2021

Core Competencies Required by University Librarians for the Adoption of Information Technology Tools: An Empirical Study

Khurram Shahzad
GC University, Lahore, knoor19april@yahoo.com

Core Competencies Required by University Librarians for the Adoption of Information Technology Tools: An Empirical Study

By:

Khurram Shahzad

Government College University Lahore, Pakistan (www.gcu.edu.pk)

E-mails: **khurramm@gcu.edu.pk**; knoor19april@yahoo.com

ORCID iD: **0000-0002-7562-9933**

Abstract:

Purpose: This study explores core competencies that are needed by library professionals for the implementation of Information Technology (IT) Tools in the university library of Lahore, Pakistan.

Methodology/Approach: A quantitative approach followed by survey research design was opted to complete the study on the competencies which are needed by library professionals for the implementation of Information Technology (IT) in the university library of Lahore, Pakistan. A total of 120 questionnaires were distributed among university librarians of Lahore. All questionnaires were sent through emails. 91 duly filled questionnaires were received by the researchers from the respondents. The response rate was 75.83%.

Research limitation (s): This study is limited to the university library of Lahore, Pakistan.

Key finding (s): Results of the study show that Librarians need IT skills for applying the latest technologies in their libraries. They need automation-related skills. They can't bring innovation to their libraries with a traditional mind setup. They need web-based expertise too. Library professionals need to become innovators. They require practical expertise for performing electronic services in their libraries. Library practitioners need to grab a set of learning IT methods to utilize technology. They need to participate in continuous professional development programmes.

Practical implication (s): The study recommends competencies that need to be grabbed by library professionals of the universities for implementing Information Communication Technologies (ICTs) in their libraries for providing efficient services to the users and meeting the required

objectives of the organization. Emerging technologies should be implemented in the university libraries to fulfill the information and research needs of the users quickly.

Contribution to knowledge: Findings and recommendations of the study are very fruitful to adopt the latest tools of Information Technology in the university libraries.

Research type: Research

Keyword (s): Competencies of universities libraries, IT adoption in university libraries, Required core competencies

1. Introduction and Background to the Study:

Information Technology has brought prominent changes in all fields of life. Libraries can't prosper without an effective utilization of Information Technology. It is considered the currency of the 21st century. Bailey (2002) stated that IT is considered the most important revolution in the history of mankind. A nation becomes progressive through the effective usage as well as the application of IT systems. IT provides maximum opportunities to the community. They bring the completion of their set goals without facing certain barriers. Information technology has left a deep impact on every walk of life. Ramzan (2004) pointed that inventions of the internet, intranet, mobile phones, satellite communication, and wireless technology have connected people. IT has changed the ways through which scientific, technical, business, commercial, educational and cultural information is recorded, organized, exchanged, and sought. Libraries around the world have adopted many innovative changes in the past two decades due to the happenings in information technology. Now advanced methods in librarianship are being utilized. Technologies are being applied to run several functions of the libraries. (Rowlands and Nicholas 2007).

In Pakistan, information technologies are not fully implemented and utilized. Pakistan is far behind from prosperous nations in terms of the application of technology. The libraries don't have proper IT infrastructure. The information needs of the users can't be fulfilled in a short time. Libraries are still not fully automated in Pakistan because most library professionals have a traditional mindset up. Ramzan (2009) explored the levels of information technology (IT) in Pakistani libraries. He investigated the status of computers, library software, online resources, and services being utilized in the libraries of Pakistan. His study revealed that the libraries were lacking in the application of Information Technology. The libraries were not provided proper funds to

acquire the latest technological tools. The librarians did not have proper access to computers. He stressed a need to fully automate the libraries.

Information Communication Technologies (ICTs) are not effectively utilized in Pakistan. Library professionals have a shortage of proper funds, organizational support, and required skills. They are not inspired to implement the latest technologies in their libraries. Shaikh (2009) stated that the institutes of Pakistan were far behind than the institutes of progressive nations. In Pakistan, technology was not properly being implemented and utilized. Pakistani institutes were not facilitated with the required IT equipment. There was a serious shortage of funds, support, training, positive mindset, passion, and required competencies, etc. The study recommended an urgent need to formulate Information Technology Policy at the national level so that technology may effectively be applied in the institutes of Pakistan like other leading nations of the world.

Library practitioners of Pakistan are not well trained in Information Technology. They can't avail emerging innovations in IT fully. Their theoretical and practical knowledge is not up to mark. They mostly provide traditional services to their users. Ramzan and Deljit (2010) found that librarians couldn't utilize technology easily in the libraries and they faced several hurdles in the application of IT due to the shortage of required competencies. They were not playing an active role in the application of information technologies. They were not involved in decision-making policies related to technology. The study recommended enhancing the competencies of library professionals so that emerging IT innovations may be adopted in the libraries.

In Pakistan, library graduates are not taught practical skills relevant to the field. Consequently, library professionals face problems in the field. They cannot do routine tasks efficiently in the electronic environment. They cannot make effective utilization of the technology. They like to perform only conventional services. Mahmood and Shafique (2010) stated that there was a huge gap between the curriculum of library schools and the needs of the market. The demands of the market differed from the curriculum contents of the library schools. Graduates were taught theoretical concepts of librarianship.

Library practitioners who do not like technology cannot run their libraries successfully. A creative approach is highly essential for the survival of library professionals in the fast-changing highly competitive world. Advanced countries are also advanced in information technology and underdeveloped countries are also poor in technology and information. Technology is changing

the routines of libraries very much. Ameen (2011) analyzed the challenges and opportunities for library professionals in the IT era. It was shown that many changes had taken place in librarianship due to the advent of information technologies. It had become a dire need of the present age for library practitioners to learn the usage of technology to survive, compete and lead in the information society.

Pakistani libraries are far behind in the adoption of the latest technologies than the libraries of progressive countries. Although several radical steps are being taken to upgrade national IT policy and action however the situation of national libraries is not up to mark. The majority of the libraries are not willing to implement the latest innovations that have taken place in technology. This is happening because library professionals don't have the required competencies for implementing IT innovations in their libraries. The Higher Education Commission of Pakistan is providing full-text access to more than 45,000 online journals and 175,000 e-books, through its National Digital Library Programme. However, no significant progress is made in the libraries on the whole. There is a traditional setup in most of the libraries. It seems that the librarians are not ready to change the traditional working style. This passive attitude of library practitioners has forced the competent authorities of the universities to rely on computer professionals for the selection, purchase, and implementation of information technologies without the due involvement of librarians (Ramzan 2004).

The current study explores core competencies that are needed by university libraries of Lahore for the adoption of IT in the libraries so that efficient services may be provided to the users. In this area, no comprehensive national study is done. There is an urgent need to know the competencies required by librarians for a better implementation of technologies to lead in this fast-changing competitive knowledge-based world. The study will prove productive in making strategies and plans to improve the librarians' competencies. This will assist in flourishing quality library services through the effective usage of technologies. Therefore, this research problem is of great value. Recommendations based on the literature review and findings of the study hope to provide guidelines not only to the competent authorities of the institutes but also to the government representatives for effective utilization of technology in the libraries having known and improved required competencies in the university librarians of Lahore, Pakistan.

