated. Another respondent said that Pakistan library Association must play an active role in the implementation of information technology and its head quarter should not be rotated. It should be made compulsory for the librarians to get the registration of Pakistan Library Association. Job structure of librarian must be improved. One of the respondents strongly recommended the establishment of a committee on

nation level. This committee will work for the development of IT in libraries. It will present the projects and gather the scattered ideas and efforts on one platform. Through this committee we can get the benefits of IT in the real sense. One of the respondents scholarly said that creation of nationalism is strongly needed in this society.

Conclusion

The condition of IT implementation in Pakistani libraries is very pathetic. It is not conceived in the real sense. Standards are not maintained in the implementation of IT projects. Situation in private sector is better than government sector. Public universities are improving in this regard.

There is a scarcity of funds in government sector. The reason for this dilemma is poor economy of Pakistan and policies of the government. In private sector funds are not a problem; if librarian is competent and he is fully aware of the latest technologies and can present his requirement in effective ways he can get funds. Librarians do not have forums to convey their problem and requirements; if they get such forums, funds will be no more problem for them. Funds in public universities are not a problem.

Library schools are not providing proper information technology education to their students. The education which they are imparting is basically user end awareness. They can be aware and intelligent user of the computer but they cannot exploit the features of the computer. Syllabi of Pakistani library schools are obsolete and not updated with the frequent changes in technology. Practical aspect of the training is very weak. Pakistani library schools lack expertise to teach students the latest technological developments.

There is no arrangement for the continuing education of library professionals. Refresher courses for staff are not conducted on regular bases. Recommendations are shaped on the basis of findings and conclusion, which will not only facilitate the library planners of the future in Pakistan but will also be equally beneficial for the libraries of other developing countries.

RECOMMENDATIONS

1. IT implementation in Pakistan libraries is still in the stage of infancy. It has no comparison with the developed countries. We are at least one hundred years behind. We should keep it in consideration and should not try to jump that level at once. Hard work and gradual efforts are needed to reach the destination. For getting maximum benefits, information technology in Pakistani
2. libraries must be conceived in the real sense. We must maintain standards in the implementation of IT projects.
3. Library budget should be increased in order to acquire

hardware, software and IT based collections.

4. Special IT maintenance and special staff training budget should be provided to libraries.

5. Library schools should invite bright students by offering them incentives.

6. Librarians should be trained in marketing techniques to offer IT based services effectively. Charging for IT facilities should be planned carefully. Gradually users should be convinced to pay for IT based services by using marketing techniques

7. Continuing education must be regarded as a normal practice in the profession

8. Our education system should be library oriented. The students must be given assignments and compelled to use the given resources in the library.

9. Integrate digital library concept in the curriculum of all disciplines of studies at least at graduation and post graduation level.

10. A committee on national level should be established who work for the IT in libraries. It will develop and present the projects for IT development, and will gather the scattered ideas and efforts on one platform to get the benefits of IT in the real sense.

11. The department of library science and national library must be separated and fully authorized to implement the rules. Their leadership must be sincere and dedicated which is scanting in this profession.

12. Librarian should be independent for funds and IT development plans. Status of librarian must be upgraded.

13. New rules and regulations must be devised to accommodate technology based materials and services.

14. Foundations like Punjab library foundation should be established in all provinces that work for the development of information technology in libraries.

15. Electronic document should be developed locally.

National information policy and National information infrastructure must be developed. Standards for information technology implementation in Pakistani libraries must be developed.

Conflict of Interests

The authors have not declared any conflict of interests.

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