Abstract: The main objectives of this study were to know the factors supporting librarians’ attitudes in the adoption of technology and the impact of IT on libraries and librarians’ working behaviours. The study was conducted in three phases. Firstly, relevant literature was reviewed and data collection tool was developed. The population of the study was professional library staff working in the university libraries of Lahore. The response rate was 76% due to serious efforts of the researcher. Secondly, gathered data were analyzed through SPSS Version 24.0 and conclusions were drawn. In the final phase, recommendations were drawn along with discussion. Findings of the study show that Information Technology has brought a positive impact in the libraries and the lives of library practitioners. IT has raised the standard of libraries and the image of library professionals. Computer literacy is very supportive in the successful application of information technologies in the libraries. Factor of personal interest is very fruitful for implementing emerging information technologies in the libraries. Sufficient budget and participation in IT-related training workshops prove very helpful in the successful application of information technologies in the libraries. Findings and recommendations of this study can be a helpful source for library practitioners, HEC Pakistan, policy makers and decision making bodies for increasing positivity in library professionals’ attitude towards the implementation of emerging technologies in the libraries.

Key Words: Factors Supporting IT Behavior, Impact of IT on libraries and librarians, University librarians-Pakistan
Introduction:

Information technologies provide new avenues for the faculty, researchers and students in the developed world to gather maximum data about almost all topics. They can communicate their thoughts in a creative style. They can perform work efficiently. They bring completion of their set goals without facing certain barriers. Information Technology has left a deep impact upon every walk of life as such e-marketing, e-governance, virtual universities and digital libraries have become buzzwords these days (Ramzan 2004).

IT has become the backbone of the libraries and prosperity of the libraries and information centers is not possible without its implementation. A huge change has happened in the libraries particularly university libraries of Pakistan during a decade due to emerging technologies. There is an urgent need of short term training programmes for library practitioners so that they can perform well in the field and meet the demands of their organizations without facing any possible barriers. Mahmood and Khan (2007) conducted a study related to required competencies for library practitioners in the age of Information and Communication Technologies (ICTs). Survey research method was adopted. Data collection instrument of the study was questionnaire. The findings of the study revealed that library practitioners were aware of the significance of Information Technology. They showed interest in IT based programmes. They preferred continuous learning programmes as their education differed from the real working environment of the libraries. Therefore, they developed required skills by attending trainings for professional growth. They were aware of the utility of Information Technology. They knew that the libraries could not survive without making a proper implementation of the emerging technologies.

There are different factors which determine library professionals’ acceptance and rejection behavior towards technology. Internal and external factors also play a vital role in deciding the acceptance attitude of librarians. If there is no pressure from others, then library practitioners feel inspired to utilize the latest technologies for the purpose of bring creativity in their works. Rabina and Walczyk (2007) investigated the attitude of information professionals towards Information Technology. Their study revealed that technology acceptance or rejection attitude took place due to different causes. The study concluded that internal organizational set up and external factors played a great role in shaping up attitudes of information professionals. If internal organizational environment will be friendly then library professionals would accept technological changes gladly however if organizational environment was consisted upon internal clashes then information professionals felt disappointment in adopting innovative technologies. It was also found that external elements also affected IT acceptance behaviors of library professionals. The study recommended a strong need to encourage the library practitioners to embrace new technologies for serving their users in an efficient style.

Library practitioners need to adopt versatile approach. They require continuous learning programmes. Traditional mind set up can prove fatal as dynamic changes are happening in the libraries and information
centers. There is a difference between theoretical studies and practical work-style. Rehman (2008) stated that library practitioners needed to clinch market-based market skills. They needed to take into account the needs of the market. They needed to get prepared keeping in view the needs of the field. They required practical skills related to their work. Merely, bookish knowledge couldn’t meet market needs. Field-based studies were highly crucial for the library practitioners. It was recommended that library schools should spread field-related studies to their graduates.

The factors of age and computer literacy are vital components for the technology acceptance behavior. In many cases, it is observed that males are more active in availing technology than women. If librarians are computer literate then they don’t feel hesitation in using technology. Cavas (2009) investigated the attitude of teachers towards Information and Communication Technologies (ICTs). The study concluded that the level of use differed by several factors including age factor, personal computer factor and computer literacy. The results revealed that science teachers had a positive attitude towards Information Technology. The teachers agreed that their students’ learning improved through Information Technology. Kim (2009) conducted a study related to technology acceptance behavior. He indicated that behavior of people towards IT was positive however they felt hesitation in availing new technologies. The study concluded that a strong mind set was required for the adoption of technology. It was concluded that people generally felt threats in using new technology as it would risk their jobs and they would have to start their routines with a new approach.

