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RESEARCH PAPER

The Impact of ICT on College Libraries' Technical and Reference Services

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ABSTRACT

This research was conducted to explore the impact of ICT on library technical and reference services in the public sector college libraries of Punjab. The quantitative approach and survey method was used by distributing the questionnaire to all the population of 236 professionals having minimum 16 years of education. 187 valid responses were received with a response rate of 79.23 %. The mean value concerning to the impact of ICT on library technical and reference services was below the average 3 and score of technical services was a little higher than reference services. The age experience and ICT training were found significant positive predictor for better impact of ICT on both library services. A non-significant positive relationship was also detected in the two variables of gender and qualification. The mean value for using ICT among male and higher qualified respondents was a little higher than female and lower degree holders. The electronic devices should be provided in the libraries. The opportunities for ICT training should be increased with special reference to the female professionals. This study is important for authorities making policies and releasing funds for libraries and it would prove a good contribution in the existing literature on the impact of ICT on the services rendering by the college libraries of Punjab, Pakistan.

Introduction

The information has brought a great revolution in the life style of human being through development in medical technology, agricultural technology, transport, industry, communication devices and computers. Furthermore, it can be said without any hesitation that the present society is an information-based society in which all the social and economic growth revolves around the information. Free flow of information assures the growth and development in every field of life. Keeping in view these facts and importance of the information, each person in a society must have the quick access to his/ her required information at right time (Sample, 2020).

The term Information Communication Technology refers to the use of techniques and equipment to communicate and disseminate the information and to share knowledge. The concept of virtual and digital library services has been prevailed after the revolution of Information Communication Technology (ICT) in the library and information centers (Abrashi, & Sallauka, 2022. The use of ICT in the libraries has totally reshaped the nature of job and functions performed into the libraries (Ullah et al., 2022).

The role of libraries is changing due to the frequently use of latest techniques of Information Communication Technology (ICT). The transition has been observed in the various functions of the library i.e. acquisition, organization, circulation, technical and reference services regarding the usage of new information communication technology (ICT) due to the changing behavior, needs and expectations of the users towards library services (Adekoya & Inyang, 2023). The technical services in the library address the organization of library material and include the services like classification, labeling, accessioning, generating barcode numbers, cataloguing, indexing, abstracting, preparing bibliographies etc. Now a days there is acute need to use latest equipment of ICT to perform these technical functions within the libraries (Kulkarni et al., 2023).

The reference services address the use of library, assistance and guidance to use the library, knowing about the actual information need of the user by conducting reference interview and answering the queries of the library users directly and indirectly by referring to the relevant resource from where the required information can be gained. The development of reference information resources, selecting, acquiring and keeping the collection of reference sources separate from the other collection for consulting to know the instant natured questions of the library members for example consulting dictionaries to know the synonyms, antonyms or pronunciation of some word, consulting bibliographies to know about some information resource bibliographic detail, consulting maps to know about the location of some country or city etc. furthermore Current awareness services (CAS), Selective Dissemination of Information (SDI) and Information Literacy (IL) programs for library patrons are also included in the provision of reference services in the libraries. (Mahmud & AbubakarSaka, 2022).

The ICT has reshaped the role of libraries and whole the structure of technical and reference services in a new environment of digital world. The huge and vast world has been transformed into a global village with the invention of computer and Internet. The ICT has been involved in every field of life. The libraries have a challenge to face many competitor organizations rendering information services through remote access. The services of academic libraries have been reshaped by providing remote access to information beyond the boundaries of walls and geographical territories, however these all demand the use of latest equipment, adequate funds, training for library staff and library users also (Hamad et al., 2023). The internet has become an eminent source of latest information easily and speedily. The World Wide Web running on internet has been appeared as an effective source of dissemination of information and many organizations disseminating the information have been appeared as strong competitors of libraries (Ahmed & Sheikh, 2021).

The profession of librarianship has been changed and a huge amount of information resources have become available on non-printed media and on soft form electronic books and journals on soft or hard form. The soft form has developed the concept of digital/virtual libraries and information centers and the role of traditional libraries confining on print media only have become insufficient for the increasing information needs of the researchers and scholars (Adenariwo & Sulyman, 2022).