2. Literature Review

Technology provides ample learning opportunities to librarians. IT broadens outlook, enhances skills, brings great comfort and ease in working, and ends old methods of serving the library's users. It brings more creativity and innovation. Rao and Babu (2002) stated that a shift of libraries from traditional to electronic had provided threats and learning opportunities to the library practitioners. Library professionals could be left far behind in technology if they would feel fear of implementing technology in their libraries. This move of libraries had also provided ample learning opportunities to the working libraries. They could lead having grabbed required technological skills. They could become leaders. They could bring innovative approaches, manage their libraries well, and provide satisfactory services to their clients. They needed to grab digital skills. They must develop web-based skills to manage IT in an efficient style. They should not feel fear from technology. They needed to adopt a liberal approach. They needed to become creative in their specialized area of knowledge. Their role had been changed due to change-movement in the libraries. They could not become successful by following traditional approaches. They could compete well with computer professionals by adopting emerging technologies in their libraries.

Librarians need IT skills for applying the latest technologies in their libraries. They need automation-related skills, need a progressive behavior, and a change in their working according to the changing needs of the present era. Anwar and Al-Ansari (2002) conducted a study related to continuing skills of library professionals. The study showed that there was an urgent need for library practitioners to learn skills related to automation. They needed to automate their collections. They could succeed only by following the latest technologies. They needed to provide information to their users by using technology and to utilize technology for bringing comfort in their libraries in the best interests of their users. The study recommended a need for continuous training programmes for library practitioners to develop relevant skills among them to meet the organizational requirements.

Library professionals need an entirely different approach for leading in this age of information and communication technologies. They need web-based expertise too. They need to become equipped with IT-related skills to lead from the front. They can't bring the completion of the desired objectives without getting the required skills in IT. Mahmood (2003) reviewed the previous

studies related to the skills required for library professionals. He revealed the required competencies in a lucid style in the light of a comprehensive study. His study showed that library practitioners needed an entirely different approach in the present age of information and communication technologies. They could not compete with other professions with a traditional approach due to the emerging technologies. They needed web-based related skills to serve their organization efficiently. They needed to get a complete command of technology-based skills. They needed to get participation in training programmes. They needed to get a natural passion for becoming dynamic. Without personal interest, library practitioners could not grab technology-based proficiencies. They could become innovative leaders through technology acceptance behaviors. They needed to embrace technologies to become successful and to compete with other leading libraries. They could be left far behind if they followed the traditional approach and did not leave the old traditions.

Mahmood (2003) stated that innovations demanded new competencies from library practitioners. IT had brought a great challenge for the working professionals of libraries. They needed practical-based learning to excel in their organizations. They required continuous training programmes for grabbing required skills. They could perform routine functions of the libraries easily by receiving proper skills related to IT. They could not survive without accepting technology. They needed a broad vision for leading their libraries from the front. They needed an innovative approach. They needed to introduce user-friendly services by utilizing the tools of information technology. Warnken (2004) stated that library practitioners needed to develop IT-based skills to better serve their users. They must have proper skills in information and communication technologies. They must effectively make the usage of internet. They should be familiar with information literacy expertise. They should be equipped with relevant skills to perform well in their jobs. They should conduct information literacy programmes to aware users of the information searching skills. They should facilitate the users in an efficient style. They should make effective usage of different websites. They should grab the latest skills relevant to their job. They should work according to the changing needs of the organization. They should apply the best technological tools in their libraries. They should lead their libraries in the best possible ways. Ashcroft and Watts (2004) mentioned that library practitioners needed a new set of technical skills for locating relevant information. They needed to digitize their resources. They should introduce digitized services in their libraries. They should change their ways of serving the

users. They should build online institutional repositories. They should make an electronic resource-sharing network. They should provide library services around the clock while using technology-based resources effectively. They should digitize rare resources of their libraries for long-term utilization.

Bertot (2004) stated that library practitioners should use the internet effectively to serve users efficiently. They needed to learn all the basic things of the internet so that they might better use this technology. They needed to develop a proper lab in the libraries. They needed to upgrade their library systems. They needed to provide web-based services. They needed to accept technology for surviving in the present age of information and communication technologies. They should not be conservative. They should be technology-minded so that they might meet the needs of their organizations. Bailin and Grafstein (2005) stated that technology had changed the working of libraries and library professionals needed to get relevant education and training to grab good positions in the market. They said that library practitioners needed to adopt innovative methods of serving the users effectively. They needed to change their minds. They should be free from any ambiguity. Their concepts should be related to information technology. Library practitioners needed to adopt a liberal outlook towards technology. They needed to attend short-term professional programmes related to new technology so that they could develop accurate technology-based expertise and serve their users in the best ways. Bakar (2005) conducted a study related to the skills required by library practitioners. He revealed that library professionals needed to adopt a progressive approach to become up to date in emerging technologies and to lead in the present age of information and communication technologies. It was shown that librarians needed to gain basic IT knowledge to know the core concepts of technology and database management systems. They needed to develop online searching skills. They needed to change the traditional mindset up. They needed to apply the latest technological tools in their library to provide efficient services to users.

Smith (2005) stated that a positive mindset could change threats into opportunities for library professionals. Librarians could avail opportunities to lead their libraries nicely through required expertise in the age of information and communication technologies. They needed to develop relevant skills to meet challenges. Librarians needed advanced knowledge of information technology to manage technological advances. They required practical skills in IT. Library

practitioners need to develop IT skills for meeting their users' needs in an efficient style. They must accept the challenges of modern times happily. They need to act fearlessly. They should leave the traditional mindset up. They need a great vision to turn their libraries into the best places of learning. They can enhance research culture and book reading habits by implementing new technology. They need to learn hardware and software concepts. Williamson (2006) stated that many changes were occurring in libraries due to emerging technologies. Academic learning places were experiencing innovations quickly. These technologies had changed the working style of institutional places. These had affected libraries as well. Library practitioners needed to develop a change in their libraries. They needed to change their attitude. They should get familiarity with IT systems. They should get participation in continuous learning programmes. They needed to follow a revolutionary approach. They should act as great leaders. They should possess skills as required by the market. It was recommended that Library Schools should change their curriculum keeping in view the changing conditions. They must provide practical learning to their graduates so that they could compete in the market and apply the latest technologies in their libraries for providing satisfactory services to the users and to meet the set objectives of the organization. They would be able to use new methods and techniques if they had better knowledge of technology. Gorman (2006) said that library practitioners equipped with proper IT skills could provide the right information to the right users within no time. They could become instrumental in utilizing technology. They should conduct information literacy programmes for enabling users to locate relevant information without depending upon others. It was also concluded that the public had more and more expectations from the library practitioners.

Melchionda (2007) stated that library practitioners' role had been changed due to the rise in digital resources. It was concluded that library professionals needed to bring more changes in their work. They did not need to follow the old way of serving the users. They required the latest techniques for meeting information needs. They could increase research output by disseminating relevant documents to the researchers. They needed to perform multiple functions for promoting book reading culture. Hardesty and Sugarman (2007) conducted a study related to the behavior of library practitioners towards emerging technologies. The study concluded that library practitioners did not have sufficient skills in accessing information through technology. They needed comprehensive formal learning for availing the benefits of technology. They needed to study textbooks related to technology, automation, retrieval methods, electronic information instruction,

etc. Mahmood and Khan (2007) conducted a study related to the skills needed by library professionals in the modern age IT revolution. Results of the study show that library practitioners were fully aware that IT was the backbone of the libraries and no efficient and quick services could be provided to the users without having implemented emerging technologies in the libraries. Users' demands for the required material needed to be placed on top priority and it could not be possible without competent library professionals. Skilled manpower could provide services to the users through the latest moods without facing hurdles.