There is not a single factor that is responsible for librarians’ acceptance or rejection attitude. They are different factors that play a role in shaping up the minds of librarians towards technology. Abbasi (2013) conducted a study related to technology acceptance behaviors, theories and model. The study concluded that Technology Acceptance Model depicted certain features of human behaviors by which acceptance or rejection theories related to Information Technology could easily be understood. The results of the study also showed that several factors effected librarians’ behaviors to accept technologies. The study emphasized the need of motivation to the library practitioners for enriching the libraries with technology-based resources and services.

IT background is very essential for utilizing the latest tools of technology. Without technical expertise, maximum benefits of IT can’t be gained. Mansoureh (2014) conducted a study to investigate the factors for the adoption of Web 2.0 tools in the libraries of Iran. The findings of the study revealed that the most dominating factors were capability, job requirements and IT background. These factors played a good role in technology acceptance behaviors. It was recommended that Web 2.0 technologies should not be ignored as these brought multiple benefits to the library practitioners.

Past experience of using technology and internal environment of the organization are significant factors that play a great role towards technology-acceptance or rejection attitudes. Budget is also a leading
factor. If no sufficient funds are available then technology cannot be implemented and utilized. Majali (2015) investigated a study related to technology acceptance behavior. Quantitative research approach was utilized for this research. Data was collected through a structured questionnaire. The study concluded that technology acceptance behaviors were affected by age, gender, computer literacy, past experience of using computer and the internal environment of organization. The study recommended that a handsome amount should be provided to implement latest technologies in work places. The study also raised the need of appropriate training programmes for developing required skills related to Information Technology.

It is very essential to know the factors that support librarians’ positivity towards the implementation of emerging technologies in the libraries. Without investigating effective factors for IT implementation, libraries can’t be prospered and the standard of librarians can’t be improved.

**Objectives of the Study:**

The objectives of the study are as following:

1. To determine the factors affecting the attitudes of university librarians in the adoption of technology
2. To reveal the impact of IT upon libraries and librarians’ working

**Literature Review:**

There are certain factors that play a great role in changing library practitioners’ minds. Attitudes are not constant. These keep on changing with the passage of time. Human behavior is very complex. This does not remain permanent. Changes take place in the librarians’ attitudes towards Information Technology due to certain factors. These factors may relate to gender, expertise, finance, training, support etc. Al-Qallaf (2006) conducted a study related to Librarians and technology. The study found that there was a significant difference in library professionals’ behaviors toward the usage of technology in the libraries of Kuwait. It was revealed that library practitioners working in private sector were utilizing technology in an efficient manner. Public sector librarians were not playing an active role in the implementation of technology. There lacked in computer literacy. The study raised the need of financial aid and moral support to library professionals.

Clarity of concepts is also a major factor in technology-adoption. If library professionals have basic grip on the terms and concepts of different perspectives of IT then they can prove highly dynamic at their work-places. Kim (2006) stated that clarity of technical concepts was an important factor in the technology acceptance behavior of library practitioners. Web-based resources could easily be utilized with concepts-clarity. He recommended the need of short term training programmes for making an effective utilization of technology.
The top level administration of any organization is a major factor in the application of Information Technology. If competent authorities of an institute don’t take interest in the implementation of technology then effective usage of technology may not be possible. If administration takes keen interest in the application of technological tools, then library professionals are supported and encouraged to implement latest technology in the libraries. Hwang (2007) suggested that amicable relations between administration and library professionals could play a good role in the implementation and utilization of technology. He also suggested the need of friendly relations between computer experts and library professionals.

Without effective organizational support, technology can’t be utilized efficiently. The factor of institutional support is dominating in technology acceptance attitude. If an organization plans properly for technology-utilization then people may possibly turn to technology usage happily. Without a positive role of an organization, technology can’t be benefitted. Thatcher et al (2007) stated organization played a crucial role in the implementation and utilization of technology. The institutes will prosper with a proper attention towards the latest technology.

Librarians also know very well that up-gradation of libraries is not possible without getting familiarity with technology. IT has become an imperative element for the librarians. They can’t lead their libraries without accepting technology. Uwaifo (2007) stated that most of the library practitioners had a positive attitude towards Information Technology. They were willing to automate their libraries. They were fully aware that technology brought a great ease in working. Age factor and computer literacy were major factor in determining librarians’ attitude towards Information Technology. Adeyinka (2008) stated that educational qualification and technology skills were major forces behind the technology acceptance attitude of librarians. He revealed that IT background proved helpful in the creation of positive attitude of librarians to accept technology. He recommended the need of training programmes to positively change the attitudes of library practitioners.