The usage of information communication technology enables the library staff to fulfill the demands of information seekers through multiple channels by saving the time of library staff and users. Furthermore, usage of ICT in library technical and reference services ensures more accuracy and efficiency than traditional methods. The information services rendered by the libraries can be enriched with a big positive change by adopting information communication technology to fulfill the increasing demands of the information seekers. (Haruna & CLN, 2022).

A mentionable community in the field of librarianship has realized that the use of information communication technology is inevitable to perform the library functions and these challenges have enhanced the responsibilities of librarians to render information services to satisfy the demand of library users (Mushi et al., 2023).

In Pakistan librarians are mostly suffering from techno-stress regarding the implementation of the ICT services. There is also shortage of adequate funds to purchase equipment used for provision of digital services, majority of the library staff is unable to run a digital and virtual library and hesitate to acquire the digital and virtual information resources and providing remote access to the required information. This all seems due to non-availability of sufficient funds and ICT training opportunities to the librarians (Rafique at al., 2023).

The present study will be helpful to the organizational administrators while devising policies for recruiting and controlling the activities of workers to improve their performance for achieving the tasks. Furthermore, the present study is useful for information professionals by identifying their problems to resolve them as well as for the users of the information centers by upgrading the quantity and quality of the information resources and services. No research study has been conducted on this crucial issue covering the colleges of Sargodha and Faisalabad division.

Literature Review

The ICT has made possible for the libraries to cross the boundaries of library walls and limitations of membership within a specific geographical territory. Furthermore, it has made possible to manage a large amount of information storage in an accurate and effective way. The libraries can cover and manage the information resources on multiple media. The ICT is one of the greatest blessings of science and technology which has changed the whole map of knowledge by expanding the boundaries of knowledge and specialization in each facet of knowledge field and caused to change the human life style totally. The Application and trend to use the ICT skills within the library and information services has been emerged as an essential component and has introduced the traditional libraries as an intellectual multi-format and multi-media information centers (Khan et al., 2023).

The ICT equipment includes the wide variety of computing hardware (desktop computers, laptops, servers, network storage devices. The functions were performed in the libraries without the concept of automation but as the Information Communication Technology prevailed throughout the world at a large scale, the college libraries are taking it seriously to introduce and use ICT in technical and usage services effectively to handle large collections of information on multi-variety of topics on multiple formats (Tallolli & Mulla, 2023).

The academic libraries serve to achieve the academic standards and targets of their parent academic institutes (Ali, 2018). The academic libraries store, preserve and organize information resources by technical services of classification and cataloguing, indexing, abstracting for easy retrieval of required information and perform their duties to meet the high standards of current trends and changing information seeking behavior of the scholars and researchers (Rath, 2022).

The advent of ICT in the academic libraries has totally reshaped the job structure of librarianship throughout the world and it seems that traditional methods to render library services would be obsolete in near future (Ali & Naveed, 2020; Aslam et al., 2021).

The duties of library professionals regarding the provision of technical services like cataloguing, indexing, reference services, maintaining the newspapers and serial section, managing the circulation record, availability of databases for reference section etc. have developed a perception of incomplete and useless libraries without the inception of ICT in the information services (Shah et al.,2023).

Faizan (2023) conducted a research study to evaluate the impact of information communication technology and use of equipment required for that purpose in the academic libraries. The study resulted that ICT was implemented at some extent in the Arts, science and engineering colleges and offered assistance to the clientele with an innovative way. The study also observed that some academic libraries rendered assistance services by conducting video conferencing to fulfill the needs of reference services (Shoaib et al., 2022).