Melchionda (2007) interrogated the role of library practitioners in the age of the internet and their required competencies. The study concluded that library practitioners needed a new set of habits to meet the demands of the present age. They required practical learning to use technology in an efficient style. They needed to attend training programmes to grab the required skills. They could survive in the information society only through the effective usage of information technology. They should organize electronic resources. They should make institutional repositories. They should develop users' friendly websites. They should make pages on Facebook of their libraries. They should market their library's resources and services through online methods. Rehman (2008) stated that library professionals needed competencies in accordance with market needs so that they could lead their organization from the front and create a good impression of their services. Many new trends were taking place in the field so it had become indispensable for the library community to consider these needs and make the implementation of the latest technologies in their libraries to meet the objectives of the organization. They could support information literacy programmes through IT. They could not ignore the utility of IT in the present age of continuous changes in terms of innovations. Kealy (2009) conducted a study in the University of Melbourne library to investigate the required skills and education of library practitioners. The major objective of the study was to identify gaps in skills and to form a comprehensive plan for training. The study revealed that library practitioners lacked key skills in information technology. They could not manage the library's affairs efficiently due to improper planning. The study recommended an urgent need to conduct continuous training programmes for developing IT skills among library practitioners so that they could lead their libraries from the front.

Mahmood and Shafique (2010) investigated a study related to the qualification of library graduates to fill the vacant posts of leadership in the country. The study concluded that there was a huge gap between the curriculum of library schools and the needs of the market. The demands of the market differed from the curriculum contents of the library schools. Graduates were taught theoretical concepts of librarianship. The study recommended that library schools should revise their curriculum keeping in view the changing demands of the market. Library graduates should be taught relevant courses. Their practical skills should be enhanced. They should be encouraged and inspired to utilize new technologies to enable them to grab the required expertise. Partridge (2010) explored the required skills of library professionals in the age of information and communication technologies. The study showed that Web 2.0 technologies were being frequently utilized by librarians for the facilitation of their users. Library practitioners ought to be technology-minded. They should focus on practical skills. They needed to pay visits to the leading libraries and follow the same traditions in their libraries. They needed to give priority to continuous learning programmes. They needed to bring a change in their mindset. They should be aware of the needs of their users. Ameen (2011) analyzed the challenges and opportunities for library practitioners in the age of information and communication technologies. It was shown that many changes had taken place in librarianship due to the advent of information technologies. It had become a dire need of the present age for library practitioners to learn the usage of technology to survive, compete and lead in the information society. It was recommended that awareness programmes should be organized for updating the knowledge and expertise of library practitioners.

Fangman (2011) stated that librarians in the present age needed to get a complete grip upon different open-source software and databases. They should have theoretical as well as practical concepts related to technology. They should conduct information literacy sessions. They should know the methods of checking plagiarism. They should be well aware of online press clipping. They should know digital standards. Negi (2014) stated that mobile communications had brought a great revolution in the field of information. People made conversation with one another through mobile phones. They searched and shared information daily. The usage of cell phones had enhanced e-learning very much. People had become habitual of searching for information via cell phones. They could access the required information within no time. They had begun to use internet facility on their mobile phones. They could read the books online. This innovation had provided a

great challenge to library practitioners. Now, library professionals needed to develop more IT skills. They also needed to provide their library's resources and services through a mobile phone facility. They needed to get the required expertise.

Smith & Hayman (2015) conducted a study related to decision-making for the application of emerging technologies in libraries. The findings of the study revealed that library practitioners needed creative thinking to lead their organizations well. Library schools needed to teach market-oriented courses so that they could produce innovative professionals in the market for coming up to the needs of the present age of ever-growing changes. They couldn't produce creative graduates without changing teaching practices. They needed to provide IT-based education. They needed to quit traditional methods of teaching. They needed to promote virtual-based learning so that the graduates might develop relevant skills and perform well after grabbing their jobs. Khan et. al. (2017) conducted research on factors influencing the adoption of virtual reference services. Results of the study showed that the willingness of the library professionals was an important factor for the effective implementation of IT tools in the libraries. Without the willpower and determination of the libraries, IT innovations couldn't be proper applied in the libraries. Library professionals' intention matters a lot in the successful implementation of IT for meeting the required needs of the community.

Baro, Obaro, and Aduba (2019) conducted a study on an assessment of digital literacy skills and knowledge-based competencies among librarians working in university libraries in Africa. Results of the study showed that university librarians needed skills in automation, social media, metadata, databases, and website development. These skills were highly required to perform satisfactory services in a challenging environment. Okeji, Tralagba & Obi (2020) stated that digital skills for the university libraries were of great significance and value for the successful adoption of IT. Users needed quick and smart services from the universities and it couldn't become possible if library practitioners were not properly trained in IT tools. For the provision of efficient and quick services to the users of university libraries, it was very essential for library professionals to grab the required skills of IT so that they could shape up friendly services in the libraries to facilitate the users.

3. Research Objectives

The goal of the study is to explore competencies that are needed by library professionals for the implementation of Information Technology (IT) in the university library of Lahore, Pakistan. The following objective of the study was set to conduct the study:

- To explore core competencies related to technology that are required by LIS professionals for the implementation of IT in the university libraries of Lahore, Pakistan
- To know the perceptions of university librarians about Information Technology

4. Methodology

Research Design:

A quantitative approach followed by a survey research design was opted to complete the study on the competencies required by library professionals for the adoption of IT in university libraries and their perception of Information Technology. As the researcher wanted to collect data from a large size sample therefore for such kinds of studies quantitative research was the most appropriate as many researchers and experts have also stated that quantitative research is the best way to collect data from a large population.

Population and Sampling:

The population of the study consisted of all public and HEC recognized private sector university library professionals of Lahore having at least MLIS qualification. There were 120 working Librarians having at least an MLIS degree in the public and private sector universities of Lahore. This information was obtained from reliable sources like the PULISAA list of librarians and the Sada-e-Librarian Directory of Pakistani Library Professionals. The probability technique followed by census sampling was used to collect the data. These libraries were listed on the website of the Higher Education Commission of Pakistan. The researchers used the Higher Education Commission of Pakistan's website www.hec.gov.pk/, telephone directories, discussion groups such as PAKLAG, LIBCOOP, etc. to find names, postal and e-mail addresses of libraries, and librarians. There were 13 public sector universities and 21 private sector universities in Lahore on the list given by the Higher Education Commission of Pakistan. The list of Public and Private Sector universities is shown as following:

List of Universities/Institutes of Lahore:

Sr. No.	University's Name
1.	Government College University, Lahore
2.	Information Technology University, Lahore
3.	King Edward Medical University, Lahore
4.	Kinnaird College for Women, Lahore
5.	Lahore College for Women University, Lahore
6.	University of Education, Lahore
7.	COMSATS University, Lahore
8.	University of Engineering & Technology, Lahore
9.	University of Health Sciences, Lahore
10.	National College of Arts, Lahore (NCA)
11.	Pakistan Institute of Fashion and Design, Lahore
12.	University of the Punjab, Lahore
13.	University of Veterinary & Animal Sciences, Lahore
14.	Virtual University of Pakistan, Lahore
15.	Lahore University of Management Sciences (LUMS)
16.	Beaconhouse National University, Lahore
17.	Forman Christian College, Lahore
18.	Hajvery University, Lahore
19.	Ali Institute of Education
20.	Global Institute, Lahore
21.	Imperial College of Business Studies, Lahore
22.	Institute of Management Sciences, Lahore
23.	Lahore Leads University, Lahore
24.	Lahore School of Economics, Lahore
25.	Lahore Garrison University, Lahore
26.	Minhaj University, Lahore