Change in libraries is very much essential keeping in view the change in technology. If librarians don’t accept changes then they will be left far behind from the professionals of other fields. They will not be able to compete with computer professionals particularly. Mullins et al (2008) stated the idea of champions plays a useful role in technology acceptance attitude. Champions are such agents who are change-makers. They can play a positive role in shaping up attitudes of people. They can shift others’ attention to use technology efficiently. They are responsible for bringing innovation and creativity.

Computer literacy is a basic need of the present age. Librarians with computer literacy bring fruitful changes in their libraries. They bring innovation. They implement different technology passionately. Nov and Ye (2008) found that users’ competencies to use information technologies also played a significant role in technology acceptance behaviors of library professionals. If users are computer literate then they demand information through technology for the purpose of saving their precious time and effort. Library
professionals have to use technology keeping in view the changing needs of their users. So, users also play a good role in changing behaviors of library professionals towards Information Technology.

The designations of librarians also affect their attitude towards technology-acceptance. If librarians are working on high-seats then they also realize that promotion of the libraries is first priority. Aharony (2009) stated that the designation of library professionals also determined their attitude towards Information Technology. He described that library professionals working at high seats gave more priority to technology than the library professionals working at lower seats. Library managers had a positive attitude towards technology because they wanted to lead their organization and compete with other prominent institutes whereas library professionals working under their subordination were reluctant to change traditional mind set up.

Library professionals in Pakistan don’t have technical expertise of IT. They are not well aware of the concepts of technology. They can’t manage technologies single-handedly. They depend upon others for the purchase of technology-related equipment. Ramzan and Deljit (2010) investigated the factors that influenced the attitudes of library practitioners towards Information Technology. Survey research method was opted for this study. The study found out that librarians couldn’t handle technology effectively due to fears. They did not understand the terminology of Information Technology. The study recommended a need to technology awareness to get lead from computer professionals.

IT background is a very essential factor for utilizing the latest tools of technology. Without technical expertise, maximum benefits of IT can’t be gained. Mansoureh (2014) conducted a study to investigate the factors for the adoption of Web 2.0 tools in the libraries of Iran. The findings of the study revealed that the most dominating factors were capability, job requirements and IT background. These factors played a good role in technology acceptance behaviors. It was recommended that Web 2.0 technologies should not be ignored as these brought multiple benefits to the library practitioners.

Research Design:

The researcher adopted quantitative approach followed by survey research design to complete the study on the factors affecting the attitudes of librarians towards the implementation of IT. In the light of reviewed literature, tool of questionnaire was developed to collect data. A pilot study was conducted to ensure the reliability and validity of the questionnaire. Overall Cronbach Alpha was 0.82. Questionnaires are useful to get data about behaviors. The population was professional librarians working in the private and public sector universities/institutes of Lahore recognized by HEC Pakistan. The sample was based upon all the working librarians of the university libraries of Lahore. Librarians were selected as subjects because they play a prominent role in the application of Information Technologies. The researcher utilized census
sampling technique to gather data from the target population. The response rate was 76% due to serious efforts of the researcher. 91 respondents out of 120 submitted their responses.

Results and Discussion:

The following sections show data analysis, findings and discussion.

Respondents’ Gender:

A total of 91 library practitioners participated in this study. Acquired results show that majority of the participants were males who were 66 (72.5%) in number. Twenty five (27.5%) respondents were the females. Figure 1 shows the frequency distribution of respondents’ gender.

![Figure 1: Respondents’ Gender](image1)

Respondents’ Type of Institute

Respondents were asked to indicate their type of institute. The acquired results highlight that 43 (47.3%) respondents were from Private Sector Institute, 38 (41.8%) belonged to Public Sector Institute, and 10 (11%) were from Semi Government Institute. Figure 2 shows the frequency distribution of respondents’ type of institution.

![Figure 2: Respondents’ Type of Institution](image2)
Impact of Information Technology

The participants were asked to mention their opinion about the different statements related to impact of Information Technology upon libraries and librarians’ working. For this purpose, they were given different statements to tick, which revealed their perception about the Information Technology. Acquired responses are analyzed in this section. Descriptive statistics presented in the table 1 show that participants strongly agree that IT has a positive impact in their personal and professional lives. It has made their lives easy and comfortable. It has improved library services, enabled users to access accurate information, saves the time of users and library practitioners, searching and retrieval process has become easy, library practitioners have become more efficient in their jobs due to IT, professional status has been improved, libraries have become more prestigious and the benefits of IT are highly fruitful.