The research study of Haider and Hussain (2023) detected that there were a large number of libraries which were not using information communication technology in-spite of the availability of computer machines, internet connection and availability of electronic devices used to run an ICT system in the libraries due to the incompetent workers, poor maintenance of ICT system, being obsolete the previous ICT knowledge and lack of continuing education programs for the staff and library users (Shoaib et al., 2020). A large number of computers and other digital devices laying down out of order and unable to use addresses the poor skills and insufficient training programs which was causing a huge wastage of funds. The study further highlighted that there was not enough continuing education of ICT specialists in comparison to speedy changes in ICT and obsolescence of existing knowledge and expertise in ICT (Shabbir & Ali, 2021). The study further pointed out another issue that libraries can't retain their efficient and expert staff due to low salary packages and they leave organizations in search of better future and better financial benefits (Ali, Shoaib, & Abdullah, 2021; Ali, Shoaib, & Asad, 2021).

The study of Lateef and Mairaj (2023) urged on the need for conducting research studies on the burning issue of ICT implementation and its impact on library services and satisfaction of the library users concerning to the collection development to meet the demand and provision of e-resources and their use. It was further suggested higher authorities should release the funds well in time realizing the crucial need of implementing new digital technology in the libraries to meet the teaching and learning needs of the community.

The above reviewed studies revealed that although these studies were relevant to the topic of current study yet a very small number of studies were found on the crucial topic of implementation of ICT in the college libraries of Punjab, Pakistan. The current study is aimed to fill this gap and will prove a good addition in the existing research literature of relevant field as there is an acute need to conduct studies at this burning issue within the various geographical territories of Pakistan.

Material and Methods

The quantitative research method was used as it ensures objectivity and accuracy to draw conclusions from the obtained results. The review of literature revealed that such type of studies mostly use quantitative research design in which short and close ended questions are asked to get brief answers and feelings about the statements. The survey method was used to collect data by using a self-devised questionnaire.

The population of the study was library professionals working in the public sector college libraries of Sargodha and Faisalabad division, in the province of Punjab, Pakistan, possessing at least 16 years of professional education degree. The total number of populations was 236 and it was decided not to take sample from it and all the population was consulted. The questionnaire was distributed and 187 valid responses were received with a proportion rate of 79.23 % of the whole population.

Instrument of the study

The instrument covered the objectives of the study and was consisted of three parts.

1. The first part covered the demographic variables of librarians covering 5 facets i. e. gender age, experience, ICT training and qualification.
2. The 2nd part of the instrument was consisted of the 12 statements concerning to the performing organizational/technical services i.e. acquiring, storing, cataloguing, and indexing etc. using traditional or ICT skills.
3. The 3rd part of the instrument was consisted of 12 statements concerning to the performing functions of reference services to the users by using traditional or ICT skills providing remote access.

Validity of the instrument

The validity assures that the instrument is able to measure that is wanted to be measured. The self-devised instrument was sent to the three doctorate degree holder experts of the profession to get their approval and after their positive opinion a pilot study was managed before starting the actual process of research survey. Some amendments were made to make the instrument more understandable.

Reliability of the instrument

The reliability refers to the generalization of the results, there should be the same results under same controlled facets and under same situation. The responses were tested by applying Cronbach's coefficient alpha test for measuring consistency and reliability. The executed reliability score was .89 which is an acceptable score for social science research studies as according to Bland & Altman (1997) the acceptable reliability value of Cronbach's Alpha test in social science studies is 0.70.

Table 1
Reliability analysis of the questionnaire

Cronbach's Alpha	N of Items
.890	24

Data collection

The data was collected through online Google link. Some questionnaires were also sent by post, email to the population. Whole the available population was consulted to get responses. The total number of populations was 236 and 187 valid responses were received with a proportion rate of 79.23 % of the whole population.

Data Analysis

The collected data were analyzed by using the "Statistical Package for Social Sciences version (SPSS) version 25'' applying descriptive statistics for executing the frequencies of respondents and resources of the libraries. The inferential statistical tests were applied to

explore the relationships and effect of demographic characteristics on the usage of information communication technology (ICT). The data were collected and analyzed using five point Likert scale indicating the intensity of the feelings from strongly disagree score=1, disagree score=2, neutral score=3, agree score=4 and strongly agree score=5. The results were prepared in percentage order and finally conclusions were drawn and recommendations to improve the current status were highlighted.

Results and Discussion

The result regarding gender of the respondents showed that out of 187 respondents, males were 116(62%) and females were 71(38%). Regarding the age largest group was having age up to 30 years (n=88) 47.1%, the second largest group regarding age was between 31 and 40 years (n=76) 40.6%. The respondents belonging to 41years and above age group were 23(12.3%). Regarding the experience of respondents largest group was possessing experience up to 5 years (n=101)54%, The group of respondents having experience between 6-10 was (n=27)14.5%. The respondents having experience between 11-25 years were 44 (23.5%).

Table 2
Demographic characteristics of the respondents.

Sr. #	Variable	Groups	Number	Percentage	Total Percentage
1	Gender	Male	116	62 %	100%
		Female	71	38%	
2	Age	Up to 30 years	88	47.1%	100%
		31-40 years	76	40.6%	
		Above 40 years	23	12.3 %	
3	Experience	Up to 5 years	101	54%	100%
		6 to 10 years	27	14.5%	
		11 to 25 years	44	23.5%	
		26 years and above	15	8%	
4	ICT training	Received	139	74.3%	100%
		Not received	48	25.7%	
5	Qualification	BS 4years/MLIS	158	84.49%	100%
		M. Phil.	29	15.31%	

The smallest group regarding experience having 26 years or above was (n=15)8%. Regarding the ICT training the respondents were divided into two groups, the large group 139 (74.3%) availed no opportunity of ICT training while the second small group of 48 (25.7%) got CT training. Regarding the qualification of the respondents, the large group was 16 years professional degree holders (n.158) 84.49 % whereas the and results executed in the table revealed that majority of the respondents had 16 years of education while the strength of M.Phil (18 years) degree holders was (n.29) 15.31% while there was no PhD degree holder among the respondents of college librarians of Faisalabad and Sargodha division.

Table 3
Impact of ICT on Technical services in the college libraries

Services	Mean	SD
Technical Services Mean	1.8734	.6558

The respondents were inquired about ICT impact on technical services within the college libraries and it was disclosed that mean value concerning to the impact of ICT on technical services was 1.87 which is below the average mean value 3 and indicates a poor

status in the college libraries, however it was a little higher than the impact on reference services.

Table 4
Impact of ICT on Reference services in the college libraries

Services	Mean	SD
Reference Services Mean	1.7014	.5577

The respondents were inquired about ICT impact on Reference services within the college libraries and it was disclosed that mean value concerning to the impact of ICT on reference services was 1.70 which is below the average mean value 3 and indicates a poor status of ICT usage in the college libraries. Furthermore, it is also less than the mean value of impact on technical services 1.87 and there was need to improve the use of ICT in of ICT in both the services generally and reference services particularly.

Table 5
Impact of ICT on overall library services (technical + reference) in the colleges

Services	Mean	SD
Overall Services Mean	1.7874	.5681

The respondents were asked about the ICT impact on Reference and technical services. Overall mean value concerning to both the services was 1.78 which is below the average mean value 3 and indicates a poor status of ICT usage in the college libraries.

Relationships

The relationships between 5 demographic variables gender, CT training, Qualification, Age and experience are evaluated and results are given in the following tables.

Table 6
Impact of ICT on library services and Gender difference

Statement	Gender	N	Mean	SD	Sig.-
Overall Services Mean	Male	116	1.8297	.60172	.076
	Female	71	1.7183	.50501	

Independent sample T-test revealing the Gender difference and Impact of ICT on Technical and reference services overall. The executed results in Table 6 reveals that there is a slight difference between the mean values of male (M=1.8297; SD=0.60172) and female (M=1.7183; SD=0.50501), as male members are positively correlated with the use of ICT but the significance value .076 is greater than the standard significance value .05 which indicates the difference is not significant. It can be stated that no much difference found regarding impact of ICT on Technical and reference services based on gender.

Table 7
Impact of ICT on library services and ICT training

	ICT Training	N	Mean	S. Deviation	Sig.
Overall Mean ICT impact	Not Received	139	1.8588	.59530	.019
	Received	48	2.1875	.70752	

The results executed in table reveal significant difference between the mean values of the participants who got ICT training and who did not get ICT training. A significant positive correlation with the usage of ICT and ICT training was found among the respondents as mean value 2.18 of ICT training receivers was greater than those who had not received ICT training 1.85, the significance value .019 is less than the standard

significance value .05, however mean score of both the groups was below the average mean value 3 which indicated the poor status of the ICT usage.

Table 8
Impact of ICT on library services and Qualification of the respondents

S.no	Statements	Means		t-value	Sig.
		Male	Female		
1	ICT on technical Services	3.62	3.75	.819	.665
2	ICT on reference services	3.51	3.97	.006	.132

The independent samples t-test was applied to find the relationship between usage of ICT and qualification level of the respondents, The results displayed in table 8 reveal that no statistically significant relationship was found as the executed significance value regarding reference services was .662 which is greater that standard significance value .05. The same situation is regarding the reference services as executed significance value .132 is greater than the standard value .05. However, the sight non-significant positive relationship was detected between higher qualification ad usage of ICT as the mean values of M. Phil degree holders were a little greater than BS/MLIs degree holders but it was not statistically significant. The results indicate that mean value of the usage of ICT was lower in reference services than that of technical services.

Table 9
Impact of ICT on library services and Age groups of the respondents.

Variables	Age Groups	N	M	SD	Sig
	30 years or less	88	1.42	.4362	
	31-40 y	76	1.67	.5784	
Impact of ICT and Age Groups	41-50 y	10	1.86	.6491	.000
	50 above	13	2.18	.7643	
	Total	187	1.78	.6551	

The results of ANOVA test executed in table 9 reveals a significant positive relationship between Age variable and impact of ICT as the mean values of ICT impact increase by increasing the age. The executed significance value .000 is less than the standard significance value < .05 which discloses that Age is significant positive predictor for better impact of ICT on the library reference and technical services.

Table 10
The impact of ICT on library services and Experience of the respondents.

Variables	Experience	N	M	SD	Sig.
	Up to 5 years	112	1.58	.5431	
Impact of ICT and Experience	6 to 10 years	32	1.70	.5049	.028
	11 to 25 years	43	2.08	.6783	

The results of ANOVA test executed in table 10 reveals a significant positive relationship between Experience variable and impact of ICT as the mean values of ICT impact increase by increasing the experience of respondents. The executed significance value .028 is less than the standard significance value < .05 which discloses that experience is significant positive predictor for better impact of ICT on the library reference and technical services.

ICT impact on technical services

The mean value concerning to the impact of ICT on college library technical services for individual each statement is given below in table 11.

Table 11
Mean Values concerning to ICT impact on technical services

Statements	N	Mean	SD
ICT is used in this library for selecting and ordering information resources	187	1.96	1.288
ICT is used in this library for receiving and verifying orders	187	2.02	1.340
ICT is used in this library for accessioning information resources	187	2.01	1.342
ICT is used in this library for classifying	187	1.97	1.198
ICT is used in this library for cataloguing]	187	1.87	1.062
ICT is used in this library for filing and sorting catalogue entries	187	1.97	1.191
ICT is used in this library for assigning subject headings	187	1.63	1.051
ICT is used in this library for indexing and Abstracting services	187	1.88	1.296
ICT is used in this library for library members record	187	1.92	1.282
ICT is used in this library for creating reports concerning to library members and library material	187	1.56	.967
ICT is used in this library for reservation and Reminder services	187	1.72	1.041
ICT is used in this library for stock taking and barcode generating]	187	1.97	1.175
Valid N (listwise)	187		

The Respondents were inquired about their perception regarding ICT use and impact on technical services within their libraries and the executed mean value concerning to each of the 12 statements was between the range of 1.56 to 2.02 mean score which reveals very poor status of the use of ICT in the library technical services.

ICT impact on Reference services

The mean value concerning to the impact of ICT on college library technical services for individual each statement is given below in table 6

Table 12
Mean Values concerning to ICT impact on technical services

	N	Mean	SD
ICT is used in this library for guiding to use library & reference sources	187	1.87	1.075
ICT is used in this library for conducting reference interview to assess the need of information seeker.]	187	1.76	1.266
ICT is used in this library for providing CAS (current awareness services)	187	1.93	1.136
ICT is used in this library for SDI (Selective dissemination of information) services.	187	1.79	.997
ICT is used in this library for providing OPAC services to the users.	187	1.76	.899
Training to use internet is provided to the users regularly	187	1.68	.875
Continuing education programs are arranged to upgrade the ICT skills of the library staff.	187	1.75	.919
ICT is used in Lectures programs to facilitate the users.	187	1.53	.785
Information Literacy programs are arranged to enable the users to find and use required information.	187	1.62	.849
ICT is used in this library for resource Sharing.	187	1.71	.811

ICT is used in this library for creating databases to answer the instant natured questions of library users.	187	1.48	.571
ICT is used in this library to evaluate the reference material and reference services	187	1.53	.682
Valid N (listwise)	187		

The Respondents were inquired about their perception regarding ICT use and impact on reference services within their libraries and mean value concerning to each of the 12 statements was between the range of 1.48 to 1.76 mean score which reveals very poor status of the use of ICT in the reference services of the college libraries of Faisalabad and Sargodha divisions.

Findings

The study disclosed that mean value to use ICT was very poor 1.87 and 1.70 below the average 3 regarding both type of technical and reference services respectively, however the score of technical services was a little higher than reference services. Regarding the relationships between demographic characteristics of the respondents with the impact of ICT, regarding the gender, male were a slightly and positively correlated with better ICT impact and high qualification was also found slightly and positively correlated with the better impact of ICT on library reference and technical services as by increasing qualification, the mean of ICT impact increased also but these relationships were not statistically significant because their executed significance values were greater than > .05 the standard significance value, The demographics of ICT training receivers, senior age and more experience were positively and significantly correlated with the better impact of ICT on library services as the mean values of ICT impact on library reference and technical services increased by increasing age, experience and getting training to use ICT in the libraries. The relationship of these three demographic characteristics was statistically significant as the executed significance values were less than the < .05 standard significance value.

Conclusions

The results disclosed that current status of ICT use in the technical services of college libraries in Sargodha and Faisalabad divisions of Punjab was very poor with regard to the internet connection and provision of digital devices. The results disclosed that current status of ICT use in the reference services of college libraries in both the divisions was very poor with respect to the use of digital databases, use of World Wide Web and remote access. Meanwhile, the impact of ICT on college libraries technical services was not so fruitful due to non-availability of digital collection and equipment to implement ICT within the college libraries as the mean value was below the average mean score 3. Moreover, the impact of ICT on reference services of the college libraries was below the average and it was due to non-availability of digital equipment to use ICT within the college libraries as the mean value was below the average mean score 3. The study resulted that following problems and challenges are being faced by the college librarians in the use of ICT to improve the status of library technical and reference services. In addition, there is indifferent attitude of higher authorities towards libraries' basic needs, lack of funds to convert the traditional libraries into the digital libraries, lack of ICT training opportunities for college libraries of Sargodha and Faisalabad divisions of Punjab.

Recommendations

The funds should be raised, the digital material and electronic devices should be provided to use in ICT services within the libraries, the opportunities for training of ICT should be increased and furthermore a peaceful environment incentive for training the female librarians must be managed because the mean value to use ICT among female was lower than male respondents.

Suggestions for further studies

1. This is suggested that further studies should be conducted on new emerging trend of information communication technology within the vast range of library services comprising of resource sharing, preparing union catalogues, online meetings and use of ICT in security and circulation activities.
2. Further studies should be conducted within the various types of libraries to compare their services and demands of the information seekers i.e. public libraries, special libraries.
3. There is acute need of further studies across different geographical territories especially in the libraries of backward areas focusing on the ICT trainings of the user community.
4. It is suggested that further studies should be conducted to evaluate the current status of Librarians concerning to their ICT skills that are essential to manage the libraries and information centers in this total changed environment of ICT.
5. It is also suggested that further studies are needed to evaluate the current status of curriculum taught in the universities to equip the students rendering information services by using ICT effectively.

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