27.	National College of Business Administration & Economics, Lahore
28.	Nur International University, Lahore
29.	Qarshi University
30.	The Superior College, Lahore
31.	University of Central Punjab, Lahore
32.	University of Lahore, Lahore
33.	University of Management & Technology, Lahore
34.	University of South Asia, Lahore

Instrument:

To answer the research question of the study i.e., 1) Which technological skills are required by Library practitioners? 2) What are the perceptions of library professionals about IT? a comprehensive questionnaire was designed. The survey questionnaire was utilized as an instrument to obtain primary data from the library professionals. The questionnaire is an effective instrument to gather descriptive data for measuring attitudes and for answering the required research questions. It helps to attain information related to different trends from a vast population. Different researchers have also highlighted the significance of the questionnaire. They have stated that a questionnaire is a primary data collection tool. It saves precious time and the economy. Keeping in view the effectiveness of the questionnaire, the researcher used this tool to gather data. The questionnaire was passed through the process of pre-testing and pilot study to check the validity and reliability of the tool. It was accompanied by a cover letter as well as a self-addressed return envelope. The questionnaire contained several close-ended questions. In constructing the questionnaire, help was taken from the reviewed literature and subject experts. The questionnaire was designed in two parts by the researcher. The first part included demographical information and the second part was about the required competencies of university libraries for the adoption of IT in university libraries and their perceptions about Information Technology. A pilot study to ensure the reliability and validity of the instrument was conducted and overall Cronbach Alpha was 0.82.

The researcher created an online questionnaire through Google Docs Form. That questionnaire was sent to all respondents through e-mail. The heads of the libraries were contacted through

telephonic conversation to submit the duly filled questionnaire as early as possible by themselves and their supporting colleagues i.e. Senior Librarians/Deputy Chief Librarians and librarians. The response rate was 76% due to researchers' consistent efforts in following up with respondents through telephonic conversation and by using personal references. From 120 respondents, 91 respondents submitted the duly filled online questionnaire.

After having gathered the required data, the gathered data were analyzed and tabulated for interpretation. Statistical Package for the Social Sciences (SPSS) Version 24.0 was utilized. Tables and figures were also formed where necessary. Statistical procedures were used in the data analyses including 'Frequency distribution', 'Descriptive statistics', i.e., mean, standard deviation, etc.

Following figure 1.0 presents the research design adopted for the current study graphically:

Figure 1.0

Research Design Procedure to Conduct the Study
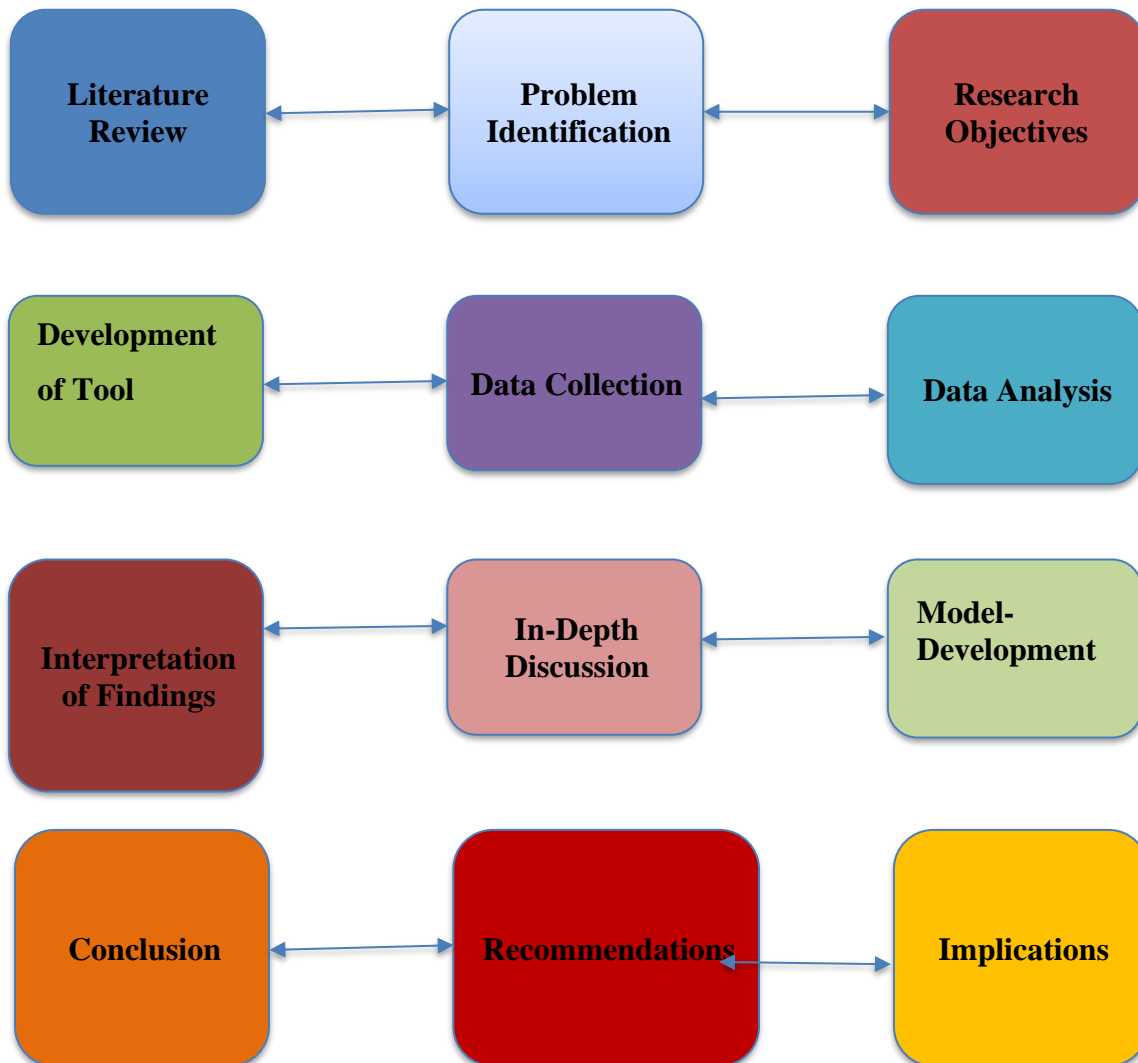
5. Data Analysis/ Findings of the Study:

Data collected through questionnaires are analyzed and interpreted here. Ninety-one questionnaires have been analyzed below:

5.1 Gender of respondents

A total of 91 respondents participated in this study out of the target population of 120 which represented a 75.83% response rate. Out of the total respondents, 76 (83.52%) were male and 15 (16.48%) of them were females. The frequency distribution of respondents' gender is presented in table 1.

Table 1

Frequency distribution of respondents' gender (N= 91)

Gender	Frequency	Percent
Male	76	83.52
Female	15	16.48
Total	91	100.0

5.2 Qualification of the respondents:

Respondents were asked to mention their highest academic qualification. Acquired results show that 56 (61.5%) respondents had the degree of Masters, 31 (34.1%) had the degree of MS/ M. Phil, and 04 (4.4%) had the degree of Ph.D. The frequency distribution of respondents' qualification is given in Figure 2.

Figure 2.0

*Frequency distribution of respondents' qualification*
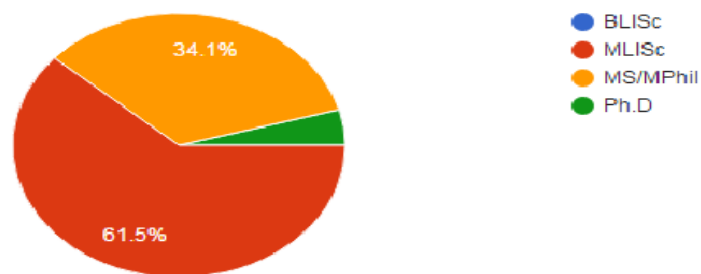
5.3 Respondents' ages:

Respondents were asked to mention their age groups. The ages ranged from 25 to above fifty-five. Acquired results show that thirty-six (39.6%) respondents had their age between 25 to 34. Forty-eight (52.7%) respondents had their ages between the ranges of 35 to 44. Six (6.6%) respondents had their age between 45 to 54 while 1 (1.1%) was above 54 years. The frequency distribution of respondents' ages is presented in Figure 3.

Figure 3.0

Frequency distribution of respondents' ages
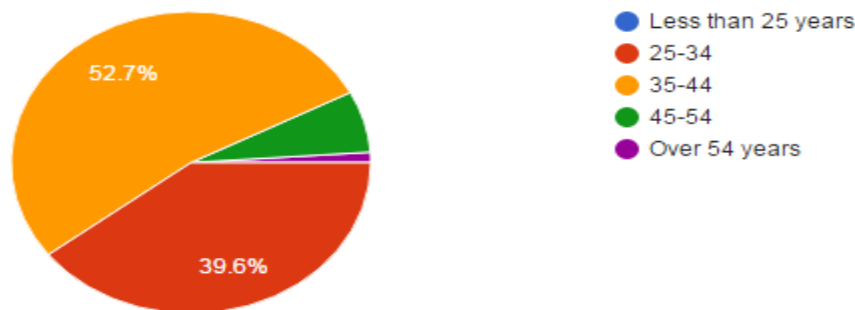
5.4 IT competencies level of the respondents

The participants were asked to rate their IT skills level. These skills included Hardware/Software and networking skills MS Office, Library Automation, Database creation, Internet search tools, Online databases search, Digitization, Web-based services, Information literacy, Information resource management, E-serial management, Repository building, Metadata standards, Project management, Decision making, Communication skill, and service attitude. The participants were asked to tick different options to rate their IT skills level on a 'five-point Likert scale' i.e. 'Not Good At All', 'Not Good', 'Neutral', 'Good' and 'Very Good'(See Table 2). The mean and Standard Deviation received against each statement have been presented below.

Respondents' Perception about Hardware/Software Skills

The respondents were asked to rate their Hardware/Software skills. Many respondents said that they had good skills in hardware and software. Only a few respondents were of the view that they were not good at Hardware/Software Skills. The mean received about the statement "Hardware/Software Skills" is 3.97 whereas Standard Deviation of the same is1.016.

Respondents' Perception about MS Office Skills

The respondents were asked to rate their MS skills. Many respondents said that they had good skills in MS Office. Only a few respondents were of the view that they were not good at MS Office Skills. The mean received about the statement "MS Office Skills" is 4.13 whereas the Standard Deviation of the same is 0.792.

Respondents' Perception about Library Automation Skills

The respondents were asked to rate their Library Automation skills. Many respondents said that they had good skills in Automation. Only a few respondents were of the view that they were not good at Library Automation Skills. The mean received about the statement "Library Automation Skills" is 4.14 whereas the Standard Deviation of the same is 0.768.

Respondents' Perception about Database Creation Skills

The respondents were asked to rate their Database Creation skills. Many respondents said that they had good skills in Database Creation. Only a few respondents were of the view that they were not good at Database Creation Skills. The mean received about the statement "Database Creation Skills" is 3.76 whereas the Standard Deviation of the same is 1.078.

Respondents' Perception about Internet Search Tools Skills

The respondents were asked to rate their Internet Search Tools skills. Many respondents said that they had good skills in Internet Search Tools. Only a few respondents were of the view that they were not good at Internet Search Tools Skills. The mean received about the statement "Internet Search Tools Skills" is 4.19 whereas the Standard Deviation of the same is 0.788.

Respondents' Perception about Online Database Search Skills

The respondents were asked to rate their Online Database Search skills. Many respondents said that they had good skills in Online Database Search. Only a few respondents were of the view

that they were not good at Online Database Search Skills. The mean received about the statement "Online Database Search Skills" is 4.11 whereas the Standard Deviation of the same is 0.809.

Respondents' Perception about Digitization Skills

The respondents were asked to rate their Digitization skills. Many respondents said that they had good skills in Digitization. Only a few respondents were of the view that they were not good at Digitization Skills. The mean received about the statement "Digitization Skills" is 4.02 whereas the Standard Deviation of the same is 0.869.

Respondents' Perception about Web-Based Services Skills

The respondents were asked to rate their Web-Based Services Skills. Many respondents said that they had good skills in Web-Based Services. Only a few respondents were of the view that they were not good at Web-Based Services Skills. The mean received about the statement "Web-Based Services Skills" is 3.96 whereas Standard Deviation of the same is 0.829.

Respondents' Perception about Information Literacy Skills

The respondents were asked to rate their Information Literacy skills. Many respondents said that they had good skills in Information Literacy. Only a few respondents were of the view that they were not good at Information Literacy Skills. The mean received about the statement "Information Literacy Skills" is 4.09 whereas the Standard Deviation of the same is 0.825.

Respondents' Perception about Information Resource Management Skills

The respondents were asked to rate their Information Resource Management Skills. Many respondents said that they had good skills in Information Resource Management. Only a few respondents were of the view that they were not good at Information Resource Management. The mean received about the statement "Information Resource Management Skills" is 4.08 whereas the Standard Deviation of the same is 0.763.

Respondents' Perception about E-Serial Management Skills

The respondents were asked to rate their E-Serial Management skills. Many respondents said that they had good skills in E-Serial Management. Only a few respondents were of the view that they were not good at E-Serial Management. The mean received about the statement "E-Serial Management Skills" is 3.90 whereas the Standard Deviation of the same is 0.943.

Respondents' Perception about Repository Building Skills

The mean received about the statement "Repository Building Skills" is 3.87 whereas the Standard Deviation of the same is 0.933.

Respondents' Perception about Metadata Standards Skills

The respondents were asked to rate their Metadata Standards Skills. Many respondents said that they had good skills in Metadata Standards. Only a few respondents were of the view that they were not good at Metadata Standards. The mean received about the statement "Metadata Standards Skills" is 3.95 whereas the Standard Deviation of the same is 0.923.

Respondents' Perception about Project Management Skills

The mean received about the statement "Project Management Skills" is 3.98 whereas the Standard Deviation of the same is 0.856.

Respondents' Perception about Decision Making Skills

The respondents were asked to rate their Decision-Making skills. Many respondents said that they had good skills in Decision Making. Only a few respondents were of the view that they were not good at Decision-Making Skills. The mean received about the statement "***Decision-Making Skills***" is 3.99 whereas the Standard Deviation of the same is 0.937.

Respondents' Perception about Communication Skills

The respondents were asked to rate their communication skills. Many respondents said that they had good skills of Communication. Only a few respondents were of the view that they were not good at Communication Skills. The mean received about the statement "Communication Skills" is 4.00 whereas the Standard Deviation of the same is 0.843.

Respondents' Perception about Service Attitude Skills

The respondents were asked to rate their Service Attitude skills. Many respondents said that they had good skills of Service Attitude. Only a few respondents were of the view that they were not good at Service Attitude Skills. The mean received about the statement "Service Attitude Skills" is 4.05 whereas the Standard Deviation of the same is 0.848.

Table 2

Descriptive Statistics of IT Skills Level of the Respondent

To Measure IT Skills	N	Mean	Std. Deviation
Hardware/Software and networking skills	91	3.97	1.016
MS Office	91	4.13	.792
Library Automation	91	4.14	.768
Database creation	91	3.76	1.078
Internet search tools	91	4.19	.788
Online databases search	91	4.11	.809
Digitization	91	4.02	.869
Web-based services	91	3.96	.829
Information literacy	91	4.09	.825
Information resource management	91	4.08	.763
E-serial management	91	3.90	.943
Building of Repository	91	3.87	.933
Metadata standards	91	3.95	.923
Project management	91	3.98	.856
Decision making	91	3.99	.937
Communication skill	91	4.00	.843
Service attitude	91	4.05	.848

Note: 5=Very Good, 4=Good, 3= Neutral, 2=Not Good, 1=Not Good At All

Participants had different opinions about different IT skills. Here, the highest and lowest opinion of the respondents is interpreted. About Hardware/Software and Networking skills, 34 (41.8%) respondents were of the view that they had good skills while 2 (2.2%) respondents said that they were not good at all. About MS Office skills, 48 (52.7%) respondents were of the view that they had good skills while 5 (5.5%) respondents said that they were not good. About Library Automation, 48 (52.7%) respondents were of the view that they had good skills while 4 (4.4%) respondents said that they were not good. About Database Creation, 40 (44.4%) respondents were of the view that they had good skills while 4 (4.4%) respondents said that they were not good.

About internet search tools, 41 (45.1%) respondents were of the view that they had good skills while 3 (3.3%) respondents said that they were not good. About online database search, 40 (44%) respondents were of the view that they had good skills while 3 (3.3%) respondents said that they were not good. About digitization, 46 (50.5%) respondents were of the view that they had good skills while 1 (1.1%) respondent said that he was not good. About web-based services, 47 (51.6%) respondents were of the view that they had good skills while 6 (6.6%) respondents said that they were not good. About information literacy, 44 (48.4%) respondents were of the view that they had good skills while 5 (5.5%) respondents said that they were not good. About information resource management, 44 (51.6%) respondents were of the view that they had good skills while 3 (3.3%) respondents said that they were not good. About E-serial management, 41 (45.1%) respondents were of the view that they had good skills while 2 (2.2%) respondents said that they were not good at all. About the building of the repository, 42 (46.2%) respondents were of the view that they had good skills while 1 (1.1%) respondent said that he was not good at all. About metadata standards, 43 (47.3%) respondents were of the view that they had good skills while 1 (1.1%) respondent said that he was not good at all. About project management, 46 (50.5%) respondents were of the view that they had good skills while 7 (7.7%) respondents said that they were not good. About decision making, 39 (42.9%) respondents were of the view that they had good skills while 9 (9.9%) respondents said that they were not good. About communication skills, 47 (51.6%) respondents were of the view that they had good skills while 1 (1.1%) respondent said that he was not good at all. About service attitude, 43 (47.3%) respondents were of the view that they had good skills while only 1 (1.1%) respondent said that he was not good at all.

5.5 Participants' perception about Information Technology

The participants were asked to show their perception of IT. They were provided different statements to tick so that their perceptions about IT could be known by the researchers. Received responses are shown in Table 3.

Table 3

Descriptive statistics of respondents' perception about Information Technology

Statements	Mean	Std. Deviation
Information technology has improved library services.	4.25	.754
Information technology is a fast-changing field.	4.24	.735
Information technology has enabled users to access accurate information in the libraries.	4.04	.744
Resource sharing has increased among the libraries through Information Technology.	4.08	.718
Information technology saves the time of users and library practitioners.	4.21	.768
IT has made search and retrieval easy.	4.18	.769
Library practitioners have become smart due to IT.	4.08	.778
Library practitioners feel that their professional status has been improved by using IT in the libraries.	4.04	.829
Libraries having IT facilities are considered more prestigious than libraries without IT facilities.	4.13	.806
The benefits of IT are more valuable than its financial cost.	4.08	.778

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

Table 3 shows that IT has positive changes. It has brought innovation in library services. It has provided easy access methods to users. It has made the process of resource sharing very easy. It saves precious time for the library professionals and the users. It has made the process of searching for required content very easy. Library professionals have become smart and quick in the provision of services to the end-users. It has increased the worth of the libraries in the community. Its benefits are multiple.

6. Conclusion:

Most of the respondents have shown a positive attitude about IT. Revolution in librarianship has taken place on account of IT. Librarians with a traditional mind setup can't become successful in the adoption of IT in their university libraries. In the libraries of Pakistan, IT is not being utilized

properly. Most of the library practitioners were not actively involved in different stages of IT applications. Library practitioners don't have the proper training to make a fruitful usage of information technologies. Many library practitioners don't have the skills of proper planning. The personal willingness of the library professionals is the most important phenomenon to implement IT in university libraries. Competencies related to the Web are highly required by the library staff. Many respondents were good in MS Office skills. Project team competence brought easiness in the implementation of IT. A positive attitude towards IT is required by library staff for the adoption of emerging technologies in the libraries. The study has shown that most of the respondents are familiar with the basic concepts of library automation, database creation, internet search tools, digitization, E-serial management, information literacy, repository building, meta-data standards, and project management.

7. Discussion:

Library professionals play a leading role in promoting book reading culture, higher learning, and research traditions by utilizing information and communication technologies. Competencies of the library staff are of great value in the adoption of Information Technology in the university libraries otherwise innovative services may not be provided to the users. Library professionals having no IT expertise can't run the functions of libraries efficiently in the modern era which is full of innovations. Libraries are going through revolutionary changes. Libraries are no more like the libraries of the past. In olden times, books were not issued to the users. In the present era, books are on open shelves in libraries. Books are not only in print format but also in digital format. These books are issued to users. The philosophy of present age librarianship has been changed. Now, the user is at the center of every library. All resources and services of the library are designed keeping in view the demands, expectations, and perceptions of the users. Users are given the topmost priority. Librarians need to develop the required competencies to meet the information and research needs of the users.

Library Professionals need unconventional services to cope with challenging situations. Librarians of the current age can't survive with a traditional mind setup. They need to provide value-added services in their organizations. They need to provide a congenial atmosphere to their users. They need to provide free wi-fi, makerspace, information commons/learning commons to

users so that they may be attracted towards libraries and effective utilization of the library's resources and services may be made to better facilitate the users. Traditional services are being replaced by digital services in the present age of Information and Communication Technologies (ICTs). If library practitioners don't manage the challenging situations, then professionals from other disciplines i.e. IT experts and Media Professionals will replace their services in the future.

A revolution has taken place in the field of technology. Technological innovations keep on changing rapidly. Old systems are replaced by new ones. Old technology becomes obsolete with the passage of time (Zhang, 2021). Due to rapid technological advances, it has become a great challenge to switch over to new technologies through the conversion of data so that records in the old systems may not be lost and work may go on smoothly. Adoption of emerging technologies and the replacement of old tools is a great necessity for library professionals. Sensemaking is a process to realize one's role in the organization in changing situations. When one feels uncertainty about his role in the organization then the process of sensemaking starts. Every professional must know his role in the organization in order to provide efficient services at the workplace so that employers may also feel a sense of self-satisfaction from the concerned employee and things may move on smoothly (Dorner, 2017). Rapid changes are happening in every profession. The library profession is quite different from the past. Library professionals of the modern age need to consider their important role in the efficient working of the organization. They need to play a supportive role otherwise things will not go in their favor.

In the coming times, there will be increased usage of the social website to promote the library's resources and services. Library collections would be available to a wide range of audiences due to social media channels. Users will not face physical barriers for getting access to required information resources. Social interactions will bring efficiency to the workplace (Saarti, 2020). So, library and information professionals need to develop social media skills to play a vital role in the delivery of information. Librarians need to play a flexible role. They need to act as teachers. They need to perform the role of Instruction Librarians. They need to become technology specialists. They need to become embedded librarians. Their role is limited to a specific place. They act as information consultants, information controllers, expert hunters, copyright advisors, knowledge managers, and subject librarians.

Libraries need to depend upon alternative funding sources. Library professionals should look for possible sponsorships. Librarians need to implement mobile phone services effectively. Users should be served quickly and efficiently. Alerts should be disseminated to the users through smartphones. Users' information needs should be placed on top priority.

Libraries will always be key places in the dissemination of information resources. Library professionals should create new value in the libraries by virtue of collaborative environments. Demand-ready information resources should be provided to the users. Meaningful interactions should take place between library professionals and users. Users should be served through discussion corners and diverse solutions in the future. Librarians should be recruited in the libraries having multidisciplinary skills. They should be recruited in the libraries if they are well versed in IT and have sound interpersonal communication skills (Robinson, 2021). Library staff should be technologically more skilled. Libraries should recruit staff having diverse skills to work in a digital environment so that innovative technologies may be implemented to fulfill the information and research needs of the users efficiently. Such library staff members will possess problem-solving skills. Artificial intelligence should be utilized excessively. Robots may be used to get works done efficiently, accurately, and quickly. Robots play a great role in providing value-added services to users. These robots should be operated by library staff members as software are managed.

Through adequate skills and expertise, library professionals can become innovative leaders if they have positive behaviors towards information technology. The literature has revealed that the environment of the organizations also affects librarians' behaviors towards technology and working styles. It has become evident that the libraries of Pakistan are far behind from the libraries of progressive countries due to the lack of trained staff in IT.

Following figure 4.0 shows core-competencies-model in light of attained results that need to be developed by library professionals of the universities so that emerging IT tools may be implemented in the libraries and users' needs may be satisfied efficiently, quickly, and smartly:

Figure 4.0

Core Competencies Model
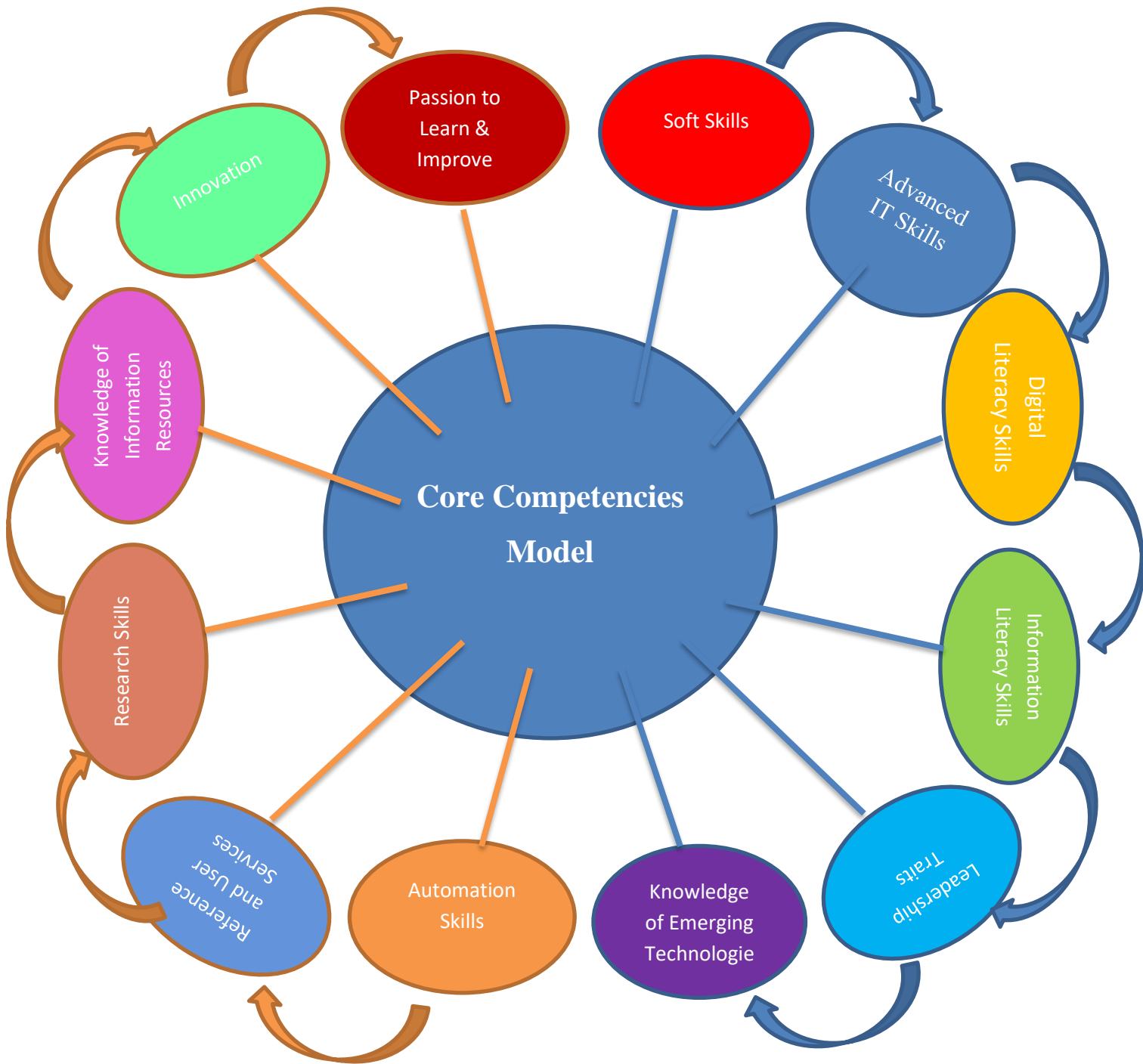
8. Recommendations

Following recommendations are made for the adoption of IT in the university libraries of Pakistan based on conclusions of the study:

1. IT applications should be utilized in libraries to serve the users efficiently.

2. Library practitioners should realize the utility of IT in the present age of Information and Communication Technologies (ICTs).

3. All library practitioners should possess a positive behavior towards IT so that libraries may prosper like other departments.

4. Library professionals should be computer literate as it is the most needed competency of the present age.

5. Library practitioners should be actively involved in different stages of IT applications.

6. Library practitioners should have the proper training to make a fruitful usage of information technologies.

7. Library practitioners should have skills of proper planning.

8. Librarians should show personal willingness for the adoption of IT in university libraries.

9. Chief Librarians of the university libraries must take an interest in IT for gaining benefits from emerging technologies.

10. Librarians should possess the required skills to provide web-based services in the best interests of the organization.

11. Library practitioners should attend refresher courses to grab the required skills of IT.

13. A competent team should be appointed in libraries for accomplishing IT-based projects.

14. Library practitioners should have a positive service attitude to avail the benefits of information technologies.

15. IT skilled manpower should be recruited in libraries.

16. Library professionals should not be afraid of using IT. They should have a liking attitude towards emerging technologies.

17. Library professionals should grab proper skills in library automation, database creation, internet search tools, digitization, E-serial management, information literacy, repository building, meta-data standards, and project management.

18. Technical support should be provided for the proper utilization of IT.

19. IT policy should be formed in libraries.

20. Library professionals should be provided short-term training courses opportunities to grab required competencies to implement the latest technologies in the university libraries to provide smart and efficient services to the users and to support the vision of their organizations.

9. Implications:

The study offers food for thought to concerned authorities of the universities, top-level administration of the libraries, policymakers, professional associations, Higher Education Commission (HEC), Islamabad, and all other stakeholders to provide learning opportunities to librarians so that they might develop core competencies and implement latest technological tools in libraries in order to play a leading role in the fulfillment of organizational objectives. New recruitments should be done in the libraries having taken a critical analysis of the skills of information professionals so that they could perform efficient services in the libraries through the implementation of emerging IT tools.

10. References:

Ameen, K. (2011). Changing scenario of librarianship in Pakistan: managing with the challenges and opportunities. *Library Management*, 32 (3): 171 – 182

Ashcroft, L. and C. Watts. (2004). Change implications related to electronic educational resources. *Online Information Review,* 28 (4): 284-291.

Anwar, M. A. and H. Al-Ansari. (2002). Developing working LIS professionals in the Gulf Cooperation Council countries: A study of the perceptions of deans and directors of academic libraries. *The Electronic Library,* 20 (3): 231-240.

Bailey, R. L. 2002. Information: The currency of the new millennium. *The International Information & Library Review*, 29: 319-331

Bailin, A. and A. Grafstein. (2005). The evolution of academic libraries: The networked environment. *The Journal of Academic Librarianship,* 31 (4): 317-323.

Bakar, A. B. A. (2005). IT competencies in academic libraries: The Malaysian experience. *Library Review,* 54 (4): 267-277.

Baro, E.E., Obaro, O.G. and Aduba, E.D. (2019). An assessment of digital literacy skills and knowledge-based competencies among librarians working in university libraries in Africa. *Digital Library Perspectives*, 35 (3/4) 172-192. https://doi.org/10.1108/DLP-04-2019-0013

Bertot, J. C. (2004). Libraries and networked information services: Issues and consideration in measurement. *Performance Management and Metrics,* 5 (1): 11-19.

Fangman, C. and Christina, C. (2011). The librarian's role in combating plagiarism, *Reference Services Review*, 39 (1):132 – 150.

Gorman, G. E. (2006). What does "online" mean in 2006? *Online Information Review,* 30 (5): 481-484.

Hardesty, S. and T. Sugarman. (2007). Academic librarians, professional literature and new technologies: A survey. *The Journal of Academic Librarianship,* 33 (2): 196-205.

Kealy, K. (2009), Do library staff have what it takes to be a librarian of the future?, *Library Management*, 30 (8/9): 572 – 582.

Khan, A., Masrek, M.N., Mahmood, K., and Qutab, S. (2017). Factors influencing the adoption of digital reference services among the university librarians in Pakistan, *The Electronic Library*, 35 (6), 1225-1246, https://doi.org/10.1108/EL-05-2016-0112

Mahmood, K. (2003). A comparison between needed competencies of academic librarians and LIS curricula in Pakistan. *The Electronic Library,* 21 (2): 99-109.

Mahmood, K. and M. A. Khan. (2007). ICT training for LIS professionals in Pakistan: A needs assessment. *Program: Electronic Library and Information Systems,* 41 (4): 418-427.

Mahmood, K. and Shafique, F. (2010). Changing research scenario in Pakistan and demand for research qualified LIS professionals. *Library Review*, 59 (4): 291 – 303.

Melchionda, M. G. (2007). Librarians in the age of the internet: Their attitudes and roles: A literature review. *New Library World,* 108 (3/4): 123-140.

Negi, D.S. (2014). Using mobile technologies in libraries and information centers. *Library Hi Tech News*, 31 (5): 14 – 16.

Okeji, C.C., Tralagba, E.C. and Obi, I.C. (2020), An investigation of the digital literacy skills and knowledge-based competencies among librarians working in university libraries in Nigeria, *Global Knowledge, Memory and Communication*, 69 (4/5), 311-330. https://doi.org/10.1108/GKMC-05-2019-0054

Partridge, H., Menzies, V., and Munro, C. (2010). The contemporary librarian: Skills, knowledge, and attributes required in a world of emerging technologies, *Library & Information Science Research,* 32 (1): 265–271.

Ramzan, M. (2004). Effects of IT utilization and knowledge on librarians' IT attitudes, *The Electronic Library*, 22 (5): 440 – 447.

Ramzan, M. (2009). Levels of information technology (IT) applications in Muslim world libraries, *The Electronic Library*, 22 (3): 274-80.

Ramzan, M. and Diljit, S. (2009). Status of information technology applications in Pakistani libraries, *The Electronic Library*, 27 (4): 573 – 587.

Rao, K. N. and K. H. Babu. (2001). Role of librarians in Internet and world wide web environment. *Information Science,* 4 (1): 25-34.

Rehman, S. (2008). Developing new competencies among LIS professionals: Challenges for educators. *Pakistan Journal of Library & Information Science,* 9: 67-82.

Robinson, M.G. (2021), Skills and qualifications for the special library environment in Jamaica: a job advertisement analysis, *Library Management*, 42 (1/2), 149-163. https://doi.org/10.1108/LM-07-2020-0109

Rowlands, I. (2007). Electronic journals and user behaviour: A review of recent research. *Library & Information Science Research,* 29 (3): 369-396.

Saarti, J. (2021), Information management during a crisis – providing an open and reliable information infrastructure for a sustainable world, *Library Management*, 42 (4/5). 287-290. https://doi.org/10.1108/LM-10-2020-0151

Shaikh, Z.H. (2009). Usage, acceptance, adoption, and diffusion of information & communication technologies in higher education: A measurement of critical factors, *Journal of Information Technology Impact,* 9 (2): 63-80.

Smith, I. (2005). Continuing professional development and workplace learning 11: Managing the people side of organizational change. *Library Management,* 26 (3): 152-155.

Smith, E. and Hayman, R. (2015). Sustainable decision making for emerging educational technologies in libraries, *Reference Services Review*, 43 (1): 7 – 18.

Warnken, P. (2004). The impact of technology on information literacy education in libraries. *The Journal of Academic Librarianship,* 30 (2): 151-156.

Williamson, V. (2006). Surviving change and growing the profession together. *Library Management,* 27 (8): 548-561.

Zhang, Y., Susan Xue and Zhaohui Xue (2021). From collection curation to knowledge creation: Exploring new roles of academic librarians in digital humanities research, *The Journal of Academic Librarianship*,47 (2). https://doi.org/10.1016/j.acalib.2021.102324.