Table 1: Descriptive Statistics of Respondents’ Opinion about Information Technology

<table>
<thead>
<tr>
<th>Statements</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>IT has improved library services.</td>
<td>4.25</td>
<td>.754</td>
</tr>
<tr>
<td>IT enables users to access accurate information.</td>
<td>4.04</td>
<td>.744</td>
</tr>
<tr>
<td>IT has made resource sharing easy.</td>
<td>4.08</td>
<td>.718</td>
</tr>
<tr>
<td>IT saves the time of readers and librarians.</td>
<td>4.21</td>
<td>.768</td>
</tr>
<tr>
<td>IT makes librarians more efficient.</td>
<td>4.08</td>
<td>.778</td>
</tr>
<tr>
<td>Librarians’ professional status has been improved through IT.</td>
<td>4.04</td>
<td>.829</td>
</tr>
</tbody>
</table>

Note: 5=Strongly Agree, 4=Agree, 3= Neutral, 2=Disagree, 1=Strongly Disagree

Factors Supporting Towards IT Applications

The participants were asked to mention their opinion about the factors affecting towards IT applications. For knowing the value of these factors, the respondents were given different statements to rate. Acquired responses are analyzed in this section. The participants were asked to tick different options about the factors affecting towards IT applications on a ‘five point likert scale’ i.e. ‘Strongly Disagree’, ‘Disagree’, ‘Neutral’, ‘Agree’ and ‘Strongly Agree. Descriptive statistics presented in the table 2 show that participants agree that different individual, organizational and human factors provide support towards IT applications. Library practitioners possessing the traits of personal interests, computer literacy, leadership qualities, creativity, positive attitude and passion are more likely to be successful in the adoption of emerging information technologies in their libraries. The respondents are also of the opinion that support from the organization, budget allocation from the organization for IT tools, encouragement and incentives for implementing new technologies, sufficient IT resources, regular power supply and documented policies for the uplift of IT prove fruitful in the application of information technologies. The results have shown that human factors i.e. IT skilled staff, willingness of staff to adopt new technologies, cooperative
colleagues, project team competence, willingness to change, organizational heads’ interest towards IT and Chief Librarian’s interest towards IT provide support in the successful implementation of information technologies in the libraries.

Table 2: Descriptive Statistics of Factors Affecting towards IT Applications

<table>
<thead>
<tr>
<th>Factors Supporting IT</th>
<th>N</th>
<th>Mean</th>
<th>Std. Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computer Literacy</td>
<td>91</td>
<td>4.12</td>
<td>.758</td>
</tr>
<tr>
<td>Personal Interest</td>
<td>91</td>
<td>4.11</td>
<td>.849</td>
</tr>
<tr>
<td>Participation in IT-related training</td>
<td>91</td>
<td>3.95</td>
<td>.780</td>
</tr>
<tr>
<td>Leadership qualities</td>
<td>91</td>
<td>3.81</td>
<td>.868</td>
</tr>
<tr>
<td>Support from the organization</td>
<td>91</td>
<td>4.05</td>
<td>.765</td>
</tr>
<tr>
<td>Sufficient IT resources</td>
<td>91</td>
<td>4.02</td>
<td>.760</td>
</tr>
<tr>
<td>Regular power supply</td>
<td>91</td>
<td>3.95</td>
<td>.886</td>
</tr>
<tr>
<td>Documented policies for uplift of IT</td>
<td>91</td>
<td>3.87</td>
<td>.748</td>
</tr>
<tr>
<td>Willingness of staff to adopt new technologies</td>
<td>91</td>
<td>4.15</td>
<td>.714</td>
</tr>
<tr>
<td>Project team competence</td>
<td>91</td>
<td>4.02</td>
<td>.730</td>
</tr>
<tr>
<td>Chief Librarian’s interest towards IT</td>
<td>91</td>
<td>4.18</td>
<td>.797</td>
</tr>
</tbody>
</table>

Note: 5=Strongly Agree, 4=Agree, 3= Neutral, 2=Disagree, 1=Strongly Disagree

Conclusion:

Majority of the participants have agreed that IT has improved library services and raised their professional status and worth in the community. Without the implementation of IT in libraries, the future of librarianship is at risk. Computer literacy is an essential element for the effective utilization of information technologies in libraries. The study has shown that the factor of personal interest is the most dominating among all other factors for utilizing IT in libraries effectively and efficiently. Chief Librarian's interest towards IT matters a lot for gaining benefits from emerging technologies. Skills to provide web based services are highly required for library practitioners. From organizational factors, budget allocation is a leading factor to avail technology in libraries. Service attitude skill is a crucial element to avail the benefits of information technologies. From human factors, IT skilled staff is the most essential factor to implement IT in libraries. The study recommends that librarians should take personal interest for utilizing IT in libraries effectively and efficiently. Training opportunities should be provided for library professionals in the effective utilization of IT.
References: